

Case study analysis report of online collaboration and networking tools for social innovation

30 September 2014

Deliverable 8.3 of the
FP7-project: TEPSIE (290771)



Abstract

This deliverable constitutes Deliverable D8.3 “Case study reports of online collaboration and networking tools for social innovation”, due on 30 September 2014. It reports on the empirical work of Tepsie examining the use of online networks and other digital tools to support and/or enabler social innovation.

Suggested citation

Millard, J., Carpenter, G. (2014). “Case study analysis report of online collaboration and networking tools for social innovation”, a deliverable of the project: “The theoretical, empirical and policy foundations for building social innovation in Europe” (TEPSIE), European Commission – 7th Framework Programme, Brussels: European Commission, DG Research: <http://www.tepsie.eu>

We would like to thank all of our partners in the TEPSIE consortium and colleagues at DTI for their contributions to this report in the form of case studies, other inputs and comments, though responsibility for how their material is used rests with the authors:

- Simon Mikael Fuglsang Østergaard (DTI, Denmark)
- Łukasz Gajewski (WRC, Poland)
- Gunnar Glänzel (UHEI, Germany)
- Sophie Hostick-Boakye (YF, United Kingdom)
- Georg Mildenerberger (UHEI, Germany)
- Konstantinos Modikos (ATL, Greece)
- Robin Murray (Member of Tepsie’s independent Advisory Panel).
- Niels Christian Nielsen (DTI, Denmark)
- Jimmy Kevin Pedersen (DTI, Denmark)
- Filipe Pinto (UCP; Portugal)
- Gudrun Schimpf (UHEI, Germany)
- Johan Ernest Olivier Secher (DTI, Denmark)
- Rasmus Kåre Thaarup (DTI, Denmark)

Date: 30 September 2012
TEPSIE deliverable no: 8.3

Authors: Jeremy Millard, Gwendolyn Carpenter
Lead partner: Danish Technological Institute, Denmark
Participating partners: Young Foundation (United Kingdom), University of Heidelberg (Germany), Atlantis (Greece), Universidade Católica Portuguesa (Portugal), Wrocław Research Centre EIT+ (Poland)

Contact person: Name: Jeremy Millard
Institution: Danish Technological Institute
jrm@teknologisk.dk
+45 72 20 14 17

CONTENTS

1. Introduction and purpose	5
1.1. Background	5
1.2. Definition of digital social innovation and purpose of this report	6
1.3. Structure of this report and terminology explanations	7
2. Methodological approach	8
2.1. Introduction	8
2.2. Determination of themes and case selection criteria	8
2.2.1. Top down rationale – selecting six relevant societal challenge themes	8
2.2.2. Bottom-up criteria for determining the types of cases	10
2.2.3. Operational case selection criteria	12
2.3. Analysis of cases	13
2.4. Overview of cases analysed	15
3. Employment	17
3.1. Context	17
3.1.1. Strategic issues, trends and challenges	17
3.1.2. Roles and impacts of ICT	19
3.1.3. Framework for analysis	20
3.2. Case analysis	22
3.2.1. Social needs addressed and summary	22
3.2.2. Types and uses of ICT	23
3.2.3. Social innovation outcomes	25
3.2.4. Social innovation processes	27
3.2.5. Barriers and drivers	28
3.2.6. Lessons learned and success factors	29
3.2.7. Conclusions and reflections	32
4. Place making	36
4.1. Context	36
4.1.1. Strategic issues, trends and challenges	36
4.1.2. Roles and impacts of ICT	38
4.1.3. Framework for analysis	40
4.2. Case analysis	43
4.2.1. Social needs addressed and summary	43
4.2.2. Types and uses of ICT	44
4.2.3. Social innovation outcomes	47
4.2.4. Social innovation processes	49
4.2.5. Barriers and drivers	51
4.2.6. Lessons learned and success factors	53
4.2.7. Conclusions and reflections	56
5. The sharing economy	60
5.1. Context	60
5.1.1. Strategic issues, trends and challenges	60
5.1.2. Roles and impacts of ICT	63
5.1.3. Framework for analysis	63

5.2. Case analysis.....	66
5.2.1. Social needs addressed and summary	66
5.2.2. Types and uses of ICT	67
5.2.3. Social innovation outcomes	70
5.2.4. Social innovation processes	72
5.2.5. Barriers and drivers	74
5.2.6. Lessons learned and success factors	76
5.2.7. Conclusions and reflections	79
6. Health	84
6.1. Context	84
6.1.1. Strategic issues, trends and challenges	84
6.1.2. Roles and impacts of ICT	86
6.1.3. Framework for analysis	87
6.2. Case analysis.....	90
6.2.1. Social needs addressed and summary	90
6.2.2. Types and uses of ICT	92
6.2.3. Social innovation outcomes	97
6.2.4. Social innovation processes	99
6.2.5. Barriers and drivers	100
6.2.6. Lessons learned and success factors	102
6.2.7. Conclusions and reflections	105
7. Education.....	108
7.1. Context	108
7.1.1. Strategic issues, trends and challenges	108
7.1.2. Roles and impacts of ICT	110
7.1.3. Framework for analysis	112
7.2. Case analysis.....	116
7.2.1. Social needs addressed and summary	116
7.2.2. Types and uses of ICT	117
7.2.3. Social innovation outcomes	120
7.2.4. Social innovation processes	121
7.2.5. Barriers and drivers	123
7.2.6. Lessons learned and success factors	125
7.2.7. Conclusions and reflections	127
References	131
Annex 1: Case study reporting template	135
Annex 2: Tepsie's preliminary definition of social innovation	140
Annex 3: Online platforms, communities and networks	144

1. Introduction and purpose

1.1. Background

The overall objective of the Tepsie project's Work Package WP8 (using online networks to maximum effect) is to examine the extent to which, how and why, online networks and other digital tools (collectively termed Information and Communication Technology, ICT, in this report) are substantially changing the character of communication; relationship building; collaboration platforms; information access and data usage; social choices; service models; financing and much more. In this context, Work Package 8 examines the impact of ICT on, and its interaction with, social innovation, as well as the practitioner and policy making implications of this.

This current report is Deliverable D8.3, and draws on two earlier deliverables D8.1 and D8.2. Deliverable 8.1 examined the development of online networking and other digital tools by providing an overview and a conceptual understanding of the present and future multi-faceted development of online networks, media and collaboration tools, as well as other relevant ICT. This included an understanding of the shifts in paradigms as tentatively indicated in the use of terms like Web 2.0, Web 3.0 and even Web 4.0. Deliverable D8.1 also argued that ICT in an historical context represents a decisive techno-societal paradigm shift as a new general-purpose technology enabling profound socio-economic, organisational, cultural and political changes. D8.1 highlighted how these current changes in the context of ICT can be compared with those resulting from previous shifts like steam and railways, electricity and steel, automobiles, mass production and broadcast media. (Perez 2004 and 2009). Such shifts have arguably also preceded the industrial age, as for example the printing press with moveable type invented by Gutenberg in the 15th Century which enabled the mass production of printed texts and images for the first time. A more apt comparison with the current impact of ICT and internet might be 17th Century England when the printing press was joined by the two other crucial factors – infrastructure and literacy – so all three appeared together for the first time enabling a fervent of ideas and popular movements competing for social, economic, religious and political attention. (Hill 1972) These new factors were regular transport links to most parts of the country (stage coaches at that time), and increasing literacy (in most villages at least one person for the first time was available who could read and write.) (Millard 2008)

Deliverable D8.2 looked at the role of communities and networks in social innovation, and the role that online networking tools are playing in this. Based on the findings of D8.1, as well as subsequent research, D8.2 specifically investigated three main conceptual frameworks for examining the impact of ICT on, and its interaction with, social innovation. First, a taxonomy of online networks enabling social innovation was constructed derived from an empirical scanning of a large number of them and an examination of the roles each type plays, from which an explanatory conceptual framework was also derived. Second, an examination of how social innovation is created by individuals and groups of people organised in communities was undertaken, and how ICT and online media impact these communities and thereby impact social innovation. Much of the evidence and research in this context has been undertaken in the corporate and commercial world from which it is argued social innovation can learn. Third, the role of networks, the network effect and the impact of ICT was analysed drawing on the rich and ongoing theoretical and empirical research in this important and growing field.

1.2. Definition of digital social innovation and purpose of this report

This deliverable D8.3 reports on the empirical work of Tepsie's WP8 examination of so-called 'digital social innovation', i.e. the use of online networks and other digital tools to support and/or enable social innovation. By 'support' is meant that a specific social innovation is taking place anyway but that it is, in some way or other, significantly improved by deploying ICT. By 'enable' is meant to imply that a specific social innovation would not happen without ICT, and could even lead to completely new types of social innovation appearing. In turn, Tepsie defines social innovation as new approaches to meeting social needs which are both social in their means and in their ends, and which engage and mobilise the beneficiaries and help to transform social relations by improving beneficiaries' access to power and resources (see Annex 2). This report examines *inter alia* what are termed social innovation outcomes, i.e. meeting a social need in new ways like increasing the number and quality of jobs for the unemployed, and social innovation processes, i.e. new or improved capabilities and relationships and the better use of assets and resources.

Tepsie's definition of digital social innovation seems to provide a somewhat different and complementary perspective compared to the definition used by the Digital Social Innovation project where the following definition is used: "...a type of social and collaborative innovation in which final users and communities collaborate through digital platforms to produce solutions for a wide range of social needs that have failed to be met by existing solutions and at a scale that was unimaginable before the rise of Internet-enabled collective platforms."¹ Tepsie includes in its definition social innovations which use digital tools alongside traditional tools and approaches, so that, for example, it is not assumed that "final users and communities" necessarily themselves use digital tools, but that such tools are used in significant ways by one or more actors, or in one or more parts of the value chain, to support or enable social innovation.

Thus, in this report, digital social innovation is defined as the use of digital technology to enable or support social innovation. With the rapid growth of cheap, ubiquitous and powerful tools like the internet, the world-wide-web, social media and smart phone apps, new ways of carrying out social innovation have become possible whilst many existing ways have been strengthened. Often this means the barriers to social innovation in terms of communication, outreach and scaling have been reduced and thresholds lowered. For example, the so-called 'sharing economy' is blossoming in which people can share cars, tools, accommodation, and even their time and skills. This is now possible more than ever before using the internet or mobile apps to link, almost instantaneously and regardless of distance, people with a social need to others who can meet that need. Digital tools can also be transformational and open new perspectives on social innovation, such as the use of so-called 'big data'² to collect and analyse data of what social needs are being experienced by which people in different places at different times. Using new digital technologies can also open new perspectives for locally manufactured and very cheap products for people who otherwise have no chance of being helped. For example, using the internet to send algorithms for 3-D printed prosthetic limbs designed for war victims in developing countries for local production and use.

This report, D8.3, presents and analyses the empirical desk work and case studies undertaken by Tepsie, but does not attempt to undertake an overall synthesis, draw general conclusions or make general recommendations. Subsequent deliverables, D8.4 and D8.5, will undertake this task by suggesting future research requirements and making policy recommendations based on the cumulative work of WP8.

¹ <http://digitalsocial.eu/>

² 'Big data' refers to the vast amount of data that can be collected from the internet, for example as made available by the public sector as open government data and as contributed by ordinary people through 'crowdsourcing'.

1.3. Structure of this report and terminology explanations

This report is composed of seven sections:

- Section 1: Introduction and purpos
- Section 2: Methodological approach
- Sections 3 to 7: report on desk research and detailed case analysis of five themes: employment, place making, the sharing economy, health and education.

After the references section, there are also three annexes:

- Annex 1: Case study reporting template used for describing the 30 digital social innovation case studies across the five themes, enabling direct comparison and analysis.
- Annex 2: Tepsie's preliminary definition of social innovation, as well as the types of social innovation and how social innovation takes place.
- Annex 3: Online platforms, communities and networks, derived from the research in D8.2 as loose taxonomies concerning how ICT supports or enables these developments.

Explanations of terminology

There are a number of common terms or abbreviations used throughout this report which require brief explanation:

- PPPs: public-private-partnerships, i.e. partnerships between the public and private sectors.
- PPCPs: public-private-civil-partnerships, i.e. partnerships between the public, private and civil sectors.
- Standard ICT: refers generally to off-the-shelf, readily available ICT for acquisition or purchase through mainstream ICT outlets which requires no or very minor adaptation prior to or during use. This means that development costs are shared amongst all users, thus keeping the price low. It is also implies that the ICT is generally easy to use as it is can often become a standard product or service used by many.
- Bespoke (tailored) ICT: in contrast with standard ICT, is specially made or adapted (by the supplier of the user) prior to or during use to include very specific features only required by the user. This means that development costs are largely borne by the user alone, thus the price tends to be high. It is also implies that the ICT generally requires special training for use as it is often unfamiliar being not a standard product or service but only used by a relatively few.

However, these definitions for standard and bespoke ICT are not fixed as they depend to some extent on the context (sector, beneficiaries, etc.) in which the ICT is used.

- Traditional activities: refer to activities or processes which are used traditionally in social innovations both with or without ICT, and can include physical activities as well as media like TV, radio, the telephone, etc.
- Physical activities: refer to activities or processes which are physical, such as human face-to-face, print media including the press, events like meetings workshops, conferences, etc.

2. Methodological approach

In this section, the methodology and approach followed to undertake Tepsie's empirical work on digital social innovation is explained.

2.1. Introduction

This case study report is based on a themed approach to empirical studies derived from important European challenges in major societal sectors to which social innovation is making a big contribution, and where network technologies and digital tools (Information and Communication Technology, ICT) is supporting and/or enabling social innovation in doing this. This societal challenge-led approach has enabled the identification and analysis of emerging issues against existing technology functions, and to pinpoint issues and needs the technology is not addressing or not addressing well.

The report is structured around five social challenges themes, within each of which three focus areas have been identified as of particular relevance to the impact ICT is having on social innovation, or where ICT is a key enabler. For each focus area, one or more case studies have been analysed, resulting in a total of 30 empirical cases overall.

The rationale behind the selection and analysis of the 30 empirical cases has been 'multiple case study design' (Yin, 2009), which recognises that the use of multiple cases, instead of a very small number, to address research issues or questions is, in most cases, a more powerful approach. Multiple case study design enables the researcher to explore the object under study through the use of a replication and triangulation strategy, in which cases are analysed to explore the research issues derived from theory or from earlier research. According to this approach, if all or most of the cases provide similar results, there can be substantial support for the development of a preliminary set of conclusions and, in the long run, perhaps a theory that describes the phenomena (Eisenhardt, 1989). This design approach includes the selection of five themes each with at least five empirical case studies, as described in section 2.2 below, in order to undertake cross-case analysis and draw cross-case conclusions as described in section 2.3 below).

2.2. Determination of themes and case selection criteria

Themes, focus areas and cases were determined by applying both a top-down and bottom-up approach, as described in the following. The geographic focus is Europe (wider than the European Union), but non-European evidence and case studies were also examined.

2.2.1. *Top down rationale – selecting six relevant societal challenge themes*

Deliverable D8.2 examined how six types of technology platform might address specific societal challenges through their deployment of different combinations of assets and tools. The OECD Better Life Index³ was used as a starting point, and is used again in this D8.3 deliverable, together with the European Public Sector Innovation Scoreboard,⁴ for deriving the five societal challenge themes. The

³ <http://www.oecdbetterlifeindex.org/>

⁴ http://ec.europa.eu/enterprise/policies/innovation/files/epsis-2013_en.pdf Note, the European PSI categories are in fact taken from the United Nation's measurement of the 'government sector' in the so-called COFOG (Classification of the Functions of Government)

OECD Better Life Index facilitates comparison of wellbeing across countries, based on eleven topics the OECD has identified as essential in the areas of material living conditions and quality of life. The European Public Sector Innovation (PSI) Scoreboard uses ten overall categories when investigating public sector innovation in order to group and measure the activities of the public sector which generally addresses societal challenges. The two sources are compared in Table 2.1.

Table 2.1: The OECD's Better Life Index and the European Public Sector Innovation Scoreboard

The OECD Better Life Index	The European Public Sector Innovation Scoreboard
• Housing • Income • Jobs • Community • Education • Environment • Civic engagement • Health • Life satisfaction • Safety • Work-life balance	• General public services • Defense • Public order and safety • Economic affairs • Environmental protection • Housing and community amenities • Health • Recreation, culture and religion • Education • Social protection

Together, the OECD topics and the European PSI categories provide a detailed overview of the main societal challenges important to Europe. In Table 2.2, the two indexes have been used to guide and structure the selection of Tepsie's societal challenge themes in order to facilitate the analytic approach to the case studies. These Tepsie societal challenges have also been designed so they are not incompatible with Tepsie's definition of social innovation (see Annex 2).

Table 2.2: Aligning the five Tepsie societal challenge themes with the OECD's Better Life Index and the European Public Sector Innovation Scoreboard

OECD Better Life Index	European Public Sector Innovation Scoreboard	Tepsie themes
• Jobs • Work-life balance	• Economic Affairs	1. Employment
• Income		2. Sharing economy (and sharing society)
• Health	• Health	3. Health
• Education	• Education	4. Education
• Community • Housing • Civic engagement • Life satisfaction • Safety	• Housing and community amenities • Recreation, culture and religion • Social protection • Public order and safety • General public services	5. Place making (for community and local development)

The adoption of this societal challenge approach has also been endorsed by Tepsie's Advisory Panel and by comments from the European Commission.⁵ The need is seen to strengthen the European policy impact of social innovation through a more coherent and concrete focus on Europe's critical

⁵ For example, at the Tepsie European Social Innovation Research Conference and Colloquium, 1-2 October 2013, Heidelberg, Germany.

societal challenges, as articulated in the Europe 2020 Strategy,⁶ such as unemployment, inequality and poverty, health and education, as well as demographic changes like ageing, climate change and energy.

The Tepsie themes also reflect one of the filters being used by the Commission funded Digital Social Innovation study⁷ which has categorised its large number of ‘light case studies’ into the following domains:

- Education and skills
- Participation and democracy
- Culture and arts
- Health and wellbeing
- Work and employment
- Neighbourhood regeneration
- Energy and environment
- Science
- Finance and economy.

2.2.2. *Bottom-up criteria for determining the types of cases*

In order to ensure that a relatively broad and representative range of cases are investigated, wide ranging desk research, focused on Europe but also taking account of global evidence and case studies, was undertaken to identify and characterise the five themes. This included looking at the main focus areas within each theme, the types of social innovation outcomes achieved or sought, and the types of social innovation processes deployed, as elaborated in the following.

- i) *The main focus areas in each theme:* based on the desk research, three focus areas are identified per theme which best characterise the theme, as shown in Table 2.3, and between one and three cases were selected per focus area resulting in at least five cases in total per theme.

Table 2.3: Case study focus areas by theme

Theme	Focus Area
Employment	• Preparing for work • Finding work • Creating and doing work
Place making (community and local development)	• Smart places • Local community development • Civic engagement and activism
Sharing Economy (and sharing society)	• Exchanging time and talent • Activating the value of dormant assets • Creating viable shared assets
Health	• Preventive and self help • Personalised and smart patient environments • Supporting smart infrastructure for integrated health and social care
Education	• Widening access to education • Personalised education and new learning environments and knowledge commons • A multi-partner approach to education

⁶ http://ec.europa.eu/europe2020/index_en.htm.

⁷ Digital Social Innovation study (2013-14): <http://digitalsocial.eu/>.

- ii) *The types of social innovation outcomes being achieved or sought:* based on the desk research, the main social innovation outcomes for each theme using ICT are shown in Table 2.4.

Table 2.4: Social innovation outcomes per theme

Theme: societal challenge	Social innovation outcomes (actual or confidently predicted by the case)
Employment	1. Improved entrepreneurship and work skills (personal and collective) 2. Improved employment supports, e.g. training, tools, facilities, etc. 3. Improved matching between work demand and supply 4. Increase in jobs and work (number and duration) 5. Improved jobs and work (quality and remuneration) 6. Scaled employment impact (more sectors, workers, localities) 7. Other
Place making (for community and local development)	1. Improved place-related facilities and amenities (digital, physical and cultural) 2. Improved place-related use of resources 3. Improved place-related growth, prosperity and well-being 4. Improved place-related social and cultural cohesion/inclusion 5. Improved place-related activism and participation (including political, planning, budgeting, etc. 6. Scaled place development impact (more sectors, workers, localities) 7. Other
Sharing economy (and sharing society)	1. Improved matching and exchanging of time and talent increasing economic benefits 2. Improved matching and exchanging of time and talent increasing social and community benefits 3. Increased fixed asset use giving economic value to more people 4. Increased fixed asset use giving social and community value to more people 5. Increased creation of viable shared assets giving more economic value to more people 6. Increased creation of viable shared assets giving more social and community value to more people 7. Scaled sharing economy impact (more sectors, workers, localities, people, etc.) 8. Other
Health	1. Increase in health and wellbeing (numbers of people and duration) 2. Increase in health personalisation 3. Increase in health skills (personal & collective): patient centeredness 4. Scaled health impact, actual or predicted (more sectors, groups, localities) 5. Other
Education	1. Increase in education and personal skills (formal & informal) (numbers of people & duration e.g. lifelong learning) 2. Increase in accessible educational content and tools 3. Increase in educational personalisation 4. Improved qualification and validation system 5. Scaled educational impact, actual or predicted (more sectors, groups, localities) 6. Other

iii) *The types of social innovation processes deployed:* based on the desk research, the main types of social innovation processes deployed using ICT are shown in Table 2.5.

Table 2.5: Social innovation processes

Social innovation process	Examples
1. Structure	• Organisation • Governance (roles, relationships, power) • Management and leadership
2. Relationships	• Trust • Reciprocity • Deliberation • Conflict resolution • Mutualism • Transparency and openness • Accountability • Opening of the innovation process
3. Capacity	• Skills (individual & collective) • Capabilities (individual and collective) • Knowledge generation (individual and collective) • New/unused assets and resources • Evaluation, assessment and monitoring • Awareness, learning and understanding • Experimentation
4. Collaboration	• Cooperation • Involvement • Consultation • Engagement • Participation • Networking • Co-creation and collective creation (including design thinking approaches) • Cross-sectoral collaboration • Blurring roles (e.g. 'pro-sumers')
5. Action	• Activism • Campaigning • Advocacy and voice • Decision- and policy-making

2.2.3. *Operational case selection criteria*

Apart from the selection of cases based on the themes and focus areas, the following case selection criteria were applied.

Essential case criteria, i.e. cases should:

- conform to the Tepsie social innovation definition, and represent at least some of the stages of social innovation (see Annex 2).
- have high impact in delivering social innovation outcomes, though recognising that this can be evaluated in different ways and mean different things to different actors.
- be real operational examples with good balance across Europe.

- show how ICT plays a major role and that collectively cases illustrate a wide range of different ICT roles in relation to online platforms; communities, knowledge and innovation; and networks and the network effect (see Annex 3).
- be logistically amenable to data and information collection and analysis, including suitable material accessible in the public domain, and cooperation from case owners to enable primary research.

Other case selection criteria were also applied, recognising that the intention is not to seek a fully 'representative' sample of case, but rather to illustrate as much as possible the full range of focus areas and issues within each theme. Thus, selection was undertaken as far as possible to represent a range of different:

- case actors and actor roles, as well as mixes of actors within a case, including the important role of the beneficiary (the target group of actors which the case benefits, or intends to benefit).
- Geographic reaches and scales.
- Cases sizes, e.g. number of beneficiaries, budgets, etc.

Overall, in WP8's empirical work, a deliberate choice has been made not to examine already well known or high profile cases but instead to examine new examples from across Europe, plus a few from outside Europe, but which still provide relevant evidence for examining the role and use of ICT in social innovation. Case selection has thus attempted to look not only for mainstream well-known cases but also for lesser known but still relevant examples. It should also be noted that many of the cases examined have a broader scope and cover aspects not analysed here, as this report focuses only on the specific areas and issues identified in this methodology.

It also needs to be emphasised that, although a large number of detailed cases have been examined, which gives this study breadth as well as depth, the main conclusions of this report are based purely on these cases and do not take account of the background research or of previous analytical and case studies. Drawing broader conclusions based upon both the empirical research of this report in combination with the background research will be undertaken in the two subsequent reports (D8.4 and D8.5).

2.3. Analysis of cases

Following Yin's 'multiple case study design' approach, the 30 cases (to be published separately) are analysed on the basis of the qualitative and quantitative evidence they provide, alongside European and global desk research, plus interviews with case owners in most of the cases. These multiple sources of evidence (triangulation) make it possible to (Yin, 2009):

- address a broader range of issues
- converge lines of inquiry and ensure that findings or conclusions are more convincing and accurate
- face potential problems of artificially constructed findings by empirically testing and validating them as they emerge.

In order to collect the empirical evidence from the cases, a "common template for write-ups" was developed and then piloted in two cases: Viedome community platform in the Netherlands and the patient brief case in Denmark (see Annex 1). This allowed the approach and instrument to be validated before using it across all 30 cases.

The levels of analysis undertaken reflect the structure of each theme in this report, i.e. for each of the five themes in turn:

1. **Context:** background research is presented to provide an overall theme context and to make it possible to identify the three focus areas within each theme. The following structure per theme is thus adopted in this report:
 - Strategic issues, trends and challenges within the theme
 - Roles and impacts of ICT
 - Framework for analysis: based on the background research this specifies the three focus areas and the relevant social innovation outcomes to be examined in each (see also section 2.2.2 above)
2. **Case analysis:** using the following structure, each focus area and its constituent cases are examined and compared:
 - Social needs addressed and summary
 - Types and uses of ICT
 - Social innovation outcomes
 - Social innovation processes
 - Barriers and drivers
 - Lessons learned and success factors
 - Conclusions and reflection: including addressing the three generic research issues of:
 - The role and use of ICT in social innovation
 - The strategic and operational considerations related to ICT in social innovation
 - The policy issues related to ICT in social innovation.

Given that this database of 30 cases, together with the accompanying desk research, constitutes a rich resource, there is great potential to examine a wide range of additional perspectives, perhaps in additional papers or articles.

2.4. Overview of cases analysed

Thirty cases are analysed in detail in this report, as summarised in Table 2.6

Table 2.6: Overview of cases analysed

Employment

Focus area	Case	Social needs addressed
Preparing for employment	Surfen zum Job (DE)	Tackling youth unemployment, low job skills and the digital divide
	Jobbanken (DK)	Supporting people with a mental illness (back) into work, giving them self-esteem, and reducing society's costs
Finding employment	Slivers of time (UK)	Flexible work matching for job-seekers & volunteers with employers and people with personal care budgets to spend
	EsLife (ES)	Flexible work matching for household & family tasks, tackling high unemployment in local area
	Skillendar (UK)	Skills calendar to match job-seekers & volunteers with people who need work /tasks done in neighbourhood
Creating and doing work	Mission Leben (DE)	Providing people with a mental illness with work, improving their life and self-esteem
	CSE: Copenhagen School of Entrepreneurship (DK)	Flexible workspaces for students with no job providing start-up experience to avoid long-term problems

Place making

Focus area	Case	Social needs addressed
Smart places	EastServe, Manchester (UK)	Tackling local digital divide, low skills, high unemployment and poverty, improving engagement and social cohesion
	Naprawmyto (PL)	Facilitating local action and dialogue on local problems, and community activism
Local community development	Viedome Total Community Platform (NL)	Daily and long-term physiological, medical and psychological needs of elderly and others in need of care
	TEM -- Local Alternative Currency Unit (EL)	Meeting all types of basic daily needs of residents in poverty, combatting pay cuts, unemployment and social disruption
Civic engagement and activism	Hackney CAB crowdmap (UK)	Support low-income residents, losing some or all housing benefit, from going further into poverty and losing accommodation
	IOBY (USA)	Strengthen neighborhoods in multiple ways by small non-profit grassroots projects using local donations and volunteers

Sharing economy

Focus area	Case	Social needs addressed
Exchang-ing time and talent	Athens Time Bank (EL)	Meeting all types of basic daily needs for people in poverty and unemployment but still requiring tasks to be done
	Cookisto (EL and UK)	Homemade food swapping and exchanging, developing cooking skills & creating a com-munity around healthy food, reduced waste and mutual support
Sharing existing dormant assets	Streetbank (UK)	Use of under-used, and thus wasted, assets by low-income households, builds community & activism, improves environment
Creating new shared assets	Repair Café Movement (NL)	Learning repair skills with volunteers in local centres promoting self- & collective repair, save money, increase re-use, creativity, & strengthen social cohesion
	Open-Corporates (UK)	Making the corporate world transparent via open data to citizens, civil groups, journalists to create new content & knowledge & hold corporates to account

Health

Focus area	Case	Social needs addressed
Preventative health & self-help	Patients like me (UK)	Mission to give people answers, helping them connect with others and enabling every patient to benefit from the collective experience of all.
	Buddy App (UK)	Improve clients' mental health more effectively by making them feel less dependent on the therapist or the therapy taking place at the actual clinic.
Personalised health & smarter patient environments	Patient Briefcase (DK)	A mobile solution to connect the patient in own home with professional medical & care personnel through live video and audio channels over a broadband Internet link
	Diabetiva (GER)	Reach high-risk patients with diabetes mellitus type 2 who have displayed symptoms or developed illnesses & blood complications
Supporting smart infrastructure for integrated health & social care	dotHIV (GER)	Generate money to support effected, raise awareness of global threat of HIV/AIDS, de-stigmatise HIV-positive people
	Social Enterprise Clinics	Improve access to medical services in poor countries to provide universal provision of basic medical services, at low cost or on voluntary basis, using ICT tools
	Cell Slider (UK)	Contribute to the development of cures for cancer through the public analysis of images of tumours and cancers.

Education

Focus area	Case	Social needs addressed
Widening access to education	MOOCs (global)	Widening the access to Higher Education and addressing the societal needs for lifelong education and the upskilling of the labour force, by providing free online courses for everyone interested.
Personalised education & new learning environments	Quest to Learn (USA)	Engaging children in education by using the seven principles of gaming.
	School of One (USA)	Mass-customisation of daily instructions of how and what math skills to practice so as to meet each student's specific needs and abilities, as well as preferred ways of learning.
	Professor Why (PL)	Dissatisfaction with the current form of chemistry education, lack of real experiments in schools (greatly impoverishes the study of chemistry), and need to show mostly teenagers the effects of chemical experiments
Multi-partner approach to education	MONDEY (Mile-stones of Normal Development in Early Years) (DE)	Improve early fostering & diagnosis of 0-3 year old childrens' retarded development by supporting parents, pedagogical staff & scientists with monitor-ing & documentation of everyday situations

3. Employment

3.1. Context

This section very briefly summarises the main findings arising from the desk research carried out across Europe in relation to strategic issues, trends and challenges which provides the general *employment* context, as well as some of the observed and expected roles and impacts of ICT within this context. However, this is only done in this report in order to develop a framework for analysis and to identify three focus areas and relevant cases within the *employment* theme. Deliverables D8.4 and D8.5 will examine both the empirical evidence presented here in the light of the full desk research to draw conclusions and recommendations regarding outstanding research gaps and policy issues.

3.1.1. *Strategic issues, trends and challenges*

The potential for innovation in the workplace in terms of changing job types, how work is performed and organised, as well as in where jobs are being added or removed, varies considerably. It tends to be low in traditional sectors and in the public sector, both of which tend only to be relatively infrequently subject to competition from new sources, but high in new sectors like ICT, business services, media, and new and high tech manufacturing where such competition is a common occurrence. Across Europe, there are also considerable differences in the institutional and regulatory systems within which work, employment and entrepreneurial activity sit. Although there are many nuances and variations, these include the so-called ‘flexi-curity’ models, typical in Nordic countries, which attempt to provide a framework combining flexibility for employers to hire and fire workers as well as security for workers through active support to maximise their employability rather than keep them in a particular job. Elsewhere in Europe, institutional and regulatory frameworks include the continental corporatist models of central-west Europe with strong social partners but rigid labour markets, the low social transfer models of southern Europe countries which tend to be top-down with rigid bargaining systems, and the more market-oriented models in the Anglo Saxon countries, aspects of which many of the former command economy countries of eastern Europe have tended to adopt. (Esping-Anderson 2000)

There are also European level policies and initiatives, many of which have been strengthened and revised since the 2007-8 economic and financial crisis and its aftermath, such as:⁸

- Clear goals for activating labour markets, including the target of 70% labour market participation, low unemployment and flexi-curity policies.
- European learning networks, such as gender mainstreaming, age management, inclusive entrepreneurship, migrant and ethnic minorities, reintegration of ex-offenders, social economy, asylum seekers and victims of human trafficking and youth employment.
- Through the European Social Fund: the Agenda for New Skills and Jobs; Active inclusion policy; Youth on the move; New European Agenda on Integration; Strategy on Equality; European Disability Strategy; and Corporate Social Responsibility (CSR).
- Social and Economic Councils at the different levels of the labour market.
- The overall goal is to improve employability and increase the quantity and quality of jobs.

Another consequence of the recent crisis is what is often characterised as ‘jobless growth’ where there have been massive rises in unemployment, especially in southern Europe and amongst young

⁸ http://ec.europa.eu/employment_social/eie/chap1-5-2_en.html

people, despite the economy picking up again in the last few years. This reflects and exacerbates many social problems arising from sometimes contradictory issues like:

- Flexibilisation of the workforce which, in the absence of counterbalancing employment security measures, tends to put more power in the hands of employers.
- Youth unemployment, where job-churn in the labour market has considerably reduced so many older workers are staying put in the context of job loss and fewer new jobs being created.
- The prospect of significant reductions in the proportion of working age people in the population as a whole due to the retirement of the post-war 'baby boom' population cohort and moves towards an 'ageing society', which, although this should in principle create more employment opportunities, has not yet happened to any significant extent, probably due to labour market rigidities across sectors and localities, and training and skill problems.
- The changing roles of different interest groups and the reduction of the post-war political consensus concerning labour markets and their embedded social contracts (both formal and informal), resulting *inter alia* in trades unions and worker representatives generally losing power and influence.
- Labour market reforms towards less regulation and trends towards a 'race to the bottom' in terms of pay levels, working conditions and workers' rights, especially in the context of economic globalisation.
- Low pay, minimum wage regulation in some countries and campaigns for a so-called 'living' wage.
- Problems in integrating disadvantaged groups within the dynamic complex of the above changes.

Other important trends include fluctuations in self-employment rates since the 2007-08 financial crisis, with significant differences between countries, after an initial rise soon followed by a fall.⁹ This may be due to many self-employed people transferring their business to the unofficial economy as well as more self-regulation via, for example, project, flexible and homework, often using ICT, as well as more redundancies in this sector.¹⁰ In some countries, such as the UK, this is leading to greater de-regularisation and de-unionisation of the labour market as exemplified by much more occasional, intermittent, casual and 'un-social' hours employment, as well as so-called zero-hour contracts in which workers are not guaranteed any work and thus income at all. On the one hand, this may benefit freelancers who have the skills, competences and networks to cope and even thrive, whilst on the other hand there is evidence this condemns many who do not have such resources to a working life characterised by intermittent and uncertain work and income.¹¹

In Europe, as elsewhere, there is a trend towards a greater role for social entrepreneurship and the social economy, with social entrepreneurs accounting for about 10% of all businesses and for 11 million paid employees.¹² This and other trends mark some shift towards more bottom-up forms of employment, as being monitored and supported, for example, by the European WISE Network (Work Integration Social Enterprises as a tool for promoting inclusion), to help create new forms of manual labour in building, carpentry, salvaging and recycling, waste, maintaining public or green areas and packaging products.¹³ There is also EUWIN (European Workplace Innovation Network)

⁹ <http://www.eurofound.europa.eu/areas/industrialrelations/dictionary/definitions/selfemployedperson.htm>

¹⁰ <http://ec.europa.eu/social/BlobServlet?docId=6137&langId=en>.

¹¹ http://en.wikipedia.org/wiki/Zero-hour_contract

¹² <http://ec.europa.eu/enterprise/policies/sme/promoting-entrepreneurship/social-economy/>

¹³ <http://www.isede-net.com/content/social-economy/wise-work-integration-social-enterprises-tool-promoting-inclusion>

which is recruiting so-called ‘ambassadors’ from enterprises, chambers of commerce, business federations, social partner organisations, public agencies and research institutions to raise awareness about workplace innovation and its benefits.¹⁴

3.1.2. *Roles and impacts of ICT*

There is much agreement about some of the main impacts of ICT on employment. For example, most observers agree that innovation in the economy supported or enabled by ICT typically reduces the demand for labour in existing sectors and companies because of increased productivity, innovation in processes, organisational re-structuring, and more automated and/or do-it-yourself products and services on the part of some consumers who become so-called prosumers. At the same time, historical experience indicates that new technologies, and especially so-called general purpose technologies like steam, electricity and now ICT, spawn massive new economic sectors and the new jobs that go with them (Perez 2009)¹⁵ – a veritable bloodbath of Shumpeterian creative destruction. However, despite this, there are just as many robust disagreements about the roles and impacts of ICT on employment in practice. For example, although most agree that new jobs are being created (assuming the impact of the economic and financial crisis will not disrupt the long-term trend), there is no general agreement as to the types or quality of any new work or new work forms. On the one hand, some see a brave new world of highly skilled individuals selling their talents in a global market place over the Internet, playing off potential employers against each other (Tapscott & Williams 2006), and Perez (2009) generally shares this view provided the right policies are put in place. On the other hand, some see worker exploitation and surveillance reduced to a state of servicing the machine (Sennett, 1998 and 2006). Sennett’s dystopia is echoed by others observing the moves towards the ‘24/7 available society’, the consequent loss of autonomy, the reduction (or qualitative change) in social capital (instead of people actually meeting in person with all the personal interactions that usually shape relationships, they merely Skype and leave aside “all the rest”), and the overall ‘mechanisation’ of human life where all you are and all you do goes through your device (See for example Schmidt and Cohen 2013).

Whether or not these dystopias reflect the underlying trend, there is probably some veracity in both visions, and this gives potential space to policy makers. It is clear that an increasingly flexible model of work is leading to threats to traditional benefits, such as pensions and health insurance as provided by a given employer and a consequent reduction in employee rights within the existing regulatory and insurance system. So, trades unions, as well as employers and policy makers need to be aware of these and similar challenges.

It is also clear ICT does change work at a fundamental level and has profound impacts on the way firms operate, on how individuals work and the jobs they do, and on how groups of people organise their operations both internally and externally. It is already clear that most if not all activities which are routine, which manipulate, match and mine data, and which require access to information and systematised intelligence, will become codified and automated by ICT, resulting in the squeezing out of people doing such jobs. Good quality human jobs, on the other hand, will increasingly focus even more than at present on activities which humans are innately better equipped to do than machines. Fortunately, this still appears to encompass a large potential area of growth in the numbers and quality of work, revolving around the use and creation of implicit and tacit knowledge. These areas include care, teaching, consulting, counselling, advising, controlling and coordinating, decision- and policy-making, creating, innovating, brainstorming, empathising, socialising, etc. In each case, of course, such human-centred work will increasingly be strongly

¹⁴ http://ec.europa.eu/enterprise/policies/innovation/policy/workplace-innovation/euwin/index_en.htm

¹⁵ See Tepsie Deliverable D8.1: www.tepsie.eu

supported by powerful ICT systems. The uncertainty is that the boundary between what can be codified and captured by ICT and what cannot is constantly moving. What we think of as 'routine' is part of a dynamic cycle in which new work, knowledge and processes are created and older types which were themselves once new now become 'routinised'. Thus, the boundary between what machines do best, especially in the context of so-called artificial intelligence, and what people do best is constantly shifting, as both change, also in response to each other. (Millard 2006)

Returning to areas of general agreement about the impact of ICT on employment, most agree that:

- Access to information and networks allows people to make more informed decisions about work and careers.
- People are able to be more flexible about where and when they work.
- Training and preparation for work can now take place more easily and cheaply online.
- People are able to find work that interests them/employees who fit their requirements much more easily through the availability of online contracting which removes many place and time-based limitations.
- Networks such as LinkedIn allow people to stay in touch with potential work partners much more easily, generating better working relationships and an enhanced ability to find jobs.
- It is easier for people to access the networks of others like them for self-help and mutual support, e.g. entrepreneurs, career changers, working parents to exchange information.
- People are able to work much more flexibly due to the availability of 'cloud' technologies (not a particular website/app, more a technological shift that enables the social innovation of flexible working).
- Work can be split up into chunks both time-wise and location-wise, thus enabling work to be undertaken by many people across the world simultaneously, which allows it to be completed more quickly and cheaply.
- Services such as Skype have made global video-conferencing free and made it easier for people to form work partnerships across countries.

ICT thus makes it easier for workers to find jobs and for employers to find skilled workers as labour markets become more transparent. Because ICT has the potential to connect workers to work irrespective of their location, and crowdsourced work providers are able to judge workers on their merit, it is possible that ICT could help overcome the social, cultural, educational and physical barriers that might otherwise have excluded women, people with disabilities, ethnic minorities or other disadvantages from participating in the labor market. It is clear that labour is becoming more disjoined from location, and work is increasingly disaggregated and shared across space and time. There is a rise in so-called 'homeshoring', where people work for a virtual organisation or call-centre from their homes, and this opens up opportunities for those with caring responsibilities who might choose to stay at home rather than work in a traditional job. All this means it will become easier for workers to become very highly specialised at particular tasks.

3.1.3. Framework for analysis

Based on the desk research reported in the foregoing, three focus areas can be derived which seem to represent some of the important ways in which ICT is enabling or supporting social innovation in the employment theme.

1. Preparing for employment

People need appropriate vocational skills, competences and aptitudes in order to prepare for employment. This includes both initial education, training and other forms of preparation, as well

as re-training to help them get a new or better job. In principle, ICT can support people in preparing for employment in two main ways:

- by facilitating or improving the individual's vocational skills and competences relevant for work
- by facilitating or improving the social and other supports relevant to preparing for work.

On this basis, two main social innovation outcomes are examined for this focus area:

- Improved entrepreneurship and work skills (personal and collective) using ICT.
- Improved employment supports (e.g. training, tools, facilities, etc.) using ICT.

2. Finding employment

ICT is an important tool in finding employment, for example by matching those looking for work with those seeking one or more workers with the relevant skills, competences and aptitudes. Evidence from Poland, for example, shows that traditional private job centres only help about 5% of young job seekers find a job, and job centres themselves today undertake job matching mainly by using ICT. Much more often, young job seekers use family and other contacts as well as the Internet. The Internet can also be used to match work or tasks which people need doing with those willing and able to do them in real or very quick time, for example the US-based TaskRabbit which also recently launched in the UK.¹⁶ ICT can assist in finding work in two main ways:

- by facilitating or improving the matching of paid work with workers looking for such work
- by facilitating or improving the matching of unpaid / voluntary / reciprocal work with people looking for such work.

There is one social innovation outcome examined for this focus area:

- Improved matching between work demand and supply using ICT.

3. Creating and doing work

ICT helps in the introduction of, or increase in, new forms of employment, such as telework, distance work, flexible work or itinerant work, as well as completely new types of work such as web-design, app development, software programming or any other types which need ICT or are in the ICT sector. Work may be performed away from the organisational premises at another location or 'on the move', and may also result in completely virtual forms of (semi) permanent or temporary work, or so-called 'project' work. ICT can also assist people enter or become stronger in the labour market who are more or less excluded from the traditional labour market, such as the disabled, older persons, or would-be workers who are otherwise disadvantaged (such as immigrants with poor language or other skills). Overall, ICT can assist in creating and doing work:

- by facilitating or increasing the amount of work and/or the number of jobs
- by facilitating new, or improving existing, ways of working (e.g. in terms of quality, flexibility, location, remuneration, etc.)

There are two social innovation outcomes examined for this focus area:

- Increase in jobs and work (number and duration) using ICT.
- Improved jobs and work (quality and remuneration) using ICT.

In addition, there is also one theme-wide social innovation outcome:

- Scaled employment impact (more sectors, workers, localities) using ICT.

¹⁶ <https://www.taskrabbit.com> and <https://www.taskrabbit.co.uk>.

3.2. Case analysis

3.2.1. Social needs addressed and summary

Seven cases are analysed in the employment theme as summarised in Table 3.1.

Table 3.1: Employment cases: summary

Focus area	Case	Social needs addressed	Summary
Preparing for employment	Surfen zum Job (DE)	Tackling youth unemployment, low job skills and the digital divide	- Improve digital search skills for all types of unemployed with focus on low qualified, and help in finding a job - Training, practical help for both the jobless and for the public and civil organisations providing support - Public and private funding, civil operation - 30 cities in Germany; 300 youth
	Jobbanken (DK) ¹⁷	Supporting people with a mental illness (back) into work, giving them self-esteem, and reducing society's costs	- Digitally coordinated education, exercises, networking - Prepares and matches both job seekers and potential employers, also with administrative support - Public funding (€800,000 pa 2013-15), private partners, private operation - 3 cities, 483 trained, 387 started in a protected job
Finding employment	Slivers of time (UK) ¹⁸	Flexible work matching for job-seekers & volunteers with employers and people with personal care budgets to spend	- Digital fast and flexible matching to recruit and manage the supply and demand of labour and volunteers, and better utilise existing resources - Public (€600,000 seed money 2005), private and civil funding, civil partners, private operation - 80,000 users, 13.7m potential, 9 FTEs, across UK
	EsLife (ES) ¹⁹	Flexible work matching for household & family tasks, tackling high unemployment in local area	- Digital fast and flexible matching to recruit and manage the supply and demand of household and family tasks - Private funding, 15% of price paid to EsLife after work or task done, private operation, expected profitable by 2015 - >1,000 people matched with work in 7 cities, growing to >25 cities in 2014
	Skillendar (UK) ²⁰	Skills calendar to match job-seekers & volunteers with people who need work /tasks done in neighbourhood	- Digital fast and flexible matching at neighbourhood level using calendar for skill and time search, 'people helping people' philosophy at any time - Private funding, civil partners & users, private operation - Neighbourhood-based, can be used anywhere, thousands of users
Creating and doing work	Mission Leben (DE) ²¹	Providing people with a mental illness with work, improving their life and self-esteem	- ICT adapts workplaces to needs and capacities of workers with a mental illness, market basis (e.g. Aumühle laundry) - Public, private and civil funding (€1.5m turnover aim for 2014), civil operation - 700 sheltered workplaces in all Germany, 280,000 jobs
	CSE: Copenhagen School of Entrepreneurship (DK) ²²	Flexible workspaces for students with no job providing start-up experience to avoid long-term problems	- ICT for student start-ups in lab incubator environment as part of knowledge and innovation community - Public funding, public/private partners and operation - >100 start-ups, 55% sustainable, one location (Copenhagen) with international cooperation

¹⁷ www.jobbanken.nu

¹⁸ www.sliversoftime.com

¹⁹ www.eslife.es

²⁰ www.skillendar.com

²¹ www.mission-leben.de

²² www.cse.cbs.dk

Social needs addressed

All seven cases examined use ICT as an important tool to either directly support people finding it difficult to be in employment because they are at a disadvantage or vulnerable in some way, or have specific needs like needing to work variable hours, or in order to assist volunteers undertake work that benefits others. All cases also stress that the beneficiaries of such activities experience improved self-esteem and overall increases in welfare, in addition to reduced costs to society in the longer term.

Focus areas

The sample of seven cases comprises two *preparing for employment* cases, three *finding employment* cases, and two *creating and doing work* cases. Although many of the cases provide outcomes in two or more focus areas (see section 3.2.3), there is a clear specialisation of functions across the seven cases.

Funding and actors

The *preparing for employment* cases both rely on public funding with one run by a civil organisations and one by the private sector. In comparison, the two *creating and doing work* cases show a mix of public and market funding and mixed actor operation. Compared to this, the *finding employment* cases are funded and operated by the private sector, although the *Slivers of Time* case received initial public seed money.

Scale and scope

Most cases already have substantial scale and are still growing. Although the *finding employment* cases tend to start in specific locations, they are growing fastest either through expansion of the company or organisation or by the business model being copied by potential competitors, with the *Slivers of Time* case already providing a nationwide service.

3.2.2. Types and uses of ICT

The types of ICT and its use varies across the three *employment* focus areas, as described below.

Preparing for employment

- ICT used:** Relatively standard ICT is used alongside physical and traditional activities. *Surfen zum job* operates a database of 8,000 institutions providing ICT facilities and support which is also used to survey the demand for their service. In addition, the case uses ICT as a medium of instruction for improving digital and other skills. In comparison, *Jobbanken* has digitised all its internal processes to simplify and save money, and also uses ICT-based planning tools for interaction with job-seekers. The ICT used by the job-seekers themselves depends on their individual starting skills, and they are also provided with a self-service interface which can be personalised for their own needs. Both cases use online platforms for content creation (e.g. databases and tools), and for matching assets (the job-seekers and their skills and competences) with the needs of prospective employers.
- Online platforms, communities and networks:** In both cases, ICT is used to set-up platforms for content creation and issue identification. It is also used to build complementary online and offline knowledge communities amongst the service operators and to some extent with job-seekers and employers, and to support social capital creation (both some bonded and bridging types), amongst job-seekers. This takes place through both ICT-enabled networks that

supplement face-to-face and other traditional networks of a small-world nature (i.e. mainly within the existing community). In addition, in *Jobbanken* this is also starting to become a more extensive network opened up via key individuals and organisations as a scale-free network.

Finding employment

- ICT used:** Relatively standard ICT is used which is generally standalone, i.e. ICT is the only or main basis for all service activity with no necessary traditional activities, and these are also the cases that are funded and operated mainly by the market. *Slivers of Time's* portal can be tailored to specific needs linking employers wanting short-term staff with workers offering flexible work, so that ICT replaces the middle-man with an end-to-end solution. People looking for work or to volunteer can also create a profile building a 'talent pool' which prospective employers can access online. *EsLife* has a website with simple navigation in 3 steps: i) notification of work or a task which needs doing, ii) proposals from people wishing to provide work or tasks and acceptance, and iii) completion of the work or task and payment to *EsLife* of 15% of price paid. The types of tasks matched are babysitting, elderly care, pet care, cleaning, minor moves, and repairs. *EsLife* also provides a database of the task provider's skills and requirements which are evaluated, rated and thus guaranteed by *EsLife*, leading to online reputation and building trust. The case has geolocation mobile functionality enabling real-time matching, and also runs a blog with news, information and practical tips. As in the other two cases, *Skillendar* provides a database of the task provider's skills and conditions, which if satisfactory from the user's perspective leads to online reputation and builds trust.
- Online platforms, communities and networks:** All three cases have established content creation, issue identification and matching assets to needs platforms. Similarly, all three support an online knowledge community, but despite ICT being the only medium used by the service itself, offline communities also develop because in these *finding employment* cases matching is mainly fast, often urgent and thus local. This is reinforced in the *EsLife* case because the type of functions supported impinge on people's family, community and local life, and the *Skillendar* case is designed to be a neighbourhood service as 'people helping people' in 'self-help communities'. This in turn, generates strong social capital (both some bonded and bridging types) amongst user communities. All three cases also started as mainly small world networks in specific localities, but are rapidly becoming scale free dissemination networks as they quickly expand. Indeed especially *EsLife* and *Skillendar* are copied from other similar services elsewhere, such as TaskRabbit, so are part of a global scale-free dissemination network. They also exhibit some tendencies to being random networks where people copy other examples, perhaps more because so many others are doing so apparently successfully and earning profits, than the intrinsic value of the service itself in a particular context.

Creating and doing work

- ICT used:** Both standard and bespoke ICT is used also alongside physical and traditional activities depending on the skills and aptitudes of the individual. The focus is on high simplicity at the user interface in the *Mission Leben* case targeting disadvantaged users, though this is less critical in the *SoE* case aimed at graduate students. The *Mission Leben* case exemplifies using ICT to adapt and automate workplaces to place people with a mental illness in a sheltered workplace such as the Aumühle laundry. This example uses databases, terminals, RFID²³ tags with barcodes or transponders on items of laundry, as well as other devices such as

²³ Radio-Frequency Identification.

RFID readers, both handheld and batch, and automatic laundry sorting devices, washing machines, dryers, laundry folders, etc. Each step of the laundry process has its own software module, and all required human supervision is kept simple and user friendly. For example, people with a mental illness do not have to read or write to operate the system, but only need to steer the mouse to the correct part of the screen. In some contrast, the student start-ups at the CSE deploy a great number of different ICT tools, both standard and bespoke, and typically based on freeware programs which can also be adapted and further developed. There is an online screening tool for new student start-ups capturing ideas, strategies, key features, partners, markets, funding, etc., to generate an 'elevator pitch' document for physical presentation to be permitted to enter the proof-of-concept phase. The most important internal tool is *Podio* as a platform for teamwork on the students' start-up projects, for different projects to interact, and for monitoring by CSE. External communication is handled mainly by social media (*Facebook* and *LinkedIn* with *MailChimp* for newsletters). ICT is used alongside physical and traditional training workshops, mentoring, brainstorming and general informal hub/incubator serendipity, plus interaction with business angels, facilitators, accelerators, venture capitalists and other investors.

- **Online platforms, communities and networks:** *Mission Leben* has developed content creation and issue identification platforms, for example as inventories of work to do and work done. The case has not developed online communities, but the application of ICT has supported physical workplace communities of workers. *Mission Leben* uses an ICT Internet of Things e.g. RFID barcodes or transponders on all laundry items and equipment which digitally inter-communicate and are controlled both by automatic programs and the operators. In contrast, the CSE case uses in principle all types of online platform from content creation, to matching assets with needs, to action on problems, dependent on the ambition of the student start-up. The student start-ups are also members of both online and offline start-up communities, with strong mutual reinforcement between the two, and significant building of social capital (mainly bonding, but also some bridging types), including an alumni community providing an on- and offline knowledge base for new start-ups. CSE initially exhibited a small world network configuration, and is now starting to become part of a scale-free network by learning and adapting from thousands of other global IT hubs and incubators, often termed 'Silicon xxxx' (as in Silicon Valley in California or Silicon Roundabout in London). Like the three *finding employment* cases, CSE (but not *Mission Leben*) is perhaps starting to exhibit tendencies towards also being a part of a random network in which it becomes fashionable to jump on the bandwagon of ICT incubation hubs, though to be fair the case is showing strong signs of success.

3.2.3. Social innovation outcomes

In the following the social innovation outcomes and their beneficiaries reported by the cases are summarised by focus area. Although many of the cases provide outcomes in two or more focus areas, there is a clear specialisation of functions across the seven cases.

Preparing for employment

1. *Improved entrepreneurship and work skills (personal and collective)*
 - *Surfen zum Job*: 300 unemployed youth prepared for, and learnt how to find, employment in 30 cities, with an overall high evaluation of training.
 - *Jobbanken*: 483 people with a mental illness trained, 387 started in a protected job or internship (255 in private sector), with very low drop-out (2011-2013 data).

- *Eslife*: promotes initiative and autonomy amongst unemployed, under-employed and volunteers, and helps develop organisational, time management and ICT skills
 - *Skillendar*: improves the entrepreneurship and overall skills, including in ICT, of people on edge of labour market.
 - *Mission Leben*: Improvement of all-round work and ICT skills of unemployed people with a mental illness, and their motivation to learn.
 - *CSE*: focuses on developing the full range of unemployed students' entrepreneurship skills, as well as links into the wider higher education, innovation and specialist knowledge of the Copenhagen Business School.
2. *Improved employment supports, e.g. training, tools, facilities, etc.*
- *Surfen zum Job*: 300 unemployed youth prepared for, and learnt how to find, employment in 30 cities, with an overall high evaluation of training.
 - *Jobbanken*: 483 people with a mental illness trained, 387 started in a protected job or internship (255 in private sector), with very low drop-out (2011-2013 data).
 - *Eslife*: provides benefits of legal and insured work compared to informal work.
 - *Mission Leben*: comprehensive workplace and work process transformation to match the capacities and needs of people with a mental illness.

Finding employment

3. *Improved matching between work demand and supply*
- *Surfen zum Job*: Of the 300 unemployed youth prepared for work in 30 German cities many also found employment directly via the case.
 - *Slivers of Time*: 80,000 job seekers with loose links to the labour market, with 13.7m potential, facilitated by 9 full-time-equivalent staff across the UK. For example, Leeds City Council coped with peaks in service demand for street cleaning, data entry and stewarding with flexible labour supply.
 - *Eslife*: Over 1,000 unemployed, under-employed and volunteers looking for work, in 7 cities and growing to over 25 in 2014 (latest two months of data show 600-700 tasks completed by 75-80 task providers).
 - *Skillendar*: helps thousands of people on the edge of the labour market find additional jobs in their neighbourhood when they need it.
4. *Improved jobs and work (quality and remuneration)*
- *Slivers of Time*: as an example, Hertfordshire County Council's Breakaway for Carers scheme enabled workers and volunteers seeking flexible work to link with people needing care and their carers to give the latter some support, relief or a break. Carers requiring breaks also book help.
 - *Eslife*: Seeks to give the unemployed, under-employed and volunteers as much work as they want, up to full-time, and enables them to plan their working life much better around other demands on their time.
 - *Skillendar*: focuses on 'people helping people' philosophy on a family, community and neighbourhood life context helps to enrich work in the local area.

Creating and doing work

5. *Increase in jobs and work (number and duration)*
- *Mission Leben*: 700 sheltered workplaces and 280,000 jobs for people with a mental illness across Germany. For example, one workplace in Aumühle includes *inter alia* a protected

laundry workplace and shows an increase in secure jobs to 55, plus 10 additional staff (team leaders and skilled employees), compared to former 'normal' workplace.

- *CSE*: just over 100 start-ups create their own new businesses and jobs for unemployed students, with an average of 4 people each including interns, about 55% are sustainable and about 20% are social enterprises.

6. *Improved jobs and work (quality and remuneration)*

- *Mission Leben*: Increase in more varied types of work available to people with a mental illness, like scanning, sorting and finishing orders.
- *CSE*: more satisfying and more highly remunerated work through supporting start-up innovations where the individual has much greater influence and control over their current and future work.

Other

Other outcomes were reported, not directly linked to any focus area, as below.

7. *Scaled employment impact (more sectors, workers, localities)*

- All cases are scaling, disseminating or growing, based on the empirical evidence provided in the cases, and most also exhibit many positive spillover and multiplier effects elsewhere and on other initiatives. The *finding employment* cases seems to be scaling fastest.

8. *Increase in health and wellbeing*

- *Jobbanken*: improvements to quality of life of people with a mental illness, their self-esteem, psychological wellbeing and reduced loneliness, which also reduces the costs of care and other supports on the rest of society.
- *Mission Leben*: Improving mentally vulnerable workers' motivation, autonomy, life satisfaction and participation in the community.

9. *Reduced carbon release*

- *Mission Leben*: laundry and similar work used to be sent to cheaper wage countries, but is now done more locally saving transport and other physical costs.

3.2.4. **Social innovation processes**

In the following the social innovation processes and social practices reported by cases are summarised by focus area drawing on the process taxonomy presented in section 2.

Preparing for employment

Both *Surfen zum Job* and *Jobbanken* have mutually beneficial multi-actor collaborative partnerships with reciprocal relationships across all sectors supported by ICT, but also rely on physical and traditional activities to assist people with problems entering the labour market. Good and inclusive relationships with vulnerable beneficiaries are also crucial, and are mediated by the use of standard ICT and the ICT training provided alongside these physical and traditional activities. The focus is mainly on building the capacity and skills of the beneficiaries through direct activation and participation within a clear and goal oriented structure to help the beneficiary become ready for work both in terms of capability but also motivation.

Finding employment

All three cases, *Slivers of Time*, *EsLife* and *Skillendar*, use relatively standard ICT as the only or main service basis for linking people looking for small amounts of work or offering to help others with small tasks. However, the cases do report strong trust, reciprocity and cooperation between employers and workers/volunteers on top of the technology platforms provided. This seems to be because such online interaction can directly support offline communities as the service is geared to fast and often urgent, and thus highly local, activity in a simple and flexible manner. This is reinforced by the fact that much of the work and many of the tasks directly support family, community and local life, thereby generating strong social capital. A prime focus of all three cases is also creating flexible capacity out of underused and unused assets (i.e. people's time and both technical and behavioural skills), and to encourage collaboration and networking together with strong motivation. Decisive leadership and a 'good for the community' ethos appear to be important, as are shared roles and procedures, especially to avoid the potential danger of workers/volunteers being exploited by pushing them into a 'war for low prices' ('race to the bottom').

Creating and doing work

The two cases, *Mission Leben* and *CSE*, are at opposite ends of the spectrum between a protected and adapted workplace in the former case and a dynamic, innovative and challenging workplace in the latter case. Both are, however, designed to create new jobs and undertake new work. Each case uses various mixes of both standard and bespoke ICT alongside physical and traditional activities depending on the skills and aptitudes of the individual. The main focus of each case is also on individual and team skills and capacity building directly serving a real job already existing or being created as part of the process. Trust and collaboration are crucial elements as part of the relationship building and networking processes which, especially in the *CSE* case, also systematise the sharing of knowledge, ideas and experiences both online and offline.

3.2.5. Barriers and drivers

In the following the barriers and drivers reported by cases are summarised by focus area.

Preparing for employment

The main barrier is reported as lack of familiarity with ICT, and thus some reluctance by the target group to use the technology. In the *Surfen zum Job* case it is also difficult to get trainers as many think ICT is not appropriate for this group. Another barrier for this case is the occasional lack of access to good ICT bandwidth. Despite this, an important driver in both cases is good ICT infrastructure that is much more efficient at handling many interactions and transactions than some traditional methods, even though it cannot replace the need for important social and human interaction as complementary to the ICT. Using ICT tools has clearly made it possible to reduce the cost of preparing vulnerable people, and others finding it hard to access the job market, for employment.

Finding employment

The main barrier is the difficulty of overcoming established ways of working and attitudes, especially with mainly low skill beneficiaries. Legislation and administrative systems are not geared to independent working. Another important barrier is the potential problems of exploitation of workers/volunteers especially given that it is often the private sector which operates these services

using mainly ICT tools, and there can be a reaction against attempts to mix the market into social needs initiatives. Indeed, in the *Eslife* case especially, there appear to be fewer volunteers because of the economic crisis as people need to earn as much as they can at this time, so are deterred from volunteering towards the need to find their own remuneration. There are also some problems with the ICT, which, even when simple and attractive, many people in the potential beneficiary group are reluctant to use. Despite this, drivers include the fact that the quality and affordability of ICT in most countries is now increasing significantly and is being used more and more also by this group, many of whom are starting to accept that a job is no longer for life. The service and business model demonstrated by these three cases has the strong advantage of being simple, clear and typically leading to high impact and good profits, so it is being adopted and scaling fast, although for the individual service platform this means that competition is becoming fierce.

Creating and doing work

The main barrier for the *Mission Leben* case is that the bespoke ICT needs back-up systems and support, often at short notice, as it can often fail. Another barrier is that the ICT, even when made very simple at the user interface, can be challenging for people with a mental illness. In the *CSE* case, the main barrier is lack of physical space given its popularity driven by its success in assisting unemployed students create jobs. It has also been difficult to raise funds despite this success, given that the public funders have very squeezed budgets. The main driver in the *Mission Leben* case is the strong belief and commitment of the founders, and their success in getting the right mix of partners with the same belief. For *CSE*, access to good and bespoke ICT is the main driver, but also ensuring that it complements and supports the important more traditional activities. There is also increasing demand from unemployed students which is driving the success of the case.

3.2.6. Lessons learned and success factors

In the following, the lessons learned and success factors reported by cases are summarised by focus area in relation to the use and role of ICT, strategic and operational considerations and policy implications.

Preparing for employment

The role and use of ICT in social innovation

ICT has a supporting role in helping vulnerable and other unemployed people become better prepared for employment. This is done by both reducing many of the costs involved and providing many more flexible solutions and opportunities in achieving this goal, as well as directly providing ICT skills which add significantly to the beneficiaries' competences and thereby increase the likelihood of obtaining work in the future. Thus, although successful employment preparation initiatives exist in many forms with and without ICT, the role of ICT in these cases is improving outcomes both directly and indirectly. For example, in the *Jobbanken* case it is seen as increasing the social outcomes substantially resulting in more mentally vulnerable people successfully assisted compared to earlier schemes.

Strategic and operational considerations

In the *Surfen zum job* case, the civil society initiator and operator has a goal of tackling the digital divide through pilots rather than itself providing a long-term solution, which needs to be provided by government and educational institutions. This shows the important role such civil organisations can play in conducting small scale experiments with new uses for ICT, alongside the mainstream delivery of the traditional service which then, if successful, could be passed to the responsible

agencies. A different approach to ICT experimentation is the *Jobbanken* case in which the public sector (both Danish and European) provides ongoing funding for what is, in effect, an outsourced service in competition with the mainstream public agencies providing a similar service.

Policy issues

Given that ICT typically seems to be improving employment preparation initiatives which are already underway, the technology needs to be carefully embedded in the overall initiative so as to both maximise its complementarity with non-ICT tools and techniques but not to attempt to replace these where the ICT channel provides a less appropriate solution. Training, coaching and other preparation supports are likely to need physical and traditional approaches alongside the improvements ICT deployment can contribute, especially in the context of people who have been unemployed for some time and/or who are vulnerable or find it hard to access the job market for various reasons. This will of course depend on the specific individuals involved and the context they are in. The two cases examined demonstrate the value of experimenting in a controlled and deliberate manner to understand better the strengths and weaknesses of ICT in this context.

Finding employment

The role and use of ICT in social innovation

ICT is seen both in a supporting role improving the matching of the supply and demand and of labour, as well as enabling new things to be done which could not otherwise be achieved. In the former role, ICT can make labour much more flexible by precisely linking to the demand side so that supply and demand can better align to each other, for example by enabling workers or volunteers to fit their activities around other demands on their time. ICT as an enabler creates a new marketplace and business model on a modularised platform giving end-to-end access to a flexible supply of workers/volunteers, whilst in turn enabling them to access flexible work or tasks that suit them. This model has disrupted incumbent methods of flexible employment by removing the need for costly intermediaries (the ‘middleman’, in this case employment agencies) who only delay the process, and putting power directly in the hands of the employer on the one hand and the worker/volunteer on the other. (This enabling and indispensable role of ICT is comparable to the role of ICT in the *sharing economy* theme and in the *smart places* cases in the *place making* theme.) This can achieve huge cost savings, reckoned for example to be 65% of structural and operational costs in the *EsLife* case, compared to the situation without ICT. Consequently, scaling becomes much easier through copying, adaptation and improvement, for example to other locations without significantly increasing structural and operational costs.

Strategic and operational considerations

The three ICT-enabled *finding employment* cases illustrate a new and quite profound strategic model for identifying and deploying labour to meet real-time and quick-time operational demand in any sector. This model enables much greater control over the strategic disposition of personnel resources in deploying both permanent and occasional staff, for example increasing the flexible responsiveness of local authorities in meeting variable demand (such as in Leeds, UK, in the *Slivers of Time* case). It also makes it easier for individuals receiving personal budget allocations to hire care services more flexibility, giving them increased independence and autonomy over their daily activities. These new relationships of flexibility and greater control over resources also engenders new types of production and consumption, such as new types of local family, household and so-called ‘nearest neighbour’ services (as in *EsLife* and *Skillendar*). However, the model can result in the exploitation of supply side labour if their interests are not taken into account and they are not adequately provided with appropriate powers of choice and enrolment.

Policy issues

The policy lessons for using ICT to both support and enable finding employment include, first, significant cost savings and efficiencies through real-time and quick-time matching directly between the demand and supply sides of labour, thereby cutting out no longer productive links in the supply chain. ICT also enables much greater flexibility, personalisation and ‘mass customisation’ of work and tasks, which additionally increases both economic and social ‘efficiencies’, thereby improving the productive deployment of unused assets. However, to ensure this takes place as efficiently as possible, both the demand and supply sides need their rights and interests protected in new forms of labour and employment contracts, mediated as necessary by policy-makers and regulators to circumvent exploitation and ensure that the societal interest is also upheld. Policy and regulation will need to be adapted to become enablers of these beneficial aspects of new ICT-enabled forms of labour market matching, and this will typically require legacy frameworks to be changed. Trust on all sides needs to be promoted through transparency and openness to scrutiny and negotiation as new frameworks are put in place.

Creating and doing work

The role and use of ICT in social innovation

ICT is mainly an enabler rather than a supporter of social innovation in these cases. In the *Mission Leben* case the workplace for people with a mental illness would not be commercially viable without ICT adapting it and ensuring it is suitable, thereby making the jobs secure, as well better and more diverse. In the *CSE* incubator hub case for unemployed students, ICT is vital and so well integrated into all activities that the service and the jobs created would not be possible without it. For example, the use of the online working platform and tool is necessary for the essential knowledge and experience sharing activities.

Strategic and operational considerations

The two *creating and doing work* cases exhibit a range of actors, with a mix of public and private funding, and mixes of public, private and civil operation. They also illustrate the operational opportunities of aligning, in principle, any work task or process to match the variable needs of potential workers, regardless of their particular characteristics. In fact, it seems possible, through intelligent alignment and personalisation using ICT alongside other tools or techniques, to focus on the positive capacities and skills of any individual, however ‘limited’ these might be in conventional terms. Thus, the focus moves decisively away from ‘what can’t this individual do’ towards ‘what can he or she do’. In strategic terms, this is potentially a quite fundamental shift in thinking and practice which itself opens the possibilities for many further opportunities. The *Mission Leben* case illustrates this with individuals traditionally completely excluded from the labour market, and demonstrates how they can be included in an economically sustainable business model. The *CSE* case shows how individuals with high skill and competence potential can be assisted to hone and focus these in creating innovative new jobs for themselves.

Policy issues

The main policy implication is the use of ICT to enable the inclusion into the labour force of most if not all individuals who are willing and able to work, however many limitations employers, or the individuals themselves, imagine they have. New types of productive work can be created and carried out if ICT is used intelligently for the benefit of both society as a whole and of employers. Seen from both the economic as well as the social perspective, unused assets can be readily identified and productively deployed. This also directly improves the lives of the individuals concerned by enabling them to carry out work which they can do, receive an income and become

(re)integrated into society with an increase in self fulfilment, community and self-worth. The CSE case also illustrates how such work can itself become more creative and innovative with potential spillover effects on new types of productive work and potentially in new areas and sectors of work.

3.2.7. **Conclusions and reflections**

Drawing directly on the above analysis, conclusions regarding the three generic research issues, introduced in the methodological approach in section 2, are summarised below as they relate to the *employment* theme. An overview of all the main results of the analysis of the *employment* cases is provided in Table 3.2.

1. *The role and use of ICT in social innovation*

ICT plays a supporting role in social innovation in both the *preparing for employment* and the *finding employment* focus areas by significantly improving outcomes being sought by traditional and physical activities. ICT also enables new types of social innovation to be achieved in both the *finding employment* and the *creating and doing work* focus areas, for example by making it possible to set-up new business models and adapting workplaces to workers' special needs. Mainly standard ICT is used, although some bespoke is also deployed where relevant, such as in the *Mission Leben* case where workplaces are adapted to suit the needs of people with a mental illness. All types of online platform are used depending on the particular case, although content creation and issue identification are the most common, as is matching assets to needs in the *finding employment* cases. Online communities are established typically as complements to existing offline communities or enabling the latter to be developed as knowledge communities which also build social capital. All three main types of networks are deployed, although small-world networks are most common in the preparing for employment cases, whilst in both the *finding employment* and *creating and doing work* cases scale-free dissemination and copying networks are starting to become common, and indeed these cases are to some extent the result of random type copying networks developing globally. In most employment cases, ICT is used to significantly reduce costs, increase flexibility, shorten value chains and improve capabilities through building knowledge communities and for sharing experiences.

2. *Strategic and operational considerations related to ICT in social innovation*

There are strategic and operational differences between the three focus areas. In the *preparing for employment* cases, it seems typical for public funded strategic ICT use and experimentation to take place through either civil society or private sector partners. In the *finding employment* cases, new strategic business models for finding and matching the supply and demand for labour are developed which enable flexible, rapid control and deployment of labour resources. In turn, these require careful balancing of the interests of both the supply and demand sides of labour so as not to lead to exploitation. The *creating and doing work* cases strategically use ICT to align the types and processes of work and tasks to specific individuals and operationally focus on what the individual can do rather what they cannot do.

3. *Policy issues related to ICT in social innovation*

Following on from the strategic and operational issues, there are also clear distinctions between the three focus areas regarding policy issues, although all strongly focus on the inclusion of people as workers who are disadvantaged or vulnerable in some way. The *preparing employment* cases show that careful embedding of ICT into the traditional activities used to train and support unemployed and vulnerable people is needed, initially through controlled experimentation depending on the context. In the *finding employment* cases, cost efficiencies due to cutting out the unnecessary 'middle man' and thus shortening value chains

are achieved, as well as increased flexibility and mass customisation which improves the productive deployment of people as unused or underused assets. However, new forms of regulation may be needed to mitigate exploitation and prevent a race to the bottom in terms of wages, hours worked and working conditions if all the power concentrates on the employers' side. The *creating and doing work* cases illustrate a strong inclusion policy of catering for people previously excluded from the labour market and by creating new types and areas of work, thus also increasing the productive deployment of unused or underused assets with similar caveats as above.

Overall, all six social innovation outcomes examined in the employment theme, as well as several others, have been shown to be either supported and/or enabled using ICT, as detailed in section 3.2.3. The seven cases examined in the employment theme all use ICT as an important tool to either directly support people finding it difficult to be in employment because they are at a disadvantage or vulnerable in some way, or have specific needs like needing to work variable hours, or in order to assist volunteers undertake work that benefits others or themselves. In some cases, such as *Slivers of Time* and *CSE*, the voluntary activities help volunteers develop their own skills and gain experience.

All cases also stress that the beneficiaries of such activities experience improved self-esteem and overall increases in welfare, in addition to reduced costs to society in the longer term. Most cases already have substantial scale and are still growing. The seven cases are thus all examples of social innovation cases enabled or supported by ICT, and thus in line with the definition given in section 1.

In meeting the social need of disadvantaged people for employment that these seven cases examine, there are clear differences between the three focus areas in how ICT is used and in the configuration of partnering and funding. They tend to indicate that the private sector is itself most interested in focusing mainly on services that can be carried out only by ICT, which is most readily done in the *finding employment* cases where the real, quick-time and highly flexible matching of labour supply and demand is a relatively standalone and coherent function. In these three cases, ICT is the only medium needed by the basic service and this is delivered and operated by the private sector, perhaps for two reasons. First, the private sector can directly transfer ICT systems already developed in the market and supplied to commercial or public sector customers for the same purpose, thus giving them economies of scale. Second, the private sector is less interested itself in designing and delivering human and organisational support systems in such social need cases where it has traditionally not operated, but which if needed, as in the *Slivers of Time* and *Skillendar* cases, can be easily delivered as a discreet add-on operation by civil or public sector partners. The other four cases in the employment theme, in the *preparing for work* and the *creating and doing work* focus areas, need to deploy ICT in such social need cases alongside physical and traditional activities as it is more difficult to make such functionalities separate or discreet from each other. In these other four cases, it is thus the civil sector which tends to operate the service, with the exceptions of the *CSE* case, though here it is a public-private partnership which operates the case, and in the *Jobbanken* case, but also here there is strong public funding.

The *finding employment* cases are also based on relatively standard ICT supporting an online community which is also the only or main basis for all activity. However, such a purely online community or knowledge network can also spin-off offline communities if the function timewise supports fast and urgent, and thus local, activity in a simple and flexible manner, and/or if the type of function concerns people's family, community and local life. This in turn, generates strong social capital amongst user communities. All three cases also started as mainly small world networks, but are rapidly becoming scale free dissemination networks as they quickly expand; indeed especially

EsLife and *Skillendar* are copied from other similar services elsewhere, e.g. TaskRabbit, so are part of a global scale-free dissemination network with tendencies towards being part of a viral random network.

Table 3.2: Employment case analysis overview

Focus area and SI outcomes	ICT use	Online platforms	Communities	Networks	Social innovation processes	Barriers	Drivers	Role of ICT in social innovation	Operational and strategic	Policy issues
Preparing for employment: skills and supports	Standard ICT alongside traditional activities	- Content creation - Issue identification	- Complementary on- and offline knowledge communities - Social capital (both bonding & bridging)	- Starting as small world, scaling to scale-free	- Collaboration, reciprocity, partnerships - Building capacity, skills & motivation	- Beneficiary and trainer reluctance to use ICT - Sometimes poor ICT	- Good ICT infrastructure reduces activity costs - Good fit of ICT with traditional activities	- Supporting - Reduces costs - Flexible solutions - Improves capabilities	Public funded strategic ICT use and experimentation done both through the civil and/or the private sector	Careful embedding of ICT is needed into the traditional activities used to train and support unemployed and vulnerable people, initially through controlled experimentation depending on context
Finding employment: matching supply and demand	Standard ICT, standalone	- Content creation - Issue identification - Matching assets to needs	- Online knowledge communities - Also enables offline communities and builds social capital (both bonding & bridging)	- Starting as small world, scaling to scale-free, with some random	- Trust, reciprocity, cooperation - Flexible, fast, local - Leadership to avoid exploitation	- Legacy, working, attitudes, legal & administrative systems - Reluctance to mix market and social goals	- Need to earn money in crisis - Better and cheaper ICT - Valuable service & business model with high impact and good profits	- Supporting: improved matching and flexibility - Enabling: new business & marketing models shortening value chains & cutting intermediaries	Funded & operated by private sector, some public money. New strategic business models for finding HR, enabling flexible, rapid control and deployment, but that needs balancing by HR interests.	Cost efficiencies due to cutting out 'middle man', increasing flexibility and mass customisation which improves the productive deployment of unused assets, but new forms of regulation may be needed to mitigate exploitation
Creating and doing work: more and better jobs	Standard & bespoke ICT alongside traditional activities	All types depending on case	- Complementary on- and offline knowledge communities - Social capital (mainly bonding, some bridging)	- Starting as small world, scaling to scale-free, with some random	- Building capacity and skills - Trust, collaboration, relationships - Knowledge and idea sharing	- Bespoke ICT needs ICT back-up - Even simple interface can be difficult for low ability group - Lack of space for good mixing of ICT with physical activities	- Bespoke ICT for high ability group & good mix with physical activities - Strong belief and commitment from founders and from partner mix	Enabling (rather than supporting): e.g. for adapting workplaces & work processes for vulnerable people, for enabling vital online knowledge & experience sharing.	Mix of public & private funding, & mixed actor operation. Aligning work tasks or processes to any individual by focusing on what can be done rather than what can't	Inclusion policy for people previously excluded from the labour market and for creating new types and areas of work, thus increasing the productive deployment of unused assets.

4. Place making

4.1. Context

This section very briefly summarises the main findings arising from the desk research carried out across Europe in relation to strategic issues, trends and challenges which provides the general *place making* context, as well as some of the observed and expected roles and impacts of ICT within this context. However, this is only done in this report in order to develop a framework for analysis and to identify three focus areas and relevant cases within the *place making* theme. Deliverables D8.4 and D8.5 will examine both the empirical evidence presented here in the light of the full desk research to draw conclusions and recommendations regarding outstanding research gaps and policy issues.

4.1.1. *Strategic issues, trends and challenges*

The place making theme for community and local development is concerned with how ICT can support or enable social innovation to develop specific places or types of places, including regions, cities, localities, neighbourhoods and communities. Place making implies integrating a range of social, economic, cultural and political aspects within a specific geographic or spatial context. It thereby often draws on elements from all the other themes but integrates them within one location or type of location.

In the last ten years, and particularly since the economic and financial crisis of 2007-2008, there has been a clear return to an understanding that social, economic and cultural structures and competences at local level have huge value and are crucial to building wider concepts of socio-economic development in general. (Millard 2014) This understanding is, however, not a return to earlier notions of localism based on hierarchical structures, but instead closely mirrors the objectives and desired impacts of social innovation in meeting real social needs in new ways. This approach is increasingly focusing on the daily social needs of people for work, education, health and prosperity in local contexts and in ways they themselves have some control over, and can also contribute to strengthening theories of social innovation. Likewise, the more bottom-up and participative development practices of place making are often in line with, and can complement new more broadly based concepts of, social innovation. They also illustrate a dialectic between, on the one hand, a more macro, top-down and fundamentalist market-driven set of constructs, with, on the other hand, a more locally-embedded, nuanced as well as socially and culturally aware approach. Whilst the latter has become more important in recent years, it has not yet seriously threatened the former's continued dominance. Into this mix of views on systemic societal change, new conglomerations of the two approaches have emerged even more recently. Many of these are attempting to build new economic models based on shared value and social value often derived from and embedded in localities (for example, as described by Porter & Kramer 2011), alongside an increased concern for inequality, poverty and social distress. (Millard 2014)

Some of this new thinking about place making comes from the development movement, which is traditionally concerned with the socio-economic development of so-called developing countries. However, this is also becoming increasingly relevant in the context of so-called developed countries, such as in Europe, given for example increasing concerns about rising poverty and inequalities. Such thinking focuses on how local populations, typically consisting of poor and marginalised groups, should also be seen as potential actors, consumers, assets, producers and business partners as well as innovators in their own right, rather than passively remaining

dependent on the developed world's social and economic structures and cultures. (For example, in Prahalad's 2004 book entitled the "fortune at the bottom of the pyramid".) Through their own independent social and economic innovation systems, such local communities can start from where they are, use their own resources and ingenuity, in combination where relevant with Western and global resources, to address their own particular social needs and support transformative social change in their own way.

Many of these development inspired concepts and approaches are based on participatory responses to the need to assess the impact of complex societal development programmes where the assumptions were poorly articulated and those involved were unclear about how the process of change in their community would unfold. They also attempt to build on existing strengths, positive attributes and things which work well, often through experimental and socially innovative approaches, rather than simply looking for problems and attempting to tackle them, thus avoiding a path-dependency outcome. This has clear resonance with Tepsie's definition of social innovation (see Annex 2) based on addressing the real social needs of individuals and communities whatever these are, as they see, feel and understand them themselves. In addition, it focuses in particular on the bottom-up, self-driven and self-controlled practices involved, in which traditional development paths are shunned or revised based on what the community itself sees as its most important assets and goals. Indeed, these approaches are largely about the process of change itself, where goals are often identified during rather than prior to the process, and the recognition that these processes are rarely linear but instead have many feedback loops that need to be understood within the context of experimentation and social innovation. (Millard 2014)

In Europe, the Platform Against Poverty and Social Exclusion²⁴ is one of seven flagship initiatives which comprise the Europe 2020 strategy. With more than 120 million people in the EU at risk of poverty or social exclusion, EU leaders have pledged to bring at least 20 million people out of poverty and social exclusion by 2020. The fight against poverty and social exclusion is at the heart of the Europe 2020 strategy for smart, sustainable and inclusive growth.²⁵ More specifically, the aim is to target poverty and social exclusion through growth and employment as well as modern and effective social protection. The platform was launched in 2010 and will remain active until 2020. Many of the issues being addressed by Europe's anti-poverty strategy are well illustrated by Castells et al (2012) in Barcelona, where he charts how ordinary people are coping with the latest economic crash through field work in the city which shows that 97% of families surveyed have engaged in non-capitalist economic practices since 2008 simply to survive. This is a massive rise compared to the period before the crisis. Such practices include growing food, consumer cooperatives, exchange and social currency networks, free universities, hacklabs, etc. The interesting aspect here is that the solutions being found are coming from ordinary people in their own localities responding creatively and innovatively to the pressing challenges they and their families and communities are experiencing every day.

Europe's bottom-up place making initiatives are, however, not only related to poverty and deprivation. One of the biggest, most influential movements, which has also scaled massively since its foundation in the UK in 2006 to 50 other countries, is the Transition Town Network.²⁶ A transition town is a grassroots community project that seeks to build resilience in response to so-called 'peak oil' (i.e. the proposition that oil resources will fast deplete), climate destruction, and economic instability. Peak oil was, however, simply the starting point, and the focus in many localities also now encompasses local food, jobs, housing and mobility, all of which are seen as

²⁴ <http://ec.europa.eu/social/main.jsp?catId=961>

²⁵ http://ec.europa.eu/europe2020/index_en.htm

²⁶ <https://www.transitionnetwork.org/>

interlinked. The Transition Town Network describes itself as a bottom-up charity “whose role is to inspire, encourage, connect, support and train communities as they self-organise around the Transition model.” “Ultimately it’s about creating a healthy human culture, one that meets our needs for community, livelihoods and fun.” In addition to a strong online presence, it also uses “events, conferences, training, blogs, webinars, newsletters, books, films, guides, tweets, and more...”²⁷ The Transition Town Network is seen as a socio-economic movement based on fiscal localism.²⁸

4.1.2. *Roles and impacts of ICT*

ICT appears to be having a profound impact on places and on *place making*, but an effect which is highly nuanced and far from clear cut. For example, in Eastern Europe most services are provided by the state at local and regional levels, but many citizens want to participate in this, such as helping authorities improve public transport by establishing a platform where users can submit their ideas for change,²⁹ maintaining public property on a platform where people can show which properties need to be fixed, or getting involved in the local social and economic community when local authorities present to the public issues and challenges and ask for their inputs. The community is mostly built by people living in the area and who know local places intimately. ICT can help in the fight against local corruption which is still high in Eastern Europe.³⁰ Other examples include using ICT to search for missing persons as in Bulgaria,³¹ or to report illegal casinos as in Russia.³² An example in Estonia, probably the most advanced ICT country in Eastern Europe, is the use of mobile phones by a large number of citizens to geo-locate industrial, including nuclear, waste left over from the Soviet period in order to assist local and national authorities to map the extent of the problem and plan clear-up programmes.

In the context both of globalisation and of the ever burgeoning presence of the virtual space and virtual worlds, there may seem to be a mismatch between online activities and traditional physical reality. In this context, a number of strategic issues are apparent:

- How can the realities of people’s physical and social needs in their everyday local lives be met using digital technologies, and how can the physical and digital worlds complement each other rather than degrade each other? “Clicks and bricks or clicks versus bricks”.
- What are the inherent strengths of ICT which can be used to support social innovation and place development: data and data analysis, speed, connectivity, information, global reach and the long tail, virtually zero cost of forming online communities, dramatically reduced transaction costs, etc.?
- How can ICT be used to support people in situ in their local lives which gives social, psychological and cultural meaning embedded in a community where physical relationships?
- How to retain social and community values and meaning in the face of what is often seen and experienced as virtual and impersonal technology?
- How to guard against decisions being taken about peoples’ lives based purely on big data, data analytics and closed algorithms?
- How to mitigate the digital divide, in terms of access, affordability, skills and use, whereby some individuals, groups and localities are disadvantaged?

²⁷ <https://www.transitionnetwork.org/>

²⁸ [http://en.wikipedia.org/wiki/Transition_Towns_\(network\)](http://en.wikipedia.org/wiki/Transition_Towns_(network))

²⁹ As in the ZBiletemTaniej example.

³⁰ for example in Russia: www.otmenta.ru

³¹ www.lipsva.com

³² www.gdecasino.org/ru

- How to balance data privacy, protection and mis-use with openness, transparency and the benefits of big data?

People live their private and public lives in physical localities, although most are today more or less mobile, often over short distances and increasingly over longer, thereby linking physical places together in both highly personal but also collective ways. How this takes place is increasingly mediated and supported by ICT in terms of information, communication and services. The transport and mobility technologies enabling physical movement are also themselves increasingly dependent on ICT. In this context, many of our social needs are increasingly both defined and realised through an intertwining of our physical and digital worlds which are (according to the Economist, 2012) re-shaping each other and often becoming a seamless whole. Physical and digital worlds are becoming increasingly interwoven, as complements rather than substitutes. As people rely more and more on connected devices to explore the physical world, digital information will have a growing influence on how they see the physical realm and how they act within it and move through it.

Many technology trends (such as ambient intelligent space, artificial intelligence and intelligent agents, cloud based services, the semantic web and the internet of things, mobile and mobile apps, social media, and augmented and virtual reality) are enabling us to better contextualise our physical interactions with people, things and places.³³ For example, the so-called ‘geoweb’ of data linked to geographic places provides ‘digital overlays’ of different types of data related to physical locations and things, thereby ‘augmenting their reality’ so that, for instance, pointing a smart phone at a building instantly provides information about it.³⁴ According to the Economist (2012), the “geoweb is growing thicker”, i.e. there is an increasing number of features of the physical world (e.g. buildings, businesses, schools, parks, public facilities, etc.) with information attached to them. The thickest geoweb is in Scandinavia, then Western Europe, North America. The digital overlay will, in effect, allow people to see through walls (what’s in that shop), what’s around the corner (is there a taxi nearby), and across time (what happened here in 1945). For example, people are increasingly seeing cities (where these trends are greatest) as digitally constructed places. (Economist, 2012)

There is an increasing number of digital services which are place-specific rather than general. For example, digital public services where research has shown that up to 70% are local or regionally focused, and the majority of applications for mobile phones (especially smart phones) people use as they move around are locality-based. (European Commission 2012). A large amount of ‘big data’ is geo-located, i.e. it includes geo-coordinates which locate the data to specific points in space or specific geographic areas. This characterises much of the so-called ‘open data’ made available by governments and local authorities, as well as proprietary, private or personal data which might be added or mashed together either as open or protected data to solve specific problems and/or analyse specific issues or situations. Much ICT also supports activities (including social innovation) which is not in itself new (e.g. complaining to the local council, signing a petition, making donations, etc.) However, ICT is enabling these things to be done on a greater scale – reaching many more numbers than would be possible offline, as well as much faster including in real-time. It is also enabling new peer-to-peer models of action, completely new types of functionality such as augmented reality, as well as completely new business models like the sharing economy.

³³ See Tepsie D8.1, section 3.1.6: www.tepsie.eu

³⁴ This relates to the so called ‘internet of things’ and ‘internet of everything’ – see also Tepsie D8.1 section 3.2.3: www.tepsie.eu

4.1.3. *Framework for analysis*

Based on the desk research reported in the foregoing, three focus areas can be derived which seem to represent some of the important ways in which ICT is enabling or supporting social innovation in the *place making* theme.

1. Smart places

There is a huge number of examples of using ICT to make places smarter (more efficient, more effective and more livable), pushed forward by the upsurge of the smart city movement over the last five years. Cities are at the 'sweet spot'. They are large enough to have real power and impact, but also small enough to be close to the everyday reality of peoples' lives. If cities really are 'smart', they can locate themselves at this sweet spot between centralised and de-centralised governance models. In this context, and the fact that the majority of the world's population now live in urban areas with this number growing inexorably, making cities, and indeed places, smart needs to be a core element in how we all live satisfying and prosperous lives.

The prevailing focus of the smart place, in which the local authorities and other organisations deploy sensors, networks, data and data analytics to improve the efficiency and effectiveness of local systems (like transport, utilities, etc.) and services, is only half the story however. From this perspective on its own, there is the danger of a one-size fits all, top-down view of place development. The diverse needs of the inhabitants as individuals, households, neighbours, communities, organisations and businesses – that bring the locality to life -- are just as important³⁵. Thus, any adequate model for the smart city must also focus on the smartness of its citizens and encourage the processes, and especially social innovation processes, that make places important: those that sustain very different – sometimes conflicting – activities. Large places, like cities, are by definition engines of diversity, so focusing solely on streamlining utilities, transport, construction and unseen government processes can be massively counter-productive, in much the same way for example that the 1960's penchant for the so-called 'economic efficiency' of social-housing tower blocks was found, ultimately, to be socially and culturally unsustainable and highly damaging.

Instead, smart places will be smart because their citizens have found new ways to craft, interlink and make sense of their own and each other's data and through this their interconnected lives. The recent "Mapping Smart Cities in the EU" study³⁶, showed that to date one of the most common types of so-called smart city initiatives across Europe is, in fact, about "smart neighbourhoods", and is especially concerned with using data and coordinating resources to improve the lives of the neighbourhood's inhabitants in terms of improved physical environments and mobility. Places need to be joined up by digital infrastructures as well as by physical infrastructures, and of course by people, and to use all these infrastructures to improve facilities, amenities and resources for place development.

In this context there are two social innovation outcomes examined for this focus area:

- Improved place-related facilities and amenities (physical or cultural)
- Improved place-related use of resources.

³⁵ See also Usman Hague's article "Surely there's a smarter approach to smart cities?", 17 April 2012: <http://www.wired.co.uk/news/archive/2012-04/17/potential-of-smarter-cities-beyond-ibm-and-cisco>

³⁶ Undertaken by DTI and partners in 2013 for the European Parliament: European Commission (2014).

2. Local community development

Local community development focuses on how individuals, groups and communities at the small scale and local level, can be supported and support themselves, to grow, be sustained and prosper, with a focus on coherence and inclusiveness. One of the main pillars of local community development is the current and ongoing EU research focus on so-called CAPS, Collective Awareness Platforms for Sustainability and Social Innovation.³⁷ CAPS use ICT tools and networks for supporting and propelling new forms of sustainability and social innovation. This is done through a people-centric approach that aims to actively involve citizens in creating new multi-dimensional communities at the grassroots, whilst at the same time linking into wider social, economic and democratic systems. Specifically, CAPS aims to support extended awareness of the social world, the environment and the consequences of people's actions in developing environmentally friendly lifestyles, new economic models and participatory governance. A related aspect is the 'digital habitats' approach (Wenger et al, 2009) directly related to the 'communities of practice' concept³⁸, where the focus is on the evolving interplay between community and technology and how each continually shapes the other.

Some of the main issues in the *local community development* focus area are, therefore, how ICT supporting and/or enabling social innovation can build growth, prosperity and wellbeing in the local community, as well as support disadvantaged individuals and groups, thereby also promoting social cohesion and inclusion.

In this context there are two social innovation outcomes examined for this focus area:

- Improved place-related growth, prosperity and well-being
- Improved place-related social and cultural cohesion/inclusion

3. Civic engagement and activism

Civic engagement and activism is concerned with the use of ICT to support and enable activism, campaigning, consultation, deliberation, and decision- and policy making at the local level or in place-specific contexts. Civic engagement is about empowering local communities to form and implement their own policies and make their own decisions. In many cases, it inevitably intersects and interacts with higher level politics and governance systems and authorities, which can either be complementary and supportive or act as barriers and perhaps even in direct opposition to local needs and aspirations.

The aim of civic engagement and activism is to make decision- and policy making both more locally relevant to local people, as well as more open, transparent and accountable, even when decisions are not taken locally. In a social innovation context, civic engagement normally leads to activism, i.e. local people implementing their own decisions and policies in order to improve their own wellbeing and prosperity. Responsible civic engagement would, in addition, not impinge on or harm the wellbeing and prosperity of other localities. An important goal of civic engagement is to enable or support citizens to themselves become involved in the running of their locality. When citizens have a chance to be a participant in this governance process, it makes a difference in how they view the locality. It becomes "your" locality, and "you" take better care of it. This also improves overall governance.³⁹

³⁷ <http://caps2020.eu/about-caps/>

³⁸ See Tepsie D8.3 section 3.

³⁹ One of the issues in relation to online civic engagement is slacktivism (i.e. very shallow forms of engagement) versus thick, impactful participation (www.siresearch.eu).

Thus, some of the main issues in this focus area are how ICT supporting and/or enabling social innovation can empower local communities to formulate and agree their own policies and make their own decisions through consultation, deliberation, and decision- and policy making at the local level? A related issue is how campaigning and activism can be enabled or supported whereby local people put into practice their own decisions and policies in order to improve their own wellbeing and prosperity (i.e. local implementation of policies and decisions)?

In this context there is one social innovation outcome examined for this focus area:

- Improved place-related activism and participation (including political, planning, budgeting, etc.)

In addition, there is also one theme-wide social innovation outcome:

- Scaled place development impact (more sectors, workers, localities) using ICT.

4.2. Case analysis

4.2.1. Social needs addressed and summary

Six cases are analysed in the *place making* theme as summarised in Table 4.1.

Table 4.1: Place making cases: summary

Focus area	Case	Social needs addressed	Summary
Smart places	EastServe, Manchester (UK) ⁴⁰	Tackling local digital divide, low skills, high unemployment and poverty, improving engagement and social cohesion	- ICT affordable broadband for jobs, education & community - Holistic approach to local urban regeneration - Central and local government funding, public-private-civil partnerships and operation - 5-fold increase in access, doubling training and digital inclusion cf. to average, lower unemployment by 6,200, 180 start-ups, 3-fold increase in educational achievement, fewer benefits claimed
	Naprawmyto (PL) ⁴¹	Facilitating local action and dialogue on local problems, and community activism	- Enabling real- and quick-time online (web & mobile) reporting of problems to authorities & community dialogue - Civil funding with other public resources, private ICT providers, 14 public-private-civil partners, civil operation - 11 localities and spreading
Local community development	Viedome Total Community Platform (NL) ⁴²	Daily and long-term physiological, medical and psychological needs of elderly and others in need of care	- ICT toolbox & HW, SW & infrastructure personalised for 8 types of need & integrated in home and community context - Public, insurance & user funding, initiated by private sector, public-private-civil & university research partnerships, many local volunteers, private operation - multiple locations in NL (90% of turnover); export to BE, DE UK, CD, UK & Nordics; turnover & profit grown threefold 2007-12
	TEM -- Local Alternative Currency Unit (EL) ⁴³	Meeting all types of basic daily needs of residents in poverty, combatting pay cuts, unemployment and social disruption	- ICT web/mobile for matching supply & demand, managing system, social fora, awareness raising; local currency to exchange work and goods, regulated informally in community - Local civil funding through subscriptions & from university; civil initiation, support from local mayor, and civil operation - 1 location, 1,500 members of 144,000 population, spread to >10 other localities
Civic engagement and activism	Hackney CAB crowdmap (UK) ⁴⁴	Support low-income residents, losing some or all housing benefit, from going further into poverty and losing accommodation	- Online crowdsourced campaigning tool using website, mobile and social media to collect data and organise, increasing civic engagement on issues, community voice and agency - Public lottery fund, many civil organisations, with public & private partners, volunteers and civil operation through local advice centre - help to 3,000 low-income households losing €127 per month each, local community activism and participation increased.
	IOBY (USA) ⁴⁵	Strengthen neighborhoods in multiple ways by small non-profit grassroots projects using local donations and volunteers	- Online crowd-resourcing and crowd-funding (micro-finance) based on website for project registration, finding, donating and volunteering, plus social media - Started in 2008 by 3 grassroots activists in New York, rapidly gained funding from many foundations & other donors, remains civil operated - £740,000 donated; 350 successful projects; 83% success rate; 81 cities; €27 average donation; donors live on average 3 km away

⁴⁰ www.eastserve.com

⁴¹ www.naprawmyto.pl

⁴² www.mxviedome.com

⁴³ www.tem-magnisia.gr

⁴⁴ www.hackneycabcrowdmap.com

⁴⁵ www.ioby.org

Social needs addressed

All six cases examined use ICT as an important tool to both support existing and enable new social innovations in directly developing the prosperity, wellbeing and engagement of people in their localities, neighbourhoods and communities by curating a sense of place through mixing the virtual with the physical and the intangible with the tangible. All cases also stress that local people are themselves important agents and decision-makers of their own and their localities change.

Focus areas

The sample of six cases comprises two *smart place* cases, two *local community development* cases, and two *civic engagement and activism* cases. Although there is clear specialisation of functions across the six cases, most of the cases span two or more focus areas which is to be expected given that *place making* is a cross-cutting theme (see section 4.1.1). In this theme, the differences between focus areas in terms of issues targeted, resources used and operational considerations are much less distinct than in the *employment* theme. It is clear that this is a consequence of the *place making* theme being cross sectoral, linking potentially any and all issues in a specific geographical place, or type of place, which in turn typically requires a greater array of different types of actors to collaborate in order to ensure a joined-up approach for maximum impact.

Funding and actors

Most of the *place making* cases rely on a wide range of funding types, partner constellations and both formal and informal champions, activists and volunteers, many of whom live in the places being developed. So, although many cases do rely on external funding, support and other resources and ideas, they are very much locally and bottom-up driven. Most cases are thus characterised by public-private-civil-partnerships (PPcPs).

Scale and scope

Most cases already have substantial scale and are still growing. Some have or are growing in situ (the *EastServe* and *Hackney CAB Crowdmap* cases), others have been inspired by or copied from initiatives elsewhere (*Naprawmyto* and *TEM*), whilst two are also more or less original concepts that are themselves inspiring and being copied in other places (*Viedome* and *IOBY*).

4.2.2. Types and uses of ICT

The types of ICT and its use varies across the three *sharing economy* focus areas, as described below.

Smart places

- **ICT used:** In the *EastServe* case, relatively standard ICT is used alongside physical and traditional activities. Given that many residents use mobile phones rather than fixed telephone lines, a 100Mbps licensed wireless broadband backbone network was installed (at affordable prices for an area with the highest child poverty in the UK) for digitally enabled services and social networking, including information and interactive services from the City Council, national government departments, the police and local community networks. By 2010, more than 50,000 households with a population of more than 250,000 were included, as well as ICT access and training sites in 17 local schools, eight UK-Online community access centres and 10 public access points in libraries and other centres. The *Naprawmyto* case is similar in using relatively standard ICT but quite different from *EastServe* in being primarily an example where the ICT is the only or main channel for the service to function successfully, though this does also have some spillover into offline knowledge and participation communities. Users can also take and send photos to illustrate the problem if it is tangible. The service enables dialogue and

discussion to take place around the problem both with the local authority as well as with other citizens, and this also spills over into other and broader citizen interaction issues.

- **Online platforms, communities and networks:** In both cases, all types of online platforms are being used with the exception of matching finance to needs. The most common are content creation and issue identification, but matching assets to needs, as well as solving and action on problems platforms have been developed, with the latter most strongly in the *Naprawmyto* case and mostly bottom-up by specific groups although often in partnership with the PPCPs in both cases. Also in both cases complementary online and offline knowledge communities are created, directly by the *EastServe* case and more indirectly by the *Naprawmyto* case, which also support social capital creation, particularly as bonded local ties, amongst local residents and organisations. In terms of networks, both the *smart places* cases started out as a small-world network with a limited number of local participants each with few contacts. However, as word-of-mouth spread the network rapidly became scale-free spreading rapidly through the locality via the ICT access points as well as via local organisations and champions acting as dissemination hubs. Both cases also exhibit some tendencies to being random networks where people copy other examples because they seem to be successful. This is especially so in the *Naprawmyto* case given its more focused and standardised 'FixMyStreet' type model, and indeed it was directly inspired by the UK's first *FixMyStreet* (which provides free software and assistance for anyone to "run a website like FixMyStreet in your country or city, for free....the FixMyStreet Platform is for citizens who want to run their own sites."),⁴⁶ as well as the American *SeeClickFix.com*⁴⁷ forerunners.

Local community development

- **ICT used:** The *Viedome* case uses mainly relatively standard ICT (although bespoke ICT is also possible if relevant, for example, sensitive gait and detection equipment for different types of movement) alongside physical and traditional activities. The concept is built around a toolbox for personalising home care for older persons based on flexible infrastructure, hardware and software components fully open for other suppliers, as well as Mextal (the firm owning and commercially selling the concept), to build upon. VieDome can combine all functionalities and bring together most proprietary products and services using a modular building block concept. It currently provides 123 product and service types, ranging from infrastructures, TV, touch screen, PC, mobile, sensor, cameras, etc., as well as appropriate software and content. VieDome is broadly applicable in houses as well as in institutions, and has a modular building block set-up so can be implemented in unique ways as desired for individual users. VieDome is a community platform specifically designed for each individual municipality, local society as well as for the individual care recipients who live there. The ICT is configured to ensure the user can live as independently as possible as well as integrate into the community, but personalising the package around care, comfort, safety, information, support and advice, communication, entertainment and commerce. The TEM case has also adopted standard ICT solutions for both web and mobile as open source e-platforms, but these are used very specifically to match the supply and demand for the exchange of local goods, services and tasks based on a local currency (Local Alternative Unit – TEM). ICT is also used for self governance of the system including membership subscriptions, and via social media for ensuring transparency to combat corruption, promote discussion and raise awareness alongside a large number of physical and traditional activities in the local community.

⁴⁶ www.fixmystreet.org

⁴⁷ www.seeclickfix.com/

- **Online platforms, communities and networks:** In both cases, all types of online platform are being used with the exception of matching finance to needs. The most common are content creation and issue identification, but matching assets to needs is the most used in the *TEM* case, solving and action on problems platforms are also important especially in the *Viedome* case and mostly organised by the user and his/her community themselves, although often in partnership with the PPCPs. Also in both cases, complementary online and offline knowledge communities are created, with the former facilitating and significantly enhancing the latter, and where important social innovation benefits arise especially in the form of social capital with mainly bonded but also bridging local ties. In terms of networks, both the *local community development* cases started out as small-world networks with a limited number of local participants each with few contacts. However, as commercial marketing together with the activities of public, private and civil professionals (in the *Viedome* case) and word-of-mouth as well as awareness raising (in the *TEM* case) related the story, the network rapidly became scale-free spreading very quickly elsewhere in the country. The *TEM* case also exhibits some tendencies to being part of a random network where people copy other examples of local currency scheme which have been used for many years but only relatively recently started to go more viral through ICT networks.

Civic engagement and activism

- **ICT used:** The *Hackney CAB Crowdfmap* case uses free and low cost online tools and platforms (website, mobile and social media) to create a multi-dimensional campaign to gather stories and raise awareness of the impact of housing benefit changes in Hackney. It used WordPress – a free blogging platform – to create a website that includes information on the changes, shows a map of the impact and shares research findings; Crowdfmap – a free mapping and information visualisation tool – to map stories to show the impact at a local level; Twitter – a microblogging tool – to distribute findings and interact with decision makers; and Facebook – the most popular online social networking tool – to reach more residents of Hackney. These free online tools meant that Hackney CAB Crowdfmap could reach the community and gather and share findings without having to create new and costly solutions. However, the campaign found it difficult to interact with many individual residents so used ICT alongside physical and traditional activities. The *IOBY* case also uses free or low cost online ‘crowd-resourcing’ and crowd-funding (micro-finance) based on website for project registration, finding, donating and volunteering, plus social media (Facebook, blogs, Twitter, Flickr, Vimeo) for constant updating and following up projects, people and places. This is supplemented by traditional and physical activities, given that of course all projects are physical and tangible projects in the neighbourhood. The overall purpose is to strengthen neighbourhoods in multiple ways by small non-profit grassroots projects using local donations and volunteers.
- **Online platforms, communities and networks:** In the *Hackney CAB Crowdfmap* case, both content creation and issue identification online platforms are used. Content creation is used to map the problems people were facing with their housing benefit, whether a shortfall in rent, facing arrears, or facing eviction, to help highlight the extent of the problems faced by cuts to housing benefit. Content creation is used to generate insight into the overall problem with the rental market for those in receipt of housing benefit, by filtering online content to ascertain how many rental properties advertised in the area were affordable for those on housing benefit. Issue identification is used to undertake analyses and draw conclusions on campaigning issues in order to take action both on- and offline targeting journalists and politicians, amongst others, and so bring a national issue with adverse local effects to the attention of people in power. However, the *IOBY* case uses all types of online platform

including solving problems and action on problems, and especially matching assets to needs and matching finance to needs on a local and neighbourhood basis. Both cases create complementary online and offline knowledge communities, with the former facilitating and significantly enhancing the latter, and where important social innovation benefits arise especially in the form of social capital with mainly bonded but also bridging local ties. The *IOBY* platform itself has greater focus on online communities than *Hackney CAB Crowdfmap*, but of course it facilitates offline communities around the neighbourhood projects. In terms of networks, both the *civic engagement and activism* cases mainly exhibit and remain small-world networks with a limited number of local participants each with few contacts. However, both, but especially *IOBY*, also demonstrate strong scale-free networks being taken up more widely through bridging ties – *IOBY* now has neighbourhood projects in 81 US cities, as well as being influenced by random networks as the approach is copied increasingly elsewhere.

4.2.3. **Social innovation outcomes**

In the following the social innovation outcomes and their beneficiaries reported by the cases are summarised by focus area. Although there is clear specialisation of functions across the six cases, most of the cases span two or more focus areas which is to be expected given that *place making* is a cross-cutting theme.

Smart places

1. *Improved place-related facilities and amenities (digital, physical and cultural)*

- *EastServe*: apart from 50,000 households and 250,000 being connected, so are 17 local schools, 8 UK-Online community access centres and 10 public access points in libraries and other centres in the district. The district has moved from the least connected to the most connected part of the city.
- *Naprawmyto*: reporting on problems related to facilities and amenities saves money for the responsible authority by reducing their need for regular inspections, and enables them over the medium-term to capture data on where, when and what type of problems occur so making it possible to plan and use their maintenance and repair resources much more efficiently; the service also provides residents with much quicker redress of the problem.

2. *Improved place-related use of resources*

- *EastServe*: the case has successfully worked with other development initiatives, and provided “substantial support” in, for example, building by 2010 of 197,000 m² new commercial floor space, nearly 1,300 local companies supported by business advisors, nearly 5,000 new homes and 6,7000 improved, as well as other local developments. Secondary school attendance is at its highest level in 10 years, and there are now 6 ‘Green Flag Award’ winning parks in the area.
- *Naprawmyto*: reporting on the problems related to the local use of resources saves money for the responsible authority by reducing their need for regular inspections, and enables them over the medium-term to capture data on where, when and what type of problems occur so making it possible to plan and use their maintenance and repair resources much more efficiently; the service also provides residents with much quicker redress of the problem.
- *Viedome*: focuses on identifying and accessing the assets of the wider community which can be deployed to assist the target group and develop the wider community. These are especially the time, energies and diverse capacities of volunteers, family members and neighbours, as well as from the local authorities and civil groups. The technology provides

the basic services at individual level, but is so designed to encourage and support cooperation between a large number of actors.

- *TEM*: matches the supply and demand of local goods, services and tasks ensuring that as many as possible otherwise idle assets in the community are put to good use.
- *IOBY*: improves the use of local funding and volunteering in small neighbourhood projects.

Local community development

3. *Improved place-related growth, prosperity and well-being*

- *EastServe*: over 40% of residents have had basic ICT training, more than double the rate than Manchester's average despite the district having the city's highest rates of deprivation and child poverty (also some of the UK's highest), 32% of whom considered this had improved their job prospects and 20% have taken extended courses for accreditation. The case has also helped increase from 21% to 66% of school pupils achieving good secondary school results, assist more than 6,200 residents into employment, 180 of whom have started their own business, and has seen the percentage of residents claiming benefits reduce from 40% to under 33%.
- *Viedome*: brings economic life and wellbeing back into communities by ensuring older and other vulnerable people remain longer in their homes or in the local community, spending and acting locally.
- *TEM*: helps to meet the basic daily needs of residents in poverty, combatting pay cuts and unemployment by providing a new means to meet economic necessities, as well as retaining this economic (non-profit making) activity in the community thus supporting local prosperity. The most common needs exchanged include food, electrical and other repairs, maintenance and small scale construction, child day care and doctor's visits.
- *IOBY*: supports local small scale neighbourhood growth and wellbeing through local funding and volunteering.

4. *Improved place-related social and cultural cohesion/inclusion*

- *EastServe*: has successfully built a 'sense of place' utilising ICT and other resources through the development of geographically focused 'Digital Action Places'.
- *Viedome*: is highly successful in developing local community cohesion in a large number of localities and neighbourhoods in the Netherlands, and now elsewhere, where older people as well as other weaker and vulnerable groups reside.
- *TEM*: helps to combat social disruption and exclusion, building local community cohesion, and slowing out-migration of the population.
- *IOBY*: through its non-profit neighbourhood projects, supports local social cohesion and inclusion.

Civic engagement and activism

5. *Improved place-related activism and participation (including political, planning, budgeting, etc.)*

- *EastServe*: transformed community capability and participation through innovative content and e-services embedded in physical activities.
- *Naprawmyto*: the online platform provides for online discussion and dialogue around local problems and issues, both between the local authority and citizens as well as amongst citizens themselves.
- *Hackney CAB Crowdmap*: the platform provides information on the impact of housing benefit changes in Hackney. By engaging with individuals on the street and working with

organisations to gather impact stories from service users, local community activism and participation was increased, and 64 reports have been collated online to date.

- *IOBY*: the platform provides a space to find or register neighbourhood projects, and to donate and volunteer, creating impact on the ground and starting chains of further activism.

Other

Other outcomes were reported, not directly linked to any focus area, as below.

6. *Scaled place development impact (more sectors, workers, localities)*

- All cases, with the exception of *Hackney CAB Crowdmap* (which is not designed to scale at this stage) are scaling, disseminating or growing, and most also exhibit many positive spillover and multiplier effects elsewhere and on other initiatives. For example:
- *EastServe*: Since 2000, the number of households served has increased from about 5,000 to 50,000 and the population from about 25,000 to 250,000, as well as growing to ICT access and training points in 17 local schools, eight UK-Online community access centres and 10 public access points in libraries and other centres.
- *Naprawmyto*: reporting problems to local authorities has spread from the UK to Poland and then to 11 localities around the country.
- *TEM*: local currency exchange of goods, services and tasks has spread to 10 other localities.
- *IOBY*: has grown in five years, based on local funding and volunteering, from several small projects to £740,000 donated, 350 successful projects, 83% project success rate, in 81 cities, €27 average donation and donors living on average only 3 km away.

7. *Increased voice of marginalised people*

- *Hackney CAB Crowdmap*: sharing the stories and voices of people experiencing negative impacts of the housing benefit changes. The use of an online platform that shared such information helped amplify the problem to people with power and influence, such as London Assembly Members and journalists.

4.2.4. **Social innovation processes**

In the following the social innovation processes and social practices reported by cases are summarised by focus area, drawing on the process taxonomy presented in section 2.

Smart places

EastServe uses relatively standard ICT alongside physical and traditional activities under the motto 'from digital divide to digital dividend' in which people have a real personal stake in digitally enabled living and a new sense of pride in their achievements as one of the most connected and cooperative communities in the world. Focus is on enabling people, both individually and collectively, to become stakeholders in new online and offline social networks, encouraging strong and positive relationships between people from different backgrounds in the workplace, in education and within neighbourhoods to do things for themselves as 'digital pioneers' with a mutual aid ethos. This includes generating their own content and using that to develop new e-services based on user journey mapping using ethnographic techniques such as observing what people actually do. Critical is developing a clear 'sense of place' through a strong geographic focus around local people, communities and organisations with 'NetStart Action Plans', but complementing this local flavour by city support and processes. The overall belief is that encouraging people back into work will have the biggest impact on quality of life and self esteem,

including increasing collective self-esteem and mutual respect. *Naprawmyto* is basically a standalone ICT platform which provides for online discussion and dialogue around local problems and issues, both between the local authority and citizens as well as amongst citizens themselves, and this also encourages offline initiatives to be set-up and/or supported around the same concerns. *Naprawmyto* thereby supports the Involvement and participation of citizens in local life and the process of knowledge creation by individuals for local authorities and vice versa, which starts to re-set the power and other relationships, such as decision-making and decision-taking, between citizenry and government.

Local community development

Both cases demonstrate highly developed relationships and close cooperation underpinned by ICT between a variety of actors at local level: public, civil organisations plus volunteers and individuals. In the *Viedome* case these relationships are extended in the commercial sector to the Dutch commercial TKH group owning Mextal and other multinationals (supplying ICT and other equipment), and to regional authorities (in terms of planning) and national levels (in terms of government policy and the personal budgets used by many older people to pay the *Viedome* subscription). In the *TEM* case, local 'democracy' based on transparency to fight corruption is important, albeit in an informal, self-regulated and open manner, in which ICT is essential. Thus, the *Viedome* case explicitly and formally links local development to multi-level actors and structures, whilst the *TEM* case is strictly local and informal although has links with other similar local currency initiatives elsewhere in Greece. In both cases, these relationships, including the commercial ones in the *Viedome* case, are close and trustful and are essential for success. This operates both at the organisational level but also amongst the beneficiaries themselves to become more independent but also to make social contacts, often supported by the technology. Local groups and organisations, plus volunteers and individuals are given a focus around which to develop both their individual as well as their collective capacities and skills in assisting weaker members of the local community to become more visible and active. These capacities can be extended to other activities and purposes. Given the *Viedome* case's important commercial dimension, the approach it uses is 'coopetition' at the organisational level, where public, non-profit and commercial actors work together to deliver appropriate services and support community development. The beneficiaries themselves are also empowered and encouraged to cooperate within the local community and with each other.

Civic engagement and activism

In the *Hackney CAB Crowdmap* case, the Hackney Citizens Advice Bureau involved in initially setting up the initiative was critical, even though it was apprehensive about getting involved in a very political debate. However, it has excellent relationships within the area with voluntary and support organisations, the local authority and citizens. Collaboration, networking and participation are at the heart of this, especially in raising awareness. Therefore, much trust had already been established with people struggling with the housing benefit changes, and this increased the number of inputs made and led to feelings of reciprocity. Local capacity has been enhanced about generating and analysing data and campaigning through citizen advocacy. The main purpose of gathering impact data stories was to increase the voice of local people, campaign against the changes by providing reasoned evidence of negative impact, and hopefully influence decision makers to reconsider the policy changes. ICT is critical to this, but so too are more traditional tools, including speaking to local people on the streets and awareness sessions at local groups, such as parent support groups, to help local people understand the changes, while encouraging them to share any information on how the changes were affecting them. Stories were also gathered from

the Citizens Advice Bureau, and all were added to the map on the website to provide an easily accessible and illustrative visualisation of the housing benefit problems in Hackney. Supplementing this work, *Hackney CAB Crowdfunder* carried out research into the housing market in Hackney and published research findings on the website. The results of a mystery shopping housing exercise and the online impact map were shared through social media and used by other organisations to supplement their own findings. Both *civil engagement and activism* cases rely on volunteers, local resources local activists and champions, although *Hackney CAB Crowdfunder* started with government lottery money and has the support of an advice bureau, whilst *IOBY* is and always has been completely local, grassroots and bottom-up. The *IOBY* case connects people and money to site-based projects, all of which are conceived, designed, and run by neighbours. This ensures community buy-in, long-term caretakers and daily reminders of what's been achieved. Successful projects are then magnified, so they can benefit other neighbourhoods, and the positive impact ripples throughout the city and indeed to other cities. *IOBY* is all about "having a stake in the game, engaging with others while you do so, and seeing and living with the end result".

4.2.5. **Barriers and drivers**

In the following the barriers and drivers reported by cases are summarised by focus area.

Smart places

The main barrier in the *EastServe* case is obtaining and sustaining sufficient finance given that the project relied, at least from the start, on significant ICT and other infrastructure investments. Such high levels of investment were not necessary in the *Naprawmyto* case, but because both *smart places* cases potentially have a broad focus across different issues and sectors which need to be integrated in a joined-up manner in one geographic place, both require a wide array of different types of actors to address these challenge, including financial ones. This in turn requires significant coordination efforts as such partnerships can be rather complex and sometimes unstable. In both cases, this led to residents in the *EastServe* project being sceptical to start with, until, through 'word of mouth', it caught on and then it was very popular. In the *Naprawmyto* case, on the other hand, the biggest barrier is to convince municipalities to participate, especially as they must pay for the service according to their size. Another barrier in the *EastServe* case is data security due to the citizens' PCs connected to the Internet which requires a lot of support especially concerning viruses, firewalls and malware. Drivers for *EastServe* include conducive national and regional policies during most of the 2000s, and European networks like Eurocities and Telecities, plus visionary local champions. The project has also been used by local and national networks, plus the UK Government, as an example of best practice which is being used to inspire other initiatives around the country. For the *Naprawmyto* case the driver was a non-profit foundation which financed the development of the service (and which sells the service to local authorities) after becoming aware of the *FixMyStreet* and the *SeeClickFix* exemplars. Important in both cases was the fact that, once the project became accepted, popularity expanded quickly, showing the importance of local buy-in and enthusiasm which can become the main driving force.

Local community development

The barriers experienced by the *Viedome* case include the severe pressures on national home and health care budgets due to the economic and financial crisis which constrain the provision of appropriate services to older people and others in need of care. Even in the Netherlands, the current national budgetary and reimbursement payment rules still generally favour care at a distance rather than support for the local hands-on care approach of the *VieDome* concept. Because of the new thinking required to move away from care at a distance using ICT mindset

towards a ‘warm-hands’ and care in the community using ICT mindset, it is often difficult for care organisations in general to adjust to this new partnership model which VieDome has pioneered and which is likely to be a very important area of future growth. The model only works well when otherwise competitor organisations work together. This implies a change in mindset and new types of business model, also related to the Dutch personal budget and client-based budgetary system. Barriers to scaling outside the Netherlands are also significant because of the huge regional and national policy and regulatory differences, as well as the different market conditions and expectations. The main barrier in the *TEM* case is quite different, given its small and informal bottom-up nature, and relates mainly to technical problems due to lack of ICT literacy. Indeed, when new members join the local currency scheme, a supplementary system of paper receipts is kept alongside the electronic transactions in case of mistakes, at least until the user is fully competent and confident. The drivers for the *Viedome* case include joining the commercial TKH Holding Group which gives it financial stability and the potential to grow into and through a multinational company. When the Mextal company marketing *Viedome* sees a risk, every effort is made to try to eliminate it by adjusting the business in organisational, economic and social terms, so that innovation is not only in the product but also in the way it does its business and interacts with its clientele. The greatest driver is, of course, the constantly rising demand for elder- and other care which both keeps costs as low as possible as well as maximises quality and support to both individual and community wellbeing. In both cases an important driver is a visionary local champion with grassroots vision and determination, together with a strong sense of local community solidarity. Ironically, this was given a strong boost by the economic and financial crisis which left thousands jobless, and many more with significantly reduced income, thereby encouraging the growth of local solutions as alternatives to the mainstream economy.

Civic engagement and activism

The main barrier the *Hackney CAB Crowdmap* case faced was the difficulty of reaching the target audience online. Many of the people whose stories it sought to highlight did not have access to the internet at home. Where they did, directing them to the website was difficult. In addition, people could be somewhat apprehensive about sharing their details online, worried that they were identifiable. To overcome this, and to ensure the campaign reached as many people as possible, staff at the Citizens Advice Bureau were ‘trained’ in how to take reports and reduce apprehension amongst those providing their stories. Names were avoided and pins were mapped to the centre of the Ward residents lived in on the Crowdmap, rather than the property address or postcode. In addition, volunteers spent an afternoon on the streets of Hackney speaking to local people to gather reports and raise awareness of the changes. The barriers to the *IOBY* case are somewhat different and relate to the challenges of scaling up very small local projects to maximise their potential impact. On the one hand, such projects are very local by definition as they address often quite specific local problems, but on the other hand, many of the approaches and ideas are potentially valuable elsewhere so perhaps an ‘accelerator’ type approach would be useful. Also of course, the *IOBY* platform and approach itself can and often does function to spread ideas and encourage their take-up elsewhere. In terms of drivers, an important spur to the *Hackney CAB Crowdmap* case was the initial Big Lottery (government) Fund in providing support to develop the tool and engage with the public. Also access to free and very low cost ICT is critical, as is pro bono support from web developers who provided further support. But the dedication and commitment of one champion volunteer to develop the campaign and liaise with a range of local organisations to gather reports and raise awareness was paramount. The *IOBY* platform driver is also related to the dedication and commitment of local activists, as well as the very low top-down overheads needed to run the platform itself as well as implement neighbourhood projects.

4.2.6. *Lessons learned and success factors*

In the following the lessons learned and success factors reported by cases are summarised by focus area in relation to the use and role of ICT, strategic and operational considerations and policy implications. An overview is provided in Table 4.2.

Smart places

The role and use of ICT in social innovation

The *EastServe* case shows how ICT can have an important supporting role in helping an economically and socially deprived community through significant ICT investment in infrastructure and training which complements more traditional local urban regeneration initiatives. In comparison, the role of ICT in the *Naprawmyto* case is one of indispensable enabler as the service would not be possible without the technology. Although of course citizens have always reported problems to local authorities and had dialogue with them and with each other, the ICT now enables a huge quantitative change in the speed and type of this relationship, as well as a significant qualitative improvement in its richness. In turn, these changes reduce costs and improve service and participation quality. This enabling and indispensable role of ICT is comparable to the role of ICT in the *sharing economy* theme and in the *finding employment* cases in the *employment* theme.

Strategic and operational considerations

The *EastServe* case shows the importance of new delivery partnerships, looking not only at developing models of public-private partnerships (PPPs) but also at civil and citizen partnerships (PPCPs) and models of social economy enterprises. The case has central and local government funding, the outsourcing of ICT provision and support to the private sector, but is operated by a broad mixed-sector partnership. Similarly the *Naprawmyto* case has a wide array of PPCPs, including a private sector ICT provider, civil funding with other public resources, 14 PPC partners to provide content and updates across all relevant sectors, and is operated by a civil organisation. Both *smart places* cases tested the concept and the technology in an initial pilot before rolling out more widely (in the *Naprawmyto* case to 11 other localities), and in such cases there does appear to be a need to develop and test new organisational, as well as technological, models to ensure their sustainability. A general characteristic of these types of case is that they typically need a broad focus across different issues and sectors which requires integration in a joined-up manner in one geographic place, to be successful. They thus need a wide array of different types of actors to address these broad challenge, including financial ones. This in turn requires significant coordination efforts as such partnerships can be rather complex and sometimes unstable. Overall, such initiatives need to be multi-sectoral and comprehensive at the local level to ensure good impacts and avoid piecemeal and uncoordinated action which otherwise could easily be counterproductive if different projects work against each other.

Policy issues

The *EastServe* case shows there is a need for innovative approaches to tackling inequalities in the 'digital divide', for example by providing not only access to equipment, connectivity and training but also stimulating demand by developing good quality content and involving local citizens in generating that content. Digital and other services should be based on the social, cultural and economic needs of the neighbourhoods targeted, and this requires a combination of detailed local research and real efforts to consult with and engage local people, as an essential prerequisite for capturing user needs and involving users in the design and delivery of new services. Also important is that the actors in the project, especially the public sector, need to demonstrate a long term commitment to community engagement and capacity building and invest as much in the development of people's skills and confidence as in the technology being deployed. An ongoing

evaluation strategy is required that not only has the ability to identify weaknesses, and even failures, but also has the role of communicating these results directly into the strategic decision making process so that the project can adapt and evolve as quickly and effectively as possible, backed up by effective project management resources. In comparison, the policy issues reflected by the *Naprawmyto* case are narrower than the *EastServe* case, in the sense that it provides just one type of service (reporting and discussing local problems) although it is equally broad in the potential range of sectors and relevant issues. The focus is on efficiency and cost saving for the local authority, as well as on convenience, better services and increased participation for citizens. An important policy issue for local authorities is that this type of service becomes an essential tool in the process of decision making, providing data and knowledge about local problems and areas of concern. Collecting such data and knowledge over the medium-term on where, when and what type of problems occur also makes it possible to plan and use their maintenance, repair and other resources much more efficiently.

Local community development

The role and use of ICT in social innovation

In both cases, ICT both supports social innovation as well as enables new types. In terms of support in the *Viedome* case, ICT helps to personalise care for elderly people both in their homes and within the wider community. The approach is to use mainly standard off-the-shelf, modular, building block technology, in plug and play mode, with *Viedome* acting as an open platform enabling accurate personalisation and targeting of services to precisely meet the specific needs of individuals and communities. In the *TEM* case, ICT is used to improve governance and management, to facilitate social media discussion and to raise awareness. In both cases, ICT is deployed alongside physical and traditional activities, and particularly in the *TEM* case with many ICT illiterate members, parallel digital and paper systems are run to ensure records are not lost whilst upgrading ICT skills in the longer term. Both cases also demonstrate how ICT can enable new things to be done which could not otherwise be accomplished. For example, in both cases, value chains are shortened, unnecessary middlemen are excluded, and costs are reduced. In the *Viedome* case, this includes instant, ubiquitous and high quality communication and access to both daily living and medical services beyond the local community, thus, in effect, enabling vulnerable people to remain in their local community longer without having to be physically close to such services. *Viedome* thus also deploys bespoke technology if necessary to serve the very specific needs of an individual in their particular context. In the *TEM* case it would not be possible without ICT to accurately and quickly match and exchange goods, services and tasks, thus making the local currency viable and sustainable.

Strategic and operational considerations

The *Viedome* case shows that in this successful commercially-driven case, both competition and cooperation are required across all involved actors from all sectors as public-private-civil partnerships (PPCPs). It also helps to have a conducive national policy focused on homecare and personal budgets. Traditionally many community projects like this would be initiated top-down by service providers and/or the state, but by using *VieDome's* multi-dimensional approach, there is room for business models that can keep costs low, make profits for commercial players, and generate real social benefits in collaboration with users. This also involves innovation and taking calculated risks, but within a professional and strategic context. The *TEM* case is somewhat different given its small, informal and purposively democratic, transparent and bottom-up nature. Here, trust, ethics and anti-corruption are driving features both to make the system work in a fair and economically just manner, as well as use this to build local community and solidarity. These

characteristics are certainly not absent from the *Viedome* case, but are instead seen as an essential complement to making its new social and business model viable, also in monetary terms.

Policy issues

The *Viedome* case illustrates both the importance of national social welfare and eldercare policy as well as ICT-enabled social innovation undertaken by an entrepreneurial SME. In the former, moving demand towards home care and the use of a personal budgets has decentralised much decision-making about how care budgets are used to local authorities and the individual users. Building on this, the Mextal company's complementary bottom-up vision, approach and managed risk-taking is also important. This has been underpinned by the company developing a unique and successful 'social business' model, on top of its commercial business model, to demonstrate to the authorities the social and cost-saving benefits of keeping vulnerable people in their communities as long as possible. The transition from services at a distance to user-generated functionalities and content in intelligent homes actually means the transition from supply-oriented services to demand-driven services. But it also means the transition from a one-dimensional customer supplier relationship to a multidimensional user network. This kind of approach is also embedded within a community concept where multiple organisations are active in supplying both services and technology.

These concepts work only if the user fully integrates the community technology and services into his/her life pattern, and this will only happen if they have a positive effect on the user, and if they are individually focused and controllable by the user. Again, the *TEM* case is somewhat different given its bottom-up, small and informal nature, so that the absence of a countervailing and restrictive local and national policy and regulatory framework, which might otherwise illegalise *TEM's* local currency activities, is important. (European law has now legalised local currencies under certain conditions.) Indeed, the local mayor and local municipality have approved and joined the initiative and become important partners. However, both cases do also have important similarities in that both are attempting to create and/or implement alternative economic models in the specific local context. In the *Viedome* case this new model remains very much in the formal monetary economy and has successfully developed a combined social and business model demonstrating both economic and social benefits to policy makers and investors in monetary terms. In the *TEM* case, the new economic model is basically non-monetary and largely outside the formal traditional economy. It uses a local currency purely to give people a means of exchanging goods, services and tasks which they would otherwise not have, as well as to keep such assets within the community to prevent leakage and further degradation of local prosperity and wellbeing.

Civic engagement and activism

The role and use of ICT in social innovation

ICT is both a supporter and enabler of social innovation. In the *Hackney CAB Crowdmapping* case, it facilitates gathering information and data, assists in analysing the data, and increases the efficiency of managing and organising campaigns and advocacy. It also supports many of the traditional and physical activities associated with such campaigning. By sharing data, stories and research findings online and via social media, ICT makes it easier for research findings to be found and accessed by interested parties. This has led to articles in the mainstream press and trade press, along with political discussions. In the *IOBY* case, ICT dramatically improves the identification and application of resources (funding and volunteers) to local and small projects, a process which is much more costly and slow without the technology. In addition, ICT enables new things to be done not otherwise possible, such as instant large scale mapping in the *Hackney CAB Crowdmapping* case from many sources and locations via the crowdsourcing and crowdmapping applications on residents'

and activists' smart phones. It also allows linking to other databases and other groups, as well as data and information sharing across all partners and volunteers in real-time. ICT enables the experiences of those who are rarely heard or listened to be widely shared beyond the immediate locality, reaching unexpected parties. By sharing experiences and data on the issue, it also has the potential to help others generate social innovation related to housing. The *IOBY* case without ICT would not be able to match assets and finance to needs so accurately as well as quickly, nor track project progress and raise awareness amongst other potential donors and volunteers. Nor would the initiative have spread so quickly from a small start in New York in 2008 to 80 other cities today.

Strategic and operational considerations

Both cases show that by using free and low cost online tools, together with dedicated and visionary champions and activists, there are opportunities to engage with a wide range of people. Local campaigning, action and advocacy rely on such local activist champions supported by professionals and sometimes assisted by small external funds and the local authority. These include decision makers, supporters and those affected as potential beneficiaries in the *Hackney CAB Crowdfunder* case, and local donors and volunteers as well as large and small general funders in the *IOBY* case. Both civic engagement cases are operated by local or grassroots civil organisations and some volunteers. Cooperation, or at least permissiveness, from authorities is also important within the context of an enabling legal and governance environment.

Policy issues

Both cases show how the gaps in understanding and evidence of policy implementation (such as the housing benefit changes on individuals in the *Hackney CAB Crowdfunder* case) or of local and neighbourhood needs and problems (in the *IOBY* case), often lack local and fine-grained evidence of needs, performance and impacts. The two cases show how relevant data, information, finance and volunteers are needed and can be identified and deployed. Such bottom-up, real world inputs, gathered from crowds and mediated by activists and experts can help fill these gaps using technology to gather and share information and assets in order to raise awareness, illustrate issues, take action and spread evidence to a wide range of people. An important caveat, especially in politically sensitive issues like housing benefits and local urban renewal, is that such approaches seem to be both reliable and valuable as long as their objectives, participants, processes and outcomes are transparent and open to interrogation, and this is also a task ICT is eminently suited to fulfil if used appropriately.

4.2.7. Conclusions and reflections

Drawing directly on the above analysis, conclusions regarding the three generic research issues, introduced in the methodological approach in section 2, are summarised below as they relate to the *place making* theme. An overview of all the main results of the analysis of the *place making* cases is provided in Table 4.2.

1. The role and use of ICT in social innovation

ICT plays an important supporting role in social innovation across all *place making* cases and focus areas, helping to promote prosperity and welfare and increase engagement in both economically and socially deprived communities (as in the *EastServe* case) as well as in more developed localities. ICT supports connectivity, training, the matching of assets and needs and in some cases also matching local financial assets to needs (as in the *IOBY* case), as well as data collection and analysis (for example in *Hackney CAB Crowdfunder*). ICT is also a critical enabler leading to new types of social innovation, for example enabling both quantitative and qualitative changes in the speed, sophistication and richness of processes and relationships, as well as producing new and better outcomes, as in the *Naprawmyto*, *Viedome* and *IOBY* cases.

ICT is also used to improve governance and management, to facilitate social media discussion and to raise awareness, and in most cases ICT is deployed alongside physical and traditional activities. In both the *civic engagement and activism* cases, ICT is an essential tool for finding and matching resources, assets and people whilst also cutting out intermediaries not adding value, and in the *IOBY* case for orchestrating project activity. This enabling and indispensable role of ICT is comparable to the role of ICT in the *sharing economy* theme and in the *finding employment* cases in the *employment* theme. The ICT used is mainly standard off the shelf technology, often used in modular building block ways, but more bespoke ICT is occasionally deployed where relevant as in the *Viedome* case. ICT is used to significantly reduce costs, increase flexibility, personalise and target services, shorten value chains and improve capabilities through building knowledge communities and for sharing experiences. All types of online platforms are used, although only in the *IOBY* case is matching finance to needs deployed. In terms of networks, most cases being locally focused tend to start with small-world but then scale using scale-free networks, whilst some also copy from, or are copied by, other initiatives elsewhere across more random networks.

2. *Strategic and operational considerations related to ICT in social innovation*

A general characteristic of the *place making* cases is that they typically need a broad focus across different issues and sectors to be integrated in a joined-up manner, in one geographic place, to be successful. They thus need a wide array of different types of actors across sectors (PPCPs) to address these broad challenges, including financial ones. This in turn requires significant coordination efforts as such partnerships can be rather complex and sometimes unstable. Overall, *place making* initiatives need to be multi-sectoral and comprehensive at the local level to ensure good impacts and avoid piecemeal and uncoordinated action which otherwise could easily be counterproductive if different projects work against each other. Given this complexity, pilot testing before roll-out often takes place and new types of business model, typically with a strong social business case, are developed sometimes also based on coopetition. Relationship building based on trust, ethics, transparency and clear, often shared, responsibilities are also hallmarks of these cases. This is particularly so in the many primarily bottom-up cases, such as the *civic engagement* cases as well as *TEM*, where local campaigning, action and advocacy rely on local activist champions with wide support in the community, although also supported by professionals and sometimes assisted by the local authority and some external funding. These cases are also often operated by civil society actors. *Place making* cases in general, given their typically complex nature, often develop, experiment with and test new organisational, as well as technological, models to ensure their efficacy and sustainability.

3. *Policy issues related to ICT in social innovation*

Many of the *place making* cases indirectly exploit national and local policy frameworks, and/or are the direct result of such policies. Most are mainly, and some purely, bottom-up initiated, driven and operated, so do require such conducive policy frameworks and platforms, but without top-down control. The best results seem to be achieved where control is local and self-generating. However, authorities and sometimes companies need to play important roles apart from an enabling one, in relation to, for example, often small amounts of funding, assistance with coordination, evaluation and providing professional and expert support where needed. The two *civic engagement and activism* cases indeed show that sometimes such cases can act at odds with national or other policies, but if they are fully transparent and open to scrutiny this can act as an important democratic corrective, at least at local level, and provide valuable fine-grained data and information which can be used to improve policy overall. In some of the cases (such as *EastServe* and *TEM*), policies may be needed to help stimulate demand and

activity, as well as provide infrastructures, given perhaps lack of ICT skills but also lack of awareness and coordination. A typical scenario is for local visionaries including entrepreneurs to exploit national and regional policies to create alternative economic models, both monetary and non-monetary, to support local prosperity and wellbeing. An important component of this is keeping as many assets as possible in the local community, rather than seeing too many leak away elsewhere. The main policy lesson is, however, that digital and other types of social innovation rest invariably on the locally embedded social, cultural and economic needs of places and the people in those places, and that local research, engagement and evaluation, as well as very good governance and management, are required to ensure efficiency, good outcomes and beneficial place development.

Overall, all six social innovation outcomes examined in the *place making* theme, as well as several others, have been shown to be either supported and/or enabled by social innovations using ICT, as detailed in section 4.2.3. They directly drive the prosperity, wellbeing and engagement of people in their localities, neighbourhoods and communities, by curating a sense of place through mixing the virtual with the physical and the intangible with the tangible. All cases also stress that local people are themselves important agents and decision-makers of their own and their localities' change, and that they experience improved self-esteem and overall increases in welfare alongside prosperity, in addition to reduced costs to society in the longer term. Most cases already have substantial scale and are still growing. The six cases are thus all examples of social innovation cases enabled or supported by ICT, and thus in line with the definition given in section 1.

The sample of six cases comprises two *smart place* cases, two *local community development* cases, and two *civic engagement and activism* cases. Although there is clear specialisation of functions across the six cases, most of the cases span two or more focus areas which is to be expected given that *place making* is a cross-cutting theme. The differences between focus areas in terms of issues targeted, resources used and operational considerations are much less distinct than in the *employment* theme. It is clear that this is a consequence of the *place making* theme being cross sectoral linking potentially any and all issues in a specific geographical place, or type of place, which in turn typically requires a greater array of different types of actors to collaborate in order to ensure a joined-up and coordinated approach for maximum impact. Most of the *place making* cases also rely on a wide range of funding types, partner constellations and both formal and informal champions, activists and volunteers, many of whom live in the places being developed. So, although many cases do rely on external funding, support and other resources and ideas, they are very much locally and bottom-up driven.

Table 4.2: Place making case analysis overview

Focus area and SI outcomes	ICT use	Online platforms	Communities	Networks	Social innovation processes	Barriers	Drivers	Role of ICT in social innovation	Operational and strategic	Policy issues
Smart places, improving use of place-related facilities, amenities & resources	Standard ICT, both with and without traditional activities	All types, except matching finance to needs, depending on case	- Complementary on- and offline knowledge communities - Social capital (mainly bonding, some bridging)	- Starting as small world, scaling to scale-free, with some random	- Collaboration, partnerships, cooptation & relationships - Building capacity, skills & responsibility - Building sense of place	- Lack of finance - Convincing & coordinating partners (mindset changes) - Technical ICT issues	- Conducive national and local policies - Vision & ability of local activists/champions to get partners on board	- Supporting via infrastructure, modular components & job training - Enabling new activities through efficiency, cheapness & flexibility	- New partnerships (PPCPs) & coordination - Wide funding sources & pilot testing before roll-out - New business models	Need to stimulate demand as well as provide infrastructures & skills training, & base digital & other services on the social, cultural & economic needs of localities, through local research, engagement & evaluation, as well as very good governance with long-term commitment & management to get efficiency, good services & development
Local community development, improving place-related prosperity & wellbeing	Standard ICT (sometimes bespoke), both with and without traditional activities	All types, except matching finance to needs, depending on case	- Complementary on- and offline knowledge communities - Social capital (mainly bonding, some bridging)	- Starting as small world, scaling to scale-free, with some random	- Collaboration, partnerships, cooptation, relationships & volunteering - Building capacity, skills & responsibility - Building sense of place & local democracy	- Lack of finance - Convincing & coordinating partners (mindset changes) - Some technical ICT & skills issues	- Good commercial & financial links - Rising demands to meet local social needs - Vision of local champions & local solidarity - Crisis as a change catalyst	- Supporting: improved matching and flexibility - Enabling: new social, business & marketing models shortening value chains & cutting intermediaries not adding value	- New partnerships (PPCPs) & coordination - New strategic social business models based on cooptation - Trust, ethics, transparency & responsibility	Exploiting national & regional policies by local visionaries including entrepreneurs, creating alternative economic models, both monetary and non-monetary which especially focus on keeping as many assets as possible in the local community to support both prosperity and wellbeing
Civic engagement and activism, improving place-related participation for real local results	Standard ICT alongside traditional activities	All types depending on case, including matching local finance to local needs	- Complementary on- and offline knowledge communities - Social capital (mainly bonding, some bridging)	Mainly small world, with some scaling to scale-free and random	- Reliance on local volunteer activists - Building local capacity & skills, trust, advocacy, increased voice, reciprocity, collaboration, relationships, knowledge and idea sharing - Building sense of place & local democracy	- Some lack of ICT skills & awareness - Challenges scaling up very small local projects to maximise impact	- Small initial funding - Very low top-down overheads - free, cheap ICT - local champions & activists & good partner mix	- Supporting: collecting data, matching local assets & finance to local needs - Enabling: instant accurate matching & data mapping/analysis, & widespread sharing	Mainly civil financed & operated. Local campaigning, action & advocacy rely on local activist champions supported by professionals & sometimes assisted by small external funds	Bottom-up data & information collection, analysis, campaigning, advocacy and action can fill the gap in evidence on policy implementation and in local problems, provided all aspects are transparent & open to interrogation.

5. The sharing economy

5.1. Context

This section very briefly summarises the main findings arising from the desk research carried out across Europe in relation to strategic issues, trends and challenges which provides the general *sharing economy* context, as well as some of the observed and expected roles and impacts of ICT within this context. However, this is only done in this report in order to develop a framework for analysis and to identify three focus areas and relevant cases within the *sharing economy* theme. Deliverables D8.4 and D8.5 will examine both the empirical evidence presented here in the light of the full desk research to draw conclusions and recommendations regarding outstanding research gaps and policy issues.

5.1.1. *Strategic issues, trends and challenges*

The current market system is extremely good at ‘sweating’ assets on the supply side, so that commercial producers are incentivised to squeeze to maximum extent their financial, human and other assets, and thereby increase productivity and performance. However, on the consumption and demand side, there is huge waste resulting from the widespread practice of exclusive asset ownership. In the last decade this is starting to be challenged by a new sharing economy growing from a small base, in which mainly individuals share with others an increasing range of their assets. These include time, skills, competences, tools, buildings, spaces, vehicles, facilities of all types, organisational capacities and even financial resources, much of which is enabled by ICT developments, especially the internet and mobile devices. ICT can very efficiently match idle assets with new forms of demand, not otherwise possible, thereby enabling these outputs to be realised. The sharing economy is starting to supplement exclusive ownership with new forms of common, collective and collaborative ownership. The sharing movement started as mainly non-profit activities but is now spreading to the entrepreneurial and profit sector with examples like ZipCar⁴⁸ and Airbnb⁴⁹ for renting out shared cars and accommodation space respectively, and which have since had impact as global market leaders.⁵⁰

The sharing economy also termed ‘collaborative consumption’) is growing fast, worth €85 billion in the US⁵¹ and already €22 billion in the UK in 2012.⁵² This seems to be the results of three main factors massively boosting the sharing economy over the last six years:

- The economic crisis in 2007-8 made people look at the assets they owned and how to make these ‘work harder’ for them
- ICT connectivity makes the sharing economy possible on a scale never seen before

⁴⁸ www.zipcar.com

⁴⁹ www.airbnb.com

⁵⁰ Given the above very general definition of the sharing economy, it can be seen it potentially covers a huge range of issues across most, if not all, sectors and aspects of daily living. The aim of this section is not to attempt a definitive definition, nor to try to draw boundaries as many others are doing this with much overlap but also significant disagreement (for example compare Botsman & Rogers, 2010, with Gansky, 2010). This section, as part of the Tepsie work described in sections 1 and 2, simply attempts to explore some aspects of the sharing economy using a number of cases, most of which are not in the mainstream, to better understand the current changes taking place. This will be taken further in Deliverables D8.4 and D8.5

⁵¹ www.fastcompany.com/1747551/sharing-economy

⁵² <http://economia.icaew.com/opinion/november-2012/global-sharing-day>

- More nebulous: people's desire for more 'authentic' experiences, e.g. more local, personal and not commoditised.

According to Rachel Botsman (Botsman and Rogers 2010), the challenge of the current sharing economy is how to scale without over commercialisation and loss of its "social, human-centred and experiential characteristics". The currency of the sharing economy is 'peer trust' based on 'reputational capital', so measuring, transporting and using this is a critical issue. Trust in big business and in government has suffered huge setbacks since the crisis, and peer trust could start to replace this as the sharing economy takes off. Botsman (2010) further observes that classical economics to date has seen the sharing economy as simply 'stealing' market from the established, normally big corporate, players. For example, hotels complain bitterly about Airbnb reducing their market share without paying normal business taxes. There are also issues around health, safety and property regulations. For example in Berlin, there is much discussion about the impact of people renting out their spare bedrooms using Airbnb for recreational use by tourists. Not only hotels are complaining but also citizens who cannot rent flats at affordable rates because so many are being bought up as 'semi-professional' Airbnb accommodation.

The sharing economy, as most radical innovations, is potentially very destructive of existing business models and incumbent actors. The issue is how to create (new) value and how to measure it, especially around existing assets. Does the sharing economy not only hijack and destroy parts of the existing market, but also create new forms of demand and thus new market value around these existing assets? Airbnb claims that over 70% of their lets are not in the centre of cities where most hotels are located, but instead in the suburbs and smaller towns, where Airbnb'ers also spend money in local shops, etc., thus boosting local economies and in effect decanting some economic activity from downtown to the suburbs. Whatever the balance of cannibalising existing demand and creating new demand, there is no doubt that radically new business models based on new forms of value creation, and new ways for people to interact around economic and social goods/services are being created. Any new business model comes under attack from incumbents and also hits legal, regulatory and insurance barriers designed for the ownership rather than the access economy.

The sharing economy is currently at the stage where this is a critical issue. For example, traditional big corporates are starting to move in (like BMW with its car share programme) attempting to capitalise on these new markets and commoditise the goods and services being created there, whilst, at the same time, unwittingly or not, are in danger of destroying the social, community and authenticity ethos still inherent in the sharing economy. This current stage of development of the sharing economy will also determine whether and, if so, how the sharing economy will scale and what form will it take. Will we recognise the current characteristics of the sharing economy in ten years?

At its core, the sharing economy is social innovation aimed at transforming how some of the fundamentals of our political economy are practiced. At present, property ownership rights, while including the right to use and consume, are configured around the right to exclude. The sharing economy is characterised by the organised practice of exercising this right as a right to share. It is one movement and its impact evolves through common practices across the movement and its many diverse actors, just as the activities, the organisations that perform them and the models, systems and technologies they deploy form one rich, diverse, yet integrated ecosystem. What has become labeled as the sharing economy, started as many simultaneous initiatives in many places and in many asset domains. The common realisation driving these initiatives was one of under-utilised assets. While the traditional problem of the commons was depletion of assets because of

the ‘free-rider’ effect, the problem of private property ownership as the right to exclude is the systematic under-utilisation of assets. In the early days of the shared economy movement, and this still remains true today, phrases such as “under-utilised assets equals waste” and “waste can be turned into value” is helping to build its active following and to scale the sharing economy.

Another of the quite unique features of the development of the sharing economy movement is that it very early on was driven by different categories of actors. For example, individuals willing to share their assets. Groups of individuals who organise mutual sharing, and local communities that do the same. Businesses built to enable the sharing of assets among their users in different configurations, and businesses that make assets available for sharing. Businesses that build tools to enable others to enable sharing. Governments and public sector institutions that invite the sharing of public sector assets, and governments that enhance public sector services by sharing tasks and responsibilities with users and volunteers. What has become the sharing economy movement includes all these types of actors, and they all seem to enhance the scale and scope of activities and sharing for each other.

Trust and community are at the heart of the sharing economy. It promotes personal and long-term relations in new ways creating loyalty and community around the shared economy service, and thereby making the automated systems resilient to commoditisation. The shift from selling a product once and for all in a market transaction, to selling access when needed, already leads to a relationship. “We will be dealing with each other again and again,” is the underlying assumption. On top of this comes the need for trust. No one wants a reckless driver in their car. No one wants to rent a car that is poorly maintained, dirty, or maybe even dangerous. No one wants noisy, littering, thieving, or destructive renters in their home. No one wants to entrust an unreliable TaskRabbit⁵³ to deliver their documents, take their children to music lessons, or pick-up some valuable merchandise.

For such reasons, most sharing economy companies are based on some form of membership model, where there is partly some initial screening, and partly a very consistent weeding out of members that fail to live up to the standards. Trust, reviewing and vouching, which build a member’s reputation and thus their ‘reputational capital’, become important values. But it reaches further than this. When local communities share assets, they become closer knit as communities. When Airbnb renters make more use of local community shops, facilities, and events than city centre hotel guests, they become community catalysts, just as their welcome into the community becomes an added value to their travel experience. The providers of an automated service also become orchestrators of membership relations, trust, and the building of communities. This is one of the reasons why the sharing economy movement seemingly without effort can span across businesses and communities and unite community action and business. One challenge highlighted by Gansky (2010) is that data, information and possibilities are widespread, whilst trust is relatively scarce so needs to be built and risks need to be taken. This highlights one of the differences between Europe and the US where there is arguably a greater risk-accepting culture. For example, Gansky (2010) talks of “screw-it, let’s do it” experimentation in the US, compared to a much more risk-averse culture in Europe.

Whether or not the sharing economy becomes a business, remains purely voluntary or some mix in between, this means that the sharing economy movement comprehensively fulfils at least the mainstream definitions of social innovation. It spans different innovation themes, such as the economy, environment, employment, education, health and community. It spans from individual

⁵³ www.taskrabbit.com

action, community initiatives, public sector services to full or partial business models for thousands of companies with more than €85 billion in combined business volume in the USA alone.⁵⁴ It spans from local to global, and is re-enforced and gains scale, reach and impact momentum from the way its many categories of actor interactions build on platforms and create vibrant eco-systems of communities, businesses, technologies and systems.

There seem to be two main impacts of the sharing economy, First, on human empowerment by giving people access to goods and services in ways and on a scale not possible before, and second on economic and social value creation by exploiting the 'idling capacity' of unused assets which can now be unlocked through shared access. There are also very important impacts on sustainability, given that when scarce assets become shared assets they become less scarce, so more value can be obtained from fewer assets.

5.1.2. *Roles and impacts of ICT*

The sharing economy has always been around, such as bed-and-breakfast holidays and holiday house swaps between teachers in the UK and Australia in the 1950s, but at least in the era of the modern economy it has always been niche and marginal. ICT connectivity, via the Internet and especially mobile, is now making all the difference, driving the massive growth and impact of the sharing economy now possible on a scale never seen before. ICT also enables scaling, diversification and moving into many areas not previously shared on a significant scale. Since the 2007-2008 crash, digital behaviour has moved on from purely sharing music, photos, videos and other content, to start experimenting with sharing money, time, services, physical things and expertise.

ICT can match 'needs' and 'haves' extremely efficiently and in real or very quick time. It enables, for the first time, on-demand needs fulfilment, and this is also impacting many commercial, public and voluntary services (Botsman and Rogers 2010). For example, Macmillan Cancer Trust has for many years run a volunteer service offering their time and skills, but were recently inspired by *TaskRabbit* to set up the *TeamUp* online volunteering and service platform for running errands and doing tasks for cancer victims. This enables the volunteers to scale up or scale down on a daily basis, depending on their changing daily or weekly schedules in the other parts of their lives, rather than committing a whole month or more in advance which was the norm before the ICT platform was built. The volunteers can, using ICT, better tune their time and capacities to needs as they occur in real time.

5.1.3. *Framework for analysis*

Based on the desk research reported in the foregoing, three focus areas can be derived which seem to represent some of the important ways in which ICT is enabling or supporting social innovation in the *sharing economy* theme.

1. **Exchanging time and talent**

One of the conundrums of advanced labour markets is that there are fairly fixed valuations of different kinds of time and talent based on job-position, education, skill-sets, labour-market regulation and legislation, collective bargaining agreements, tradition, and diverse demand and supply factors. These semi-fixed valuations, coupled with the huge logistical difficulty of quickly connecting with people who could adequately fulfil a specific need regardless of these traditional frameworks, lead to multiple instances where needs are not served and talent and time are not used. A single parent with a busy schedule doesn't have the time or skill to put up some shelves but

⁵⁴ www.fastcompany.com/1747551/sharing-economy

can easily find a handyman on *TaskRabbit* who has the half an hour needed to do the task, and they agree a price, a proportion of which goes to the platform. Such relatively simple tasks, but also more demanding ones, can be fulfilled quickly and easily by people who have the time, skill and/or are in the right place at the right time, and they can agree their own price and/or their own terms and conditions.

Opening up the labour market in this way, as long as there are still appropriate regulations to counter exploitation and unfair remuneration where money does change hands – many exchanges are non-monetary – could enable young inexperienced people and older unskilled workers find work and many others to find social and community fulfilment more easily and quickly than at any time before. According to Gansky (2010) people with specific skills are unemployed because no company has built a business that aggregates the demand for those skills into jobs, and because there is no marketplace for 3-hour freelance deliveries of the skill. The sharing economy is rich on initiatives that address this conundrum, ranging from neighborhood task and service bartering; local time exchanges, where time mostly is exchanged one-to-one regardless of the labour market price tag on the skills exchanged; and exchange platforms where tasks, skills and time can be matched or where highly specialised skills can be hired or exchanged in ways that do not happen in the mainstream labour market. Underutilised time and skills get utilised and underserved needs are served.

In this context there are two social innovation outcomes examined for this focus area:

- Improved matching and exchanging of time and talent increasing economic benefits
- Improved matching and exchanging of time and talent increasing social and community benefits.

2. Sharing existing dormant assets

The basic proposition of the sharing economy is that every under-utilised asset can be turned into use and value for someone, in some (business) cases monetisable value, but always as individual or social value for someone. To release this value requires new systems, exchanges and redistribution channels, as well as the governance to make it happen. In some cases, this means women sharing expensive clothes via the RentezVous online “peer-to-peer and designers’ fashion rental marketplace”⁵⁵, after first experiencing them at first hand at special events, under the slogan “Live fashion, don’t own it”. In other cases it means that the car is used by someone else when the owner has no need for it, or that one power drill owned by one household in an apartment block can be used by everyone in the building. It can also mean that public school facilities are made available to citizen activities outside school hours, or that the municipal conference center can be used by local charities and other organisations at marginal cost whenever there are no commercial full price users. Both economic and social gains are manifold: the cost of owning the asset is lower, someone can use the asset for free or low cost or both, whilst everyone has access to the same assets for less, and there are many more differentiated assets for use by all. All this means the the overall resource expense of the community is reduced – more value for less asset.

In this context there are two social innovation outcomes examined for this focus area:

- Increased existing asset use giving more economic value to more people
- Increased existing asset use giving more social and community value to more people.

⁵⁵ www.rentez-vous.com

3. Creating new shared assets

For individuals as well as for communities, there are numerous assets that in terms of costs of creation, of acquisition or ownership (including the skills required to use and maintain the asset) just cannot be achieved individually or through single ownership. The holiday beach house in Cabos that a family cannot afford on their own can be quite affordable if neighbours club together. The creation of a fully equipped workshop with skilled staff to instruct and assist in the use of the equipment that is needed, but is not affordable individually, by members of the *Maker's Movement*, can be set-up collectively at very affordable membership fees by the *Techshop* or the *FabLab*. The rapid expansion of the *Techshop*⁵⁶ and *FabLab*⁵⁷ concept from city to city shows just how big the need is. The same is true in the business-to-business dimension of sharing. It is an important part of the sharing economy ecosystem that it has achieved the kind of dynamics where assets, tools, systems needed, but unachievable by individual actors, can be created as business opportunities for new companies, often with early users as co-investors.

In this context there are two social innovation outcomes examined for this focus area:

- Increased creation of new shared assets giving more economic value to more people
- Increased creation of new shared assets giving more social and community value to more people

In addition, there is also one theme-wide social innovation outcome:

- Scaled sharing economy impact (more sectors, workers, localities, people, etc.)

⁵⁶ www.techshop.ws

⁵⁷ http://en.wikipedia.org/wiki/Fab_lab

5.2. Case analysis

5.2.1. Social needs addressed and summary

Five cases are analysed in the sharing economy theme as summarised in Table 5.1.

Table 5.1: Sharing economy cases: summary

Focus area	Case	Social needs addressed	Summary
Exchanging time and talent	Athens Time Bank (EL) ⁵⁸	Meeting all types of basic daily needs for people in poverty and unemployment but still requiring tasks to be done	- ICT web/mobile free platform for matching supply & demand, managing system, social fora, traditional media, awareness raising; time banking instead of money for tasks performed to be used for tasks needed, regulated informally in community - Civil funding (free software), civil partners and civil operation - Athens, copied from elsewhere & copied by others & spreading across Greece; 1,800 members, 1,200 on Facebook, 500 exchanges at any one time
	Cookisto (EL and UK) ⁵⁹	Homemade food swapping and exchanging, developing cooking skills & creating a community around healthy food, reduced waste and mutual support	- Online internet and mobile platform for all contact for swapping and exchanging homemade food, social media, traditional media - Civil start-up in Greece, small private sponsorship to start in UK, sometimes €4 per meal payments between Cooks and Foodies, all civil partners & civil operation - Started in Greece, moved to UK in 2013, & spreading across both these and other countries
Sharing existing dormant assets	Streetbank (UK) ⁶⁰	Use of under-used, and thus wasted, assets by low-income households, builds community & activism, improves environment	- Online internet and mobile platform for all contact for sharing assets, linked to traditional media - Civil start-up in UK, small civil sponsorship to assist, mainly non-monetary but some monetary if no commercial aim, all civil partners & civil operation - Started in UK in 2010, 35,000 members, 45,000 things & skills, 6,000 events, €0.65m saved, growing in situ, spreading to other countries
Creating new shared assets	Repair Café Movement (NL) ⁶¹	Learning repair skills with volunteers in local centres promoting self- & collective repair, save money, increase re-use, creativity, & strengthen social cohesion	- Online internet platform and social media for promotion, news, contacts, discussions, advice, manuals and starter kit - Meeting places for minor repairs with some equipment & spare parts, reducing throw-away & delaying re-cycling - Initial state grant & other foundation funding, now €45 fee for new start-up cafés (to cover costs), civil partners, civil operation - Started Amsterdam 2007, 2014 over 600 worldwide quadrupling since 2013, mainly Europe but also Americas & Australia
	Open-Corporates (UK) ⁶²	Making the corporate world transparent via open data to citizens, civil groups, journalists to create new content & knowledge & hold corporates to account	- Global database of companies, web scraping, reconciliation function, analysis and visualisation tools, also spinning off physical events like hackathons where data are created and shared sometimes leading to new product and services - Started in 2010 by non-profit company (social enterprise), incubated in Open Data Institute, some foundation funding, other civil partners and civil operated - from 3 to 75 jurisdictions by 2014, 60 million companies in database, small fees given to people providing data

⁵⁸ www.time-exchange.gr

⁵⁹ www.cookisto.gr; www.cookisto.co.uk

⁶⁰ www.streetbank.com

⁶¹ <http://repaircafe.org/about-repair-cafe>

⁶² www.opencorporates.com

Social needs addressed

All five cases examined use ICT as an important tool to both support existing and enable new social innovations in the context of the sharing or collaborative economy, where existing assets are shared (people's time, talent and possessions) or new assets are created collectively to be shared. In each of the cases, social needs are being met and economic, social and environment outcomes are being achieved..

Focus areas

The sample of five cases comprises two *exchanging time and talent* cases, one *sharing existing dormant assets* case, and two *creating new shared assets* cases. Most cases deliver social innovation outcomes only in their respective focus areas rather than span across two or more. However, all cases produce very similar social and economic benefits, but do so by differences in the ways they treat, use or create assets as defined by the focus area.

Funding and actors

All the *sharing economy* cases examined here are started and operated by civil organisations and/or volunteers, and most are also funded in the same way.

Scale and scope

All cases already have substantial scale and are still growing but at different paces. Apart from *OpenCorporates* which is designed in principle to have global reach, all started as small locally-focused services and have since both grown and situ as well as spread to other locations as well as internationally. The *Repair Cafés* and *Streetbank* cases seems to be scaling fastest.

5.2.2. Types and uses of ICT

The types of ICT and its use varies across the three *sharing economy* focus areas, as described below.

Exchanging time and talent

- **ICT used:** The *Athens Time Bank* case has adopted standard ICT solutions for web and mobile as free of charge open source e-platforms, based on the *Cyclos* online banking platform developed by a Dutch NGO based in South America. *Cyclos* is a pioneer in the field of complementary currency systems implementation like the C3 credit system. The main component of the platform is a tab that shows the services that are provided and the services that are requested, through which members come in contact with one another and exchange services. Social media and social communication tools (like Skype) are also used. The ICT operates together with traditional and physical activities, such as workgroups and brainstorming sessions which take place twice a month when members can get updates on all the services being provided. The digital platform functions as a hub by connecting all actors and enabling coordination and management of the service, and also runs the membership subscriptions. The *Cookisto* case similarly uses standard online internet and mobile platforms for all contact, in this case for swapping, exchanging, and sometimes buying and selling for a low price, homemade food. It also uses social media like Facebook, Twitter and Instagram to take pictures of the dishes. The Foodies (those who buy the dishes) can comment and score the meals provided by the Cooks through the social media which is also used to communicate and create a community and to publicise the service. Non-ICT tools like television, radio and the press also run stories and provide publicity.

- **Online platforms, communities and networks:** In both cases, the main online platform is matching assets to needs, but other types, with the exception of matching finance to needs, are also used depending on the case. In the *Athens Time Bank* case, the medium of exchange ('monetary unit') is time, normally measured by the hour, which enables nearly every type of service to be exchanged. These services include arts and crafts, minor construction and mechanical services, business administration, computers, education, entertainment, event organisation, food, gardening, health and healing, household services, legal, transportation, social care, writing, and looking after children and pets. By using time as an alternate currency by people who have very little of the mainstream currency, idle or wasted capacity and assets can be used to meet someone else's unmet social needs, as well as increase efficiency. In the *Cookisto* case, homefood swapping and exchanging (and sometimes purchasing at €4 per meal, providing a small income to the Cooks), with transactions done online if possible or face-to-face if necessary. Food delivery is, of course, face-to-face, which starts to build personal social relationships and mutual trust. Cooks are encouraged to use left-over and existing food and ingredients, thereby reducing food waste and a better use of food resources.

Also in both cases, complementary online and offline knowledge communities are created, with the former facilitating and significantly enhancing the latter, and where important social innovation benefits arise especially in the form of social capital with mainly bonded but also some bridging local ties. In terms of networks, both the *exchanging time and talent* cases started out as small-world networks with a limited number of local participants each with few contacts. However, as the story spread, the network rapidly became scale-free growing very quickly in the locality as well as across the country. Both cases also exhibit many tendencies of random networks, as both are taking up and copying the concept (in the *Athens Time Bank* case, originally from *TimeBanks* USA) but also itself being copied by many other locations including every neighbourhood in Athens and other cities in Greece, including Thessaloniki. The *Cookisto* case was started in Greece and then spread to the UK and is now spreading to many other locations in both countries as well as elsewhere. In Greece in 2013, *Cookisto* is in all major urban centres such as Thessaloniki, Patra, Heraklion, Crete, etc., with over 1,200 Cooks and 35,000 Foodies.

Activating dormant assets

- **ICT used:** The *Streetbank* case uses online internet and mobile platforms for all contact for sharing assets. Streetbank.com is used mainly to share spare household assets, offer services or spare time, or review what's on offer in the neighborhood. The system is precise, immediate, direct and error free, and it is simple for members to access, set-up and personalise their account, discover the neighbourhood and neighbours and start using, sharing, helping and participating. *Streetbank* recently launched *Streetbank 2.0* as a much improved, faster version of the website, and will also soon join forces with 55,000 members of another neighbourhood sharing scheme. The website provides a variety of offline tools for encouraging participation, such as fliers, custom posters, customised neighbour invitations or even making it a parallel activity for faith groups. However, the main promotional channel is, by far, word-of-mouth, which has produced its own viral phenomenon. The platform managers themselves also disseminate stickers and posters to put up in public places to spread awareness as widely as possible. And all this flows back into the online platform and back out again, in an ebb and flow of activity and participation. This all helps people get to know each other face-to-face and form links and relationships.

- Online platforms, communities and networks:** The main online platform is matching assets to needs, but other types, with the exception of matching finance to needs, are also used. Hosting the whole process on an online platform, rather than through person-to-person exchange, a magazine, or other medium, affords people the freedom to sign-up easily and quickly without commitment, leaving them free to regulate the degree to which they feel comfortable making face-to-face contact. Thus, complementary online and offline knowledge communities are created, with the former facilitating and significantly enhancing the latter, and where important social innovation benefits arise especially in the form of social capital with mainly bonded but also bridging local ties. The community fosters and encourages ‘borrowing-in-lieu-of-buying’, and instills in people the notion to consider sharing rather than their normal default buying behaviour. In terms of networks, the *Streetbank* case started out as small-world networks with a limited number of local participants each with few contacts. However, as awareness raising spread the story, the network rapidly became scale-free disseminating very quickly elsewhere in the country and the world. This also exhibits many tendencies related to random networks, both taking up and copying the concept but also themselves being copied by many other locations, including in situ as local networks expand, but also to other cities and countries. Kate Groves of *Streetbank* describes their growth thus far like this: “In four years, we have grown to a network of over 35,000 people sharing over 45,000 things and skills, mostly in the UK, but with more and more communities springing up worldwide in places like Melbourne, Toronto and Seattle. Last year 6,000 neighbours met through *Streetbank* to carry out neighbourly acts of kindness. This year we are on track for more than 30,000 people to meet who will save more than £500,000 in the process. By the end of 2016 we expect 150,000 people to be meeting and saving €3.2m.”⁶³

Creating viable shared assets

- ICT used:** The *Repair Cafés* case uses standard technology in the form of an internet platform supporting online communities on a local, national and global level. This facilitates communication between people who want things repaired and/or want to learn repair skills, as well as volunteers and experts, all from the locality where the *Repair Café* is located. The platform promotes the *Repair Cafés* concept, provides news, contacts, discussions, advice, FAQs, manuals and starter kits. It uses Facebook and Twitter to support discussion and raise awareness, using text, photos and videos, enabling members to illustrate discussion and show problems, making it easier to find solutions and volunteers to help. There are also online processes for starting a *Repair Café*, becoming a volunteer and making a donation. The online platform and the physical *Repair Cafés* meeting places are mutually supporting and both are created as new shared assets by like-minded people coming together. In some contrast, the *OpenCorporates* case uses both standard and bespoke technology. It provides a global open data database of over 60 million companies in 75 jurisdictions, together with web scraping, reconciliation functions, analysis and visualisation tools, all in open format for anyone to use to support an open data community. The main activity is to collaborate with *ScraperWiki*, a platform for doing data science on the web, to help get corporate data by scraping it from the web. The site also has a Google Refine reconciliation function that matches legal entities to company names. The core business of *OpenCorporates* is to collect data on companies through web scraping tools and then to visualise the data which is mainly from company registers, but also from a wide range of other published datasets, both national and global. For example, every night data is imported from the London Gazette, the Belfast Gazette and the Edinburgh Gazette, which is where official insolvency notices are published. Every day

⁶³ Interview with Kate Groves, Director of Marketing and Communications, *Streetbank.com*, 2014.

there is a search for the latest Health and Safety Executive enforcement notices and the latest world trademark registers are downloaded. The case also sources data from the UK's Financial Services Authority, the US's Central Contracting Registration system, and a wide variety of companies. This data is often used by *OpenCorporates*, as well as independently by third parties, in physical hackathon-type events where data are created and shared, sometimes leading to new products and services.

- **Online platforms, communities and networks:** In the *Repair Cafés* case, all online platforms used are used, except matching finance to needs: creating content through manuals, advice and discussion; issue or problem identification, based on the content and discussion, agreed issues or problems to be addressed are articulated and described, for example how to maintain or repair and electrical appliance; matching assets to needs, typically in relation to identified issues; solution identification, finding who has the expertise and time to help solve the problem, whether spare parts are needed and how these can be obtained; and action on problems, actually getting the repair made, usually in the local *Repair Café*. Much of the above takes place both off- and on-line depending on the situation. Similarly, in *OpenCorporates* all online platforms are used with the exception of matching finance to assets, but the user decides what to use and whether to use the tools provided by *OpenCorporates* or apply the open data to the tools they themselves wish to deploy.

In both cases, this means that complementary online and offline knowledge communities are created, with the former facilitating and significantly enhancing the latter. Both cases also facilitate important social innovation benefits especially in the form of social capital with both bonded and bridging ties, which in the *Repair Cafés* case includes physical meeting places, equipped and staffed by volunteers and others seeking help with repairs or wishing to learn repair skills. The *OpenCorporates* case also facilitates hackathons and other similar events. In terms of networks, the *Repair Cafés* case started out as a small-world network of enthusiasts in Amsterdam with a limited number of local participants each with few contacts. However, as awareness raising spread the story, the network rapidly became scale-free disseminating very quickly. This also exhibits strong random network characteristics, both taking up and copying the concept, which other locations then further emulate, so there are now in 2014 over 600 *Repair Cafés* worldwide, a fourfold increase in just one year. *OpenCorporates* also started as a small-world network, rapidly becoming scale-free as its use mushroomed, as well as now starting to resemble some aspects of a random network as many potential users hear about the service.

5.2.3. *Social innovation outcomes*

In the following the social innovation outcomes and their beneficiaries reported by the cases are summarised by focus area. Given the distinct conceptual and operational nature of each focus area, there is little spanning of individual cases across focus areas.

Exchanging time and talent

1. *Improved matching and exchanging of time and talent increasing economic benefits*
 - *Athens Time Bank:* identifies and matches the supply and demand of time and talent to undertake tasks for others and have tasks done by others, thereby ensuring that as many as possible otherwise idle assets in society are put to good use and relieving the economic pressure on especially poor and unemployed people.

- *Cookisto*: identifies and matches the supply and demand for homemade meals and food, especially unused left-over food, activates unused cooking talent, finds people who need or want to swap the food, sometimes for a small price which provides additional small incomes, thus relieving some of the economic pressure on especially poor and unemployed people. People become 'pro-sumers', i.e. both producers and consumers of food, thus blurring traditional roles and distinctions and increasing diversity and variety.
2. *Improved matching and exchanging of time and talent increasing social and community benefits*
- *Athens Time Bank*: identifies and matches the supply and demand of time and talent to undertake tasks for other and have tasks done by others, thereby promoting social cohesion and community by increasing ties and mutual help and support.
 - *Cookisto*: identifies and matches the supply and demand for homemade meals and food, especially unused left-over food, bringing people and communities into closer and often more frequent contact as relationships are built up, activism increases and social and cultural life is enhanced.

Sharing existing dormant assets

3. *Increased fixed asset use giving more economic value to more people*
- *Streetbank*: by 2014 over 35,000 people shared over 45,000 things and skills, mostly in the UK, but with more and more communities springing up worldwide, saving more than €650,000, with a 2016 expectation of 150,000 people meeting and saving €3.2m.
4. *Increased fixed asset use giving more social and community value to more people*
- *Streetbank*: in 2013, 6,000 neighbours met to carry out 'neighbourly acts of kindness', and in 2014 this is expected to rise to more than 30,000.

Creating new shared assets

5. *Increased creation of new shared assets giving more economic value to more people*
- *Repair Cafés*: online platform supporting offline repair workshops as new physical shared assets able to save money collectively through self- and collective repair rather than expensive professional repair or throw-away and buy something new.
 - *OpenCorporates*: online open data and open data communities create new content and knowledge for developing new products and services in for example hackathons and other physical events with economic value both for social entrepreneurs, companies as well as society as a whole.
6. *Increased creation of new shared assets giving more social and community value to more people*
- *Repair Cafés*: online communities in a virtual space support offline communities and develop cooperation, trust, participation, empowerment and a sense of community, especially a community of practice, as well as skills and competences and around repair and maintenance.
 - *OpenCorporates*: online open data and open data communities, also supporting offline communities, create new content and knowledge for making the corporate world more transparent to citizens, civil groups and governments, and to undertake investigative initiatives to hold corporates to account in relation to policy, legal and regulatory standards, as well as in relation to their own policies and actions.

Other

Other outcomes were reported, not directly linked to any focus area, as below.

7. *Scaled sharing economy impact (more sectors, workers, localities, people, etc.)*

- All cases are scaling, disseminating or growing, based on the empirical evidence provided in the cases, and most also exhibit many positive spillover and multiplier effects elsewhere and on other initiatives, and the *Repair Cafés* and *Streetbank* cases seem to be scaling fastest.

8. *Improved resource use: reuse and re-cycling*

- *Streetbank*: Sustainability is evident at both ends of the sharing process; the platform began as an effort to promote sustainable use and distribution of the latent potential of household assets, as well as more sustainable communities through the creation of real links and the application of an honour system between neighbors. At the same time it has a green effect by lightening the burden on long logistical chains that consume a lot of energy and other financial and social resources.
- *Repair Cafés*: provide re-use facilities and skills through self- and collective repair rather than throw-away; helping people to use their possessions longer, to repair as much as possible or replace parts instead of throwing the whole device away; by spreading knowledge, waste is reduced and resources are saved.

9. *Reduced carbon release*

- *Repair Cafés*: lead to reduced need to manufacture new products through longer use and less carbon intensive repair processes; this reduces the volume of raw materials and energy needed to make new products and both cut CO² emissions because manufacturing new products and recycling old ones causes CO² to be released.

5.2.4. *Social innovation processes*

In the following the social innovation processes and social practices reported by cases are summarised by focus area drawing on the process taxonomy presented in section 2.

Exchanging time and talent

Both cases demonstrate highly developed relationships and close cooperation underpinned by ICT. Both operate with little or no hierarchy with all participants being equal with the same rights and which engenders involvement, engagement and participation. The concept based on open relationships between the members and the building of trust which develops quite fast through repeated service provision. This contributes to both reciprocity and mutualism, increasing accountability, transparency and openness whenever people interact and cooperate. People undertaking both existing and new tasks develop skills and capacities. In the *Cookisto* case focusing on food and food preparation, the Cooks' skills and capacities are developed, and people without cooking experience are strongly encouraged to become Cooks for the first time, and this opens the possibility of future employment in this area. Especially in the UK and London, where all sorts of cuisine are available, people can become acquainted with different cooking methods. A strong and coherent sense of solidarity and community is created and spread amongst network members, since all feel they are resisting the serious negative impacts of the crisis. This is a new type of public service provision, intimately linked to people's needs and the capacity of the network, which can be

scaled up or down as needed, and which also brings in new enthusiastic people with new skills. The network's growth capability is significantly enhanced by the online platform which renders the whole system more appealing and easy to use, as well as enhances the network's collective and individual skills. Continuous interaction and spreading of knowledge are good signs for the network's sustainability into the future. In the *Athens Time Bank* case, the network regulates itself with simple democratically agreed rules, including that members are only obliged to pay fees if they are able. The continuity of the network is enhanced by a rule which stipulates that no one can receive more than 30 hours of services without paying back with his/her own services, not necessarily to the same person. This addresses any potential free-rider and overuse problems. In the *Cookisto* case, if a €4 payment per meal is paid this can help form the basis of a market economy, but being a very small payment, it is not designed to create profits as the Cooks are encouraged to use left-over and existing food and ingredients, thereby reducing food waste and making better use of food resources.

Sharing existing dormant assets

The *Streetbank* case demonstrates highly developed relationships and close cooperation underpinned by ICT. It presents a flat hierarchical peer-based structure where participants are considered as equals. However, some power resides with the owner who vets the terms of sharing in case of unethical behaviour, but generally leaves communities to use the site without interference. The platform and its physical activities fosters trust, reciprocity and mutualism which together contribute to the forging of long-term relations, loyalty and the fostering of a spirit of community based on the sharing process. Also, it allows for opening up the innovation process, since participation does not presuppose adherence to any rule, but rather the spirit of good and neighbourly conduct, so participants are free to innovate the process and add additional characteristics or layers to the sharing experience. *Streetbank*⁶⁴ also engenders high value skills available to a wider audience, it leverages participants' capabilities by making everyone wealthier through the sheer amount of shared assets, it promotes awareness and understanding of the possibilities of cooperation and the value that exists in the community, thus investing in social capital, and it is open to experimentation since participants are free to innovate the way they use it and what they share with their neighbours, so long as it constitutes sharing and it adds value to their community. In the longer terms, this helps develop involvement in local community affairs and an intense networking effect, as participants connect with each other in the process of accessing the communal wealth of assets. Local activism is thus also fostered where many more people will campaign against sterile consumption that does not benefit the community nor contribute to communal wealth. This also encourages the take up other related issues, like public sector and business participation in the sharing economy, the impact of consumption on the immediate and the global environment, democracy, representation, social security benefits reform, and other hot-topic social issues that are increasingly relevant today and directly affected (and should most likely be addressed by) small communities.

Creating new shared assets

In the *Repair Cafés* case, exchanges in the meeting places and on the platform are based on equality with no hierarchy in a flat open structure governed mainly by self regulation, with simple agreed rules and a strong reliance on volunteers. The knowledge community developed is based on reciprocity and constitutes a new form of relationship between laypeople and experts, as well as between peers (expert-expert; layperson-layperson, etc.). In the *OpenCorporates* case an open

⁶⁴ Interview with Kate Groves, Director of Marketing and Communications, Streetbank.com, 2014

data community has been developed and this is spinning off many groups in many countries, as well as physical and other events like hackathons. Unlike *Repair Cafés* which provides the whole service both physical and virtual, *OpenCorporates* provides sophisticated data and tools which are then applied in many other contexts by a wide variety of disparate groups, so is much more of a resource (or asset in its own right) which is used and adapted in a wide variety of ways. In both cases, capabilities and skills improve all round. In the *Repair Cafés* case this applies to both sides of the exchange process when procedures are put into words or shown in pictures. Unexperienced repairers gain new insights and improve both skills and capability by doing repairs themselves or getting advice and help in doing so. *Repair Cafés* are accessible to all as the free cooperation of like-minded people and both a meeting place and forum for consultation and participation building relations and developing and testing new skills and ideas. *Repair Cafés* provide tools and materials to help people make their own repairs on clothes, furniture, electrical appliances, bicycles, crockery, appliances, toys, etc. There are also repair specialist volunteers such as electricians, seamstresses, carpenters and bicycle mechanics. People who might otherwise be sidelined are getting involved again, and valuable practical knowledge is getting passed on as an ongoing learning process. People without anything to repair can also enjoy a cup of tea or coffee, help with someone else's repair job, or browse the reading table supplied with books on repairs and DIY, many of which are also available online. In *OpenCorporates*, knowledge and content is added, created and exchanged very fluidly resulting in a very dynamic ecosystem of users, who are constantly changing, compared to *Repair Cafés*' relatively more stable set-up and membership.

5.2.5. **Barriers and drivers**

In the following the barriers and drivers reported by cases are summarised by focus area.

Exchanging time and talent

An important barrier to both cases, given their small and informal bottom-up nature, relates to technical problems due to lack of ICT literacy. More intractable barriers include that fact that much of the policy, legal and regulatory framework is not conducive to such bottom-up alternatives to provide both monetised and non-monetised services, and often means that it can be difficult to stay within the law, for example in relation to food hygiene and financial and tax transactions, even on a small scale, in the *Cookisto* case. Both cases also face a barrier of trust when people invite strangers into their homes. Another barrier to creating a community and being inclusive is that the service potentially excludes people without skills. This means that even though all people without serious impairments have generic skills to undertake basic services, such as cooking or cleaning, but they may not be asked if others are better at doing the tasks, so their perceived 'value' may be limited, which will also curtail their ability to receive services from others. In the *Athens Time Bank* case, the barriers faced by the community as a whole are the difficulty of involving sufficient people in the decision making process, despite the encouragement of participation in governing assemblies to share responsibilities. In both cases, the primary driver is champions with grassroots vision and determination, together with a strong sense of community solidarity. There was also a strong boost given by the economic and financial crisis which left thousands jobless and many more with significantly reduced income, and this led in Greece and elsewhere to experiments with exchanging free services as well as preparing homemade food for swapping, exchanging or for a low price. This led in turn to rising demands to meet local social needs. The *Athens Time Bank* case was created in 2011 by a group of people who had gathered in Syntagma Square in Athens during demonstrations against the strict austerity measures taken by the Greek government. Then it was decided to create and run an online network, run by volunteers, for exchanging free services, using time as the unit of transaction in order to withstand to the continuous degradation of social

coherence. The *Cookisto* case was able to move to the UK in 2013 with the help of a small financial donation from the Zulu Trade company.

Sharing existing dormant assets

The main barrier in the *Streetbank* case is rooted in social norms that preclude some people from sharing and finding value in opening up to other people who, in their view, do not share their values, or because they feel their identity is threatened. Coupled with this, the trust barrier needs to be overcome when engaging with strangers for the first time, even when neighbours, and especially lending them possessions or borrowing from them. Questions like, will they return my possession on time and in good condition, are common. Another barrier is lack of computer skills and Internet literacy which can preclude people from participating on the online platform. Ironically, those with a distinct lack of these skills are usually poorer households which would most benefit from such a service. There is also the issue that existing regulations about ownership and use may restrict sharing and even treat it as illegal activity. A strong driver is the enthusiasm of the initial champions and activists in each location, the realisation that poverty is growing and the environment is suffering, and that participation in sharing schemes can help alleviate both, as well as revitalise communities. An increasing number of people are seeing that more holistic solutions and ways of living are needed, but that these can also be highly beneficial for themselves and their families. It can assist a return to the “the good old days ... when people talked and helped each other more”.⁶⁵

Creating new shared assets

The main challenge the *Repair Cafés* case faces is obtaining expert as well as ordinary volunteers who also have time and expertise to setup the online platform and operate it, including the technical expertise required to do this, to assist new start-ups with basic knowledge and advice (this is why the movement now charges €45 to start-ups, not to make a profit but to cover some basic costs), to find and use suitable meeting places, as well as staff the rapidly growing number of *Repair Café meeting place*. Huge scaling success causes capacity problems! Some of this is tackled by informal training of visitors, learning new skills on their own repairs, who can then pass them on to others. The *OpenCorporates* case has, alongside many open data portals, barriers like technology scale problems when handling huge amounts of data. There are also significant challenges in establishing and nurturing a demand-side ecosystem of users which, although this is growing, is not expanding sufficiently to match the supply-side offer, so doubts are sometimes expressed concerning whether the resources expended on the supply side are justified. Another barrier for the *Repair Cafés* case is lack of computer skills and Internet literacy which can preclude people from participating on the online platform, even though this is made as simple as possible. There are also potential knowledge ownership and IPR issues when knowledge, ideas and solutions are made by a group, although this is not a serious issue in the *Repair Cafés case* and everything (apart from start-up help) is free. There are some related challenges for *OpenCorporates* around issues like data quality, ownership, data updating, provenance, who is responsible for mistakes if something goes wrong (e.g. if data errors lead to wrong conclusions) and the potential mis-use of data.

In terms of drivers, the *Repair Cafés* case was started and is sustained by its active members and enthusiasts. The increasing social trends and pressures for do-it-yourself repairs and maintenance, as well as environmental and sustainability concerns, are also important. This trend was reinforced by the economic and financial crisis which made it difficult for many people to pay for

⁶⁵ Source: interview with Kate Groves, Director of Marketing and Communications, Streetbank.com.

professionals. For *OpenCorporates*, the main driving trend is seeing corporate data as well as government and other data as a source of income. There is also increasing interest in corporates and their activities because of their importance and their role in the economic and financial crisis, plus a more general trend and increasing pressure for all organisations (particularly large ones) to be much more transparent in relation to, for example, ownership, tax arrangements, corporate governance, remuneration, corporate social responsibility, and leadership.

5.2.6. *Lessons learned and success factors*

In the following the lessons learned and success factors reported by cases are summarised by focus area in relation to the use and role of ICT, strategic and operational considerations and policy implications. An overview is provided in Table 5.2.

Exchanging time and talent

The role and use of ICT in social innovation

In both cases, ICT is deployed alongside physical and traditional activities and, particularly when there are many ICT illiterate members, this interlinking is important. However, the basic ICT platform is the prime enabler of the matching and exchanging services, without which there would be no service or network. New monetary and non-monetary social and business models are created which considerably shorten value chains and cut out intermediaries not adding value, creating significant economic and social value.

Strategic and operational considerations

Both cases are operated by relatively small and flat civil and voluntary organisations, which are characterised by being relatively informal and purposively democratic, self-regulatory, transparent and bottom-up. Finance, support and operation are all provided by civil organisations and volunteers, apart from a small donation from a company to start *Cookisto* in the UK. Trust, ethics, transparency and anti-corruption are driving features, both to make the systems work in a fair and economically just manner, as well as use this to build local community and solidarity. Important considerations when exchanging any assets in the sharing economy context are that much of the policy, legal and regulatory framework is often not conducive to such bottom-up alternatives to providing services, whether monetised or not, and this typically means that it can be difficult to stay within the law, especially given the flexibility of the system in real or very quick time which can add to this challenge. The only judges of quality and the fairness and equity of the service are other members. In the *Cookisto* case, if a €4 payment for a meal is paid, this forms the basis of a market economy, but as a very small payment it is not designed to create profits as the Cooks are encouraged to use left-over and existing food and ingredients thereby reducing food waste and encouraging better use of food resources.

Policy issues

Given the nature of these *exchanging time and talent* cases, whether monetised or not, as small, bottom-up, informal and attempting to be democratic, it is important that unconducive policy, legal and regulatory frameworks do not hinder their successful operation but instead move to permissiveness, if not direct promotion of them. This will typically require legacy policy and regulatory frameworks to be changed. Such exchange systems provide significant cost savings and efficiencies through real-time and quick-time matching directly between the demand and supply of talent and labour, thereby cutting out no longer productive links in the supply chain. ICT also enables much greater flexibility, personalisation and ‘mass customisation’ of matching and exchange which additionally increases both economic and social ‘efficiencies’, thereby increasing the productive deployment of unused assets. These new social and business models see people

becoming ‘pro-sumers’, i.e. both producers and consumers, thus blurring traditional roles and distinctions and increasing diversity and variety. There is a potential danger of exploitation if individuals are given ‘too little reward for too much effort’ and when there are few if any standards for safety, insurance or poor conditions. However, in these two *exchanging time and talent* cases, this is unlikely to be a problem given their open, democratic and transparent nature, and where this is promoted through openness to scrutiny and negotiation.

Sharing existing dormant assets

The role and use of ICT in social innovation

In the *Streetbank* case, ICT is essential but is also deployed alongside physical and traditional activities, and particularly when there are many ICT illiterate members this interlinking is important. However, the basic ICT platform is the prime enabler of the sharing services, without which there would be no service or network. New non-monetary social and business models are created which considerably shorten value chains and cut out intermediaries not adding value, creating significant economic and social value. Although the ICT platform is essential, it also serves to facilitate and extrapolate something that is already at work, rather than innovating something completely new. *Streetbank’s* platform places much emphasis on real-world contact and the forging of long-term relations which strengthen community ties.

Strategic and operational considerations

The *Streetbank* case operates in a relatively small, informal and purposively democratic, self-regulatory, transparent and bottom-up manner, with finance, support and operation all provided by civil organisations and volunteers. It presents a flat hierarchical peer-based structure where participants are considered as equals. However, some power resides with the owner who vets the terms of sharing in case of unethical behaviour, but generally leaves communities to use the site without interference. Thus, trust and ethics are driving features both to make the system work in a fair and equitable manner, as well as use this to build local community and solidarity. The platform does not propose any model of government and its organisers have an active policy of letting communities work openly and regulate themselves. The idea is simply to make it easy for people to share their things and skills for a small membership fee, underpinned by an honour system based on being part of both a having and giving community. Most members are neighbours (peer-peer), and the platform offers no role demarcations, nor does it differentiate between participants, but this does not preclude consumer-consumer or business-consumer relations, so long as the aim of sharing and connecting with people (rather than commercial functions) is upheld. According to Kate Groves of streetbank.com “*Streetbank* is meant for neighbours to share their things and not for private benefit so individuals can make a profit or professionals sell their services. It is for the common good.” and “... active *Streetbank* neighbourhoods are friendlier places and communities more resilient because people are working together and supporting each other.”⁶⁶ Important considerations when exchanging any assets in the sharing economy context are that much of the policy, legal and regulatory framework is not conducive to such bottom-up alternatives to providing services, whether monetised or not, and often this means that it can be difficult to stay within the law, especially given the flexibility of the service in real or very quick time which can add to this challenge. The only judges of quality and the fairness and equity of the service are other members.

⁶⁶ Interview with Kate Groves, Director of Marketing and Communications, Streetbank.com.

Policy issues

When sharing existing dormant assets, whether as monetised or non-monetised services provided by organisations which are small, bottom-up, informal and attempting to be democratic, it is important that uncondusive policy, legal and regulatory frameworks do not hinder their successful operation but instead move to permissiveness, if not direct promotion of them. This will typically require legacy policy and regulatory frameworks to be changed. Such exchange systems provide significant cost savings and efficiencies through real-time and quick-time matching directly between the demand and supply of goods and services, thereby cutting out no longer productive links in the supply chain. ICT also enables much greater flexibility, personalisation and ‘mass customisation’ of matching and exchange which additionally increases both economic and social ‘efficiencies’, thereby increasing the productive deployment of unused assets. These new social and business models see people becoming ‘pro-sumers’, i.e. both producers and consumers, thus blurring traditional roles and distinctions and increasing diversity and variety. *Streetbank* urges people to share more and spend less, making the most of what can be shared, forging connections, both personal and communal, and in the process benefiting the environment and promoting sustainable practices. This in turn contributes to the development of less self-interested and more socially engaged attitudes cutting across social cleavages. There is a potential danger of exploitation if individuals are given ‘too little reward for too much effort’ and when there are few if any standards for safety, insurance or poor conditions. However, in the *Streetbank* case, this is unlikely to be a problem given its open, democratic and transparent nature, and where this is promoted through openness to scrutiny and negotiation.

Creating new shared assets

The role and use of ICT in social innovation

In the *Repair Cafés* case, standard ICT is an essential component for community building, learning and scaling, in a mutually supportive relationship with the physical meeting places where repairs are carried out. In the *OpenCorporate’s* case, hackathons and other events use the open data and tools provided, so in both cases new shared assets are created both physically and virtually. Users of the *Repair Cafés* develop trust through interaction and the value of the exchanges they experience and the answers they receive, both online and offline. Although equally enabling and essential, ICT in the *OpenCorporates* case is both standard and bespoke and used on a larger scale and by a much larger and diverse set of users. OpenCorporates inspires a social sharing concept to people who use its data, which is made openly available under the share-alike attribution of the *Open Database License*. In return, any product of that data must also be open for others to use. For users who do not give back data, they pay OpenCorporates a fee. Data from *OpenCorporates* is also used in physical events such as hackathons to create new shared assets in the form of new products and services or other content.

Strategic and operational considerations

The *Repair Cafés* case operates in a relatively small, informal and very democratic, transparent and bottom-up manner, with finance, support and operation all provided by civil organisations and volunteers, apart from some initial seed money from the Dutch government and a foundation, as well as online donations. Trust, ethics and being open to all are driving features, both to make the system work, as well as ensure that real value and knowledge are generated and experienced by members. On- and offline forums like *Repair Cafés* work because everybody can be an expert in something. The person who needs help in one instance can provide help to someone else in another. Both cases support physical activities, as meeting places in the *Repair Cafés* case where

repairs and maintenance are carried out, and as, for example, in hackathons enabled by OpenCorporates' data. This links the creation of intangible and virtual shared knowledge assets to the creation of tangible and physical shared assets, mutually supportive of each other, and represents a new movement. People want to be able (again) to create, maintain and repair goods and services for themselves and with others, and this increasingly means in a created shared physical space. In the *OpenCorporates* case, the strategic output is capturing data in searchable maps and visualisations of complex corporate structures with multiple layers of control below the headquarter of the corporations being examined, with, in some examples, thousands of subsidiaries. One example of this is how OpenCorporates has made the often hidden world of some multi-nationals transparent by visualising the complex corporate structure of Goldman Sachs' based on data from public filings and company registrations in the U.S., New Zealand, the Cayman Islands, Luxembourg and the UK. This helped to visualise how Goldman has 1,475 subsidiaries registered in the U.S. and 739 in the Caymans alone. Taggart, one of the founders of OpenCorporates has described the benefits of this, noting that "by visualising it by country, it shows particularly in the cases of Goldman Sachs and Morgan Stanley, just how critical the Cayman Islands is to those networks.

Policy issues

Creating new, viable shared assets, whether tangible or intangible, and whether in a monetised context or not, often seems to require bottom-up, informal, relatively democratic and open processes and structures. It is also important that uncoercive policy, legal and regulatory frameworks do not hinder their successful operation but instead move to permissiveness, if not direct promotion. Examples like *Repair Cafés* and *OpenCorporates* provide significant cost savings and efficiencies for individual people and organisations which could not, on their own, create assets they can use. Collective and shared efforts to create such assets not only provide value in their own right, but also add value to the community which can develop, when this works well, into a dynamic ecosystem of increasing value. ICT imparts much greater flexibility, personalisation and 'mass customisation' of such shared asset creation, adding both individual/specific as well as collective/generic value, which additionally increases both economic and social 'efficiencies', thereby promoting the productive creation of shared assets, both tangible and intangible. These movements represent new forms of social and/or business models which see people becoming 'pro-sumers', i.e. both producers and consumers, thus blurring traditional roles and distinctions and increasing diversity and variety. There is a potential danger of exploitation if individuals are asked for 'too much effort for too little reward' and when there are few if any standards for the quality of the good or service, or in the physical world for safety, insurance, working conditions, etc. However, in the two cases highlighted, this is unlikely to be a problem given their open, democratic nature, and where this is promoted through transparency and openness to scrutiny and negotiation. The promotion of new types of open data and the shared knowledge creation this enables, exemplified by the *OpenCorporates* and the *Repair Cafés* cases, shows that this can take place across a range of organisational sizes and ambitions. These two cases show the range from, respectively, small, niche and focused groups and interests (albeit spreading very fast as a concept), to huge 'big data' initiatives with an enormous variety of potential user groups and very significant impacts.

5.2.7. Conclusions and reflections

Drawing directly on the above analysis, conclusions regarding the three generic research issues, introduced in the methodological approach in section 2, are summarised below as they relate to the *sharing economy* theme. An overview of all the main results of the analysis of the *sharing economy* cases is provided in Table 5.2.

1. *The role and use of ICT in social innovation*

In all cases, ICT is essential but is also deployed alongside physical and traditional activities, and, particularly when there are many ICT illiterate members, this interlinking is important. However, the basic ICT platform is the prime enabler of the matching, sharing and exchanging of goods and/or services, without which there would be no service or network. New monetary and non-monetary social and business models are supported and/or enabled by ICT which considerably shorten value chains and cut out intermediaries not adding value, creating significant economic and social value. Although the ICT platform is essential, it often also serves to facilitate and extrapolate something that is already at work in terms of offline community building, activism and campaigning, rather than innovating something completely new. In the two *creating new shared assets* cases, such assets are created both virtually and physically. Virtually, the *Repair Cafés* platform enables online discussion and content creation focused on repairing and maintaining everyday objects and possessions, and the *OpenCorporates* case collates huge amounts of data on global corporates for open interrogation and use. The creation of shared physical assets is reflected by *Repair Cafés'* meeting places as face-to-face facilities where repairs and maintenance are carried out, and as, for example, hackathons and other events enabled by *OpenCorporates* data.

2. *Strategic and operational considerations related to ICT in social innovation*

All cases operate in a relatively small and flat civil and voluntary organisations, which are characterised by being relatively informal and purposively democratic, self-regulatory, transparent and bottom-up. Finance, support and operation are all provided by civil organisations and volunteers, apart from a small donation from a company to start *Cookisto* in the UK. Trust, ethics, transparency and anti-corruption are driving features, both to make the systems work in a fair and economically just manner, as well as use this to build community and solidarity. Important considerations when exchanging any assets in the sharing economy context are that much of the policy, legal and regulatory framework is often not conducive to such bottom-up alternatives to providing services, whether monetised or not, and this typically means that it can be difficult to stay within the law, especially given the flexibility of the system in real or very quick time which can add to this challenge. The only judges of quality and the fairness and equity of the service are other members or users of the platforms. In the two *creating new shared assets* cases, physical assets are jointly created and shared, as *repair cafés* where repairs and maintenance are carried out, and as for example hackathons enabled by *OpenCorporates* data. This extends the creation of intangible and virtual shared knowledge assets to the creation of tangible and physical shared assets, and represents a new movement. People seem to want (again) to create, maintain and repair goods and services for themselves and with others, and this increasingly means in a created shared physical space.

3. *Policy issues related to ICT in social innovation*

Given the nature of these *sharing economy* cases, whether monetised or not, as small, bottom-up, informal and attempting to be democratic, it is important that unconducive policy, legal and regulatory frameworks do not hinder their successful operation but instead move to permissiveness, if not direct promotion of them. This will typically require legacy policy and regulatory frameworks to be quite dramatically changed. Such sharing and exchange systems provide significant cost savings and efficiencies through real-time and quick-time matching directly between the demand and supply of all types of assets, thereby cutting out no longer productive links in the supply chain. ICT also enables much greater flexibility, personalisation

and ‘mass customisation’ of matching and exchange, which additionally increases both economic and social ‘efficiencies’, thereby improving the productive deployment of unused assets. These new social and business models see people becoming ‘pro-sumers’, i.e. both producers and consumers, thus blurring traditional roles and distinctions and increasing diversity and variety. There is a potential danger of exploitation if individuals are given ‘too little reward for too much effort’ and when there are few if any standards for safety, insurance or poor conditions. However, in all cases, this is unlikely to be a problem given their open, democratic and transparent nature, and where this is promoted through openness to scrutiny and negotiation. The promotion of new types of open data and the shared knowledge creation this enables, exemplified by the *Repair Cafés* and the *OpenCorporates* cases, shows that this can take place across a range of organisational sizes and ambitions. These two cases show the range from, respectively, small, niche and focused groups and interests, to huge ‘big data’ initiatives with an enormous variety of potential user groups and very significant impacts.

Overall, all six social innovation outcomes examined in the *sharing economy* theme, as well as several others, have been shown to be either supported and/or enabled by social innovations using ICT, as detailed in section 5.2.3. They result directly from a fundamental shift in mindset and in organisational forms away from the ownership to the sharing of assets, and in this way support the prosperity, wellbeing and engagement of people who participate. All five cases also stress that participants are themselves important agents and decision-makers of their own and their organisation’s change, and that they experience improved self-esteem and overall increases in welfare alongside prosperity, in addition to reduced costs to society in the longer term. The five cases are thus all examples of social innovation cases enabled or supported by ICT, and thus in line with the definition given in section 1.

All five cases examined show in detail how existing assets are shared (people’s time, talent and possessions) or new assets are created collectively to be shared. In each of the cases, social needs are being met and all illustrate the bottom-up and inclusive nature of the processes identified, and that in particular the intended target beneficiaries are involved as much as possible. Most cases deliver social innovation outcomes only in their respective focus areas rather than span across two or more. However, all cases produce very similar social and economic benefits, but do so by differences in the ways they treat, use or create assets as defined by the focus area. This means that, despite the very broad ambit of the sharing economy movement, the basic underlying economic and social model based on access to assets rather than ownership of them, is very similar and has resonance across potentially a very large number of areas.

All the *sharing economy* cases examined here are started and operated by civil organisations and/or volunteers, and most are also funded in the same way. To some extent this is a function of all cases being European and Europe has not (yet) been able to convert sharing economy initiatives into large commercially successful companies, as has the USA with, for example, *ZipCar*, *Airbnb* and *TaskRabbit*. However, all cases examined already have substantial scale and are still growing but at different paces. All started as small-world networks and then progressed to larger disseminating scale-free networks. Many are also the result of scale-free or random copying/adaptation from elsewhere, or are themselves the origin of such spread.

It is a feature of all cases that many of the users have become ‘pro-sumers’, i.e. both producers and consumers of assets, thus blurring traditional roles and distinctions and increasing diversity and variety and demonstrating how some aspects of *the wisdom of crowd* (both laypeople and experts) happen in practice. This leads to new models for providing goods and services, intimately linked to

people's needs and the capacity of the ICT network, which can be scaled up or down as needed, and which is also open to new enthusiastic people with new skills. Most cases also exhibit openness and attempt to be as democratic as possible. An essential feature of this is self-regulation through trust built on reputation in order to curtail cheating, exploitation and free-rider or over-use problems. This in turn contributes to the development of less self-interested and more socially engaged attitudes cutting across social cleavages. Shieh and Deng (2011) support this statement in their conclusion that "... (to) understand the possibilities for the emergence of civil society ... we need to allow for an associational space not defined by sharp boundaries between state, market and civil society, and from which civil society evolves in a fluid and interdependent relationship with state and market actors".

An important feature of all cases examined, and probably in most sharing economy context, is that objectives, participants, processes and outcomes need to be transparent and open to interrogation, and this is also a task ICT is eminently suited to fulfil if appropriately deployed. Indeed, in the *sharing economy* theme, from the evidence presented above, there seem to be three big enablers based on ICT. The first is the large number of mobile technologies which allow the tracking and monitoring of the usage of idle assets. The second are the social networks that are emerging which enable the leverage of existing trusted networks or the building of trust between strangers. And the third is a shifting acceptance of access over ownership – the idea that it is often just as good (or even better) to have reliable access to something as it is to own it – all the benefits of the item with none of the maintenance.⁶⁷

⁶⁷ <http://www.marketingmag.com.au/blogs/collaborative-consumption-and-the-sharing-economy-shaping-the-market-in-2014-and-beyond-47488/#.UxzLmc4TBFo>

Table 5.2: Sharing economy case analysis overview

Focus area and SI outcomes	ICT use	Online platforms	Communities	Networks	Social innovation processes	Barriers	Drivers	Role of ICT in social innovation	Operational and strategic	Policy issues
Exchanging time & talent for economic & social benefits	Standard ICT, alongside traditional media & activities	Mainly matching assets to needs, plus other (except matching finance to needs)	- Complementary on- and offline knowledge community - Social capital bonding, some bridging	Starting as small world & random, scaling to scale-free, plus some random spread	- No hierarchy in flat open structures, builds trust, relationships, responsibility, community, activism & campaigning - Self regulation with simple agreed rules - Involvement, reciprocity, participation - New skills and capacities development	- Policy, legal, regulatory framework is not conducive - Low ICT skills - How to include people who have little to offer - Convincing people initially to engage with & trust strangers	- Vision of local champions & local solidarity - Rising demands to meet local social needs - Crisis as catalyst	- Supporting: traditional activities & flexibility - Enabling: essential for new monetary & non-monetary social & business models shortening value chains & cutting intermediaries not adding value	- Civil, voluntary finance & operation - Flat, informal, open, democratic, bottom-up, self-regulate - Trust, ethics, transparency & responsibility - Non-conductive regulation can be threat but is flexible	- Need conducive permissive policies & legal frameworks - Social & economic efficiencies, better community, more flexibility, personalisation, mass customisation, new social & business models around prosumers - Potential danger of exploitation with no standards, but open democratic structure mitigates
Sharing existing dormant assets for economic & social benefits	Standard ICT, alongside traditional media & activities	Mainly matching assets to needs, plus other (except matching finance to needs)	- Complementary on- and offline knowledge community - Social capital bonding, some bridging	Starting as small world & random, scaling to scale-free, plus much random spread	- No hierarchy in flat open structures, builds trust, relationships, responsibility, community, activism & campaigning - Self regulation with simple agreed rules - Involvement, reciprocity, participation - New skills & capacity development, experiments & innovation	- Policy, legal, regulatory framework is not conducive - Low ICT skills - Trust barrier, will people return or damage my goods - Convincing people to go against existing social norms	- Vision of local champions & local solidarity - Rising need to tackle poverty, grow community & sustainability - Crisis as catalyst	- Supporting: traditional activities & flexibility - Enabling: essential for new non-monetary social & business models shortening value chains & cutting intermediaries not adding value	- Civil, voluntary finance & operation - Flat, informal, open, democratic, bottom-up, self-regulate - Trust, ethics, transparency & responsibility - Non-conductive regulation can be threat but is flexible	- Need conducive permissive policies & legal frameworks - Social & economic efficiencies, better community, more flexibility, personalisation, mass customisation, new social & business models around prosumers - Potential danger of exploitation with no standards, but open democratic structure mitigates
Creating new shared assets for economic & social benefits	Standard & some bespoke ICT alongside traditional activities	All types (except matching finance to needs)	- Complementary on- and offline knowledge community - Social capital bonding & bridging	Starting as small world & scaling to scale-free, plus much random spread	- No hierarchy in flat open structure know-ledge community as created shared tangible & intangible assets - Self regulation with simple agreed rules, use of volunteers & experts - Building capacity & skills, collaboration, relationships & ideas	- Some lack of ICT skills & technology scale - Reliance on volunteer enthusiasts, & technical expertise - Potential data know-ledge & IPR challenges when co-created, data quality & responsibility - Demand side ecosystem often weak	- Vision of enthusiasts - Open data as income source - Social trends to DIY, participation, scrutiny of large organisations - Crisis as catalyst	- Supporting: creation of traditional & physical assets as an extension of the online experience - Enabling: essential for knowledge co-creation & ongoing dialogue - Data and knowledge creation and manipulation vary hugely from small to big data, depending on case	- Civil, voluntary finance & operation - Flat, informal, open, bottom-up, self-regulate - Creation of both virtual & physical shared assets mutually supportive - Opening up complex organisations to transparency & scrutiny - Non-conductive regulation can be threat but is flexible	- Need conducive permissive policies & legal frameworks - Social & economic efficiencies, better community, more flexibility, mass customisation, new social & business models around prosumers - Potential danger of exploitation with no standards, but open democratic structure mitigates

6. Health

This section briefly summarises the main findings arising from the desk research carried out across Europe in relation to strategic issues, trends and challenges which provides the general employment context, as well as some of the observed and expected roles and impacts of ICT within this context.

Today's healthcare is reactive, episodic and focused on disease. The new healthcare will need to be pro-active, preventative and focused on quality of life and well-being. Current health care is hospital – and doctor centred. The new smart model will need to be patient centred and much care will be provided at home and include the broader social network (with family and community contributing significantly to individual health and well-being). The current approach to diagnosis and treatment is based on training and experience of clinicians. Smarter models will deliver more evidenced-based approaches and personalised care.

OECD report: ICTs and the Health Sector: Towards Smarter Health and Wellness Models (2013)

6.1. Context

6.1.1. Strategic issues, trends and challenges

Public services in health and social care across Europe are under pressure both from the current period of fiscal austerity and from rising demand driven by demographic change, particularly ageing. Across Europe there is a growing gap between revenues and expenditures that must be met both by prioritisation and by radically improving productivity. Health and social care services face another challenge too: while there have been considerable improvements in quality in recent years, the experience of many users is not good. Too often services are delivered in a de-personalised fashion and in a way that neglects the importance of good-quality relationships among citizens and between citizens and professionals. In addition it is the aging society that puts particular pressure on health and social care systems.

The challenges the health and social care sector are facing can be summarised as:

- Shift from 'acute' to 'chronic' disease and therefore an outdated model of health & social care
- Need for an integrated health and social care
- Productivity in a labour-intensive sector coupled with declining availability of the workforce
- Policy drive towards self-management, and proactive and prevention healthcare
- The rise of the wellness & wellbeing market

Some observers argue, that globally speaking the situation is even worse – as basic health is not accessible to all. Whilst worldwide agreements to address health indicators have been made in the Millennium Development Goals (MDGs), these have recently been found to be worsening rather than improving⁶⁸. Nevertheless, it is also in the context of the developing countries that radical social innovation with rapid spread and impact can be found, some examples will be described and highlighted in this report.

The OECD report (2013) *ICTs and the Health Sector: Towards Smarter Health and Wellness Models* (2013) for example proposes that a new health care model will have to be developed to replace the existing model based on reactive health care. This new model will need to deal with the flaws of its predecessor and build upon the definitions of

⁶⁸ See for instance: <http://www.worldwatch.org/mixed-progress-reaching-millennium-development-goals>

proactive and preventive, at the same time putting focus on the quality of life and well-being. Moreover, the new model has to work from another perspective than the old one. Instead of an institutionally based model of health care, the aim is to create a participatory model where care should be a team activity where the patient becomes the central member and where much of the care will be tailored to fit the specific patient's needs and where much of the care will be provided from home. This model will also encourage the inclusion of the broader social network (i.e. family and community as significant contributors to individuals' health and well-being). This model is in literature often referred to as the "P4 model", and illustrates the paradigm shift towards a model of care that is participatory, predictive, personalised and preventive. (OECD 2013)

Investigating how ICT could enable or support social innovation in the health and care market, a number of strategic issues are apparent⁶⁹:

- Health and social care services are lagging behind other areas in the use of modern technologies. Often the reason for this is that there is not sufficient information available about the efficacy and efficiency of eHealth tools such as telemonitoring and mobile apps to be implemented in health and social care services.
- eHealth can have its maximum effect only if it is interoperable at every level - local, regional, Member State level and across the borders. Currently, there is a big gap in it.
- There is a lot of health related data created in different settings – in hospitals, out-patient clinics, social care, through mobile apps etc. However, there is no agreed procedure for analysing the data for scientific and policy related issues.

A number of challenges are also apparent:

- As healthcare and social care do not have seamless IT solutions, often aren't even fitted with broadband for patients, basic ICT infrastructure needs to be implemented before Social Innovation enabled or supported by ICT can connect to existing systems. Research into the growing importance of connectivity for patients of all ages should be undertaken.
- How to ensure consistent and sustainable Social Innovation solutions. Many project seems to emerge in the areas of care of the very vulnerable (and therefore most in need one can possibly argue) – the elderly, kids, people with mental illnesses.
- How does social innovation relate to changing internal health organisation structures and practices, learning, safety? How does social innovation contribute to increases in quality and performance of health care professionals and does this imply the need for new health care impact assessments?
- How to address the big data challenges, knowledge generation and use
- How to ensure access to relevant data for the use of social enterprises and the potential for Social enterprises to feed back into the loop of formal health and social care.
- Is there a digital divide issue? Amongst practitioners? Patients? Volunteers?
- How to balance data privacy, protection and mis-use with openness, transparency and the benefits of big data.

These key trends can be summarised as follows:

- **The rise of integrated, patient-centred health care models** – In broad terms, future models of health and social care have to be more integrated and patient-centered. The future consists of getting actors from healthcare and social care services to collaborate on multiple levels - from private doctors to public hospitals and from home carers to emergency centers for the elderly. They need to be structured efficiently, be aware of their specific roles in the value chain, and, most significantly, be able to effectively share

⁶⁹ <http://ec.europa.eu/dgs/connect/en/content/health-and-well-being-research-and-innovation-ict-empowering-citizens-e-healthy-future>

information between them. shift towards integration, support of home care and preventive care, increasing self-management.

- **Systemic innovation focusing on healthcare outcomes.** Recent systemic shifts in the governance of health and social care have included the transfer of responsibility to the local level to enable more self-governance and the collaboration of different partners such as public health care actors, social care, the voluntary sector and communities. To support such new models some countries have chosen to define outcome frameworks for healthcare⁷⁰. ICTs have a potentially big role to play here, and such arrangements could be the future basis of deeper integration of social innovation solutions.
- **Increased patient responsibility for their own health, importance of health promotion** - Consumers' personal choices and behaviors are significant determinants of their overall health, and those who fail to take personal responsibility for their health can cost the system billions of dollars or Euros each year. From a market perspective, one can observe an increase in associated markets – such as the wellness market, fitness & sports market, alternative health & therapy market amongst others. Increasing consumer responsibility for their own health has been high on the agenda for governments for a long time. For instance, the WHO led Ottawa Health Convention of 1986⁷¹ summarises that health promotion goes beyond health care. It puts health on the agenda of policy makers in all sectors and at all levels, directing them to be aware of the health consequences of their decisions and to accept their responsibilities for health. The convention details clear points for action and commitments of participating countries. For instance, health promotion is seen to support personal and social development through providing information, education for health, and enhancing life skills. Enabling people to learn, throughout life, to prepare themselves for all of its stages and to cope with chronic illness and injuries is essential. This has to be facilitated in school, home, work and community settings. Action is required through educational, professional, commercial and voluntary bodies, and within the institutions themselves.

6.1.2. *Roles and impacts of ICT*

There is broad and growing consensus that any systematic effort to address these challenges requires the intensive use of ICTs to support new and “smarter” models of care. Such models aim to keep the elderly and the disabled in their own homes rather than in the considerably more expensive hospital or nursing home, enable longer-term independent living and encourage personal responsibility for healthier life style choices. In this context, ICT has a key role to play as does social innovation.

ICT trends currently transforming the health sector can be summarised as follows:

- **Big data and healthcare** - Health communication and health information technology (IT) are central to health care, public health, and the way our society views health. These processes make up the context and the ways professionals and the public search for, understand, and use health information, significantly impacting their health decisions and actions.
- **Social media enriched healthcare (Health 2.0)** - Health 2.0 strategies have been formulated and discussed for the past years all over the world. It includes the use of a specific set of Web tools (blogs, Podcasts, tagging, search, wikis, etc) by actors in health care including doctors, patients, and scientists, using principles of open source and generation of content by users, and the power of networks in order to personalise health care, collaborate, and promote health education.
- **mHealth** - With ICT, mobile platforms and the storage capabilities of cloud computing, transmission and processing technologies, and computing power it is now possible to deliver health care in fundamentally new ways (OECD (2013). Particularly *mobile technologies are fast being appreciated by the health care*

⁷⁰ See for example <http://www.rcpsych.ac.uk/pdf/The%20Public%20Health%20Outcomes%20Framework.pdf>

⁷¹ <http://www.who.int/healthpromotion/conferences/previous/ottawa/en/index2.html>

industry with a raft of devices, sensors, apps and other programs being developed that target chronic conditions, telemedicine and remote monitoring, patient data capture, electronic records, e-prescribing and the parallel industries of fitness and wellness. mHealth holds promise for improvement along the value chain – maximising professionals’ time and productivity, improving quality, increasing access and equity, stimulating greater consumer involvement, and potentially decreasing costs, or perhaps equally as importantly, getting better value for the money invested. (Deloitte Insight Report⁷²). The extent to which stakeholders create user confidence through adequate privacy and security protections will play a key role in accelerating or retarding the adoption of mHealth and the realisation of benefits.

- **Game-changing technological innovations in production** – We have recently witnessed the rise of a new era of welfare technologies that are promising to revolutionise aspects of health and social care such as 3D printing and their usage in the production of prostheses for instance, new trends in imaging technology for diagnostics and new materials such as lenses that have enabled the miracle of drastically improving the cure of cataract patients⁷³.

6.1.3. *Framework for analysis*

The background research and the examples identified by desk research show that three main types of focus area can be distinguished within the health theme.

1. Preventive Health and Self Help

Whilst the markets of prevention and well-being are hard to define⁷⁴, it is equally hard to argue against a growing trend towards preventive ICT enabled solutions. This market includes fitness apps, monitoring devices to self-screen for health risks such as diabetes or heart attack, or online enabled calorie-tracking solutions. When it comes to hugely expensive phenomena such as stress or mental illness, the combination of ICT solutions and social innovation opens up a whole new world of services and support for patients or those who could become patients. Examples of such apps and services focusing on applications which support citizens outside traditional healthcare facilities in their personal environment are for instance *Beating the Blues*⁷⁵, *Living Life to the Full*⁷⁶, *BUDDY*⁷⁷.

One can also observe a trend of platform-based health-related websites that focus on the provision of comprehensive health care information, support self-help and often allow for significant interactivity between patients, clinicians, carers or families enabling patients to learn more about his/her condition so that he/she can make better-informed decisions about his/her treatment. Examples include *PatientsLikeMe*⁷⁸, *CancerCommons*⁷⁹ or *patient.co.uk*⁸⁰. Some platforms even border on or include clinical consultation such as *netdoctor*⁸¹ or *webmd*⁸². A side-effect and challenge for such platforms is of course that they collect vast amounts of information which can

⁷² http://www.deloitte.com/view/en_US/us/Industries/life-sciences/2545b66b8dc4b310VgnVCM2000003356f70aRCRD.htm

⁷³ See for instance - <http://www.npr.org/blogs/health/2013/07/03/198065436/one-mans-quest-to-make-health-care-accessible-and-affordable>

⁷⁴ <http://www.forbes.com/sites/jenniferrooney/2013/03/26/the-opportunities-that-exist-in-the-market-of-well-being-mequilibriums-jan-bruce/>

⁷⁵ <http://www.beatingtheblues.co.uk/>

⁷⁶ <http://www.llttf.com/>

⁷⁷ <https://www.buddyapp.co.uk/>

⁷⁸ <http://www.patientslikeme.com/>

⁷⁹ <http://www.cancercommons.org/>

⁸⁰ <http://www.patient.co.uk/>

⁸¹ <http://www.netdoctor.co.uk/>

⁸² <http://www.webmd.com/>

inform research and/or marketing. This is still a rather unexplored area particularly outside of the formal website domains.

Finally, platform technology is also enabling internet users to volunteer to improve health outcomes. For instance the *BeMyEyes app*⁸³ allows users to support blind people in telling them what label they want to read in everyday situations such as cooking. Often referred to as micro-giving, ICTs combined with social innovation are enabling the improvement of life for patients in this case in a “many-for-one” model.

In this context there is one social innovation outcome examined for this focus area:

- Increase in health and wellbeing (numbers of people and duration)

2. Personalised health and smarter patient environments

Personalised healthcare is a healthcare model emphasising the systematic use of context information about an individual patient to select or optimise that patient's preventative and therapeutic care. A comprehensive ICT-enabled personalised healthcare solution includes medical sensor-enabled remote monitoring, smart-phone enabled data aggregation, medical situation awareness and analysis (risk classification, root cause analysis and risk triggers), and context-aware coaching that enables solutions for converged disease risk management and patient behaviour assistance toward prevention care or prediction of diseases for better disease risk control. As a result, the increasingly elderly population will be able to live more independently in their home environment, overcoming isolation and minimising their reliance on carers. For health and social care providers, services will be focused around more personalised and preventative health management, rather than treatment, while containing the overall cost of delivery.

Examples include:

- Common medical record systems will enable people to receive medical treatment anywhere without having to contact their local doctor or hospital.
- Citizens will be enabled and supported to live more healthy lives, minimising time in hospital, at local doctors or in care homes.
- Home monitoring will become more widely available for people considered at risk. This requires better monitoring regimes for chronically ill patients, through monitoring of vital signs.
- Management support tools and services for consumers focusing on applications which enable citizens to interact with health service providers electronically e.g. Patient Briefcase.
- Gaming based approaches of supportive disease management tools aimed for instance at children.

In this context there are two social innovation outcomes examined for this focus area:

- Increase in health personalisation
- Increase in health skills (personal & collective): patient centeredness

3. Supporting smart infrastructure for integrated health and social care

Un-synchronised social and health care service delivery leads to inefficiencies, duplication of resources and reduced levels of quality of care. Older people are particularly affected by this situation. They often need both types of services, such as support with daily living activities and chronic disease management. ICT has the potential to support integrated service delivery to achieve high quality independent living and wellbeing for older people across

⁸³ <http://www.bemyeyes.org/>

Europe and elsewhere. Much research is dedicated at the moment to innovation in the care model, particularly towards a vision of more integrated, patient-centred care⁸⁴. ICT is expected to help deliver improved collaboration, new health delivery models, and informed decision-making based on an agile infrastructure that incorporates public, private, and hybrid cloud platforms in which health information is easily and securely updated, accessed, stored, retrieved, and exchanged. This then should enable healthcare providers and public health and social services agencies to turn data into information insights, so they can deliver higher quality care to more patients and citizens at a lower cost. Finally ICT should empower patients and citizens to proactively manage their own health.

Examples where social innovation meets the ICT enabled models of the future are:

- New social models of delivering healthcare such as Naya Jeevan⁸⁵, a Micro health insurance; Center for better Health, UK⁸⁶ who run social enterprises that deliver healthcare; a for profit medical care - Derbyshire Health united provides after hrs access to doctors (UK)⁸⁷ or Social Enterprise Clinics -Penda Health⁸⁸ offer special care to women, Kenya; Lower income maternity Hospitals in India (LifeSpring); Mini Health Centre Chains (access afya) offer high tech centres in Kenya, Medical Home⁸⁹, Mexico; Clinic in a box CliniPak⁹⁰.
- Tools which enable patients to share data regarding their experiences with particular health providers e.g. Dr. Foster Intelligence⁹¹
- A new generation of diagnostics and remote healthcare solutions where innovative approaches are emerging both based on crowd sourcing of data analysis or clinical information and in remote telehealth. Examples include Cellslider⁹², Click to Cure⁹³; Digital rural medicine - mDiagnostica⁹⁴; Remote healthcare technologies - iKure⁹⁵ - platform-based solution in India; Imaging the world⁹⁶ – novel ultrasound techniques.
- Game-changing technological innovations in production (3D printing, new trends in imaging technology for diagnostics, new materials such as lenses)

In this context there is one social innovation outcome examined for this focus area, which is also theme-wide:

- Scaled health impact, actual or predicted (more sectors, groups, localities)

⁸⁴ See for instance ICT and Aging report - <http://www.technolage.org/> , or presentation about ICT-enabled services for carers and care: pathways and actors in the development of services for Long Term Care <http://www.slideshare.net/jamesks/carers-and-innovation-presentation-edinburgh-2012>

⁸⁵ <https://www.facebook.com/nayajeevan/info>

⁸⁶ <http://www.centreforbetterhealth.org.uk/>

⁸⁷ <http://www.derbyshirehealthunited.com/>

⁸⁸ <https://www.facebook.com/PendaHealth>

⁸⁹ <https://medicalhome.com/MedicalHomeWeb/index.php>

⁹⁰ clinic in a box CliniPak

⁹¹ <http://drfosterintelligence.co.uk/>

⁹² <http://www.cellslider.net/#/>

⁹³ <http://www.clicktocure.net/#sthash.tG56mKTR.dpuf>

⁹⁴ <http://mdiagnostica.com/>

⁹⁵ <http://www.ikure.in/>

⁹⁶ <http://imagingtheworld.org/>

6.2. Case analysis

6.2.1. Social needs addressed and summary

Seven cases are analysed in the health theme as summarised in Table 6.1.

Table 6.1: Health cases: summary

Focus area	Case	Social needs addressed	Summary
Preventative health & self-help	Patients like me (UK) ⁹⁷	Mission to give people answers, helping them connect with others and enabling every patient to benefit from the collective experience of all.	- PatientsLikeMe is a free patient network where people can connect with each other to better understand their diseases, share condition and treatment information, and get support from peers to improve their health. - It is also a research platform. As patients report on their disease experiences, they provide real-world insight into diseases and long term conditions. Those insights are shared with companies, government organisations and others who use them to continuously develop more effective products, pharmaceuticals, services and care. - Online community with more than 220,000 members, has 2,000+ conditions, 35+ published research studies, and over 1 million treatment & symptom reports registered
	Buddy App (UK) ⁹⁸	Improve clients' mental health more effectively by making them feel less dependent on the therapist or the therapy taking place at the actual clinic.	- Buddy is foremost a text message service intended to support clients struggling with mental illnesses in-between therapy sessions. - The initiative was started in 2012 by Sidekick Studios in collaboration with South London and Maudsley NHS trust; the biggest provider of mental health services in the UK. - The Buddy program was only one of their many social initiatives, and now the program has been spun off as a separate start-up named Buddy Enterprises Ltd.
Personalised health & smarter patient environments	Patient Briefcase (DK) ⁹⁹	A mobile solution to connect the patient in own home with professional medical & care personnel through live video and audio channels over a broadband Internet link	- Cooperation between the public and private sectors, originally supported by public innovation funds (both European and Danish) as well as private investment by Medisat itself, which today also functions as a fully commercial operation. - Medisat places strong focus on user-friendliness and making it easy for patients to be 'admitted to hospital' in their own homes. - This case is also an example of technology being overcome by the rise of new technologies. With the rise of tablets and iPads and cheap apps, its underlying technology has become obsolete. - Rolled out in 4 countries / hospital environments; 50 employees
	Diabetiva (DE) ¹⁰⁰	Reach high-risk patients with diabetes mellitus type 2 who have displayed symptoms or developed illnesses & blood complications	- Computer-based advisory service for the treatment of patients with type 2 diabetes - Patients use a glucose measuring device for home use, where the values are regularly transmitted to the Personal Healthcare Telemedicine Service (PHTS) via the internet. - 44 diabetes specialists, 299 medical practitioners, and 799 patients

⁹⁷ www.patientslikeme.com

⁹⁸ www.buddyapp.co.uk

⁹⁹ www.medisat.dk

¹⁰⁰ www.shl-telemedicine.de/index.php/diabetiva/?page=betreuungsprogramme/diabetiva/

Focus area	Case	Social needs addressed	Summary
Supporting smart infrastructure for integrated health & social care	dotHIV (DE) ¹⁰¹	Generate money to support effected, raise awareness of global threat of HIV/AIDS, de-stigmatise HIV-positive people	- The .hiv domain is a ground-breaking approach for raising awareness for a social problem. At the same time it is used to generate income from sales of .hiv domains that are forwarded to support projects and organisations aiming at solving the problem or at least contribute to solving it. - Funds are allocated using ICT. Relatively new technology will be used to introduce Internet users to the approach and to give them the opportunity to familiarise themselves with projects/organisations to be funded. An intended side-effect is that they learn about problems and issues as well as solutions and effective ways of dealing with the HIV/AIDS problem.
	Social Enterprise Clinics	Improve access to medical services in poor countries to provide universal provision of basic medical services, at low cost or on voluntary basis, using ICT tools	- Different healthcare provision models were reviewed. - Mobile phones (or the widespread telecommunications services) are the main driver for social enterprise clinics. This tool gives to the people access to new form of medical services which wouldn't be possible without existence of telecommunication. - Review of various initiatives: - Penda Health – Pilot phase. Two facilities. Personnel: 10 to 49. Client served: 741 clients (Feb 2013) - LifeSpring – Post pilot phase. 12 facilities. Personnel: 100 or more. - Access Afya – Startup phase. One facility. - Medicall Home – Post pilot phase. 3500 facilities. Personnel: 100 or more. - CliniPak - Post pilot phase. 15 facilities. Personnel: Fewer than 10. Client served: 5000 clients (March 2014)
	Cell Slider (UK) ¹⁰²	Contribute to the development of cures for cancer through the public analysis of images of tumours and cancers.	- Cell Slider is an interactive website that encourages members of the public to engage in cancer research. - Through collaboration between Cancer Research UK and Zooniverse real images of cancer cell samples are presented for public analysis. - While Cancer Research UK is a United Kingdom-based charity, the web tool can be accessed by people around the world. - Between its launch in October 2012 and December 2013, around 200,000 people visited the platform and nearly two million breast cancer images from two breast cancer studies were classified.

Social needs addressed

All cases examined use ICT as an important tool to raise awareness, provide information, fundraise for scientific research, crowd-source analysis or provide a direct service to patients. Most cases stress that the beneficiaries of such activities experience improved self-esteem and overall increases in welfare, in addition to reduced costs to society and the health sector in the longer term. Some examples are examples of experimentation that get overhauled by technological developments but ultimately serve as an early pilot into how similar technologies can be used to create better and smarter healthcare.

Focus areas

The sample of seven cases comprises two *preventive health & self-help* cases, two *personalised health & smarter patient environment* cases and three *supporting smart infrastructure for integrated health & social care* cases-

Funding and actors

The examples covered in this chapter vary from private sector initiatives to social enterprise run solutions. For instance, Medisat is the private company behind the innovative *Patient Briefcase*. It has about 50 employees and is

¹⁰¹ <https://click4life.hiv/de>

¹⁰² www.cellslider.net/#/

as a commercial supplier of products and services to the Danish health sector also a vendor with vision of modernising health services through the introduction of tele-medicine solutions to different patient groups. *dotHIV* should be better referred to as “dotHIV g.e.V. and .hiv GmbH”, as the organisation is actually two organisations, which is not really very uncommon for social ventures in Germany. As the venture is still in the planning/start-up phase, there is yet no proven sustainable business model. However, economic sustainability is envisioned to be achieved by the commercial branch, .hiv GmbH, which is to sell the domains and thereby cross-subsidise the charitable branch, dotHIV. Another non for profit set-up is cell slider. Cell Slider was developed by a team of four Cancer Research UK researchers from the Universities of Cambridge, Leeds and Southampton in collaboration with the Citizen Science Alliance, a network of scientists, software developers and educators developing, managing and utilising internet-based citizen science projects to further science and the public understanding of science and the scientific process. Cell Slider relies on a number of actors to work – researchers to provide images of cancer cells, volunteers to analyse the images, developers to maintain the website and researchers to interpret results in order to develop cures and treatments. The Social Enterprise Clinics are initiated either by a company (Access Afya) or by individual people (Penda Health). Such clinics are funded by the state (LifeSpring) or a company (Access Afya) or by individual people (Penda Health). Funding is equally varied and includes foundation funding, grants, micro funding, crowd sourcing as well as public and even European funding.

Scale and scope

Scale can be misleading as in the health area ground-breaking digital solutions can also be targeted to specific patient groups or clinical diagnoses such as the *Diabetiva* case. Still substantial scaling and growth can be observed as typically the cases featured in this section started in a specific local setting and then scale across further cities with the aim of being nation-wide solutions. Social innovation solutions in other domains – such as teach first in education seem to be much more successful at scaling internationally (through the copying of the business model), which might be a future opportunity for the health domain.

6.2.2. *Types and uses of ICT*

The types of ICT and its use varies across the three health focus areas, as described below.

This section covers the types of ICT and its use varies across the three health focus areas, as described below. To exemplify how transformational the use of ICT can be, in particular one case study stands out – the social enterprise clinics. Here research across a number of examples was undertaken to exemplify a successful social enterprise driven, ICT enabled phenomena, which is revolutionising health care and provision in the poorest of countries – for instance India, African countries and Mexico. Each of these examples would merit a case study in itself, hence here is an overview of what technologies are used to provide health services or health care to the poorest:

- *Penda Health, Kenya* : ICT is used to improve a health provider's ability to diagnose and treat patients, either through improved training or real-time assistance with clinical decision making. Moreover to improve communications between health providers and patients outside of traditional doctor visits and to improve data collection, organisation, or analysis. Moreover Penda sends SMS messages once a week on Mondays to provide patients with clinic updates and preventive health care information such as taking vitamins at mealtime to reduce flu incidence and the benefits of getting a good night's sleep. During breast cancer awareness campaigns, the clinic sends patients information about breast cancer and invites them for screenings. Penda also uses SMS for patient appointment reminders and to thank patients, and establish a warm, caring relationship. To ensure the prescribed treatment is working effectively, Penda follows up with patients via phone conversations, to check on their health status. Besides communicating with patients, Penda leverages the phone to make payments more convenient for patients. Penda is mainly a cash-based business, but it has begun offering patients the ability to pay via M-PESA. Penda collaborates with Kopo

Kopo, a social enterprise in East Africa, to collect M-PESA payments and more patients use the service as they become aware of its availability. Nevertheless, patients often go home to retrieve or borrow money when they realise they do not have enough cash to cover their bills, and return the same day or the next to pay for services.

- *LifeSpring, India* - LifeSpring chose Red Hat Enterprise Linux, JBoss Enterprise Middleware, and a number of Red Hat certified, enterprise-class, open source software solutions to build its entire IT infrastructure. Increased flexibility and choice by freeing the organisation from vendor lock-in, decreased IT costs, simplified management, reduced systems maintenance, increased scalability and performance, gained higher customer satisfaction.
- *Access Afya, Kenya /Nairobi* - ICT in Access Afya is used to improve communications between health providers and patients outside of traditional doctor visits and to improve data collection, organisation, or analysis. Access Afya staff record all patient information, consultations, and follow-ups in its electronic health record system. This links with the mini-store, helping them track inventory and warning them about potential stock-outs. Mobile phones are ubiquitous in Kenya and Access Afya capitalises on this, with each patient receiving an SMS follow-up after their visit. SMS also enhances clinical processes through appointment reminders and test result notifications. Special groups, such as teens and mothers, receive targeted health messages.
- *Medicall Home, Mexico* - ICT used in MedicallHome helps improve communications between health providers and patients outside of traditional doctor visits. Medical Contact Center and a network of medical services, intended to reduce the cost of health care and expand coverage, allowing: Universal Access Number 01-800, immediate and timely health service, equity in health, population education, increasing efficiency of services, and assurance of confidentiality of information and security.
- *CliniPak, Kenya, Nigeria, Tanzania, United States* - ICT used in Clinipak helps to improve a health provider's ability to diagnose and treat patients, either through improved training or real-time assistance with clinical decision making. Moreover it helps to improve communications between health providers and patients outside of traditional doctor visits and to improve data collection, organisation, or analysis. TheCliniPAK automates and standardises primary health care workflows and data collection, health assessment forms and patient records in a suitcase. It contains a solar powered touch screen laptop and other health assessment tools that allows a nurse or a midwife to do a high quality assessment of patients in a rural setting and to create a linked patient record (and fingerprint ID). CliniPAK contains a nascent electronic health record system, automated patient registration, and vitals capture, clinical triage, assessment, diagnosis and treatment support. The team modified an Open Data Kit (ODK) Collect, an open-source tool for mobile data collection and loaded it onto an Android Smartphone that the Community Health Workers (CHWs) carry when visiting patients. The completed surveys are then uploaded to a Vecna-hosted server, where the data is available for download and reporting. This has been a vast improvement over the paper and pen survey collection method. Vecna Cares upgraded the CliniPAK software at Enoosaen and Olereko clinics with new features for improved patient outreach, data capture and reporting capabilities.

Most of the described examples are already in the post pilot phase and are fully operational. In those examples thousands of people already received medical help and what is very important, most of the clinics are affordable for poor people and have financial sustainability at the same time. The strategy is to expand its activity as much as possible to other regions and countries which are also facing this kind of problems.

Preventive health and self help

- **ICT used** – Across examples of preventive health care solutions one can observe two trends, firstly a trend towards platform solutions – webportals like patientslikeme.com that offer content and interactive advice.

Secondly, a multitude of apps have appeared in the preventive and self-help category that aim to help with symptoms as wide as obesity, mental issues or stress-related illnesses to cardiac illnesses or the management of personal fitness. In our sample, the aim with the Buddy app is to improve the outcome of mental therapy and the process of therapist sessions. It was found that the easiest and most convenient way to do that was by making the tool available on an ICT device which clients already use as a natural part of their every-day life; their mobile phones. The Buddy app is primarily a form of digital diary. When the client has agreed to use the service in addition to her regular talking therapy sessions, the therapist submits her profile by use of her mobile phone number. In this case the app creates content and helps the clinicians to identify issues.

- **Online platforms, communities and networks** - *PatientsLikeMe* is a patient powered research network that improves lives and a real-time research platform that advances medicine. On *PatientsLikeMe*'s network, people connect with others who have the same disease or condition and track and share their own experiences. In the process, they generate data about the real-world nature of disease that help researchers, pharmaceutical companies, regulators, providers and nonprofits develop more effective products, services and care. The aim of many of the available examples of self-help or patient portals and platforms is to create online communities of complementary audiences – in other words, patients, family members, clinical experts and researchers, sometimes even pharmaceutical experts and policy makers. Most of these communities bring together relevant global communities and do not build complementary offline communities. The aim is to provide a health commons specifically aimed at specific diseases, or to enrich and improve the care environment. For instance, Buddy makes it possible for therapists and clients to share more information on a timely basis. The two trends demonstrate diverging network effects – whilst the platforms display all network effects depending on disease type and level of support requested, the apps only indirectly create network effects by providing big data of interest across all users.

Personalised health and smarter patient environments

- **ICT used** – The main drivers behind personalised healthcare solutions and smarter patient environments are the provision of better and more efficient care in terms of wellbeing, and speed of regeneration, and to do so cost and resource effectively from the perspective of the health care provider. There is a long tradition of telemedicine research and research into smart patient environments and the borderline between social innovation solutions and innovation in healthcare is rather blurred. In our examples, *DIABETIVA* Telemedicine builds on standard ICT with emphasis on telecommunications solutions such as the internet, mobile apps and so on. Telemedicine solutions are often coupled with increasingly personalised monitoring technologies. *DIABETIVA* for instance operates in a constant state of relaying information back and forth between patients and practitioners with ultimate reviews, facilitated by KADIS¹⁰³, the Karlsburg Diabetes Management System. With the *Patient Briefcase*, the patient can be monitored at home and treated by a specialised doctor or nurse from the hospital.
- **Online platforms, communities and networks** – *DIABETIVA* demonstrates a growing trend: its online platform allows for data derived from proprietary devices carried by the patients to be transmitted to an online platform. It consists of the implementation of the digital capture of the medical records in order to streamline internal processes and also helps reduce physical storage space thereof. Patients can then safely access this information for their own use online, or extracted it in a user friendly format to provide to their supporting physician. By definition, this is a complementary system to the practice of medicine. In reality, telecommunications and information sciences play an equally important role in how they facilitate the connection between this state of the art data aggregation system and the end-users' device. This is a "Matching assets to needs" platform. It

¹⁰³ <http://www.diabetes-service-center.de/en/ueber-uns.php?lang=en>

addresses the lack of reliable patient data, timely monitoring of patients condition and availability to the medical professional handling the patient's case. The platform is the core element that seeks to revolutionise patient health care in that it creates a searchable, sharable history of all the patients past readings which are available in real-time, allowing for timely and direct intervention, better healthcare, quality of life and life-expectancy for the patients in question. Furthermore this opens possibilities of obtaining much greater accuracy of diagnosis, since opinions can be made based on concrete, long term data, and not patient observations, often affected by personal embellishments, the patients' emotional condition or inability or unwillingness to share. This regards a technique that causes great impact, given the many advantages presented and extensive use of technology.

Communities, knowledge and innovation

Being diagnosed with a condition spurs patients understanding of their condition and in the process they connect and network with existing patients, passing and receiving knowledge and sharing experiences. The platform hosted by DIABETIVA can motivate patients to share data and knowledge on how to better understand it and use it to better monitor their condition. This will in time have two effects:

- a) As DIABETIVA users become better able to use their DIABETIVA generated data and use it as leverage to improve their lives the undertaking they will attract more patients who wish to partake of their communal knowledge and will thus be drawn to adopt DIABETIVA for themselves.
- b) DIABETIVA users would be more likely to splinter-off from the general group of patients, creating a knowledge-based culture, using their own lingo and adopting practices and a mentality impossible to understand and imitate for those patients outside the DIABETIVA group.

Any groups spawned by DIABETIVA users will be prone to being an informal one and, consequently, any knowledge hosted in the community will be tacit and prone to free-form (not codified), as the sharing process will have stripped any structure in the process of dissemination, since it will have been shared on an ad hoc basis to address specific matters and problems and not to educate. It will, in time, create a group of practitioners able to apply the data to some uses, but unable to promote a cohesive and intelligent analysis and application or evolve new uses.

Networks and the network effect

Members that partook in the Diabetiva pilot program, a small-world network, are all linked together by sharing the same ailment and method for coping with it. Despite the project branching out to national levels the true nature is quite limited in its overall capabilities as it is in essence designed to amplify medical services to a specific group of high risk patients that are diagnosed with type 2 diabetes mellitus. Naturally the implications of a project that deals with such high profile diseases could easily be transferable unto conditions that require similar types of monitoring. An additional noteworthy point would be the groups vast layers and methods of interaction is primarily of a digital nature which is facilitated by the latest ICT which both reduces costs, a difficult area in chronic diseases, and by default increases the overall effectiveness. Furthermore, the group aids in the creation of links between doctors and diabetes patients that could not be foreseen without the element of intensified telemedical support. The dire nature of diabetes and the magnitude of the potential dangers if unmonitored or untreated are a clear portrayal of type 2 diabetes' imperative gravity. Despite the grave nature of the networks infrastructure does in turn depend on the demands imposed by the constant communication between the involved parties the positive effects of the project must be taken into account when assessing any telemedical project both in intangible forms, such as increased well-being, as well as in economic context. As one is inducted into the group, partly due to necessity and partly by own choice, we can clearly see that the network is of limited expansionistic capabilities yet its properties are interchangeable with similar disease support groups.

Supporting smart infrastructure for integrated health & social care

- **ICT used** - *dotHIV* uses ICT in a genuinely unique way, or it may even be better to say it does not only use ICT – it even crafts ICT: By proactively shaping the composition and appearance of today's by far most important ICT infrastructure in the world, the Internet, *dotHIV* is a profoundly far-reaching approach. Nevertheless, there are also some more "down to earth" implications and opportunities. The major uses of ICT and the respective associated objectives can be summarised as follows:
 - Shape the structure of the Internet, thereby anchoring the HIV/AIDS problem on the Internet's highest infrastructure level
 - Raise money to support projects/organisations financially
 - Make users allocate donations
 - Follow up on funded projects/organisations
 - Raise non-financial support (smart capital) to support social innovation
 - Increase the probability of numerous types of actors to donate and/or get engaged. Targeted actors include: domain owners, domain users, Intermediaries, Registrars, Google, facebook, Twitter, etc., *dotHIV* itself
 - Raise awareness and de-stigmatise
 - Provide a CSR service to companies

Both examples use standard ICT.

- **Online platforms, communities and networks** - Both examples – *dotHiv* and *Cellslider* operate as crowdsourcing platforms and both demonstrate huge innovation potential in very different ways. *dotHiv* combined crowd, funding with participatory aspects and a global awareness campaign, whilst *cell slider* is a perfect example of mobilising masses to reach the outcome of many more samples classified much faster. *Cell Slider* is the online element of a much larger offline process. Initial activities take place offline in the laboratory, where scientists add stains to cancer cell samples. The next stage, where scientists would usually analyse the samples under microscopes, is taken online, asking citizen scientists to spot and classify trends. Following this, results are then analysed further, offline, by scientists and researchers to develop new cures and treatments for cancer.

The *dotHIV* approach is singular and unique (although it may be reasonable to assume that remotely similar approaches may follow suit in the future). Therefore, it is not likely nor the objective that the approach is copied using networks. However, the approach is almost 100% Internet-based and thus makes use of networks effects extensively of course. In terms of our categorisation, to identify which types of network effects actually happen or may happen, we need to determine what the social innovation we are referring to actually has to be seen in. There are several constituents: Clicks on .hiv domains, new .hiv domains registered (sales generating funds for HIV/AIDS projects/organisations), additional awareness, de-stigmatisation, maybe other charitable top level domain (TLD)s¹⁰⁴ registered.

Each of these social innovation aspects has different network effects or is affected by them in a different way. Concerning network types, we are likely to see the following patterns:

- Random networks:** Additional awareness for the problem HIV/AIDS in general and for the specific activities of *dotHIV* as well as projects/organisations supported will be generated via random networks. Although *dotHIV* is not a typical crowdfunding platform, we can borrow the knowledge we have about them to inform the likely picture we get about *dotHIV*: The "word" about the approach and supported

¹⁰⁴ A top-level domain (TLD) is one of the domains at the highest level in the hierarchical Domain Name System of the Internet. More info: http://en.wikipedia.org/wiki/Top-level_domain

projects/organisations will be spread via random networks using social media. That is likely to lead to additional awareness, de-stigmatisation, more clicks, etc. – in the best case the approach or at least single projects get viral (literally).

- ii) **Scale-free networks:** Once established, working and disseminating, we may see either the TLD .hiv as a whole or single .hiv domains as hubs with which large numbers of actors have ties. Therefore, the same content and messages that are distributed via random networks are also distributed via these hubs. In contrast, .hiv will feature “the whole” approach, including the .hiv domain, what it is all about, as well as the link to the voting, whereas in random networks, there may spread and pop up only singular aspects of it.
- iii) **Small-world networks:** are not really what is intended or targeted. Instead, the approach is to think big. However, it may make small-world networks more visible and accessible, and that is, make them bigger. In addition, we see that dotHIV has been highly successful establishing sort of a small-world (but open!) network around itself, i.e. a network of supporters and advisors (which could however also be seen as a social capital network).
- iv) **Social capital networks:** This may be another central facet of the approach: To build social capital between the “HIV community” (HIV-positive people and those who aim to help) and the rest of the world. In these terms, we may see one of the absolutely most central goals of the approach as being just that: To de-stigmatise is to build social capital, or the condition of the possibility for building bridging social capital. But the approach also aims to make people actually engage, donate, vote, etc., i.e. to build bonding social capital.

6.2.3. *Social innovation outcomes*

In the following the social innovation outcomes and their beneficiaries reported by the cases are summarised:

In the following the social innovation outcomes and their beneficiaries reported by the cases are summarised by focus area. Not all outcomes defined in our initial briefing material were relevant to the cases, yet other outcomes were also relevant that are also mentioned.

Preventive health and self help

1. Increase in health and wellbeing (numbers of people and duration)

- **BUDDY APP** - The aim of Buddy is to improve the clients’ mental health more effectively and thus faster. One way to do that is to make them feel less dependent on the therapist or the therapy taking place at the actual clinic. Through the reflection, facilitated by the easy overview of their progression on the Buddy webpage, the aim is to make the patients aware that they are the ones who are in charge and might ultimately alter their situation. In addition Buddy creates a platform of guidance powered by their own realisations as well as a tool of timely reminders which might do a lot to help the clients on a daily basis outside the clinic. For patients dealing with depression or other mental deadlocks, the daily notifications can provide a little structure to the difficult days, but most essentially the diary is a strong tool to target the talking therapy sessions towards what is most important; both on the therapist’s as well as the client’s initiative. As these measure are developed to give the service user an increased sense of independency and awareness of own progression, the aim is that the patients will find it easier to leave therapy behind sooner as well as be less likely to fall back into unhealthy patterns after having terminated therapy. Thus Buddy has the potential to decrease the duration each patient spends in therapy and thereby increase the number of people who can receive help.
- **DIABETIVA:** After first check point at six months, a 20% drop in of hospital admissions with an average decrease of time spent at 36% was noted in contrast to the control group. This translates to healthier

patients on an overall level and therefore is a representation of positive effects of telemedicine applied to the treatment of diabetes type 2. This transfers in much more effective means of preventing the disease's side-effects as opposed to reactive measures in high-profile situations.

Personalised health and smarter patient environments

2. *Increase in health personalisation*

- *Patient Briefcase:* Assessment of the quality of life of patients showed a marked improvement, and 89% of them who used the product expressed a high degree of trust and satisfaction in using it, with 94% saying they would recommend it to others in the same situation as themselves. Patients also experience increased flexibility and self-control over their daily life, with corresponding lower incidence of hospital admittance, less need of a home-help and postponed transfer to a nursing home. All these constitute additional savings for the public sector.

3. *Increase in health skills (personal & collective): patient centeredness*

- *Patient Briefcase:* The public sector staff involved (doctors, nurses and physiotherapists) have been very positive in their use and acceptance of the Patient Briefcase, which has also given them much greater flexibility in their work. The creation of an innovative culture in the hospitals involved, with improved understanding of operational and project leadership processes, as well as making the hospitals more attractive places to work.

Supporting smart infrastructure for integrated health and social care

4. *Scaled health impact, actual or predicted (more sectors, groups, localities)*

- *DotHIV:* .hiv domains being registered, generating sales and raising awareness, promotion for HIV/AIDS projects/organisations, de-stigmatisation, and maybe even other charitable TLDs being registered. However, all of this may not be predicted very much confidently, as the approach is ground-breaking and its medium, the Internet and social media developing vastly and unpredictably.
- *Patient Briefcase* - The case is a good example of successful cooperation between the public and private sectors, originally supported by public innovation funds (both European and Danish) as well as private investment (by Medisat itself), which today also functions as a fully commercial operation. The company also continues to cooperate with the public sector in developing new applications using its own and public investment and innovation funding. Also, to expand the usage of the Patient Briefcase the plug-in possibilities are many – in principle anything can be plugged in. In Medisat's Development Department they strive to update the briefcase, making it suitable for other purposes and treatments than Chronic obstructive pulmonary disease (COPD) by meeting the standards of today. Some of the plug-in possibilities today are: Spirometer – Electrocardiography (EKG) – Heart Monitor - Weight Scale - Blood Pressure Measurement - Blood Analyzer. Between 2007-2009 the Patient Briefcase has received clinical documentation.
- *Cell Slider* - Supporting the development of cures and treatments for cancer - Beneficiaries are not those who provided samples to Cancer Research for research, but future patients. Cell Slider aims to increase the analysis of cancer cell images so that researchers can use the results to develop new treatments and cures for cancer, benefiting patients, relatives, the NHS and wider society in the long run. However, the tool is in its infancy and there is a lag between the analysis of cell images and the development of treatments and cures.

Other

Other outcomes were reported, not directly linked to any focus area, as below:

5. *Generated funding, including crowdfunding and micro-donations*

- *DotHIV* - funds generated and forwarded to support HIV/AIDS projects/organisations. It may be predicted that in a five year time span, roughly “10 million Euros for small-scale AIDS projects around the world may be generated”, according to CEO Carolin Silbernagl.

6. *Health care optimisation through crowd analytics*

- *Cell Slider* - Increased analysis of images of cancer cells - In the first few months, citizen scientists analysed 1000 samples that had previously taken 18 months to analyse by eye. Between its launch in October 2012 and December 2013, around 200,000 people visited the platform and nearly two million breast cancer images from two breast cancer studies were classified. By 19 March 2014, 2,188,976 images had been analysed. Overall, Cell Slider aims to engage millions of people in order to reduce an analysis time that would usually take years to a matter of months.

6.2.4. *Social innovation processes*

In the following the social innovation processes and social practices reported by cases are summarised by focus area drawing on the process taxonomy presented in section 2.

Preventive health and self help

The aim of Buddy is to improve the clients’ mental health more effectively and thus faster. One way to do that is to make them feel less dependent on the therapist or the therapy taking place at the actual clinic. Through the reflection, facilitated by the easy overview of their progression on the Buddy webpage, the aim is to make the patients aware that they are the ones who are in charge and might ultimately alter their situation. This user-centred therapy-assisting tool contains several elements of reflection and behavioural activation. As a result a service user is likely to become more aware of her own process and learn to understand her situation much better. Hereby she might realise that she is not satisfied with status quo, and thus become more prepared to work goal-oriented towards feeling better. Furthermore the service user might begin to feel more independent as she starts to take responsibility and ultimately govern her own progress, not only might it be possible to break the cycle of dependency within mental health treatment, but it has also proven to increase attendance among service users. In fact it is quite a problem that patients fail to show up at scheduled therapy sessions; some clinics experience a 50% failure to show up. This is rarely because clients forget their appointments; rather it has to do with the fact that clients lack ownership of their treatment. Buddy gives service users the ability to govern their own treatment, set own goals and get timely reminders of the small things they need to change. When the clients have set an agenda for their therapy sessions beforehand, they are themselves much more goal-oriented and aware of what they want to achieve by meeting.

Personalised health and smarter patient environments

Examples like Diabetiva and the patient briefcase push the market into adopting more innovative methods and products. This in turn pushes prices for advanced health-care down, while at the same time upgrading the care provided. Eventually, more tech-savvy patients will find new methods of using their data, thus leveraging the benefit for patients or clients and creating on- and off-market niches that will keep the market vital long after market saturation has set in.

As these initiatives are set up currently and in the context of the sensitivity of health data, knowledge generation will be negligible, and constrained to the individual user and eventually to the small community of users who will come together to share and make the most of their experiences and their scarce and extremely focused knowledge. There will be little benefit to be had outside the tight community of connected users. More likely this relatively intense exchange may occasion external academic study to assess the networks as to its emergent properties. Initiatives like patient briefcase or DIABETIVA are sure to make health-care experts, bodies and governments re-evaluate their policies, seek to curtail costs, while at the same time increasing value for patients and re-evaluating the whole care process by bringing patients, the main stakeholder, into the fold. This kind of innovation of transferring some power and responsibility to the stakeholders galvanises the process and puts the individual, rather than the condition or the health-care system, into the centre of the debate.

Supporting smart infrastructure for integrated health and social care

dotHIV combines an entirely new approach of fundraising and campaigning with elements of crowdfunding (making use of an established and highly successful platform both as a role model and a provider of ICT infrastructure).

Therefore, there are at least two distinct but highly integrated and inter-related uses of ICT:

- First, the .hiv domain is a ground-breaking approach for raising awareness for a social problem. At the same time it is used to generate income from sales of .hiv domains that are forwarded to support projects and organisations aiming at solving the problem or at least contribute to solving it.
- And second, funds are allocated using ICT. Relatively new technology will be used to introduce Internet users to the approach and to give them the opportunity to familiarise themselves with projects/organisations to be funded. An intended side-effect is that they learn about problems and issues as well as solutions and effective ways of dealing with the HIV/AIDS problem.

Cell Slider aims to increase the analysis of cancer cell images so that researchers can use the results to develop new treatments and cures for cancer, benefiting patients, relatives, the NHS and wider society in the long run. An online community of ‘citizen scientists’ is the basis for this analysis. However, while called ‘scientists’, anyone willing to access and filter content and information can take part. When they join, participants are introduced to the crowdsourcing analysis platform and taken through a tutorial which introduces the different types of cells that appear in the images, what to look out for and how to classify images. This increases the number of individuals who can create content as anyone, regardless of skills and knowledge, can get involved. Beneficiaries are not those who provided samples to Cancer Research for research, but future patients. Cell Slider aims to increase the analysis of cancer cell images so that researchers can use the results to develop new treatments and cures for cancer, benefiting patients, relatives, the NHS and wider society in the long run. However, the tool is in its infancy and there is a lag between the analysis of cell images and the development of treatments and cures.

6.2.5. Barriers and drivers

In the following the barriers and drivers reported by cases are summarised by focus area.

Preventive health and self help

There are few barriers to the scaling and realisation of apps except overcrowding of the market and thus possibly lack of focused development support for high-quality, market and system certified apps. In the example of the Buddy app; the model is rather easy to copy and so it can potentially be duplicated all across the world. It only depends on the individual clinics; whether they agree with the initiative and manage to offer the tool in a compelling

way to their clients. This naturally follows that the clinics are able to pay for the service, wither by means of public funding or as a way to stand out on a private health care market. Buddy does not require a smartphone; and will not in the foreseeable future. This makes it cheap and attainable across social groups and economic gaps round the world. One of the main drivers behind Buddy's potential reach and potential width of applicability has been simple design and the fact that it can be used on most mobile devices, including pre-smart phone mobile phones.

Personalised health and smarter patient environments

Technological advances, such as mobile internet, tablets, smart phones, better broadband foundations and so forth, in combination with advances in the medical field are the primary driving force in relation personalised health and smarter patient environments, for instance in the field of coping with diabetes. Fast moving paces of telemedicine in different markets, such as the American market, prove such endeavours' which creates acceptance and ultimately wider adoption of the practices. This is true in cases beyond diabetes monitoring such as advanced telemedicine systems being used in keeping elder susceptible individuals out of nursing homes¹⁰⁵. The key technical drivers are increasing acceptance of IT solutions and IT skills among core target groups such as the elderly, and increasing pressure on the health care system to provide high levels of care at the same time as minimising costs. Integrated and personalised health care solutions still face huge interoperability issues. In the DIABETIVA example for instance initial barriers are evident at the clinical and technical levels where patients must have the relevant infrastructure, i.e. phone-line, and be compliant to a therapy which ensures client confidentiality. Adding the outcome requirement of cost- efficiency there is the consequential barrier that the system needs to be adopted by enough patients to justify cost-efficiency.

In terms of barriers, until recently the biggest technology barrier for the *PATIENT BRIEFCASE* and the reason why the Patient Briefcase had difficulty becoming commercially operational was the challenge of providing sufficiently stable Internet bandwidth at a suitable price, both in terms of set-up and operational costs. More recently, the availability and quality of the ICT infrastructure in Denmark has increased significantly, whilst price has also reduced to the extent that commercial products and services like the Patient Briefcase are now becoming possible in Denmark.

The barriers which need to be overcome for the type of cooperation, investment and commercialisation represented by the Patient Briefcase are well documented and include:

- The problems associated with the release of commercially sensitive information and data which potential competitors might exploit.
- The difficulties of setting appropriate commercial prices for the product and services which the public sector as the main customer can afford and which also provide sufficient commercial return for the company.
- Slow and laborious public decision-making which does not take adequate account of market needs and changes, for example slow public procurement and slow preparation of impact evaluations during the prototyping phase.
- There are also different time scales for project success between the private and public sectors, for example the need to get to market as quickly as possible in the former compared to the need in the latter for careful documentation of clinical outcomes.
- Dissemination barrier is new and cheaper technology like the iPad and other Tablets with cheap apps -that at are standard in a lot of homes- takes the market.

¹⁰⁵ Elaine Pofeldt,. (Tuesday, 14 Jan 2014). Telemedicine keeps seniors out of nursing homes. Available: <http://www.cnbc.com/id/101316376>. Last accessed February 2014.

Supporting smart infrastructure for integrated health and social care

It is difficult to generalise from the *dotHIV* example, yet the barriers encountered deserve to be presented in their own right as an example of a potentially truly transformative initiative. For *dotHIV* the most severe barrier so far has been to comply with vast, complex and often opaque rules and regulations of ICANN, complicated even more by their dynamic nature, as they have been under revision during the time *dotHIV* intended to register the TLD. Overall, the application for the TLD has had more than 200 pages, excluding 70 appendices.

The second barrier then was (and still is) the technical implementation of the project. To establish and operate a TLD is usually the business of major actors in the field, i.e. large companies and NGO with capacities built up in many years of existence. It is not the field of operation for a charitable start-up with no expertise and virtually no resources. Thus, the temporarily lacking technical expertise necessary to implement such an ambitious was a severe barrier to the endeavour. And a third and ongoing barrier is that the two branches of *dotHIV* are very different: One is a commercial supplier of an Internet service, and one is a charitable organisation dedicated to solving a distinct social problem. And in these two areas, there are completely different sets of rules in place. The most obvious or problematic difference is that the contents of .hiv domains and the associated websites may be very much in conflict or opposing the views of *dotHIV* as a charitable organisation; that is, it may be the case that .hiv GmbH has to manage and support Internet sites that conflict with the views and objectives of *dotHIV* g.e.V. However, this must be strictly separated: For the GmbH, the ICANN rules apply and have to be followed and implement, whereas for the g.e.V. the charitable mission as laid down in the mission statement is paramount. So, the conflict between diverging organisational goals and processes is dealt with through this legal structure.

6.2.6. *Lessons learned and success factors*

In the following the lessons learned and success factors reported by cases are summarised by focus area in relation to the use and role of ICT, strategic and operational considerations and policy implications. An overview is provided in Table 6.2.

Preventive health and self help

The role and use of ICT in social innovation

ICT in the examples analysed in this category has both a supporting and an enabling role as portals such as *patientslikeme.org* demonstrate. Particularly in combination with monitoring technologies, and mobile technologies this market may offer powerful solutions for individuals either taking care of their own ailments and illnesses (or simply trying to be as fit as possible) or enabling approaches for carers, family or healthcare professionals. Particularly mobile technologies are enabling a whole new approach to preventive healthcare and self-help. In the case of *Buddy* a simple app, which does not even require a smart phone supports ongoing therapy processes for mental illnesses. One can easily imagine the potential in with symptoms such as “stress”, “burn out” and “depression” as well as in the wider “well-being” and “optimising health” market particularly if network effects are activated and online & offline community building enabled.

Strategic and operational considerations related to ICT in social innovation

This category includes platforms such as *PatientsLikeMe* are patient powered research network that improves lives and a real-time research platform that advances medicine. On *PatientsLikeMe*’s network, people connect with others who have the same disease or condition and track and share their own experiences. In the process, they generate data about the real-world nature of disease that help researchers, pharmaceutical companies, regulators, providers and nonprofits develop more effective products, services and care. They are supported by the private sector or are run as non for profit organisations. *PatientsLikeMe*, the largest online network for patients, has

established its first broad partnership with a drug company, a recent article reports¹⁰⁶. Genentech, the South San Francisco biotechnology company bought by Roche in 2009, now has access to PatientsLikeMe's full database for five years. PatientsLikeMe is an online network of some 250,000 people with chronic diseases who share information about symptoms, treatments, and coping mechanisms. The largest communities within the network are built around fibromyalgia, multiple sclerosis, and amyotrophic lateral sclerosis (ALS), but as many as 2,000 conditions are represented in the system. The hope is that the information shared by people with chronic disease will help the life sciences industry identify unmet needs in patients and generate medical evidence, says co-founder Ben Heywood.

Policy issues related to ICT in social innovation

The obvious policy implication will be to define the boundary between the private market for fitness and self-help and the prevention of clinical costs by supporting approaches that save costs down the road. This is particularly relevant when it comes to the use of data that users inevitably leave when using such portals or apps. The PatientslikeMe example highlights the critical issues with portal powered social innovation approaches too however, as the data displayed is potentially highly sensitive and personal, yet can potentially support transformative medical advancement.

Personalised health and smarter patient environments

The role and use of ICT in social innovation

In the area of personalised health care social innovation meets concrete health issues and the strategic policy focus to bring down costs in healthcare. Social innovation generally speaking brings the human factor into telemedicine or eHealth – both phenomena that have their own research tradition. The examples in this category demonstrate that personalised health & smarter patient environments could open up possibilities for social innovation approaches to improve the patients quality of life, or support the carer or family or improve working conditions for the health professionals. For instance, the APP Buddy is targeted towards two very important social innovation outcomes. It has increased health and well-being of patients and thereby higher numbers of people as well as shortened duration of therapy. Secondly Buddy has increased health personalisation. This is achieved primarily by means of two main social innovation processes; a change in structure towards self-governance, and a strengthened relationship between patient and therapist. Finally Buddy creates a network in which tacit knowledge, often beyond the reach of the therapist, becomes codified knowledge which can be shared and used as a tool for better self-understanding as well as to provide better therapy for the patient.

Upon closer examination the examples in this category are probably more examples of innovative telemedicine examples, which demonstrate aspects and potential for social innovation, and certainly demonstrate social outcomes. For example the use of ICT in the Diabetiva program facilitates a higher quality of life by administering proper treatment to high-risk patients at the right time without continuous health appointments. This frees up valuable time for the patient. The patient briefcase is a similar example. Both are technological examples that could enable social innovation services in the future to provide the patients, carers or health professionals with ICT enabling or ICT supporting social innovation solutions. The main issue at the moment, which is applicable long term, is integrating telemedicine into current health care systems and who would be liable for footing the bills. Personalised Decision Support (PDS) systems, such as Diabetiva, which combine telemedical support and computer based advice will need to be further expanded with the latest technological breakthroughs. This is something which is in fact being developed by major mobile phone developers such as Apple and Samsung. Currently, Apple iPhone and iPad users can connect Lifescan blood glucose meters to their phones via Glooko's meter synch cable . So a safe assumption that mobilising accessibility, monitoring, and possibly intervention methods would be a natural path

¹⁰⁶ /www.technologyreview.com/view/526266/patientslikeme-gives-genentech-full-access/

that telemedicine could follow. Heavier promotion to ensure such practices with better channels of distribution will undoubtedly ensure the better reception of e-health. One can summarise therefore that the telemedicine area could benefit from applying social innovation perspectives as part of their ideation phases to enrich this future market be it in concrete illnesses or in elderly care or handicapped care or long-term ill care.

Strategic and operational considerations related to ICT in social innovation

The examples analysed demonstrate how important experimentation is for public sector innovation and in particular health care innovation. Both examples deliver social outcomes, yet do not do this with social means yet. For example, the *patient briefcase* is a good example of successful cooperation between the public and private sectors, originally supported by public innovation funds (both European and Danish) as well as private investment (by Medisat itself), which today also functions as a fully commercial operation. The Patient Briefcase has mainly been used to support patients with COPD for rehabilitation training, guidance, questions and answers, and monitoring of, for example, lung capacity, breathing functions, oxygen take-up, etc., which normally require a staff home visit, an outpatient visit at the hospital or admission to hospital. The technology enables the patient to maintain close personal contact with specialist staff and doctors, nurses and physiotherapists as in the hospital setting, though now in the familiar and secure home surroundings. The elderly individual is guaranteed optimal treatment, care, and rehabilitation, with the goal of regaining their functional level prior to their illness and with the intention of helping the elderly people to reach the highest level of independence possible. It is therefore important to find more effective ways of solving problems and exploiting available resources. This means raising the service level by making working processes more lean, as well as getting better in understanding, using and dissemination of good ideas, best practices and new technology solutions.

Policy issues related to ICT in social innovation

The procurement of innovation that include social innovation could be deeply embedded into healthcare innovation policies. This may require further work on impact and outcome measurements of social change, wellbeing and social impact yet might deliver much higher outcomes.

Supporting smart infrastructure for integrated health and social care

The role and use of ICT in social innovation

The spectrum of social innovations covered in the category of supporting smart infrastructure for integrated health & social care demonstrate that social innovations, which are enabled by ICT can be extremely diverse and can deliver vast results. Every person treated in a Social Enterprise clinic would otherwise not have been treated, Cell slider is an example where the power of crowdsourcing potentially can save lives by spotting cancer earlier. Whilst different in set-up and scale dotHIV would not have been unthinkable without ICT. It is a social innovation strongly embedded in today's ICT infrastructure, and an innovation to that infrastructure.

Strategic and operational considerations related to ICT in social innovation

All examples are examples of multi-partner projects that started small and have successfully scaled. Each example has addressed scarce capacity and has increased capabilities (individual & collective) for instance the social enterprise clinics give poor patients access to local medical capacity and at the same time build medical capability by allowing knowledge generation due to the use of ICT tools (gathering medical information and transforming them into medical knowledge). Those tools allow to use new and/or unused asset and resources which are generating new possibilities of how people can be treated and how they get medical services access. Cell Slider innovatively uses the general public's motivation to see improvements in cancer research and treatments, along with its growing participation in crowdsourcing activities to help scientists understand cancer cells and develop treatments. Dothiv raises awareness for AIDS, crowdfunds micro-donations, sells the TDL domain to raise funds. There are many relationships that are worth mentioning in dotHIV becoming a successful venture: First and foremost, the

relationship between domain operators, large and small, and the HIV/AIDS community will become established and/or closer. Then the relationships between domain users/visitors and that same community will also be established or enhanced. And the same happens with all other parties involved, e.g. intermediaries, the media, etc. Overall, one of the central goals of the venture is just that: The establish and improve relationships, to include more and more diverse actors into the HIV/AIDS community, i.e. a set of individuals and organisations dedicated to fighting the HIV/AIDS problem.

Policy issues related to ICT in social innovation

The policy implications are very specific to the different examples presented. For instance for dotHIV it was of course an inevitable prerequisite for the ICANN to allow new TLDs to be registered for the concept to work at all. For social enterprise clinics, which are highly successful in developing countries but also could be a model for affordable healthcare for the poorest in Western countries require specific policy changes. Cell slider is one example in the fight against cancer that taps into crowd resources, which policy may choose to support to prevent cancer and thus save costs.

6.2.7. Conclusions and reflections

Drawing directly on the above analysis, conclusions regarding the three generic research issues, introduced in the methodological approach in section 2, are summarised below as they relate to the health theme. This section is work on progress and should be read as a starting point for further analysis being undertaken in our next two reports:

The role and use of ICT in social innovation

Across the health theme we can observe the biggest diversity and breadth of ICT solutions – from apps to entire home care patient environments. A key finding is that ICT enabled “real social innovation” – in other words social innovation according to our definition – was mainly to be found in the *smart infrastructure for integrated health & social care* category. The spectrum of social innovations covered in this category demonstrate that social innovations, which are enabled by ICT can be extremely diverse and can deliver vast results. Every person treated in a Social Enterprise clinic would otherwise not have been treated, Cell slider is an example where the power of crowdsourcing potentially can save lives by spotting cancer earlier. Whilst different in set-up and scale dotHIV would not have been unthinkable without ICT. It is a social innovation strongly embedded in today’s ICT infrastructure, and an innovation to that infrastructure. dotHiv and Cellslider operate as crowdsourcing platforms and both demonstrate huge innovation potential in very different ways. dotHiv combined crowd, funding with participatory aspects and a global awareness campaign, whilst cell slider is a perfect example of mobilising masses to reach the outcome of many more samples classified much faster. Another specific phenomenon are the rise of portal technologies & apps as potential ICT enablers and supporters of social innovation – webportals like patientslikeme.com for instance offer content and interactive advice. The Buddy app aims to improve the outcome of mental therapy and the process of therapist sessions. The most difficult category was the personalised healthcare solutions and smarter patient environments. Here the potential for social innovation is significant, yet it seems that the private providers have not yet teamed up with social innovation approaches or projects (at least not in these concrete examples).

Strategic and operational considerations related to ICT in social innovation

The examples covered in this chapter vary from private sector initiatives to social enterprise run solutions. For instance, Medisat is the private company behind the innovative *Patient Briefcase*. It has about 50 employees and is as a commercial supplier of products and services to the Danish health sector also a vendor with vision of modernising health services through the introduction of tele-medicine solutions to different patient groups. dotHIV

should be better referred to as “dotHIV g.e.V. and .hiv GmbH” , as the organisation is actually two organisations, which is not really very uncommon for social ventures in Germany. As the venture is still in the planning/start-up phase, there is yet no proven sustainable business model. However, economic sustainability is envisioned to be achieved by the commercial branch, .hiv GmbH, which is to sell the domains and thereby cross-subsidise the charitable branch, dotHIV. Another non for profit set-up is cell slider. Cell Slider was developed by a team of four Cancer Research UK researchers from the Universities of Cambridge, Leeds and Southampton in collaboration with the Citizen Science Alliance, a network of scientists, software developers and educators developing, managing and utilising internet-based citizen science projects to further science and the public understanding of science and the scientific process. Cell Slider relies on a number of actors to work – researchers to provide images of cancer cells, volunteers to analyse the images, developers to maintain the website and researchers to interpret results in order to develop cures and treatments. The Social Enterprise Clinics are initiated either by a company (Access Afya) or by individual people (Penda Health). Such clinics are funded by the state (LifeSpring) or a company (Access Afya) or by individual people (Penda Health). Funding is equally varied and includes foundation funding, grants, micro funding, crowd sourcing as well as public and even European funding.

Policy issues related to ICT in social innovation

Careful embedding of ICT is needed into the traditional activities in telemedicine and home care, initially through controlled experimentation depending on context. Could potentially deliver cost efficiencies increasing flexibility and mass customisation which improves the productive deployment of unused assets, but new forms of regulation may be needed to mitigate exploitation. This may require further work on impact and outcome measurements of social change, well-being and social impact yet might deliver much higher outcomes. As the most potential for social innovation lies in the *smart infrastructure for integrated health & social care* category there is specific policy reviews and changes to be considered, for instance in the area of inclusion policy for people previously excluded from the health market or the support & inclusion of crowdanalysis models, thus increasing the productive deployment of unused assets which potentially speeds up the process of identifying cancer, thus cutting costs of treatments and increasing the chance of curability. Technically there is further need to address concerns about data security, sensitivity & privacy.

Upon closer examination the examples in this category are probably more examples of innovative telemedicine examples, which demonstrate aspects and potential for social innovation, and certainly demonstrate social outcomes. In the area of personalised health care social innovation meets concrete health issues and the strategic policy focus to bring down costs in healthcare. Social innovation generally speaking brings the human factor into telemedicine or eHealth – both phenomena that have their own research tradition.

The examples analysed demonstrate how important experimentation is for public sector innovation and in particular health care innovation. Both examples deliver social outcomes, yet do not do this with social means yet.

Table 6.2: Health case analysis overview

Focus area and SI outcomes	ICT use	Online platforms	Communities	Networks	Social innovation processes	Barriers	Drivers	Role of ICT in social innovation	Operational and strategic	Policy issues
Preventive health & self help	Standard ICT	- Content creation - Issue identification	- Complementary on- and offline knowledge communities - Social capital	Starting as small world, scaling to scale-free, with some random	- Knowledge generation - Collaboration, reciprocity, partnerships - Trust, reciprocity, cooperation	- Beneficiary and trainer reluctance to use ICT - Sometimes poor ICT	- High demand - Alignment with policies for preventive medicine & self.help	- Supporting social innovation - Improves information & knowledge	Non for profit and private sector financed innovation	- Creation of new resource to help efforts to find cures & to create better conditions for health care improvement -At the same time need to address concerns about data security, sensitivity & privacy
Personalised health & smarter patient environments	Mainly bespoke ICTs	- Content creation - Issue identification - Matching assets to needs	- In theory online knowledge communities	No network effect observed yet	- In theory support of telemedicine & eHealth solutions	- Legacy, working, attitudes, legal & administrative systems - Reluctance to mix market and social goals	- Public systems under pressure to save money in crisis - Better and cheaper ICTs - Potential of high satisfaction amongst users	In theory: - Supporting: improved matching and flexibility - Enabling: new business & service models	New strategic business models for SI in tele-medicine & care needed	Careful embedding of ICT is needed into the traditional activities in telemedicine and home care, initially through controlled experimentation depending on context. Could potentially deliver cost efficiencies increasing flexibility and mass customisation which improves the productive deployment of unused assets, but new forms of regulation may be needed to mitigate exploitation
Supporting smart infrastructure for integrated health & social care	Standard & bespoke ICT alongside traditional activities	All types depending on case	- Complementary on- and offline knowledge communities - Social capital	Online small-world support network, issue identification scaling to scale free	- Building capacity and skills - Trust, collaboration, relationships - Knowledge and idea sharing	- Beneficiary and trainer reluctance to use ICT - Sometimes poor ICT	- Good ICT infrastructure reduces activity costs - Good fit of ICT with physical activities	- Fundraising incl micro donations - Crowd-sourcing -Raising Awareness - Supporting matching assets to needs	Aligning work tasks or processes to any individual by focusing on what can be done rather than what can't	Inclusion policy for people previously excluded from the health market. Creation of crowdanalysis models, thus increasing the productive deployment of unused assets which potentially speeds up the process of identifying cancer, thus cutting costs of treatments and increasing the chance of curability.

7. Education

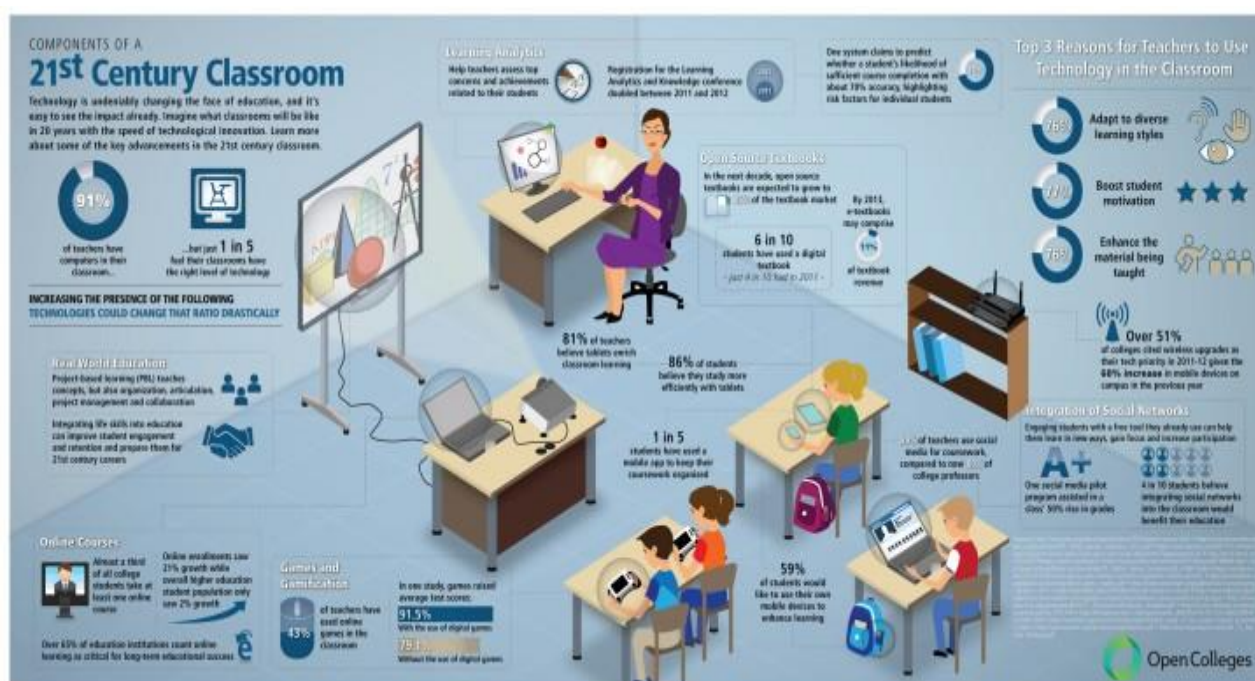
7.1. Context

This section summarises the main findings arising from the desk research carried out across Europe in relation to strategic issues, trends and challenges which provides the general employment context, as well as some of the observed and expected roles and impacts of ICT within this context.

Education may not always be thought of as an innovative sector but as schools increasingly look to relieve budgetary burdens and provide inspirational education experiences, a new breed of innovative social enterprises are emerging that can help on both counts.

Social enterprises aid innovation in education written by Tim Smedley in the Guardian, 12- August 2013

Figure 7.1: The 21st Century classroom¹⁰⁷



7.1.1. Strategic issues, trends and challenges

Even as the economy and much of the rest of society are being transformed in countries around the world, education is slow to change and looks very much like it did at the beginning of the 20th century. While people in the outside world work collaboratively and flexibly in distributed teams, using a variety of digital tools and resources to solve problems and devise new ideas and products, students in schools meet in structured classrooms at specified times; teachers cover the standard content by lecturing in front of a large class while students listen; students work individually and reproduce this knowledge on assessments; and their use of ICT is limited. This pattern is global.

¹⁰⁷ www.edudemic.com/best-infographics

The shift from a paradigm that is based on mass production and consumption of standardised goods and the hierarchical structuring of business, governmental, and social institutions to a paradigm based on the collaborative, customised creation, sharing and use of new knowledge by a large, diverse, and distributed population is creating tremendous pressure for change on all components of the education system. It has profound implications for what is taught, how it is learned, how teachers teach, how students are tested, and how schools are structured.

The challenges that indicate that fundamental change is needed include the following:

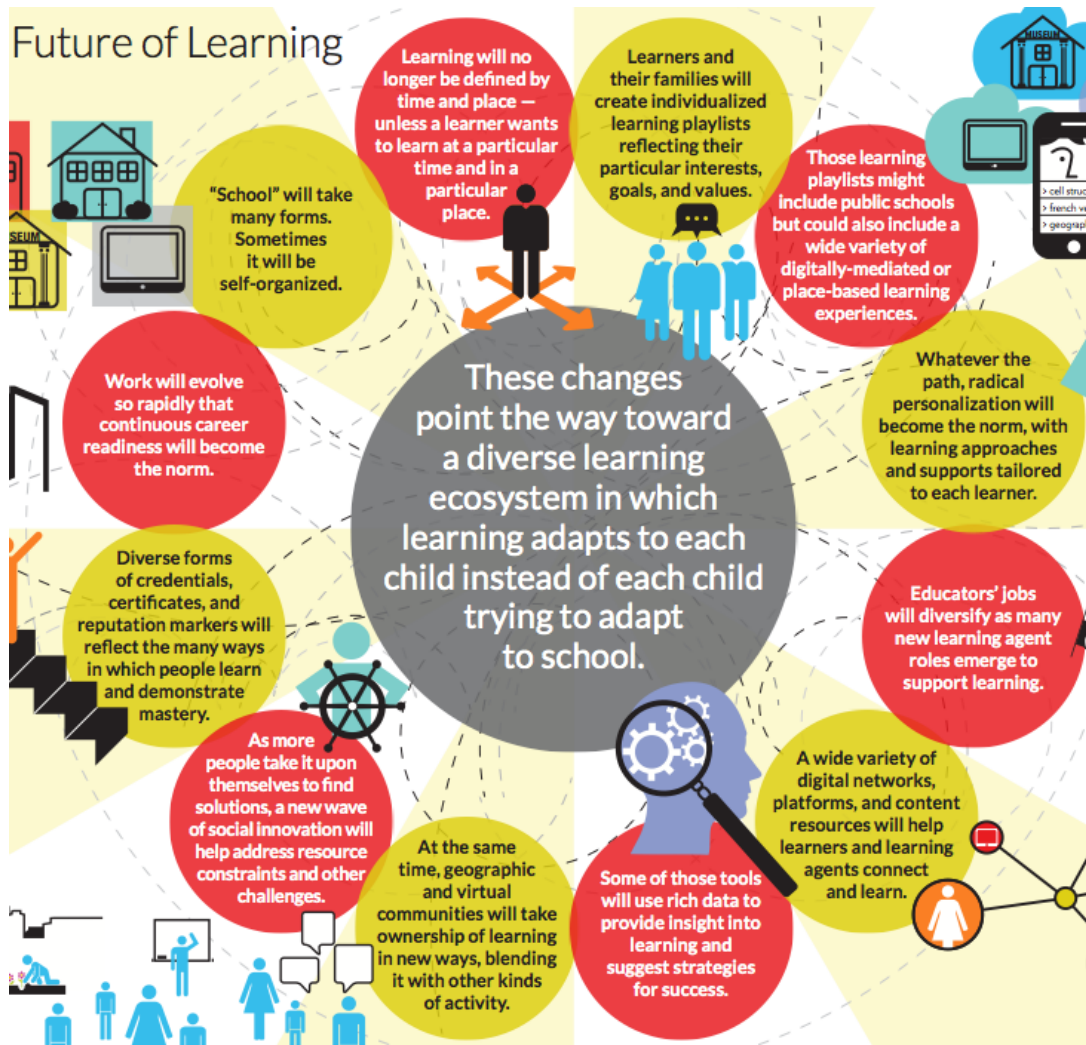
- Low levels of attainment – e.g. many students in the UK leave schools with less than 5 A*- C (the national target); there is a high percentage of pupils in Denmark that do not finish school
- Dispirited and demoralised work force
- Students coming out of school and university not ready for work/higher/further education
- Mismatch of skills – especially digital literacy
- Need for lifelong learning, continuous up-or other-skilling.

With ICT having provided access to a world of infinite information, the educational system is undergoing a revolutionising transformation. The use of ICT has contributed to changing the way we communicate, process information and think. In addition, innovation, creativity and independent thinking is becoming more important than ever in our increasingly global economy. Commentators have begun to describe how schools are likely to look under the information technology paradigm and they are very different from current schools (UNESCO, 2002; Bereiter, 2002; Hargreaves, 2003; Collins & Halverson, 2009; Schrum & Levin, 2009). The reports identify examples of these schools and classrooms, although they are surprisingly rare, even in developed countries. This is where there are some examples of social innovation that are beginning to support the ICT-led transformation of learning.

Employers are looking for employees who have developed skills for teamwork, problem-solving and interpersonal skills rather than punctuality and regularity (Davis 2013). This means that the current model of public education that has dominated the educational system ever since the industrial revolution is becoming outdated. Trends point toward the breakthrough of student-led learning, where “knowledge isn’t a commodity that’s delivered from teacher to student but something that emerges from the students’ own curiosity-fueled exploration” (Davis 2013). Another important trend has been the democratisation of education, which has been triggered by issues relating to poverty, uneven access to education and the rising costs of education. These issues can be regarded as push-factors and the driving force behind the transformation of the existing educational system. In combination with the development and sophistication of ICT, as well as driven by social innovative initiatives; open education, open universities, Massive Open Online Courses (MOOCs) and online learning are affecting the way education is being delivered today and onwards. With ICT diminishing geographical distances and enabling people from all over the world access to top education through courses offered on web-based teaching platforms and by the world’s leading professors, we are experiencing the formation of a new era of education and educational techniques and methods that enable a new style of learning which encourages the absorption of skills that are more in line with the inquiries of today’s employers.

While recognising the potential value of ICT in education, many countries face significant challenges in transforming the promises of technology into tangible benefits for learning. Many of these challenges are related to costs or infrastructural and technical issues, such as lack of access to technology or poor connectivity. This is particularly the case in low-income countries. Other barriers include the lack of relevant content in a language understood by the user and limited access to open education resources.

Figure 7.2: The future of learning¹⁰⁸



7.1.2. Roles and impacts of ICT

In all regions of the world, the penetration of Information and Communication Technologies (ICT) in schools has led to a major transformation of the education landscape. Although there is no consensus as yet regarding the actual benefits of technology in ensuring quality learning, ICT are increasingly seen as an integral part of modern education systems. Policy-makers are thus attentive to the need to ensure alignment between the development of ICT in society, their integration in schools and their use in pedagogy.

As the recent UNESCO report *Transforming Education: The Power of ICT Policies* (2011) summarises: “The opportunities offered by the use of technology in education are many. It transforms the pedagogy and can lead to an improved and more engaging learning experience. These effects are not limited to the classroom, for example, the

¹⁰⁸ www.edtechspot.com/this-is-how-learning-will-look-like-in-the-future-educational-technology-and-mobile-learning

transformation of distance education into e-learning and blended learning offers new options for delivery and new opportunities for in-service teacher training and support. The capacity of ICT to build borderless networks represents possibilities for innovative peer learning across territories and countries. In addition to redefining access to knowledge and instructional design and provision, the penetration of ICT in all dimensions of economic, social and cultural activities has far-reaching implications in terms of the skills required to become an active member of society. The ability of students to utilise ICT has become a new requirement for effective education systems.”

ICT trends currently transforming education can be described as follows:

- a) **Anytime-anywhere education** - The appearance of the “Web 2.0” was an inflection point in Education, as it allowed the creation and sharing of educational content. The new technology allowed anytime-anywhere scenarios and Higher Education was quick to adapt, with leading universities like MIT or the Open University in the UK leading the wave of innovations in the way teaching is delivered and learning is assessed. The most visible phenomenon are Massive Open Online Courses (MOOCs), which described in more detail in the following. Technology also has large role to play in new certificates, qualifications & accreditation of formal and informal education for instances through badges. Greater awareness and presence of badging through social networks is still required, but the core technology of a ‘badge backpack’ has already been refined.
- b) **Learning analytics** - Learning analytics involve the collection, analysis and reporting of large datasets relating to learners and their contexts. Current developments are focused on three areas: understanding the scope and uses of learning analytics; integrating analytics into existing courses; and expansion of learning analytics to new areas, particularly MOOCs. A central challenge is to develop analytics that are driven by key questions, rather than just querying data collected from online systems. The relation of learning design to learning analytics is also being considered, so that new teaching methods and curricula are informed by analysis of previous experience. Methods of learning analytics not only examine past interactions but also support future outcomes for students and educators. Other key issues include secure data storage, appropriate levels of access, and providing the necessary infrastructure for storing and querying large data sets.
- c) **Crowd learning** - Crowd learning describes the process of learning from the expertise and opinions of others, shared through online social spaces, websites, and activities. Such learning is often informal and spontaneous, and may not be recognised by the participants as a learning activity. In this model virtually anybody can be a teacher or source of knowledge, learning occurs flexibly and sporadically, can be driven by chance or specific goals, and always has direct contextual relevance to the learner. It places responsibility on individual learners to find a path through sources of knowledge and to manage the objectives of their learning. Crowd learning encourages people to be active in setting personal objectives, seeking resources, and recording achievements. It can also develop the skills needed for lifelong learning, such as self-motivation and reflection on performance. The challenge is to provide learners with ways to manage their learning and offer valuable contributions to others.
- d) **Citizen inquiry** - Citizen inquiry refers to mass participation of members of the public in structured investigations. It fuses the creative knowledge building of inquiry learning with the mass collaborative participation exemplified by citizen science, changing the consumer relationship that most people have with research to one of active engagement. The concept is that people who are not research professionals engage in collaborative, inquiry-based projects. For each investigation, they gather evidence of similar successful projects, create a plan of action, carry out a controlled intervention if appropriate, collect data using desktop and mobile technologies as research tools, and validate and share findings. Citizen inquiry not

only engages people in personally meaningful inquiry, it can also offer the potential to examine complex dynamic problems, such as mapping the effects of climate change, by means of thousands of people collecting and sharing local data.

- e) **Gamification** - There is increasing interest in the connections between games and education. When implemented as ‘edutainment’ or ‘gamification’ of learning, teaching practices can gain superficial elements of entertainment and reward. This may encourage learners to continue, however misses the power of digital games for engagement, reflection and self-regulation. New approaches of ‘intrinsic integration’ are linking the motivational elements of games with specific learning activities and outcomes, so that the game-play is both engaging and educationally effective. Game designers can achieve this by developing games with elements of challenge, personal control, fantasy, and curiosity that match the pedagogy. They can manipulate aspects of ‘flow’ (a player’s feeling of absorption in the game) and strategy to produce a productive cycle of engagement and reflection. The shared endeavors, goals and practices in games also help build affinity groups gathering learners into productive and self-organising communities.
- f) **Tangible Computing** – Whilst this is still a very experimental and future oriented trend area, tangible computing includes “embedding computation to the physical via intelligent objects, the internet of things and connectivity with a profound impact on learning mechanisms.”

The visualisation by Envisioning, shown in Figure 7.3, organises a series of emerging technologies that are likely to influence education in the upcoming decades¹⁰⁹. Envisioning is an independent technology research foundation based in Brazil. This infographic is the result of a collaboration between the design for learning experts TFE Research and emerging technology strategist Michell Zappa.

7.1.3. *Framework for analysis*

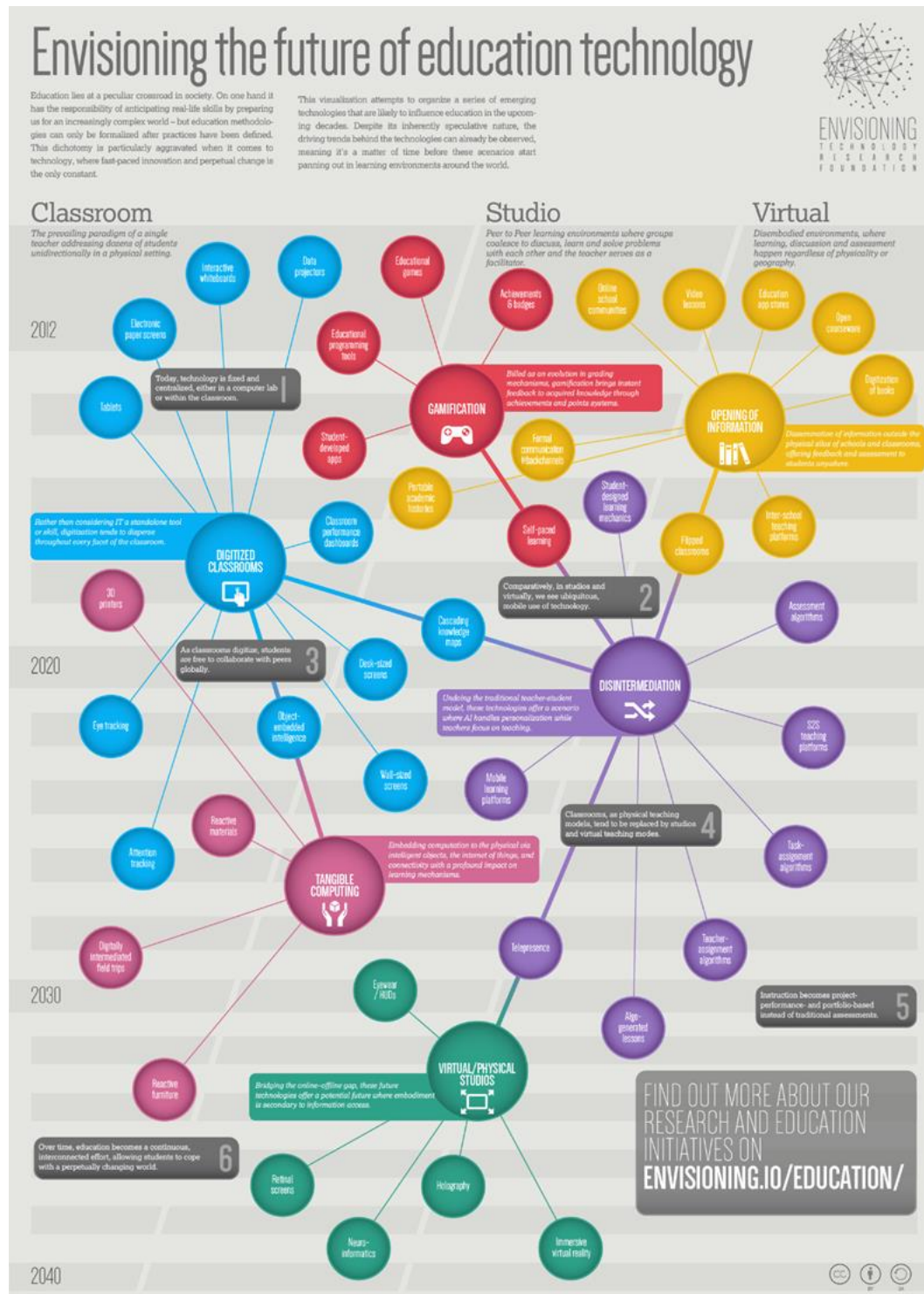
Based on the desk research reported in the two previous sections, three focus areas can be derived as some of the important ways in which ICT is enabling or supporting social innovation within education.

1. *Widening access to education*

Information and Communication Technology (ICT) can contribute to universal access to education, equity in education, the delivery of quality learning and teaching, teachers’ professional development and more efficient education management, governance and administration. The impact of ICTs are revolutionary in formal education as well as in life-long learning, and informal education as they enable sharing of resources, overcome distance, allow for exchange of experience and provide digital class rooms for anyone, anywhere. MOOCs are a good example of ICT enabled social innovation, as they display a completely new dynamic of delivery of and participation in Education. The involvement of the private sector underscores the value multi-stakeholder partnerships can add, and shows the vested interest the private sector has in the Education system and the resources it commits to support it. MOOCs are much more flexible than traditional academic institutions, and can therefore quickly adapt to the demands of the job market.

¹⁰⁹ Source: <http://www.envisioning.io/education>

Figure 7.3: Envisioning the future of educational technology



In this context there are two social innovation outcomes examined for this focus area:

- Increase in education and personal skills (formal and informal) (numbers of people and duration e.g. lifelong learning)
- Increase in accessible educational content and tools.

2. Personalised education and new learning environments

ICT presents an entirely new learning environment for students, thus requiring a different skill set to be successful. Critical thinking, research, and evaluation skills are growing in importance as students have increasing volumes of information from a variety of sources to sort through. ICT is changing processes of teaching and learning by adding elements of vitality to learning environments including virtual environments for the purpose. ICT provides opportunities to access an abundance of information using multiple information resources and viewing information from multiple perspectives, thus fostering the authenticity of learning environments. ICT may also make complex processes easier to understand through simulations that, again, contribute to authentic learning environments. Thus, ICT may function as a facilitator of active learning and higher-order thinking (Alexander, 1999; Jonassen, 1999). The use of ICT may foster co-operative learning and reflection about the content (Susman, 1998). Furthermore, ICT may serve as a tool to curriculum differentiation, providing opportunities for adapting the learning content and tasks to the needs and capabilities of each individual pupil and by providing tailored feedback (Mooij, 1999; Smeets & Mooij, 2001). Social innovation here for instance brings additional content into the classroom such as in the Professor Why example.

In a Personalised Learning Environment, learning starts with the learner. According to the National Educational Technology Plan developed by the US Department of Education, personalised learning is defined as adjusting the pace (individualisation), adjusting the approach (differentiation), and connecting to the learner's interests and experiences. Personalisation is broader than just individualisation or differentiation in that it affords the learner a degree of choice about what is learned, when it is learned and how it is learned.¹¹⁰ Within the context of this chapter personalisation includes individualisation, which means the support of pupils with special needs – be it through talent, cultural background or physical ability. Social innovation emerges in both categories as a provider of new solutions. For instance School of One is an ICT-enabled math program which manages to mass-customise daily instructions of how and what math skills to practice so as to meet each student's specific needs and abilities, as well as preferred ways of learning.

In this context there is one social innovation outcome examined for this focus area:

- Increase in educational personalisation.

3. A multi-partner approach to education

A new type of education partnership has emerged in the past decade, with the emphasis on joint strategic planning, coordination of implementation processes and assessment of outcomes. There is a growing acceptance that systemic education transformation can only be successful if a holistic approach is taken with multi-stakeholder partnerships at the heart of effective education.

¹¹⁰ http://en.wikipedia.org/wiki/Personalized_learning

Vignette: Assessment and Teaching of Twenty-First Century Skills: ATC21S

ATC21S is a multi-stakeholder partnership to define learning progressions for 21st century skills, create innovative assessment methodologies, set new standards of formative assessment, provide teaching and reporting tools and policy reports. The resources are made accessible to all; the outcomes are made available as creative commons on the web (see also www.atc21s.org).

ATC21S has been initiated and is sponsored by Cisco, Intel and Microsoft; the companies have a long history of supporting education initiatives and believe that, as employers of tomorrow's talent, they share a common interest in improving education. The academic side is led by the University of Melbourne, involving over 250 international researchers, specialists, developers and practitioners. Cognitive labs and pilots are run in six countries (Australia, Costa Rica, Finland, The Netherlands, Singapore and the USA). ATC21S tackles an issue so big, individual stakeholders would not be able to solve it on their own. The Advisory Board includes PISA OECD, IEA, UNESCO and the World Economic Forum. The project was successfully launched at the International Assessment conference in Amsterdam 2012.

Source:

http://www.jengroff.net/publications1_files/Social_Innovation_in_Education_Driving_Social_Innovation_in_Education.pdf

Particularly in the context of innovation of education with new technologies, multi-partnership approaches have emerged as a successful model. The World Economic Forum defines *a multi-stakeholder partnership in the e-schools context broadly as a partnership that exists when government officials or agencies join with the private sector, civil society, professional development and training institutions, technology and telecommunication providers, educational content and ICT application developers, teachers, parents and learners to work towards and attain a shared goal.*¹¹¹ There are plenty of examples of such partnerships.

In this context there is one social innovation outcome examined for this focus area:

- Improved qualification and validation system.

In addition, there is also one theme-wide social innovation outcome:

- Scaled educational impact, actual or predicted (more sectors, groups, localities).

¹¹¹ <http://www.gesci.org/educational-management-and-icts-including-mande.html>

7.2. Case analysis

7.2.1. Social needs addressed and summary

Six cases are analysed in the education theme as summarised in Table 7.1.

Table 6.1: Education cases: summary

Focus area	Case	Social needs addressed	Summary
Widening access to education	MOOCs (global)	Widening the access to Higher Education and addressing the societal needs for lifelong education and the upskilling of the labour force, by providing free online courses for everyone interested.	- MOOC is an abbreviation for Massive Open Online Course. - A MOOC is an online course aimed at unlimited participation with free and open access for everyone with a computer with internet access. - Coursera (Coursera.org) is currently the biggest MOOC platform with over 600 different free courses. - In April 2014 7.1 million users were registered. - Coursera is collaborating with 108 of the most well-known and highly regarded universities in the world delivering free online courses including universities such as Stanford, Yale, Princeton, London and Edinburgh University.
Personalised education & new learning environments	Quest to Learn (USA) ¹¹²	Engaging children in education by using the seven principles of gaming.	- Quest to Learn (Q2L) is a collaboration between the Institute of Play, New Visions for Public Schools and the New York City Department of Education. Q2L combines learning and gaming to meet the needs and interests of children who are increasingly engaging in digital media platforms.
	School of One (USA) ¹¹³	Mass-customisation of daily instructions of how and what math skills to practice so as to meet each student's specific needs and abilities, as well as preferred ways of learning.	- Currently around 600 middle school students were involved with the math project. - Project budget was estimated at around \$1 million at its launch in 2009. - Initiated in New York City (Middle schools in the Bronx, Brooklyn and Manhattan), now present in middle schools all over the country - The costs are today primarily borne by the individual schools. - After its launch in 2009, the School of One was named one of TIME magazine's top 50 inventions of that year, and the program has indeed led to fundamentally new perspectives on education.
	Professor Why (PL) ¹¹⁴	Dissatisfaction with the current form of chemistry education, lack of real experiments in schools (greatly impoverishes the study of chemistry), and need to show mostly teenagers the effects of chemical experiments	- Professor-Why combines computer generated images with real images and introduces users the world of science, which can be explored both at school and at home. - It also offers the possibility to do virtual experiments. - The business model is to sell the license to Professor Why not only to schools but to every child which is interested in chemistry. The license will be either on PC or on mobile devices. - Currently approx. 200 users, but only launched in May 2014.
Multi-partner approach to education	MONDEY (Milestones of Normal Development in Early)	Improve early fostering & diagnosis of 0-3 year old childrens' retarded development by supporting parents, pedagogical staff & scientists with monitoring & documentation of everyday situations	- Advanced training for pedagogical personnel & parents in diagnostic skills. - It can be used via the Internet or in paper form (Kurzskalen/short scales) by the public, by professionals and by experts. It is open and free of charge. - By using standard tools, parents, pedagogical personnel or experts can monitor and diagnose the development of children. They can choose to document the development of a child for themselves offline or use the interactive online database.

¹¹² www.q2l.org

¹¹³ <http://izonenyc.org/> in New York

¹¹⁴ www.professor-why.pl

Focus area	Case	Social needs addressed	Summary
	Years) (DE) ¹¹⁵		- It is planned to offer the programme in different languages in the near future. The short scales are already available in several languages (English, Russian, and Turkish). > 1.000 users

Social needs addressed

All six cases examined use ICT as an important tool to innovate in the education sector. The different examples from MOOCs to the virtual chemistry lab Professor Why were set up in order to provide personalised and effective teaching. The idea is that learning can happen faster and better if teaching is customised to the specific strengths and needs of each student; matched to his or her interests as well as preferred way of learning and that technology enables learning anywhere and anytime.

Focus areas

The sample of six cases comprises one *widening access to education* cases, three *Personalised education & new learning environments* cases (with quest to learn featuring in the first and second category), and two *multi-partner approach to education* cases.

Funding and actors

Most of these actor are multi-partner initiatives with different sources of funding. The *quest to learn* initiative as well as *MONDEY* are (or were at least in the beginning partly) foundation financed. *MOOCs* famously emerged from a Stanford experiment with a course on artificial intelligence and *Professor Why* is a private sector initiative. *School of One* enjoyed organic growth – it was set up a summer school project, which then led to an after school programme and then to the launch of an in-school programme. It has received significant funding by the NYC Department of Education.

Scale and scope

The scale of the examined cases is very different – for instance there is a significant difference between *MOOCs* and *Professor Why*.

7.2.2. Types and uses of ICT

The types of ICT and its use varies across the three education focus areas, as described below.

Widening access to education

- **ICT used** – Both examples chosen for this section inherently build on technology, and particularly the event of the internet in the case of the *MOOCs* and gaming technologies for the *Quest to Learn* example. ICT is the main enabler for *Coursera (MOOCs)* as education is provided through a digital online platform using existing, “off the shelf” technology. Examples of this are videos of lectures, questions with instant feedback and quizzes – everything online and only digitally accessible from a computer. *Quest to Learn* uses technology in a pedagogical model, as a tool to support teaching and learning. It is a school that uses the underlying principles of gaming to create immersive and game-like experiences in a range of methods and for a range of learning outcomes and therefore opens up new possibilities of learning, teaching and pedagogy and a different way of accessing knowledge. Here technology is also developed to bridge the uses of bespoke technologies to the school-context.

¹¹⁵ www.mondey.de

Both cases use online platforms for content creation (curricula, lectures, modules), for matching assets (students or learners and teachers) and for action on problems (new, innovative products for issues such as low engagement in education or gaps in education due to mobility, illness etc).

- **Online platforms, communities and networks** –In both cases, ICT is used to set-up platforms and to build complementary online and off-line communities. Particularly in the MOOCs example, ICT is used in order to create and underpin online communities where students can discuss topics related to courses as well as provide help to each other. The online communication and contact - made possible by ICT - is also used in the assessment process in some courses, as the validation of the work of the students is sometimes based on peer assessments by fellow course participants. By April 2014 *Coursera* offered the following functionalities in the majority of the courses: Overall description; Calendar; Announcements; Structure of the courses; Syllabus; Schedule and resources area; Peer assessment area; Discussion forums; Course surveys; FAQs; Course wikis and Meet ups. Of these functionalities all but the Meet up section promoting face to face meetings for participants (which contact possibilities is created through ICT) , uses ICT to learn, discuss and assess – the crucial points of learning.

Quest to learn is a school environment, meaning children are brought together, in a physical (and, in the case of Q2L, digital) space forming, in effect, a community of practice (CoP). The teachers and game developers at Quest to Learn work both with and without students to develop new ways for students to learn about everything from history to maths and English language to biology, while also developing skills such as team working and problem solving using ICT. The CoP is engaging a range of actors to share explicit knowledge, both on pedagogy, gaming and gaming pedagogy to develop new tools for learning, and with students on the school curriculum in line with the Common Core standards.

While the Quest to Learn partnership isn't an organised online network, it is a group of professionals working together to look at using ICT to take an action on a problem. In this case, the action is developing new and innovative gaming-related curricula to engage young people in learning in response to the problem of low engagement by many children with more traditional forms of education.

Personalised education & new learning environments

- **ICT used** – Personalisation and the development of new learning environments be it for virtual chemistry experiments or using gaming technologies to teach maths are the key impact and starting point of most of the case studies analysed for the education theme. In other words using technology to overcome distance or to change the traditional way of teaching are the fundamental starting points of the development of these initiatives. In all cases standard technologies are used alongside traditional and physical interaction to personalise the education experience for student, teacher and in some cases also parent or researcher (to gather new insight into learning in the 21. century). The focus is on “not reinventing the wheel”, Daniel O’Keefe, Curriculum Designer at Mission Lab said in an interview. *Quest to learn* for instance doesn’t just develop and create new tech tools. It does make use of already existing digital tools to supplement learning and teaching, such as the Google suite, Algodoo¹¹⁶, Brainpop¹¹⁷ and Dragon Box¹¹⁸. In the area of new learning environments, most cases display highly innovative technological state-of-the art solutions going beyond content creation to experience creation to create new ways of learning or to at least experiment with new ways of learning. For example, SMALLab (Situated Multimedia Art Learning Lab) aims to bring learning to life by using motion-capture

¹¹⁶ <http://www.algodoo.com/>

¹¹⁷ <http://www.brainpop.com/>

¹¹⁸ <http://www.dragonboxapp.com/>

cameras, projectors and wireless controllers to engage children in immersive physical mixed-reality game-based scenarios.

- **Online platforms, communities and networks** - All cases support online knowledge communities. In fact all cases support knowledge communities for the students, teachers and sometimes parents or other pedagogical staff and to varying degree technical designers (for instance game designers in the Quest to learn example). Communication processes, and key processes in the education cycle have been made very explicit in all examples and are supported by the relevant technologies to enable a seamless experience from the users' perspective – be it the student or teacher. For example in *School of One* the student logs on and reviews his instructions for the day, he might be scheduled to receive online instructions, or he just as well might be scheduled to receive live instructions by a teacher along with 10 other students. The *School of One* program also contains elements of collaboration and team spirit though it is still different than the traditional class room setting. Students of approximately the same educational level are divided into a small number of teams. These teams then serve as home base despite the individual students tailored instructions. This means that most of the group teaching takes place within the team, and in addition the teams compete with each other on a friendly basis based on academic results, attendance and organised group activities. Most of these examples operate in small world networks in specific localities or scale within very specific contexts. *MOOCs* however have opened up closed networks and have been recognised as a potentially disruptive and transformative approach. Here specific issues such as assessment and accreditation will matter for future network models. The potential is opening up best education (and the added advantage the ivy-league education holds) as well as offering specific education in a dispersed way.

Multi-partner approach to education

- **ICT used** – ICT enable virtual or physical intervention in all aspects of education. For instance, MONDEY is an example of an ICT-enabled and supported multi-partner approach. The MONDEY platform provides access to information. It creates and produces data by collecting data on the children monitored. Giving information on early childhood development, MONDEY works also to disseminate knowledge on this topic. The website informs about the project and its aims, too. This example has a strong focus on content creation and issue identification.
- **Online platforms, communities and networks** - MONDEY is a cooperation of researchers, pedagogic professionals and parents. Thus, several communities of practice are joining to exchange and apply knowledge for the benefit of children. MONDEY aims to codify and standardise knowledge about early childhood development and at the same time train diagnostic skills of educators. While MONDEY is pretty much hierarchical, the data collection follows a bottom-up approach. MONDEY combines codified knowledge and tacit knowledge existing among researchers world-wide (who can be seen as acting within a network of practice) into explicit knowledge. This knowledge is acquired and applied by the professionals in the day care centres or the parents at home and mingles with their tacit knowledge. The new knowledge reacts upon the work with children, the monitoring and the fostering directly. At the same time, users help to verify and further knowledge by providing new data. They are doing so by sharing their tacit knowledge filling in the data on the MONDEY platform or making the filled in short scales available for the MONDEY team or giving feedback during training sessions or online (contact form on the website). Ideally this creates a circulation and improvement of spoken-about knowledge available on all sides and also the improvement of codified knowledge in the long run. MONDEY operates in a scale-free network with the day care providers as influential hubs. If a day care provider adopts MONDEY it will spread to all professionals in those day care institutions. Even more so, if the provider invests into training sessions with MONDEY trained lecturers. Participation in these sessions is honoured with a MONDEY certificate. While the biggest part of MONDEY works online, face to face contact plays an important

role to teach parents and professionals on the content of MONDEY. In Pauen's view, it is important to convey which value is to be assigned to monitoring and its outcomes.

7.2.3. ***Social innovation outcomes***

In the following the social innovation outcomes and their beneficiaries reported by the cases are summarised by focus area. Given the distinct conceptual and operational nature of each focus area, there is little spanning of individual cases across focus areas.

Widening access to education

1. *Increase in education and personal skills (formal & informal) (numbers of people & duration e.g. lifelong learning)*
 - *MOOCs*: MOOCs provide access to Higher Education and address the societal needs for lifelong education and the upskilling of the labour force by providing free online courses for everyone interested. Theoretically for people with all educational levels as there are no admission requirements. However the MOOCs such as US based Coursera are in practice primarily helping those already educated interested in additional educational/professional development (Sharples, 2013).
 - *Quest to Learn*: Quest to Learn has witnessed increased attainment with the transformed curriculum. Data from the Department for Education shows that, in 2013, Q2L's average score on the English Language Arts state exam was higher than the average overall citywide test score for Middle schools and on a par with other schools in the city serving students with similar characteristics
 - *MONDEY*: MONDEY serves to increase the health and wellbeing of babies and toddlers (By 2014, 1085 children are documented, 384 children are or have been monitored constantly). MONDEY fosters an increase in personal and collective health skills since it helps to disseminate knowledge and trains skills about early childhood development from a developmental-psychological perspective.
2. *Increase in accessible educational content and tools*
 - *MOOCs*: MOOCs provide significant learning options within a variety of topics, which potentially can tailor online education to the needs and interests of each participant. However differentiation in learning possibilities and online pedagogy are still topics to be further improved on Coursera if it is a goal to strengthen educational personalisation.
 - *School of One*: The program focused on learning rather than teaching, and it makes the individual student the center of attention. By use of information on the students' preferred teaching modalities, prior knowledge and learning pace, School of One helps the students fill gaps from previous years as well as practice exactly the skills they need.

Personalised education and new learning environments

3. *Increase in educational personalisation*
 - *MOOCs*: One of the strengths of Coursera is that learning occurs at the time and location that best suits the participant. Hence the temporal dimension of learning is very personalised. Furthermore, the still growing large amount of MOOCs provides significant learning options within a variety of topics, which potentially can tailor online education to the needs and interests of each participant. However differentiation in learning possibilities and online pedagogy are still topics to be further improved on Coursera if it is a goal to strengthen educational personalisation.

- **SCHOOL OF ONE:** The School of One is an ICT-enabled math program which manages to mass-customise daily instructions of how and what math skills to practice so as to meet each student's specific needs and abilities, as well as preferred ways of learning.
- **Professor Why :** Each student or child can on her own without any teacher learn chemistry by playing a game. It help to personalise the education, because each user is interested in a different form of learning, and a different context.
- **Quest to Learn :** Currently, many outcomes at quest to learn are anecdotal and soft. However, some impact of the tailored learning environment can be noted: improved engagement, increased attainment, higher than average school rating

Multi-partner approach to education

4. *Improved qualification and validation system*

- **MOOCs** - Coursera's way of organising its courses has changed the way students participate in education courses. Before learning was fixed to a specific time and space but with Coursera participation is more flexible and tailored to the time schedule of the individual. Furthermore, the detachment of education from time and space has moved discussion and collaboration from the traditional classroom to online forums and communities. Finally the assessment of the students' work is sometimes based on peer review and hence Coursera is using the students as a resource to validate assignments blurring their role as simple students to a more instructor oriented role. A role that different studies has shown to result in accurate feedback for the student as well as valuable learning for the grader (Coursera, 2014).
- **MONDEY** - With MONDEY, knowledge about early childhood development is easily accessible and easy to apply as it is free of costs. Education and personal skills of parents and professionals are improved by MONDEY. They learn about early childhood development either by visiting the website, reading the book or using the short scales to monitor one child or several children. Also, professionals and parents can get training in diagnosis of early childhood development by MONDEY trained lecturers. The duration of the training depends on the audience and its needs: for parents, it normally takes an evening, for professionals, the advanced learning takes a day or two. Also, in the future data generated by MONDEY allows for an evidence-based approach in the development of early childhood education.

Other

Other outcomes were reported, not directly linked to any focus are, as below:

5. *Scaled educational impact, actual or predicted (more sectors, groups, localities)*

- **MOOCs:** MOOCs lifelong learning and improves learning possibilities for all those who are interested. In April 2014 7.1 million users were registered at Coursera and the number of Courserians (people signed up at Coursera) is constantly rising.
- **MONDEY:** In the future data generated by MONDEY allows for an evidence-based approach in the development of early childhood education.

7.2.4. **Social innovation processes**

In the following the social innovation processes and social practices reported by cases are summarised by focus area drawing on the process taxonomy presented in section 2.

Widening access to education

The education sector is suffering from disengagement and often mismatch between skills developed and skills required by the workforce. Further the elitist education markets of particularly the US and the UK are seen to be closing knowledge off, particularly to those in poorer countries. Social innovation has many roles to play in widening access to education and therefor opening education. The New York Times named 2012 the year of the MOOC, Time magazine dedicated its October 2012 Issue, titled “Reinventing College,” to an analysis of the role that MOOCs could play in repairing the higher education system. Traditionally the need for higher education in society has been handled by higher education institutions such as universities offering courses in specific geographical locations with access only to a limited number of admitted students. MOOCs are drastically changing this institutional setup and democratising access to higher education as there is open access for students meaning that anyone everywhere in the world can participate in an online course for free. Furthermore courses are designed to support an indefinite number of participants, so there are no admission quotas limiting access (Yuan, 2013). It can be debated whether MOOCs are a social innovation but they certainly have the potential outcome of social innovation and of bringing innovation into a sector that in itself has been described as a social innovation too. Alongside earlier models of open universities, distance learning and ICT enabled education MOOCs enable new ways of providing Higher Education and possible transformation of the organisation of Higher Education. They present a shift in the relationship between student and teacher, open new learning possibilities and shift the learning focus and offer new forms of participation, collaboration and assessment in Higher Education.

At the same there are plenty of social innovation initiatives ranging in scale and ambition trying to innovate the education sector through the use of ICTS. Quest for learning was developed by a partnership of state, market and civil actors. The innovation process was opened up, bringing a range of actors together to deliberate, negotiate and plan a new school focused on using the principles of gaming with the principles of pedagogy to improve learning. It was reliant on this cross-sectoral collaboration to bring forward a range of knowledge, experience and understanding to create the innovation. Teachers, games designers and curriculum experts come together in Mission Lab to develop effective learning materials and achieve purposeful integration of technology in the classroom. It also serves as a resource for students to observe and participate in a live design process. In this sense it uses several collaborative social innovation processes, notably consultation, engagement, participation, co-creation, design thinking and cross-sectoral collaboration.

Personalised education & new learning environments

As education becomes tailored to the individual student’s needs, his or her learning curve might rise considerably. Hereby gaps in the student’s prior knowledge is filled to create a better foundation for future learning. This implies that individual students do no longer depend on their classmates to move forward or practice some skills in greater detail. This makes the learning environment more flexible and adaptive to the students’ individual needs and pace in order to boost their learning experience. The *School of One* initiative has the potential to develop individual capabilities and provide extra support in areas of greater difficulty. In such a way, the students are effectively given the help and challenges estimated to provide them with the opportunity to learn. The School of One builds on traditional teaching principles and by use of ICT it is possible to apply all the best material and knowledge attainable to provide customised playlists of skills. By use of the online platform it is also much easier to assess and constantly monitor the students’ learning progression which creates a better awareness and understanding of what works, how fast and effectively the students are learning as well as how the oral instructors collaborate and share knowledge with and through School of One. In addition, unused capacity also plays a part as high school students which excel at math as well as university students passionate about teaching get a chance to be involved. Their abilities are utilised as support for the online instructions and they might often move on to try out their teaching skills in small groups of students. These possibilities are unique as most other teaching instructions takes place in a full classroom which might be much more demanding for a teacher resident. Given the often smaller groups of students and need for one-to-one advice, the capacities of young teachers-to-be can be utilised and hopefully become useful and

enjoyable for all. At a much smaller scale Professor Why supplies the same support for the subject of chemistry by offering the opportunity of virtual experiments to make chemistry more attractive and practical as a subject and less theoretical.

Multi-partner approach to education

Individuals gain or train their skills and capabilities with regard to diagnosis of early childhood development by reading about and dealing with *MONDEY*. One can assume that in the long run, when capabilities and skills disseminate, collective effects also emerge. Problems in development of children will be recognised early so children might be fostered earlier and better and therefore grow up healthier. Knowledge is generated by *MONDEY* with two regards: so far, tacit knowledge about early childhood development gets to the people spending a lot of time with babies and toddlers; conversely, researchers gain new knowledge by getting new and representative data for future research. Awareness on important steps in childhood development is increased. Parents and educators are learning not only to handle a specific tool but also to value each step in its own and foster a child in its own development. Trust in *MONDEY* and its team is important to get valuable and sensitive information from parents as *MONDEY* aims not only to monitor children and give a feedback but also to gain new data for future research. One of the basic ideas of *MONDEY* is to create a win-win-situation and therefore create reciprocity. To get good norm samples for future research it is paramount to get good data in the first hand. This means, as stated above, sensitive, personal data parents generally hesitate to submit. It is important to have representative data and samples to give realistic feedback to the parents and to advance research. The long term objective is a large data base for research projects which makes creating different subsamples as well as control samples possible. To reach this goal it is also important to keep the project open and transparent. *MONDEY* aims to achieve this by introducing the initiators, informing about content, aims and procedures.

7.2.5. Barriers and drivers

In the following the barriers and drivers reported by cases are summarised by focus area.

Widening access to education

MOOCs come with transformational promise for widening access to education, and thus supporting life long learning, hard policy issues such as youth unemployment or regional skills shortages. However, *MOOCs* neither have a sustainable business model at the moment nor acceptable completion rates to actually live up to its potential. First, the low completion rates can be perceived as an indicator for possible pedagogical problems. For the moment, most *MOOCs* are a digital form of the traditional teacher-centred instruction and hence online pedagogy could be further improved for many *MOOCs* in the future. Furthermore concerns regarding assessment have been expressed around cheating and plagiarism with online learning. This is especially the case if the courses are eligible for academic credits or give participants opportunities to earn an official certificate from a higher education institution (Yuan, 2013). Finally, quality assurance of the courses is primarily left to reflections and informal evaluations of course participants during and after the courses, and not to official accreditation.

The *quest to learn* example widens education in a different way – by making subjects accessible with a different, and often ICT-enabled model of learning. Q2L has, and continues to, come up against a number of barriers. The main barrier to overcome is that of preconceived notions, both from the public and the education community. Members of the public often believe that students and teachers at Q2L “are playing video games all day”, while many teachers “think game-like learning is quantifying the classroom or layering history on a Jeopardy-style game”. By developing professional development workshops for external teachers and involving Q2L teachers in game development as part of their professional development, Q2L is trying to overcome this. In addition, initially Q2L felt it had to “give

teachers things, [rather than] helping them to develop”. Q2L soon realised, however, that the process of co-development and co-creation is the most important aspect to the school, its staff and students – “the process is important, rather than the product. It’s about the process and not games.” With regards to ICT specifically, one major barrier has been the limitations imposed by the New York Department of Education. Being a public school, Q2L receives the same funding as other public schools in New York, which is a financial challenge. But, in addition, Q2L is “bounded by the barriers placed on public schools, such as firewalls [which Q2L has] had to work round for years”.

Technically however, both examples require good ICT skills, good (and affordable) ICT bandwidth and in the quest to learn example access to advanced technologies (and skilled designers & IT personnel). The latter is also the clear driver behind the quest to learn, whilst for the MOOCs most barriers and challenges as well as drivers seem to be embedded in the business & delivery model of free education or at least “accessible anywhere, anytime” education.

Personalised education & new learning environments

School of One exemplifies that it is possible to tailor education and thereby overcome the growing difficulties of a united classroom given the extensive variety in math skills at school start. This phenomenon is thought to be especially pronounced in large cities like New York where immigration is rule and students enter school with completely different backgrounds or in contexts of high mobility and transition from one school to the other (the implication of the trend of increasingly mobile workforces). A clear driver has been the need for an improved educational level in math in particular. Individually customised teaching has been an ideal in many years, but it has been recognised that it is impossible to deliver for a teacher addressing a full classroom. Here technological advancement within ICT has been a clear enabler. The key barriers are not technical but derive from the process of innovation – as with any pilot, processes of how to ideally involve all user groups such as students and teacher for the maximum outcome require a few rounds of students. At the same time a school like this is under pressure to demonstrate significant success by producing students with significantly higher maths skills than ordinary schools. *Professor Why* on the other hand does not represent an alternative school form and thus struggles to attract enough users to be a sustainable business model to achieve significant outcomes in terms of higher achievement of its students in chemistry. It needs to be cheap, state-of-the-art user friendly and attractive to a demanding target audience, and might be overtaken by new developments in the technology market.

Multi-partner approach to education

The main barrier for new partners to enter the formal institutional framework of the education sector is that the “subject” is highly vulnerable and thus data needs to be highly secure. Further all of the systems require a high degree of ICT support particularly as such initiatives often operate with less tech-savvy user groups such as pedagogues or teachers and often involve additional change management processes. For instance the barrier described in the MONDEY case, not unknown to the sector of advanced learning and especially in early childhood fostering, is the reluctance of some professionals in day nurseries to learn about a new monitoring instrument. To them it looks like an additional chore. Much is gained here by the trainings for professionals and parents through MONDEY trained lecturers. Confidence can grow by face to face contact and certainty is won in dealing with the matter. After being trained by using MONDEY for a longer period the reluctance is gone and professionals realise the advantages of monitoring consequently.

7.2.6. *Lessons learned and success factors*

In the following the lessons learned and success factors reported by cases are summarised by focus area in relation to the use and role of ICT, strategic and operational considerations and policy implications. An overview is provided in Table 7.2.

Widening access to education

The role and use of ICT in social innovation

In the examples reviewed in this chapter ICT have a crucial role in widening access to education and enabling new educational approaches. MOOCs have widened the access to higher education for a large group of people in society by changing the way higher education is provided and organised. In order to improve the general access to MOOCs the main success factor has been ICT as an enabling technology as well as the general acceptance and use of ICT in society (and the availability of broadband). ICT is essential for the emergence of MOOCs as the social innovation of MOOCs is completely based on the capability to use ICT and offer education online for everyone with access to a computer with an internet connection. Whilst there have been paper based concepts for open universities / open education, ICT are widely considered as a game changer for education. Quest to Learn exemplifies how ICT can change the educational approach and teach in new ways and therefore widen access to education for pupils who otherwise would have fallen behind in maths.

Strategic and operational considerations related to ICT in social innovation

ICT is the main enabler for online education that is provided through a digital online platform. The concept of openness independent of time and space with free access at any time beyond geographical borders would not be feasible without the use of ICT. Furthermore ICT removes limitations of the lack of physical space and enables the possibility of providing massive courses as there is unlimited space for students in an online class room. Hence Coursera and the concept of MOOCs in general would not be possible without ICT. Coursera is an online platform matching society's needs for education with the learning capabilities of the universities and thus it can be categorised as a variation of the matching assets to needs platform-type. Coursera is enabling social innovation by offering a platform from where higher education institutions and the teachers involved in the different courses can reach a large amount of different students with their courses in a cost effective way. On the other hand, there is a societal as well as individual need and demand for (lifelong) education. Until now the ability to meet the need for lifelong education at a societal and individual level has been hampered by the high costs related to further education. Furthermore, not all companies are interested in financing and freeing time for educational activities for their employees, and as many people are under a lot of time-pressure in their spare-time it can be difficult to find time and be flexible for a traditional higher education course. Through the use of ICT, Coursera and MOOCs have offered a possibility.

Policy issues related to ICT in social innovation

ICT has been transforming and mainstreaming in the organisation and conduct of all education – including life long learning. The main policy implications demonstrated are the importance of affordable broadband, access to a computer and Internet and digital literacy. Also, the rise of MOOCs potentially allow for a different value for money approach within public education systems, and for new approaches to dissemination of content and management of quality of education. Further, *quest to learn* demonstrates the value of experimenting with ICT enabled education formats and to provide the possibility for such diversity in the educational approaches.

Personalised education and new learning environments

The role and use of ICT in social innovation

All examples reviewed for this chapter demonstrate elements of how ICTs enable personalisation of education. *Quest to learn* is an example of both: a) social Innovation using ICT, as it is innovatively engaging children in new ways of learning through ICT. Without the ICT component, it would be much less innovative and also b) ICT supported social innovation. Coursera is a good example of how the ICT-development can lead to a social innovation that would not had happen without the technological development as well as society's willingness and ability to use digital platforms. The main features of MOOCs are all enabled by ICT. The School of One platform effectively matches assets and needs as students with individual strengths, difficulties and preferred learning methods are met with the ICT tools and instrumental expertise to provide them optimal opportunities to learn in each their best way.

Strategic and operational considerations related to ICT in social innovation

Innovative learning isn't reliant on ICT and can take place in analogue ways, but the approach is improved through the use and integration of ICT. All examples demonstrate that they use ICT innovatively to support teaching and learning. Coursera (and MOOCs in general) promotes lifelong learning and improves learning possibilities for all those who are interested. In April 2014 7.1 million users were registered at Coursera and the number of Courserians (people signed up at Coursera) is constantly rising. As Coursera is accessible to everybody who has access to the internet and because the courses are free Coursera contributes to society with a widening of education possibilities for potentially many different social classes. However Coursera is primarily targeting the educational needs for the higher educated as demographic data for Courserians shows that 75% have a Bachelor's degree or higher. One of the strengths of Coursera is that learning occurs at the time and location that best suits the participant. Hence the temporal dimension of learning is very personalised. Furthermore, the still growing large amount of MOOCs provides significant learning options within a variety of topics, which potentially can tailor online education to the needs and interests of each participant.

A further success factor is that all these examples demonstrate the importance of experimentation. Professor Why for instance is still a small scale initiative in the "science" yet it is a good example how public funds can help to create an innovative way of learning chemistry for children. Both School of One and Quest to Learn were based on pilot initiatives that scaled.

Policy issues related to ICT in social innovation

The need for customised education only grows as societies become ever more fragmented due to globalisation, immigration, and urbanisation. Furthermore state budgets are tight and the need for class rooms with more students as well as more inclusion is apparent. The individually tailored programs of the *School of One* initiative might make that transition easier. Therefore this example possibly suggests that ICT enables customised education and that this might need to be enabled in turn by education policy. A more radical policy angle would of course be to question or review education policy as whole and review core indicators of "good education". As a wider debate suggests education is shifting towards focusing on the outcomes – i.e. on how much students learn; not how much time they spend in the classroom. The *School of One* example suggests that there are alternative ways of "good schooling" and that 'one size does not fit all'; as not all students will learn equally well by studying the same curriculum and receiving instructions by use of the same teaching modes.

Multi-partner approach to education

The role and use of ICT in social innovation

MONDEY is first and foremost a diagnostic tool. It helps parents and pedagogical personnel to develop diagnostic skills and provides an easy to use tool for doing so. At the same time it collects data on real developments of young children to establish a database that can be used by researchers. MONDEY is an example of an ICT-enabled and supported social innovation. It uses the internet to disseminate knowledge on early childhood development. But at the same time it uses the internet to gain knowledge when MONDEY receives data on the monitoring of babies and toddlers. This is definitely innovative. MONDEY is dynamic and interactive. This would not be possible in this way

without ICT. MONDEY is supported by ICT as well as it offers a way to promote the book and to order MONDEY short scales. While the latter would be possible without ICT, the first could not take place regarding time, costs and outreach. To connect MONDEY with social media in a controlled way is discussed but not yet planned.

Strategic and operational considerations related to ICT in social innovation

The multi-partner approach is typical for the examples we have reviewed that show characteristics of ICT enabled social innovation. Here ICT support online and offline communities in creating better conditions to enable better educational outcomes. Coursera, currently the biggest MOOC platform, was launched as a for-profit company in April 2012 by the two Stanford computer science professors Andrew Ng and Daphne Koller. Four months later Coursera had hit 1 million enrolled students across 196 countries (Coursera, 2012). By April 2014 Coursera had over 7 million users, offering over 600 different courses and partnering with 108 universities. As of December 2013 Coursera had received over \$85 million in venture capital (CrunchBase, 2014). It has been crucial for MOOC's success that it has been able to make strategic collaborations with some of the most renowned universities around the world. The partnerships have been critical in order to secure the extensive supply of educational possibilities available at Coursera. Furthermore, the marketing value of some of the biggest universities worldwide partnering with Coursera should not be underestimated. Quest to learn is also a partnership between several state, market and civil organisations – Institute for Play, Center for Transformative Media and New York City Department of Education. The school resides in a wing of the Bayard Rustin Educational Complex, a building with a number of small schools that share a cafeteria and renovated library. Curricula are developed with teachers, designers and curriculum experts collaborating in Mission Lab. Teachers, games designers and curriculum experts work together to develop new learning tools centred on gaming and learning. In MONDEY's case reciprocity works. There are already first insights into the development of children gained which are congruent with perceptions by professionals in day nurseries. Interaction between observers and scientists shows that children are changing – at least in Germany -, that certain developmental steps (to button/unbutton, to catch a ball with two hands) are performed later than expected by the current state of research. This furthers new questions on what is changing and why and if this perception can be made internationally. To answer these and other questions it takes data gathering decentralised and bottom up. This is only thinkable and possible by the use of ICT.

Policy issues related to ICT in social innovation

Data security is a big topic in the multi-partner approaches, particularly if data is further used for research about learning processes. But without getting this sensitive data no reliable data will be won for research.

7.2.7. Conclusions and reflections

Drawing directly on the above analysis, conclusions regarding the three generic research issues, introduced in the methodological approach in section 2, are summarised below as they relate to the education theme. This is an early draft of findings and conclusions and will be further elaborated in our upcoming deliverable D8.4 and D8.5.:

The role and use of ICT in social innovation

ICT are both a support and an enabler in the five examples reviewed in this chapter across the categories of *widening access to education, personalised education & new learning environments* and *a multi-partner approach to education*. For instance MOOCs provide access to education anywhere and anytime and have been named as one of the innovations most likely to transform the education landscape. Why? MOOCs have the potential to open higher education, and make the best education in any topic available to anyone with a computer and Internet connection. Apart from widening access to education, MOOCs are further an example of how technology is enabling a more personalised learning experience and on a quite pragmatic note also might cut costs in higher education. Personalisation and the development of new learning environments - be it for virtual chemistry experiments

(Professor Why) or using gaming technologies to teach math's (School of One)- are the key impact and starting point of most of the case studies analysed for the education theme. In other words using technology to overcome distance or to change the traditional way of teaching are the fundamental starting points of the development of these initiatives. In all cases standard technologies are used alongside traditional and physical interaction to personalise the education experience for student, teacher and in some cases also parent or researcher (to gather new insight into learning in the 21st century).

All examples further clearly show that ICTs support communities to a varying degree. In the MOOCs case, communities of teachers and students alike are only virtual, whilst in most other examples ICT supports online as well as physical communities. Crucially, MONEY provides insight for a community of policy makers trying to effect social change in Germany by providing insight & support in the early learning environment. Amongst OECD countries Germany has a rather low acceptance of institutional childcare below Kindergarten age (>3). Most cases remain small world networks, and increase social capital, with the MOOCs being the exception of also including random network effects and scale-free networks. Network effects could potentially also have a role in personalised education & new learning environments, and has in the subgroups of programmers and coders who design such learning environments but has less importance for the actual innovations. An interesting additional finding is the opportunity ICT provides to provide insight into learning mechanisms & evaluation possibilities in the education area.

Strategic and operational considerations related to ICT in social innovation

There are plenty of social innovation initiatives ranging in scale and ambition trying to innovate the education sector through the use of ICTs. Most of these are examples of multi-stakeholder partnerships. Here several collaborative social innovation processes are evident, notably consultation, engagement, participation, co-creation, design thinking and cross-sectoral collaboration. For instance *Quest for learning* was developed by a partnership of state, market and civil actors. The innovation process was opened up, bringing a range of actors together to deliberate, negotiate and plan a new school focused on using the principles of gaming with the principles of pedagogy to improve learning. It was reliant on this cross-sectoral collaboration to bring forward a range of knowledge, experience and understanding to create the innovation. Most of the examples covered in this chapter started as small scale experiments mostly with public funding which suggests the importance of public involvement and experimentation. We can then find different operational set-ups – in the category of personalised education & new learning environments, the ICT enabled social innovation ideas started as projects turn non-for profits and eventually turned into schools themselves. Professor Why however is an example of a private sector attempt to bring social innovation into the sciences in Poland. A key strategic issue is whether the innovation is an additional educational service – either aimed at the individual, or at educational institutions, or whether they become core elements of the curriculum but organised in a new way. Examples both in the *widening access to education* category as well as the *personalised education & new learning environments* show that ICT is enabling and supporting new organisational set-ups that may provide improved educational outcomes.

Policy issues related to ICT in social innovation

Following on from the role and use and the strategic and operational issues, the key policy area for education is to enable experimentation to allow for innovative solutions to emerge that provide clear outcomes in better education. Particularly the *personalised education & new learning environment* category examples demonstrate that inclusion policy for new education providers to provide specific modules for the education market might need to be considered. This potentially includes new forms of regulation to include personalised education formats. Standard requirements for schools might need to be revised. The *widening access to education* example demonstrates that a clear associated policy area are the importance of affordable broadband, access to a computer and Internet and digital literacy. MONDEY specifically also highlight the importance of requires a good framework for data security and data protection.

Concluding, education for all is one of the most significant social innovations in itself, yet the current system has definitive need for innovation and for improvement of education outcomes. The three focus areas chosen were derived from background research into potential for ICT innovation and emerging social innovation practices and help demonstrate that social innovation is already transforming education as we know it and questioning whether new ways of learning might show better results.

Table 6.2: Education case analysis overview

Focus area and social innovation outcomes	ICT use	Online platforms	Communities	Networks	Social innovation processes	Barriers	Drivers	Role of ICT in social innovation	Operational and strategic	Policy issues
Widening access to education	Standard ICT solutions (Internet & platform technology crucial)	- Content creation - Issue identification	- Online knowledge communities	All types depending on subject area	- Flexible, fast, global - Trust, reciprocity, cooperation - Building capacity and skills	- Lack of sustainable business models & delivery model for online education - Lack of	- Good ICT infrastructure - High level of digital literacy	- Provides access to education anywhere and anytime - Opens higher education - May provide opportunities to cut costs in higher education	- New strategic business model currently run through a non-for profit set-up	The main policy implications demonstrated are the importance of affordable broadband, access to a computer and Internet and digital literacy
Personalised education & new learning environments	Standard ICT solutions as well as bespoke technological solutions (for instance gaming)	- Content creation - Issue identification - Matching assets to needs	- Online knowledge communities - Also enables offline communities and builds social capital	Starting as small world, scaling to scale-free	- Building capacity and skills - Trust, collaboration, relationships - Knowledge and idea sharing	- Legacy, working, attitudes, legal & administrative systems - Reluctance to integrate ICT-enabled educational approaches	- New ICT enabled opportunities for instance through APPS / Mobile - Experimentation with new learning approaches using digital gaming	- Can provide solutions for special needs - Higher outcomes than traditional education approaches	- Public funded strategic ICT use and experimentation done both through the civil and the private sector & then scaled within the formal education sector	New forms of regulation may be needed to include personalised education formats. Standard requirements for schools might need to be revised.
Multi-partner approach to education	Standard ICT alongside traditional activities	- Content creation - Issue identification - Matching assets to needs	- Complementary on- and offline knowledge communities - Social capital	Online small world support network, issue depending scaling to scale free	- Building capacity and skills - Trust, collaboration, relationships - Knowledge and idea sharing	- Funding for multi-partner approaches & sustainable business models - Specific technological issues such as data security	- Bespoke ICT for high ability group & good mix with physical activities - Strong belief and commitment from founders and from partner mix	- Provide support in early learning environment - provide insight into learning mechanisms & evaluation possibilities in the education area	- New strategic business model currently run through a non-for profit set-up – deals with specific segments in education or offers project modules to schools	Might require inclusion policy for new education providers to provide specific modules for the education market. Possibly requires adaptation of specific policies regarding data security.

References

- Bertot, J. C., Jaeger, P. T., & Hansen, D. (2012). The impact of polices on government social media usage: Issues, challenges, and recommendations. *Government Information Quarterly*, 29(1), 30-40.
- Botsman, R., Rogers, R. (2010) "What's Mine Is Yours: The Rise of Collaborative Consumption", New York, HarperCollins Books.
- Castells, M., Caraca, J., Cardoso, G. (Editors) (2012) "Aftermath: the cultures of the economic crisis", Oxford University Press
- Chadwick, A. (2009a). Web 2.0: New Challenges for the Study of E-Democracy in an Era of Informational Exuberance. *I/S: A Journal of Law and Policy for the Information Society*, 5 (1), 9-41.
- Dixon, J. & Keyes, D. (2013) The Permanent Disruption of Social Media. *Stanford Social Innovation Review*, Winter 2013.
- Domínguez, S. and Watkins, C., (2003) "Creating Networks for Survival and Mobility: Social Capital Among African-American and Latin-American Low-Income Mothers", *Social Problems*, Vol. 50, No. 1 (February 2003), pp. 111-135
- Economist Magazine (2012) "A sense of place – technology and geography", 27 October 2012
- Eisenhardt, K.M. (1989) "Building theories from case study research", *The Academy of Management Review*, Oct 1989, 14, 4; IBI/INFORM Global.
- Esping-Anderson, G. (2000) "Three Worlds of Welfare Capitalism", Polity Press, Cambridge, UK.
- European Commission (2012) "Public Services Online 'Digital by Default or by Detour?' Assessing User Centric eGovernment performance in Europe – eGovernment Benchmark 2012"
- European Commission (2014) "Mapping smart cities in the EU", Directorate-General for Internal Policies, Economic and Scientific Policy, European Parliament.
- Gansky, L (2010) 'The mesh – why the future of business is sharing', Penguin Group, New York.
- Gibson A (2010) "Local by Social: How local authorities can use social media to achieve more for less", NESTA, IDEA, 2010. http://www.nesta.org.uk/sites/default/files/local_by_social.pdf.
- Golbeck, J., Grimes, J. M., & Rogers, A. (2010). Twitter use by the US Congress. *Journal of the American Society for Information Science and Technology*, 61(8), 1612-1621.
- Gordon E, Baldwin-Philippi J, Balestra M (2013) "Why we engage – how theories of human behavior contribute to our understanding of civic engagement in a digital era", The Berkman Center for Internet and Society at Harvard University, Cambridge, Massachusetts, USA.
- Green, C. H., (2012) "Trust and the Sharing Economy: A New Business Model", White Paper: <http://trustedadvisor.com/public/White-Paper-Trust-and-the-Sharing-Economy.pdf>
- Harford, T. (2011) "Adapt: why success always starts with failure", Little, Brown, London.
- Harris K, Flouch H "The Networked Neighbourhoods Group", The Online Neighbourhood Networks Study, a study of the social impact of citizen-run online neighbourhood networks and the implications for local authorities <http://networkedneighbourhoods.com/wp-content/uploads/2010/12/Online-Nhood-Networks-Section-1-rev1.pdf>
- Hill, C (1972) "The world turned upside down: radical ideas during the English Revolution", Penguin Books, London.
- Hostick-Boakye, S. (2013) "Amplify: Local Campaigning in a Digital World", The Young Foundation, 2013 <http://youngfoundation.org/wp-content/uploads/2013/05/AMPLIFY-WEB.pdf>
- Hothi M (2012) "Local 2.0: How digital technology empowers local communities", The Young Foundation, 2012 <http://youngfoundation.org/wp-content/uploads/2012/10/Local-2.0-How-digital-technology-empowers-local-communities-May-2012.pdf>

- Hothi M (2013) "Listen, Participate, Transform: A social media framework for local government. A local 2.0 think piece <http://youngfoundation.org/wp-content/uploads/2013/02/Listen-Participate-Transform-A-social-media-framework-for-local-government-June-2010.pdf>
- Innes, J. E., & Booher, D. E. (2004). Reframing public participation: strategies for the 21st century. *Planning Theory & Practice*, 5(4), 419-436.
- IPTS (2009) "Migrants, ethnic minorities and ICT: inventory of good practices in Europe that promote ICT for socio-economic integration in culturally diverse communities", Institute for Prospective Technological Studies, European Commission, Joint Research Centre, Seville, Spain, July 2009.
- IPTS (2013) "CrowdEmploy Crowdsourcing Case Studies: An Empirical Investigation into the Impact of Crowdsourcing on Employability", Institute for Prospective Technological Studies, European Commission, Joint Research Centre, Seville, Spain.
- IPTS (2014) "Exploratory Research on Internet-enabled Work Exchanges and Employability: Analysis and synthesis of qualitative evidence on crowdsourcing for work, funding and volunteers", Institute for Prospective Technological Studies, European Commission, Joint Research Centre, Seville, Spain.
- Kavanaugh, A. L., Fox, E. A., Sheetz, S. D., Yang, S., Li, L. T., Shoemaker, D. J., & Xie, L. (2012). Social media use by government: from the routine to the critical. *Government Information Quarterly*, 29, 480-491.
- Ly, P. & Mason, G. (2013): Individual Preferences Over Development Projects: Evidence from Microlending on Kiva. *VOLUNTAS: International Journal of Voluntary and Nonprofit Organizations*, 2012, Volume 23, Number 4, Page 1036.
- Mashelkar, R.A. (2013): Organising inclusive innovation for accelerating inclusive growth. Official report to the European Commission by R.A. Mashelkar, President of the Global Research Alliance, August 2013.
- Mota, J.C. and Santinha, G. (2012) "Social media and civic engagement: discussing the case of Aveiro, Portugal", in "E-governance and social media", *European Journal of ePractice*, edited by Jeremy Millard and Gwendolyn Carpenter, upcoming 2012: <http://www.epractice.eu/node/5331756> accessed 30 April 2012.
- Margo, M. J. (2012). A Review of Social Media Use in E-Government. *Administrative Sciences*. *Administrative Sciences*, 2(2), 148-161.
- Meijer, A. (2013). Co-production in an Information Age: Individual and Community Engagement Supported by New Media. *VOLUNTAS: International Journal of Voluntary and Nonprofit Organizations*. December 2012, Volume 23, Issue 4, pp 1156-1172
- Mergel, I. A., Schweik, C. M. & Fountain, J. E. (2009). The Transformational Effect of Web 2.0 Technologies on Government. Available at SSRN: <http://ssrn.com/abstract=1412796>.
- Millard J (2006) "The business and economic implications of ICT use: Europe's transition to the knowledge economy", in "The Future of the Information Society in Europe: Contributions to the Debate", Editors: R Compañó, C Pascu, A Bianchi, J-C Burgelman, S Barrios, M Ulbrich and I Maghiros, published by the Institute of Prospective Technological Studies, Sevilla, Spain, European Commission DG JRC, 2006.
- Millard, J (2007) "Inclusive eGovernment: survey of status and baseline activities", published by the European Commission, DG Information Society, Brussels, December 2007.
- Millard, J. (2008) "21st Century eGovernance – turning the world upside down?", *European Journal of Political Technologies*, Spring 2008.
- Millard, J (2009) "eParticipation recommendations – focusing on the European level", Study and supply of services on the development of eParticipation in the EU, European Commission.
- Millard, J. (2012) "The development of online networking tools", TEPSIE project supported by the European Commission, deliverable D8.1: <http://www.tepsie.eu/images/documents/TEPSIE.D8.1ReportDevelopmentofOnlineNetworkingtools.31052012.pdf>
- Millard, J. (2012) "Social innovation in the age of the sharing economy: local challenges that meet the network effect", joint workshop between the TEPSIE project and MESHLABS, University of California, Berkeley, 18-19 April 2012:

<http://www.tepsie.eu/images/documents/social.innovation.and.the.sharing.economy.workshop.report.2012.from.tepsie.pdf>

- Millard, J., Nielsen, N.C., Thaarup, R.K. (2013). "Report on the role of communities and networks in social innovation, and the role that online networking tools are playing", a deliverable of the project: "The theoretical, empirical and policy foundations for building social innovation in Europe" (TEPSIE), European Commission – 7th Framework Programme, Brussels: European Commission, DG Research: <http://www.tepsie.eu>
- Millard J, Carpenter G, et al (2013) "Study on business and financial models related to ICT for ageing well" for DG CONNECT, the European Commission.
- Millard, J. (2014) "Development theory" chapter in Deliverable 1.1 (Critical literature review: theoretical framework for further empirical work) of the SI-DRIVE FP7 supported social innovation research project: www.si-drive.eu
- Millard, J (2014a forthcoming) "The digital divide and the global post-2015 development debate", In Andreasson, K. (Ed.): Digital divides: the new challenges and opportunities of e-Inclusive. The Taylor & Francis Group.
- Millard, J (2014b forthcoming) "Open governance systems: doing more with more", Government Information Quarterly.
- Mittelman, R. & Rojas-Méndez, J. I. (2013): Exploring Consumer's Needs and Motivations in Online Social Lending for Development. Journal of Nonprofit & Public Sector Marketing. Vol. 25, Iss. 4, 2013
- Moreira, A., Gerhardt, G., & Ladner, A. (2010). Impact of Web 2.0 on Political Participation. In Proceedings of ePart 2010 Conference. Lausanne, Switzerland.
- Morozov, E (2011) "The Net Delusion: The Dark Side of Internet Freedom", Perseus Book Group, New York.
- Shirky, C. (2008) "Here comes everybody – how change happens when people come together", Penguin Books, London.
- Ormerod, P. (2012) "Positive linking: how networks can revolutionise the world", Faber and faber Ltd., London.
- Perez, C (2004) "Technological Revolutions and Financial Capital: The Dynamics of Bubbles and Golden Ages", IBM 2004 Annual Report.
- Perez, C (2009) 'Technological Revolutions and Techno-economic Paradigms,' TOC/TUT Working paper No.20, 2009. Available at www.carlotaperez.com
- Piketty, T. (2014): Capital in the Twenty-First Century- Harvard university Press, translated from the French 2013 edition.
- Porter, M./ Kramer, M. (2011): Creating shared value". In Harvard Business Review, Jan/Feb 2011, 89 (1/2), pp. 62-77.
- Prahalad, C. K. (2004): The fortune at the bottom of the pyramid: eradicating poverty through profits. Pearson Prentice Hall: New York.
- Proserpio, G. Z., and Byers, J. W. (2014) "The Rise of the Sharing Economy: Estimating the Impact of Airbnb on the Hotel Industry", Boston University School of Management, Research Paper Series No. 2013-16.
- Reed, M. S., Dougill, A. J., & Baker, T. R. (2008). Participatory indicator development: what can ecologists and local communities learn from each other. Ecological Applications, 18(5), 1253-1269.
- Rifkin, J. (2014): The zero-marginal cost society: the internet of things, the collaborative commons and the eclipse of capitalism. Palgrave Macmillan: New York.
- Schmidt, E. and Cohen, J (2013) "The Saturday Essay: The Dark Side of the Digital Revolution". Wall Street Journal, 19 April 2013.
- Sennett, R. (1998) "The Corrosion of Character, The Personal Consequences Of Work In the New Capitalism", Norton.
- Sennett, R. (2006) "The Culture of the New Capitalism", Yale.
- Shieh, S. and Deng, G. (2011) "An emerging civil society: The impact of the 2008 Sichuan earthquake on grass-roots associations in China", The China Journal, No. 65 (January 2011), pp. 181-194
- Tapscott, D, & Williams, AD (2006) 'Wikinomics: how mass collaboration changes everything', Atlantic Books, London.
- Twinomurinzi, H., Phahlamohlaka, J., & Byrne, E. (2012). The small group subtlety of using ICT for participatory governance: A South African experience. Government Information Quarterly.

- United Nations (2013): Governance, public administration and information technology for post-2015 development. United Nations: New York.
- Wenger, E., White, N., Smith, J.D. (2009) "Digital habitats: stewarding technology for communities", publisher CPsquare, Portland, USA: <http://technologyforcommunities.com>.
- Yin, R.K. (2009) "Case study research: design and methods" (4th edition), Thousand Oaks, CA: Sage Publications.
- Zorn, T.E., Grant, S. & Henderson, A. (2013): Strengthening Resource Mobilization Chains: Developing the Social Media Competences of Community and Voluntary Organizations in New Zealand. VOLUNTAS: International Journal of Voluntary and Nonprofit Organizations. September 2013, Volume 24, Issue 3, pp 666-687.

Annex 1: Case study reporting template

Tepsie, January 2014

Instructions:

1. All recommended text lengths exclude tables, figures and graphics (which you are encouraged to use if relevant). This is to ensure conciseness and comparability. Store extra material in an annex for possible later use. The total final length, once finished, should be no more than about 12 pages, but intermediate versions could be longer of course.
2. All parts should be completed. The only exceptions might be section 4, 5 and 6 (reflecting the three perspectives from D8.2, see Annex 3) where it might be sensible to focus just on one or two. We will talk to you individually about this on an example by example basis.
3. The following working definition of ICT and social innovation is used: “the use of ICT to enable or support social innovation. ‘Enable’ implies that the SI wouldn’t happen without ICT and could even mean that new types of SI appear (i.e. doing new things), whilst ‘support’ implies that SI is taking place anyway but also that it is, in some way or other, improved by ICT (i.e. doing existing things better, faster, cheaper, etc.). For a definition of ICT, see D8.1, and forthcoming D1.4 for SI definitions (draft of the latter is in Annex 2).

BRIEF SUMMARY (text length: one paragraph)

- i) Specific social need(s) addressed (the objectives/aims of the example)
- ii) Overview of basic elements as a brief standalone summary

<i>Scale and location</i>	<i>Geographic name(s)</i>
Locality (s)	
Sub-national region (s)	
Country (s)	
Cross-border/international	
Multiple locations	
Other configurations (specify)	
Scale	<i>Please give a quantitative idea of scale, e.g. number of beneficiaries, project budget, etc.</i>

CONTEXT AND DESCRIPTION

1. Societal and institutional context (text length: third of page)

- i) Governance context: prevailing legal, regulatory, institutional, political context (only as necessary to understand the example)
- ii) Societal (social, economic, cultural) context, trends and issues (only as necessary to understand the example).

2. Operational aspects (text length: third of page)

- i) Why and how the example was initiated and its longer term strategy.
- ii) The roles and relationship of actors described (free text plus summarize in following table)

Actors and roles summary table (leave cells blank or enter actor name, adding extra lines as needed)					ICT used (if any)
Role/tools	Actor	State	Market	Civil	
Initiator					
Funder					
Other resource provider (specify)					
Manager/coordinator					
Partner/collaborator					
Intermediary					
Beneficiary					
Other roles (Specify)					

iii) How actors operate together/governance

iv) The sustainable business model¹¹⁹

ANALYSIS

3. Use of ICT (we are not interested in examples where the role of ICT is not important) (text length: half a page)

- Overview of ICT use (refer to table above showing which ICT used by which actor), the specific purposes for which ICT is used (e.g. communicate with beneficiaries/partners, collect data, etc., etc.), and how is this better than non-ICT tools (e.g. speed, cost, reach, collaboration, etc., etc.)?
- The non-ICT processes/tools used (e.g. workshops, print, radio, etc.) and how ICT relates to them.

For 4, 5 and 6, it will depend on the example which are addressed – at least one but maybe more.

4. Online platforms (only where relevant: see D8.2 and its extract) (text length: half to one page)

- Content creation – creating, accessing or filtering online content
- Issue identification – identifying or uncovering issues to be tackled, typically from content in i)
- Matching assets to needs – typically in relation to identified issues
- Matching finance to needs – a specific type of iii) given its importance, i.e. financial assets
- Solving problems – matching problems with problem solvers and the assets to solve problems
- Action on problems – organising to directly address problems/needs.

5. Communities, knowledge and innovation (only where relevant: see D8.2 and its extract and specify the role of ICT, see D8.2 and its extract) (text length: half to one page)

- Creation, application and dissemination of knowledge in groups and networks
- Relationship of tacit to codified knowledge and of local to larger/global scale.

6. Networks and the network effect (only where relevant: see D8.2 and its extract and specify the role of ICT, see D8.2 and its extract) (text length: half to one page)

- Random networks
- Scale-free networks
- Small-world networks
- Social capital networks

¹¹⁹ The business model is not necessarily commercial but simply means how the operation is sustainable in organisational, financial, functional, etc., terms.

7. **Social innovation outcomes** (specific to the relevant theme, see annex; we are not interested in the example if it doesn't have any relevant SI outcomes, actual or confidently predicted, and include quantified outcomes where possible) *(text length: max one paragraph per SI outcome)*
 - i) Findings in relation to SI outcome i) and how achieved
 - ii) Findings in relation to SI outcome ii), etc. and how achieved
 - iii) Findings in relation to other SI outcome (specify) and how achieved
8. **Social innovation processes and social practices** (see annex; we are not interested in the example if it doesn't have any relevant SI process, actual or confidently predicted, and include quantified processes where possible) *(text length: max one paragraph per SI process type)*
 - i) Findings in relation to SI process i) structure and how realized
 - ii) Findings in relation to SI process ii) relationships and how realized
 - iii) Findings in relation to SI process ii) capacity and how realized
 - iv) Findings in relation to SI process ii) collaboration and how realized
 - v) Findings in relation to SI process ii) action and how realized
 - vi) Findings in relation to other SI process (specify) and how realized
9. **Barriers and drivers** *(text length: third page)*
 - i) Barriers experienced – i.e. which have been problematic
 - ii) Drivers – i.e. which have enabled the example

SYNTHESIS AND CONCLUSIONS

10. **Relationship between ICT and social innovation** *(text length: third page)*
 - i) Is this an example of social innovation using ICT, or ICT that can generate social innovation, or both? Please explain.
 - ii) Is this an example of ICT-enabled social innovation (would not happen without ICT), or ICT-supported social innovation (improved through social innovation), or both? Please explain.
11. **Lessons learned: success factors** *(text length: one paragraph each)*
 - i) Operational and strategic
 - ii) The use of ICT
 - iii) Social innovation processes and outcomes
 - iv) Policy
 - v) Other (if any, specify)
 - vi) Gaps – i.e. what knowledge, research, drivers, policies, etc., are needed in future.

SOURCES

Literature and documentation	• list
Interviews	• list
Internet sources	• list

ANNEX

Working definition of SI: both 1) **outcomes** (i.e. real positive changes in wellbeing and/or prosperity of beneficiaries), and new or better 2) **processes** and practices. BEPA definition (2011): “Social innovations are innovations that are both social in their ends and their means.”

1. Social innovation outcomes, per theme:

Theme: societal challenge	Social innovation outcomes (actual or confidently predicted)
Employment	8. Increase in jobs & work (number & duration) 9. Improved jobs & work (quality & remuneration) 10. Improved entrepreneurship & work skills (personal & collective) 11. Improved employment supports, e.g. training, tools, facilities, etc. 12. Scaled employment impact, actual or predicted (more sectors, groups, localities) 13. Other (specify)
Place development	8. Improved community activism and participation (including political, planning, budgeting, etc.) 9. Improved community growth, prosperity & well-being 10. Improved community social and cultural cohesion/inclusion 11. Improved community facilities and amenities (physical or cultural) 12. Improved community security and protection (e.g. against crime, natural hazard) 13. Scale community impact, actual or predicted (more sectors, groups, localities) 14. Other (specify)
Sharing economy	9. Changed economic dynamic between common ownership (free-rider problem and over use) and private ownership (right to exclude others, hence threat of under-utilization) 10. Changed business models & value chains to harvest advantages from this change dynamic in scale 11. Environmentally sustainable production and consumption 12. Scaled sharing economy impact, actual or predicted (more sectors, groups, localities) 13. Other (specify)
Health	6. Increase in health & wellbeing (numbers of people & duration) 7. Increase in health personalization 8. Shift from reactive healthcare to preventive healthcare 9. Increase in health skills (personal & collective) 10. Scaled health impact, actual or predicted (more sectors, groups, localities) 11. Other (specify)
Education	7. Increase in education & personal skills (formal & informal) (numbers of people & duration e.g. lifelong learning) 8. Increase in educational personalization 9. Improved education and personal skills (quality and level) 10. Increase in accessible educational content and tools 11. Improved qualification & validation system 12. Scaled educational impact, actual or predicted (more sectors, groups, localities) 13. Other (specify)

2. Social innovation processes and new social practices

(actual or confidently predicted)

We postulate that there are five generic types of social innovation process

i) STRUCTURE	ii) RELATIONSHIPS	iii) CAPACITY	iv) COLLABORATION	v) ACTION
For example: • Organisation • Governance (roles, relationships, power) • Management and leadership	For example: • Trust • Reciprocity • Deliberation • Conflict resolution • Mutualism • Transparency and openness • Accountability • Opening of the innovation process	For example: • Skills (individual & collective) • Capabilities (individual & collective) • Knowledge generation (individual & collective) • New/unused assets and resources • Evaluation, assessment and monitoring • Awareness, learning and understanding • Experimentation	For example: • Cooperation • Involvement • Consultation • Engagement • Participation • Networking • Co-creation and collective creation (design thinking?) • Cross-sectoral collaboration • Blurring roles (e.g. “prosumers”)	For example: • Activism • Campaigning • Advocacy and voice • Decision- and policy-making

←————— *a continuum?* —————→

Annex 2: Tepsie's preliminary definition of social innovation

Note this is a draft extract from Tepsie's *Practitioner Report*, due for final publication in D1.4 in December 2014

There are many different definitions of social innovation. This definition is based on our research over the last three years and in offering this definition we hope to contribute to the ongoing discussion on social innovation.

In short, we define social innovations as new approaches to meeting social needs. They are social in their means and in their ends. They engage and mobilise the beneficiaries and help to transform social relations by improving beneficiaries' access to power and resources.

We define social innovation in the following way:

- *New*
A social innovation is new to the context in which it appears.¹²⁰ It might not be entirely new but it must be new to those involved in its implementation.
- *Meets a social need*
Social innovations are created with the intention of meeting a social need in a positive or beneficial way.¹²¹ Social innovations can also play a role in articulating or shaping social needs; they can help to legitimise new and emerging social needs or those which have so far gone unrecognised. Because social innovations are concerned with meeting specific social needs, we argue that social innovations are distinct from innovations which have a social impact.¹²²
- *Put into practice*
Like innovations more generally, social innovations are ideas that have been put into practice. In this way, social innovations are distinct from social inventions (new ideas that have not been implemented).
- *Engage and mobilise beneficiaries*
In social innovation, an attempt is often made to involve or engage the beneficiaries in the development of the social innovation or in its governance. This is either achieved directly, or through appropriate intermediaries or other actors who themselves have direct contact to the beneficiaries. It might also take place via actors who directly support the beneficiaries or have legitimate knowledge of their needs. This engagement often helps to ensure that the social innovation serves legitimate goals and involves the members of the target group themselves in addressing and owning their own problems. This can, in turn, lead to better and more innovative solutions, as well as increasing their awareness, competences, and even their dignity and self-esteem.
- *Transform social relations*

¹²⁰ A Evers, B Ewert and T Brandsen (eds.), *Social Innovations for Social Cohesion: Transnational patterns and approaches from 20 European Cities*, WILCO: Welfare Innovations at the Local Level in Favour of Cohesion, Liege, EMES European Research Network, 2014.

¹²¹ Here we use the term 'target group' very broadly to cover both human and non human subjects. This is important because some social innovations are focused on the environment and preserving natural habitats.

¹²² Generally speaking we call existing needs 'social' if society at large is or feels responsible for meeting those needs. If they are seen as problems that individuals are expected to solve for themselves then they are not 'social'. The concept of social needs is normative; what constitutes a social need will be discussed, debated and contested.

Social innovations aim to transform social relations by improving the access to power and resources of specific target groups. As such, social innovations can empower specific target groups and challenge the unequal or unjust distribution of power and resources across society. In this way, social innovations contribute to discourses about the public good and the just society.

Aside from the five criteria above there are also a number of factors, which often characterize social innovations, but do not necessarily have to be present:

- Unlike other forms of innovation, especially innovation in large scale companies, social innovation often tends to be **'bottom up' rather than 'top down'** and ad hoc rather than planned. It often emerges from informal processes and the entrepreneurial actions of citizens and groups of individuals.
- At the outset, social innovation is typically marked by **a high level of uncertainty**, in part because it has never been implemented before. As a result of this uncertainty it is impossible to say at the outset whether the social innovation is 'good' or more 'effective' or 'better' than alternatives. This can only be seen in hindsight.
- At the beginning, a social innovation will be different from widespread or mainstream practices. But, depending on the social, political and cultural context in which it appears, it **may become embedded in routines, norms and structures** and thereby become a widespread everyday practice. Once the innovation has become institutionalised, new needs and demands might arise, leading to fresh calls for social innovation.
- Despite good intentions, social innovations might prove to: be socially divisive; have **unintended consequences** that have negative social effects (by excluding people who are affected by the innovation in the design and implementation stages) and; become vulnerable to co-option and/or mission drift.¹²³

Types of social innovation

Social innovation is a broad term which refers to a wide range of activity. A key reflection on our research over the course of this project is that we often need to go beyond using 'social innovation' generically and be clear about what kind or type of social innovation we're talking about. To this end, we've developed a typology of social innovations which sets out five forms or types of social innovation. Some social innovations might encompass numerous dimensions.

Types of social innovation	Description	Example
New services and products	Such as new interventions or new programmes to meet social needs	Car-sharing; fair trade
New practices	Such as new services which require new professional roles or relationships	Dispute resolution between citizens and the state in NL (the professional civil servant role has changed dramatically and citizens' social needs are met much better) ???
New processes	Such as co-production of new services	Participatory budgeting (started in Brazil and since widely scaled; is not dependent on ICT, though ICT often used).

¹²³ A Nicholls and A Murdock, *Social Innovation: Blurring Boundaries to Reconfigure Markets*, Palgrave Macmillan, 2012

Types of social innovation	Description	Example
New rules and regulations	Such as the creation of new laws or new entitlements	Personal budgets (e.g. in DK and NL where older people can decide themselves how much of their support money is spent)
New organisational forms	Such as hybrid organisational forms such as social enterprises	Belu Water, a small UK based social enterprise, which sells bottled water and donates all it's profits to WaterAid and has pledged to raise £1m by 2020.

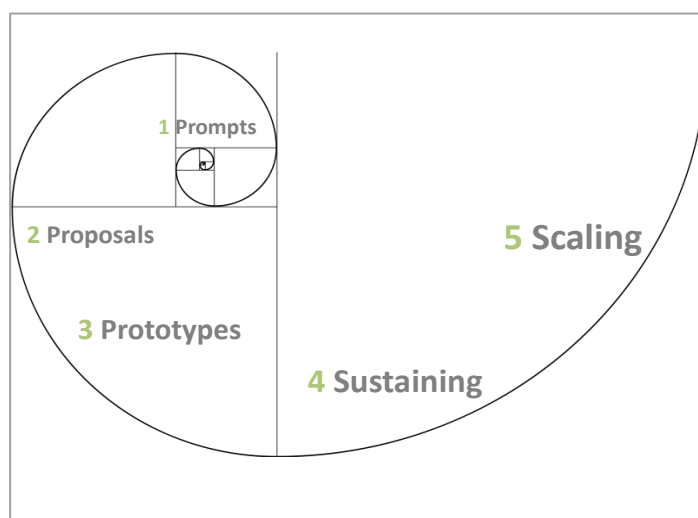
How social innovation takes place

We have identified five stages in what is called the social innovation life-cycle that take an idea from inception to impact. While this five stage process does not capture the often messy and experimental nature of developing and growing social innovations, it does provide a very useful analytical framework with which to think through the range of different activities that take place and the support and resources that are required at each stage. The five stages are:

1. Prompts – where the need for social innovation becomes apparent
2. Proposals – where ideas are developed
3. Prototyping – where ideas get tested in practice
4. Sustaining – when the idea becomes everyday practice
5. Scaling – growing and spreading social innovations

Of course, in reality, many of these stages overlap and may be undertaken in a different order. Many ventures start with a practice or prototype and only fully flesh out the demand in terms of needs much later. Often, implementation, action and practice precipitate new ideas, which in turn lead to further improvements and innovations. And feedback loops exist between every stage, which makes the process iterative rather than linear. This is why we represent this process visually with a spiral.

Figure 1 - The social innovation life-cycle



The process is highly experimental so many ideas never make it off the ground. In many cases, plans are abandoned, prototypes fail and innovators start all over again. Failure is a natural part of the social innovation process. And these failures are a necessary part of learning what works. Indeed, Samuel Beckett's famous line 'Try again. Fail again. Fail better.' could be a mantra for any social innovator.

Not all social innovations go through all five stages, but to be a social innovation a project or practice needs to get to the fourth stage: sustaining. We see the first three stages of prompts, proposals and prototyping as the stages of experimentation and invention. In some cases, social innovations remain small in scale and locally based, rather than attempting growth and scale, and in our view, this does not make them any less valid or valuable. In other cases, for example online, social innovations can skip out stages entirely, quickly going from prototyping to scaling and only then exploring business models and revenue streams when, again, they may fail if this does not happen successfully. It is also important to recognise that many people use the term social innovation to describe the whole life-cycle.

Annex 3: Online platforms, communities and networks

Overview of the three research perspectives from D8.2

1. Online platform types enabling social innovation – the technology perspective

D8.2 developed a taxonomy of six ideal types of ICT platforms which actual tools in practice use in different combinations to address social needs:

- i) Content creation – creating, accessing or filtering online content
- ii) Issue identification – identifying or uncovering issues to be tackled, typically from content in i)
- iii) Matching assets to needs – typically in relation to identified issues
- iv) Matching finance to needs – a specific type of iii) given its importance, i.e. financial assets
- v) Solving problems – matching problems with problem solvers and the assets to solve problems
- vi) Action on problems – organising to directly address problems/needs.

2. Communities, knowledge and innovation – the community perspective

This perspective looks at how individuals and groups of people as communities learn and produce different types of knowledge together, how this knowledge can be used to innovate, and the impact ICT has on these processes. Main issues include:

- i) Innovation depends critically on knowledge, both new and old, applied to new challenges or opportunities. This application almost always requires well-functioning communities of practice (CoP), defined as the social organization of a group of people jointly pursuing a shared practice, often in the workplace but in principle in any context.
- ii) Because CoPs are traditionally local and characterised by a great deal of tacit knowledge, the challenge is to exploit their power on a larger scale by using ICT which will inevitably make their knowledge at least partially codified. A main focus is thus on the interplays between traditional relationships on a local scale with much tacit knowledge on the one hand, and ICT-mediated relationships potentially up to global scale with much coded knowledge on the other.

3. Networks and the network effect – the network perspective

This perspective challenges the traditional view that individuals make so-called rational choices and decisions based on their own interests by showing that in many, if not most cases, people are strongly guided by the networks they engage in, both to innovate as well as to copy from people they trust or wish to emulate. In this context, four main types of network effects are recognised each of which is more or less influenced by the application of ICT:

- i) Random networks: unstructured networks, highly open to chance events. There are no or very few ‘hubs’ (i.e. people located centrally in the network with many links to other people or who have greater influence than other people). However, once an innovation is established, often by chance, it can spread virally and very fast, mainly through undirected (random) copying.
- ii) Scale-free networks: most people have a small number of direct links to other people, but there are also a significant number of ‘hubs’ each possessing a large number of links to other people and relatively high influence. If one or more hubs takes up an innovation, it is likely it will spread by so-called directed copying, becoming well embedded throughout the network.
- iii) Small-world networks: nearly all people have relatively small numbers of links to other people, nearly all of whom are connected to each other as part of an inward-looking group with only few external links and few if any ‘hubs’. These networks are quite resistant to innovations from outside, but once a critical number of people have adopted the innovation, it is highly likely that the whole network will do so as well through so-called directed copying.

- iv) **Social capital:** networks of friendship, neighbourhood and organisations which determine much of our individual, social, cultural, economic and political lives, plus the social resources that can underpin and may be embedded in these ties. There are two main types of social capital networks: bonded (tight, strong, trustful networks with people we know well), and bridging (loose, less committed connections with people we know less well).

Further information if needed, read on....

Ever wondered what connected Plato, Toyota and social innovation? Read on! Knowledge creation and innovation processes have fundamentally changed through the arrival of ICT and hence we ask what the role is of communities and networks for social innovation and how in particular networking tools are a game-changer for the social innovation community. We have applied three main conceptual frameworks to examine the impact of ICT on, and its interaction with, social innovation.

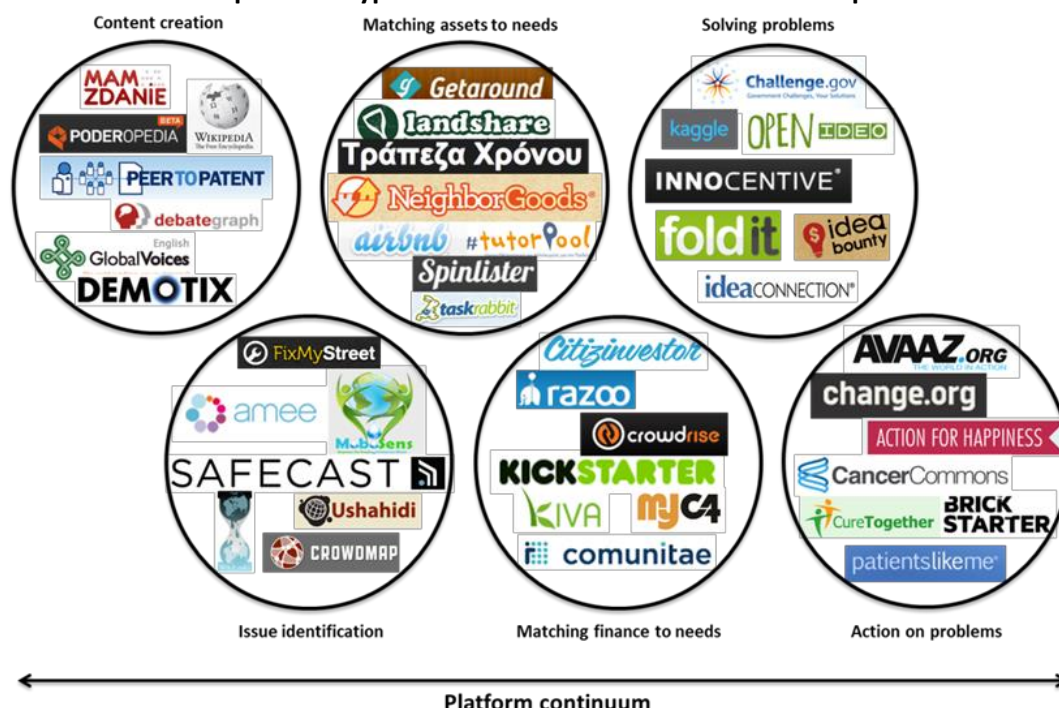
The overall objective of this research is to examine the extent to which, how and why, online networks and Information and Communication Technology (ICT) are substantially changing the character of communication; relationship building; collaboration platforms; information access and data usage; social choices; service models; financing and much more. Although this report has no intention of being a comprehensive and complete review of the impact of online networks on social innovation, it has identified three complemented perspectives taking their point of departure respectively in the technology, in communities and in networks:

1. **Taxonomy of online platform types enabling social innovation** – here we take a technology perspective by examining many of the most important current state-of-the-art platform tools and applications and undertake an illustrative mapping of examples against societal problems and needs.
 2. **Communities, knowledge and innovation: lessons from corporates** – our starting point here is the assumption that ICT creates a systemic shift in knowledge production and innovation. Applying the community perspective, we look at how individuals and groups of people as communities learn and innovate together and then examine how online tools impact these communities.
 3. **Networks and the network effect** – Mapping the impact of social innovation will require a network analysis of how people, organisations and places interact. Inspired by new approaches in social and behavioural economics, we take a network perspective and analyse the role networks play in innovation and how online tools might be changing this.
- 1) *The **taxonomy of online platform types enabling social innovation** identifies six platform types, each with distinct approaches and objectives:*
 - i) **Content creation:** Online networks enabling communities to provide access or filter content and information as part of a service or initiative. This could be by peer production and filtering of information or by direct community contribution of content and information.
 - ii) **Issue identification:** Typically building on new or existing content or assets, these online networks collect and share peer produced and crowdsourced data from communities in order to uncover or identify issues and societal challenges. This could be by uncovering new and aggregated information about problems not undertaken by government or the market.

- iii) **Matching assets to needs:** Within the context of specific issues or problems, these online networks and sharing platforms match assets or physical resources with needs, for instance tasks, land, goods, accommodation, time, etc. Assets not being used or being under-used also represent excess, idle or wasted capacity, so matching these with unmet social needs both increases asset efficiency and increases the likelihood of meeting such needs.
- iv) **Matching finance to needs:** Online networks enabling the aggregation of individual or other forms of diverse funding, through for example micro financing or crowdfunding, to meet a given social need. (In essence, this is a sub-type of type iii), matching assets to needs, but is sufficiently important to warrant designation as a discrete type.)
- v) **Solving problems:** Online networks matching problems with problem solvers. Usually these approaches and processes are undertaken by crowdsourcing or co-creation methods.
- vi) **Action on problems:** Online networks enabling and organizing communities to undertake both online and offline action and support for a given cause or social need, by matching and aggregating individuals and communities holding specific concerns and goals in common.

The six platform types are constructed as ideal types. A given social innovation will normally, of course, use more than one of the six platform types in pursuing its objectives. Yet, describing and illustrating these as ideal types helps to isolate the specific approach and purpose of each and how they might be combined in a number of ways to support social innovation.

A continuum of six platform types from assets and tools to needs and problems



2) Communities, knowledge and innovation: lessons from corporates. An important part of the corporate optimization of innovation is the fundamental insight that innovation depends critically on the application of knowledge – sometimes new knowledge, but often also old knowledge applied to new challenges or opportunities – to the creation of economically valuable new solutions: products, processes, services or business models. One of the key insights behind the

corporate optimization of innovation is that the application of knowledge almost always requires well-functioning communities of practice (CoP), defined as the social organization of a group of people jointly pursuing a shared practice, often in the workplace but in principle in any context. A CoP is characterised by high personal interactivity between different skill sets and specialisations in which doing and showing their knowledge is just as important as writing manuals or setting up a knowledge archive. CoPs are made up of a mix of complementary specialisms, for example in an architectural firm consisting of designers, draftsmen, materials specialists, environmental and energy experts, legal and planning advisors, etc., who interact to complete tasks. The power of the CoP is that different experts cooperate on a day-to-day basis thus building up shared knowledge.

Because CoPs are traditionally small scale and characterised by a great deal of tacit knowledge, the challenge is to exploit their power over distance and by using ICT which will inevitably make their knowledge at least partially codified. In a network of practice (NoP), a specific type of expert can directly link to similar experts potentially on a global scale, traditionally through conferences and journals but today ICT enables this to take place online. Further, a community about practice (CaP) can use especially ICT to link the shared practice of architecture as a holistic skill-set on global scale, hardly possibly without ICT.

Efficiency, scaling, extension, acceleration, scope, free-riding, dissemination, sharing, enhancing and empowering, are just some of the key words that characterize the effective use of ICT in the right community and network organization in relation to the company's ability to innovate.

What has been achieved in the quest by elite companies to achieve superior performance in innovation during recent years – from which we believe that social innovation has much to learn – is the ability to optimize the performance of the overall organization in terms of knowledge transformations, including eventually understanding the overall flow from very local and very tacit to global and codified, and of course not least optimizing the use of ICT.

"The people who are crazy enough to think they can change the world, are the ones who do."

- Steve Jobs, Founder Apple

An important lesson from the elite corporate performers is that all of these optimizations and functions are supported and leveraged by ICT and online media:

- ICT tools optimize and leverage all routine community functions
- ICT tools extend the 'togetherness' side of the community into separation
- ICT tools become a direct substrate and medium for embedding new knowledge and practices
- ICT sharing is an effective medium of optimization across overlapping and interfaced communities
- The extension of 'togetherness' through ICT reaches beyond the individual community and enables multiple community memberships and tightens linkages created via individual trajectories
- ICT makes the online integration of parallel communities in different geographies possible, thereby enabling distributed, virtual communities
- ICT provides shared tool-boxes across the company
- Online media make intra-company, cross geography specialist clubs functional, thereby strengthening the company's ability to successfully participate in external, global specialist networks
- Online media become the de facto space for participation in global NoPs, thereby enabling the ability to harvest relevant global advances in codified knowledge

- Online media enable the formation and the ability to sustain key NoPs, thereby enabling the company's ability to harvest from global practice and application development.

3) Networks and the network effect. Social and other types of networks are, of course, as old as history. Yet many policy makers are still wedded to the notion that individuals take decisions about everything they do in splendid isolation as if they were carefully assessing all relevant information and working out their best choice. This is how so-called 'rational economic man' and woman (*homo economicus*) are assumed to behave. The influence of other people through the individual's networks seems, in many instances, to have been dismissed. However, we know from a mass of empirical evidence that much human behaviour is not like this. Networks operate in all works of life and are now being profoundly affected by ICT. To investigate networks and the network effect we found it useful to examine four main types in the context of ICT:

- v) **Random networks:** as the name implies, these are relatively unstructured and thus highly open to chance events, such as picking up the flu virus from a fellow passenger on a train. There are no or very few 'hubs' (i.e. people located centrally in the network with many links to other people or who have greater influence than other people). However, once an innovation is established, often by chance, it can spread virally and very fast, like fashion, through so-called undirected copying, though this often tends to be relatively short lived. An ICT example of a random network is the Atenistas large open and bottom up community of citizens in Athens who love their city and spread updates about activities and the latest news virally via Facebook and Twitter, encouraging all recipients to pass the word as rapidly and widely as possible.
- vi) **Scale-free networks:** are characterized by most people having a small number of links to other people but with a significant number of 'hubs' possessing a large number of links to other people and relatively high influence. This means that if one or more hubs takes up an innovation, it is very likely that the people they link to will do so as well through so-called directed copying, and that the innovation will become well embedded throughout the network. An ICT example of a scale-free network is the KaBOOM network which uses the internet to spread the idea and the model for running non-profit childrens' playgrounds across the USA by targeting community leaders and other local champions and opinion formers.
- vii) **Small-world networks:** are where nearly all people in the network have relatively small numbers of links to other people which are mostly all connected to each other as part of an inward-looking group with only few external links. Small-world networks are thus quite resistant to innovations from the outside, but once a critical number of people have adopted the innovation, it is highly likely that the whole network will do so as well through so-called directed copying. An ICT example of a small-world network is PatientsLikeMe, an online network of patients and their families who have the same medical condition and share their experiences with each other through mutual support.
- viii) **Social capital networks:** the trust of friendship, neighbourhood and organisations which determine much of our individual, social, cultural, economic and political lives. It includes the connections that people maintain with family, friends, neighbours, colleagues, etc., and the social resources that can underpin and may be embedded in these ties, such as trust, shared identity, shared language, common beliefs, reputation and norms of reciprocity. These resources make it easier for people to work and live together and they have been demonstrated by Putnam and others to play a beneficial role for health, education, public participation and the realisation of economic opportunities. Two important types of social capital have been identified by Putnam (2007), and these are particularly important in the context of ICT as well as for issues of inclusion:

- Bonding social capital: tight, strong ties with the most immediate family members, closest friends and within closely-knit communities of like-minded people that are bound together by common features that they regard as fundamental to their identity, such as ethnicity, deep religious beliefs and strongly supported common interests.
- Bridging social capital: rather more loose, less committed connections to acquaintances, colleagues, and far-flung, weaker ties between rather diverse communities.

Three main types of process seem to characterize the way networks operate (see diagram below). First, 'preferential attachment' in which, for example, a piece of music which becomes popular perhaps by chance attracts even more popularity simply because it is already popular in a type of snowball effect. Second, the 'two-step' process whereby most people in the network change under the influence of opinion-formers (the 'hubs') who in turn are influenced by mass media or other mechanisms. Thus the first step is influencing the opinion formers and the second is the hubs influencing their followers. Third, the 'fitness model', i.e. how well a change or an innovation is actually suited to the specific situation it is applied to. Given that it may take some time to determine whether or not an innovation is fit, interesting or useful, this tends to be a longer term process.

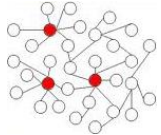
New ICT networking tools make it possible to combine and exploit the interests and expertise of huge numbers of people potentially on a global scale for the first time in (almost) real time, so that potential designers and suppliers of content, goods, services and ideas can identify each other wherever they are located or whatever status they have. This was hardly possible in the world of purely physical products and services. This has been described as extending the 'long tail', i.e. a massive increase in both the range and scope of contacts of different types.

The three types of network tend to go through a number of phases of significance to social innovation, labelled in the diagram below as early, main and late:

When attempting to scale or spread a social innovation the type of network and how and when it reaches critical mass is important, as is the potential role of ICT in this. Traditionally most social networks are relatively robust and resistant to change, so that change spreads slowly. However, at often unpredictable points in time change can spread much more rapidly. The boundary between such robustness and the fragility which leads to change is often termed the 'tipping point' when a small incremental change might suddenly cause the network to reach a 'critical mass' which triggers sudden change. In social dynamics, critical mass is a sufficient number of adopters of an innovation in a social system so that the rate of adoption becomes self-sustaining and creates further growth.

And by the way, from Plato onwards theories of knowledge are characterised by the attempt to justify knowledge achieved by an autonomous subject about an independent object. He is followed by a long line of thinkers in philosophy, theory of science and in newer theory also in cross-over fields of cognitive science. They are the starting point for the description of the system of knowledge. Failure to understand the system of knowledge, and the dynamic changes within this system in companies can lead to failure, and to suboptimal innovation. The "Toyota model" – a Japanese lean production approach – revolutionised the car industry and highlighted the importance of understanding key knowledge processes. Social innovation will need to achieve knowledge process optimization for sustained innovation performance and stands to learn much from gamechangers like Toyota, as well as fundamental thinkers as Plato.

Network processes and their outcomes by phase

Phase Network type	Early phase	Main phase	Late phase
Random 	Process: preferential attachment		• Process: fitness model shows when outcome is no longer fit (i.e. interesting or useful) • New early stage with new outcome starting randomly
	Early phase: largely unpredictable outcome before start	Main phase: the few preferred outcomes appear very early after start and then typically become self-reinforcing very rapidly	
	• Undirected copying: relatively fast • ICT impact: dramatically speeds up copying, extends frequency of a few outcomes • Relatively low innovation to copying ratio, tends to increase frequency of a small number of outcomes • Innovation impact: mainly by chance, often large scale within the potential population • Policy & scaling: can be (relatively) large scale, viral campaigns, mass-media blitz		
Scale-free 	Process: two-step		• Process: fitness model shows when outcome is no longer fit (i.e. interesting or useful) • Other fitter outcomes take over
	First step: find hub, perhaps through fitness	Second step: copy hub, perhaps through preferential attachment	
	• Directed copying: relatively slow • ICT impact: makes finding hubs easier and faster, and speeds up people copying from their hubs, extends the long tail of many outcomes/people • Relatively high innovation to copying ratio, tends to extend the long tail of outcomes • Innovation impact: differences between hubs (people only tend to refer to their hub not to each other) as well as by chance, and can be large scale within the potential population • Policy & scaling: identify, target and change hub behavior, make it easier for people to communicate with hubs		
Small-world 	Process: two-step		• Process: fitness model shows when outcome is no longer fit (i.e. interesting or useful) • Other fitter outcomes take over
	First step: find group, perhaps through fitness	Second step: copying within group, perhaps through preferential attachment	
	• Directed copying: relatively slow • ICT impact: makes finding groups easier and faster, speeds up people copying from their group, extends long tail of many outcomes/people • Relatively high innovation to copying ratio, tends to extend the long tail of outcomes • Innovation impact: differences both between groups and within group (people tend to refer to all members of the group) as well as by chance, but often small scale or scope within the potential population unless add a third step linking groups together • Policy & scaling: identify, target and change group behavior, make it easier for in-group communication		

