

# Digital-Age Transportation **The Future of Mobility**

**April 2013**

# The automotive industry in Europe has been facing challenging times

Production levels are slumping and competitiveness is under severe pressure

**Fiat to Cut Output in Poland**

**Ford Genk to close despite assurances**

**Peugeot to cut 6,000 jobs as it trims forecasts**

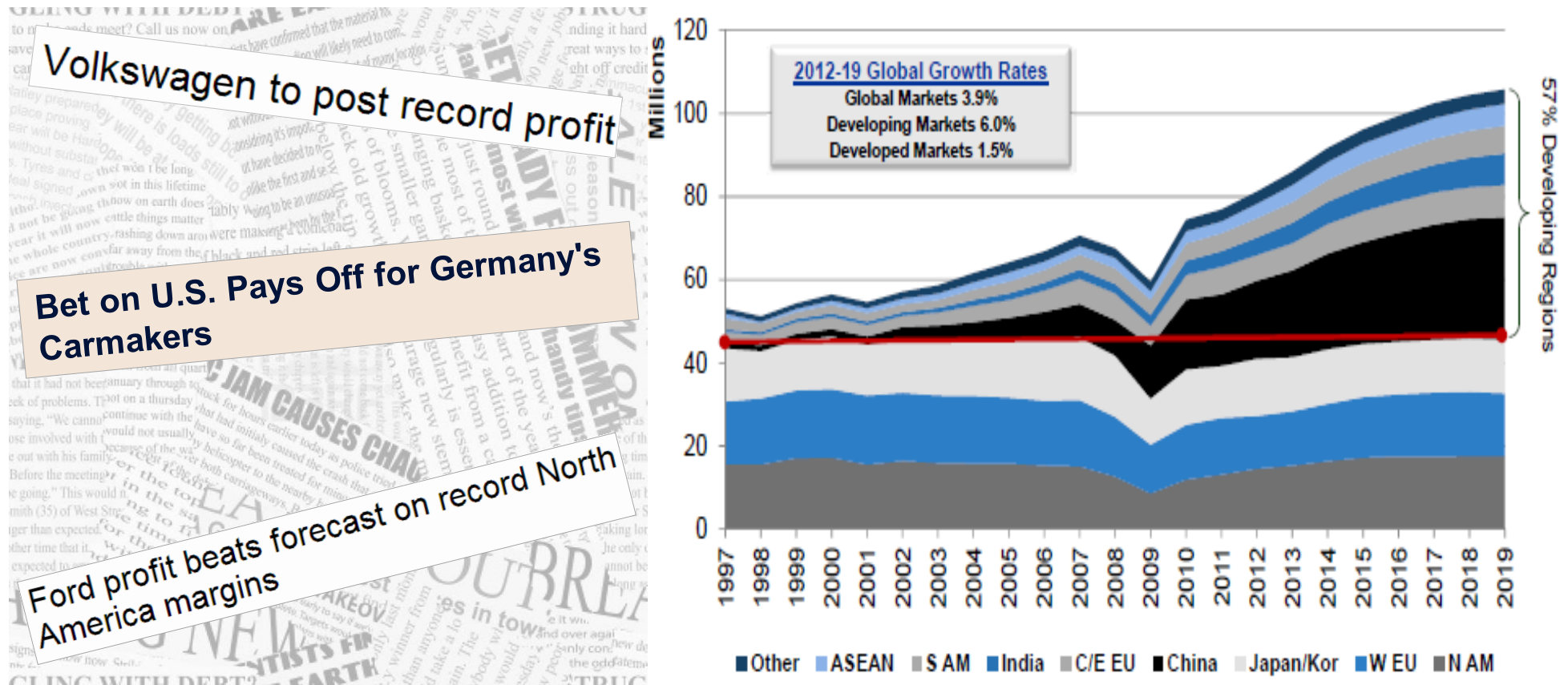
**Ford To Close Its Last Vehicle Production Company In Britain**

**GM's Opel Bochum plant to close after employees reject deal**

**Volvo Cuts Car Production**

# Globally, however, the automotive industry shows a very attractive outlook

Growth driven mainly by developing regions or focussed strategies



Europe should innovate/ focus on the right niche →  
only then there will be a future



**09h00**

Working at the office, preparing for next client meeting downtown.



Location aware smartphone detects 10 o'clock meeting and calls driverless car to pick you up.



**09h20**

Driverless car arrives. You indicate you want to take the quickest, most expensive route.



While travelling, you use the in-car wireless network to send an important email.

## Science-fiction?



**09h50**

You arrive at your client's premises.



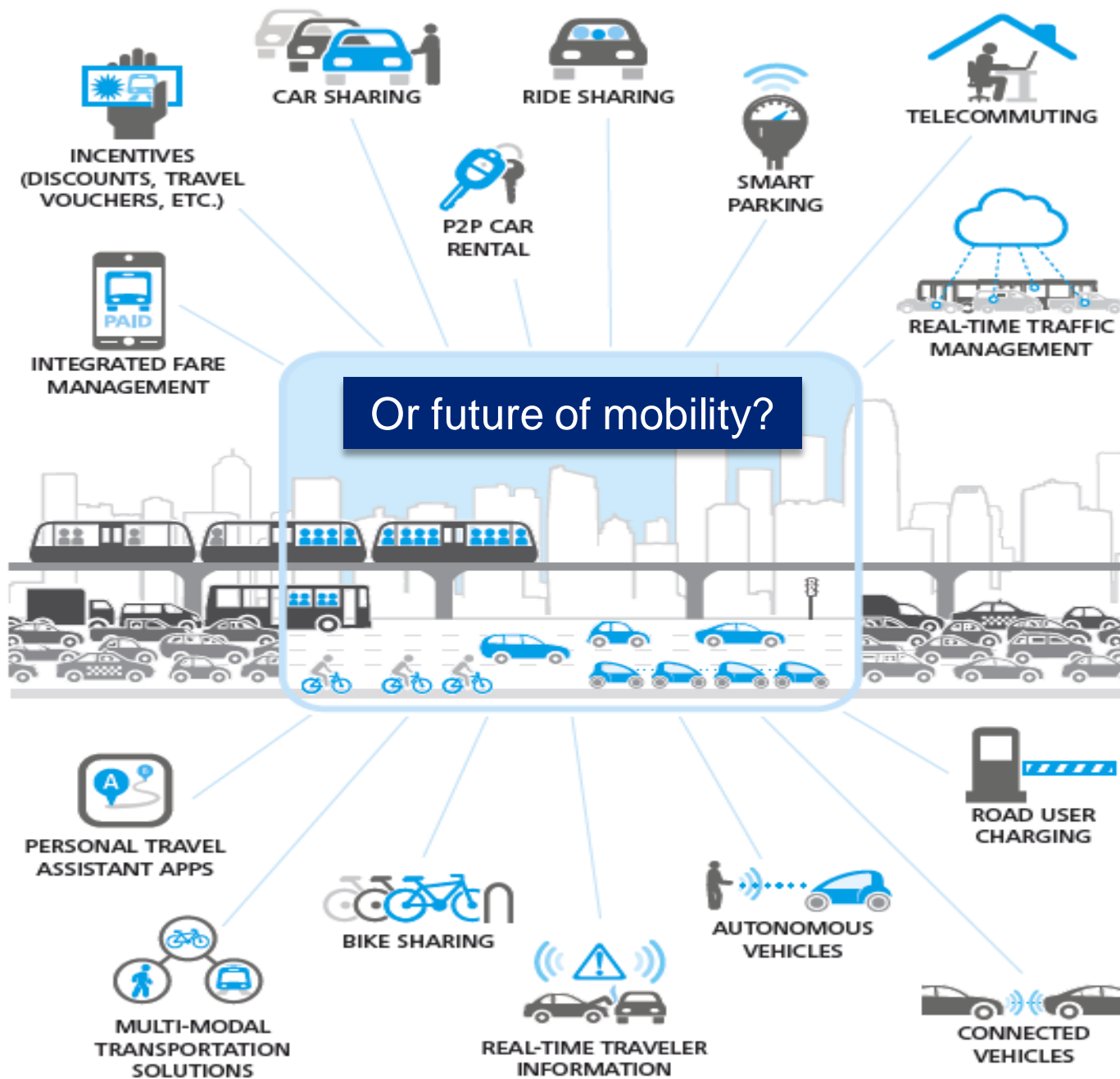
Meanwhile, you scroll through lunch spots to take your client to using the car's interactive dashboard, and make a reservation.

"Rerouting"

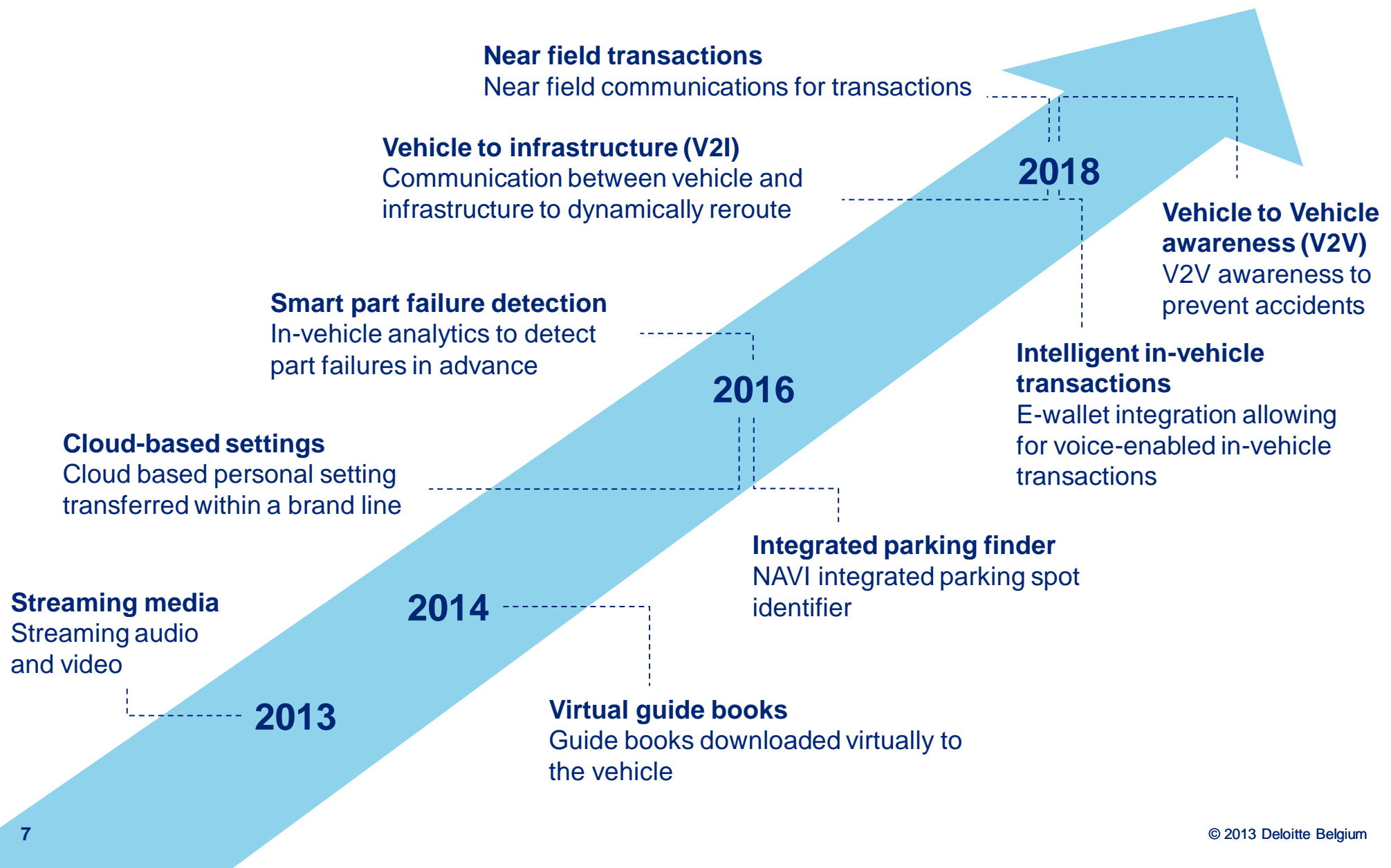
"Traffic jam ahead"



A car ahead of you notifies your car that a truck has lost its load and is causing a traffic jam. Your own car calculates a different route.



# Tomorrow's "connected vehicle" will become a node on the mobile communications highway capable of connecting drivers with friends, family and information at a pace they desire



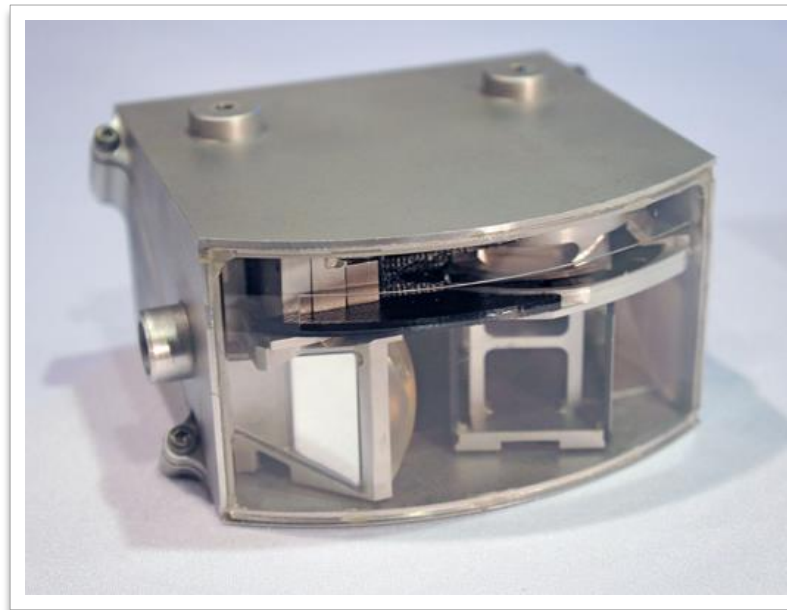


# Driverless cars are a looming disruption...



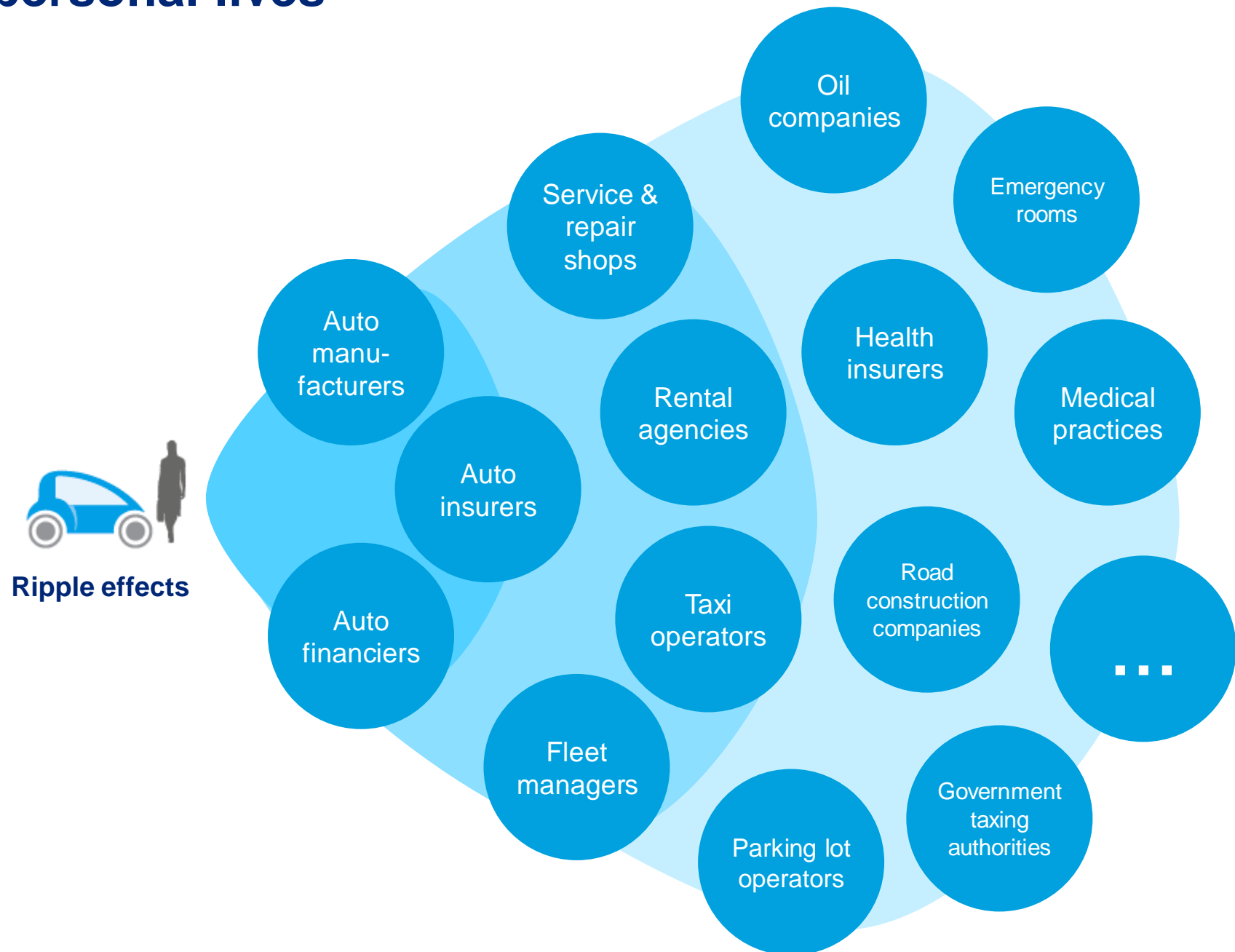
## MIT 50 disruptive companies 2013

- Toyota (Autonomous car)
- Audi (Compact laser scanner for autonomous vehicles small enough to fit into the grill)



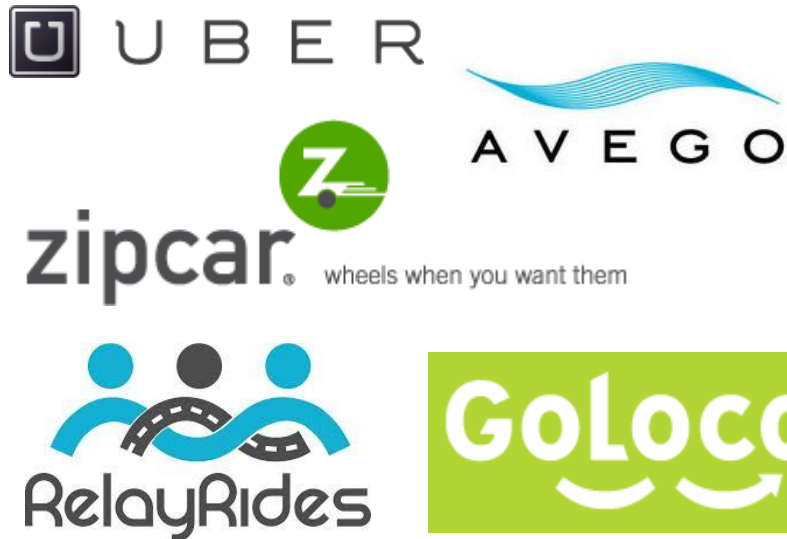


# ... and will likely change dynamics in the economy and in our personal lives



# Car sharing and on-demand solutions are growing increasingly popular, especially with generation Y

*“People get to try out different cars, different lifestyles, different identities.” By contrast owning a car, they said, felt like being tied down—like a marriage.”*



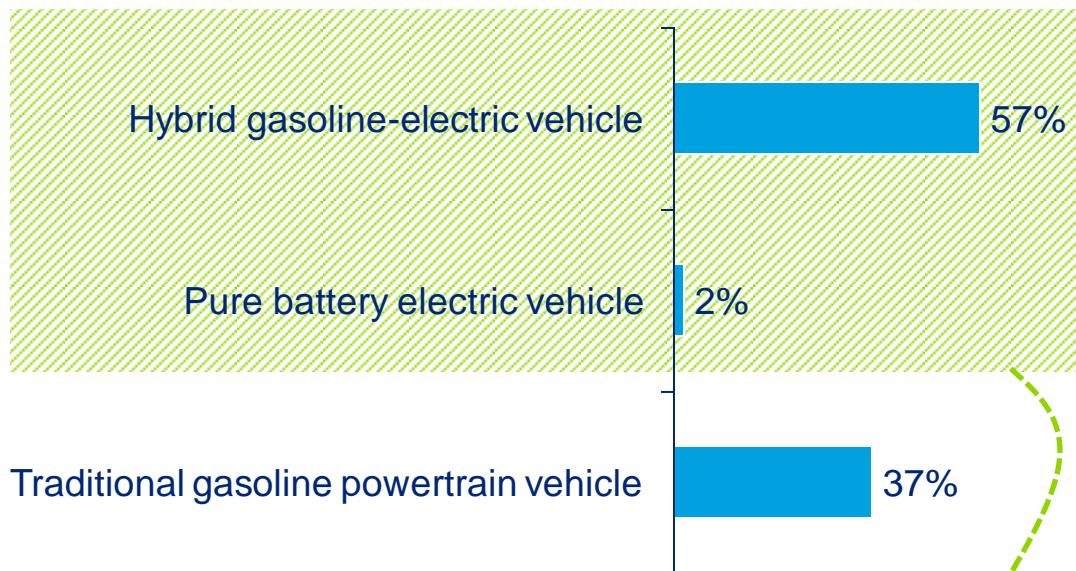
**FORD2GO** - Automotive manufacturer-backed, nationwide car sharing program in Europe that incorporates dealerships.

*“Young people increasingly view cars as appliances not aspirations, and say that social media give them the access to their world that would once have been associated with cars.”*

# Consumer preferences are changing, driven by continuous developments in technologies and materials

A strong majority of Gen Y would rather buy an electrified vehicle than any other type of vehicle

Q: Which of the following vehicles would you prefer to buy?



## The primary driver

Gen Y's sees these vehicles as being more economical to operate than traditional gasoline-powered vehicles, especially in an environment with frequent swings in fuel prices

New technologies and materials are constantly being developed

## Roof shingles that incorporate photovoltaic materials

Commercialized by Dow Chemicals. The house and garage roofs of the future won't need to be retrofitted with solar panels, they'll *be* solar panels, making electrified vehicles almost free to charge.

## Folding car

Based on MIT's City Car, Basque Hiriko Driving Mobility consortium developed a folding two-seat urban electric car.



# What can you expect as an automotive company – to what will these trends lead?

Looking ahead, the post-crisis era will be defined by three sweeping themes

1. **Consolidation:** *driven by the need to achieve scale, fill product gaps, and maintain returns in slow growth mature markets*

... but what about advanced manufacturing trends (e.g. additive) ?

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2. **Globalization:** *creating new markets and new competitors, driving the need to penetrate massive growth markets*

... but what about back shoring, local for local, ... ?

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3. **Innovation:** *required to address the global societal trends redefining the role of the car and of personal mobility*

... YES, definitely!

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# A world of opportunities

In-car **data** services

**Pricing?**

**New revenue opportunities**

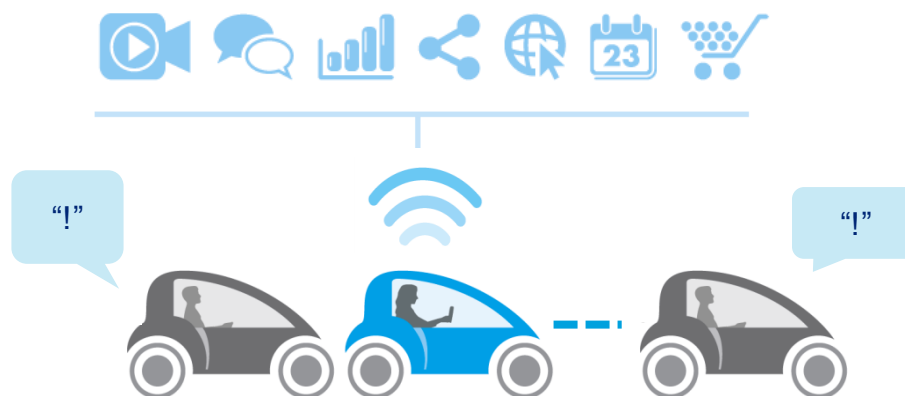
Improved on-board  
**diagnostics**  
& extended vehicle life

**Personalisation** options

Increased **safety**  
(V2I, V2V,...)

**Applications**  
and automotive app stores

**Connected cars**



**Distracted**  
driving

**Regulation**

European  
**eCall** initiative

**Technology**  
industry

**Partnerships**

**App** developers

**Communications**  
industry

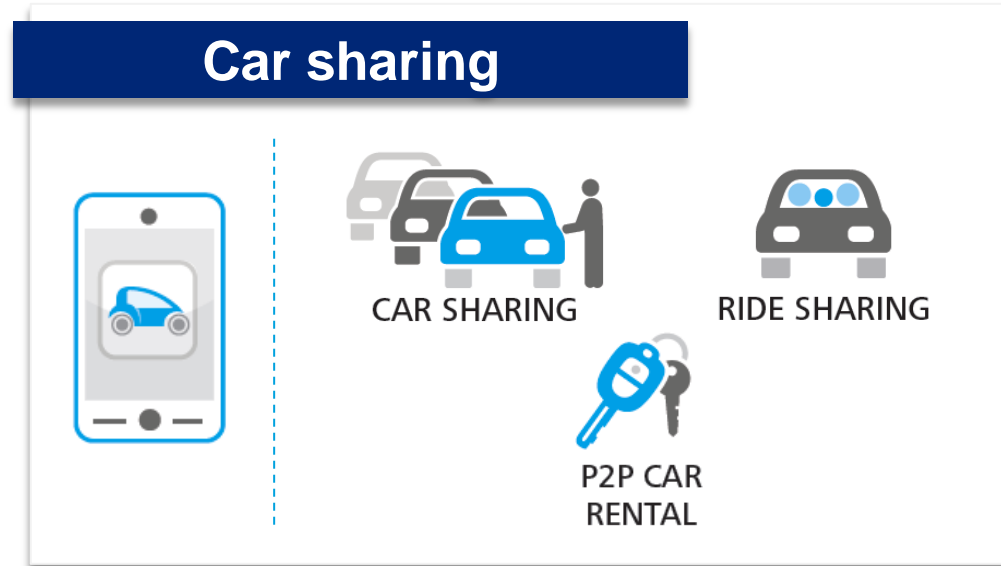
# And shifting needs

Reduced need for cars

Efficient **sharing**, enabled  
by **driverless cars**

Cars will be **used up & replaced** much faster

Shorter planning  
& business cycles



Irrelevant dealer-based  
distribution systems

Individual **ownership** fades

Evolving customer  
preferences



# Requiring different approaches

Optimizing **design for production**

Significant **reduction of accidents**  
(Connected vehicles & driverless car technology)

Quick decrease in cost of  
electronics & components

Reduced need for heavy structural  
elements and safety features

## Moore's Law

### Smaller, simpler, cheaper cars



Most car trips are  
short ones involving  
one or two people

Reduced supply chain  
**complexity**

Reduced entry  
barriers

Eroding  
**margins**

Shift in customer demand  
toward commodity products

Reduced necessary **engineering**  
expertise and **capital** costs

## Undercut business models

depending on premium autos and large margin options

## **We believe dynamics in the automotive industry will significantly change and new business models will emerge**

**Subsidise  
purchase price of  
a car, in return for  
a X-year contract  
to use certain  
services**

**Offer concierge  
services  
around the  
maintenance of  
the car**

**Be an intermediary who  
manages car-sharing  
and assures that shared  
cars are well-treated and  
maintained — including  
having the latest driving  
software**

**Capture new  
service  
revenue  
opportunities**

**Help car  
owners earn  
extra money  
by renting  
their unused  
cars out to  
strangers**

**...**

# Deloitte forward-looking insights

Our commitment to our clients includes access to our timely, valuable thought leadership concerning the issues faced by executives in today's rapidly changing automotive industry.



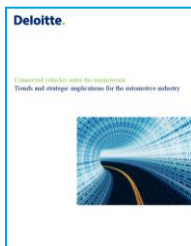
## Unplugged: Electric Vehicle Realities Versus Consumer Expectations

Based on a survey of 13,000 consumers in 17 countries, Deloitte's latest research on electric vehicles outlines the gap between consumer expectations and product offerings available today and those planned for the next five to 10 years.



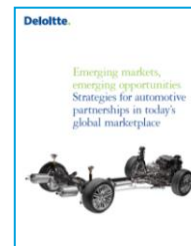
## Annual Gen Y Automotive Survey

Fielded since 2009, Deloitte's annual survey of Gen Y consumers seeks to understand their vehicle preferences and shopping behaviors. The survey contrasts preferences across generations and important automotive markets around the world.



## Connected Vehicles Enter the Mainstream: Trends and Strategic Implications for the Automotive Industry

The connected vehicle industry continues to emerge as a result of rapid advancements in technology and increased consumer demand. The implications for automakers are significant. Learn about what OEMs and suppliers should consider.



## Emerging Markets, Emerging Opportunities

This latest article examines how the nature and structure of automotive strategic partnerships have changed, and discusses what executives should consider when weighing the pros and cons and evaluating the details of establishing new relationships.



## Charging Ahead: The Last Mile - Is the U.S. electric infrastructure ready to support one million electric vehicles?

The preliminary highlights of the study Deloitte is conducting to determine if the country's utility infrastructure is ready to charge one million electric vehicles.



## Automotive Spotlight — Accelerating Toward a New Revenue Recognition Model!

This Automotive Spotlight highlights the framework of the proposed revenue recognition model and potential implications for automotive entities that currently apply existing revenue recognition accounting standards under U.S. GAAP or IFRS.



## Manufacturing Opportunity

This report examines some of the main challenges facing any attempt to cultivate an American manufacturing renaissance, and highlights recommendations that could help the United States overcome these roadblocks.



## Global Manufacturing Competitiveness Index

The index is based on the responses of more than 550 chief executive officers and senior manufacturing executives worldwide. The report confirms that the landscape for competitive manufacturing is in the midst of a massive power shift – based on an in-depth analysis of survey responses.