



A change in movement

How data is transforming
the business of mobility

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Summary

In this paper we take a look at how data is changing mobility, with an emphasis on the challenges faced by the automotive industry and particularly car manufacturers. The ascent of data as a significant source of value in traditional industries, combined with profound changes in consumer attitudes and behavior, challenge companies to deeply question everything – from industry value chains and their own positioning to the way products are developed. Or whether it's in fact services they should be developing.

We look at some of the ways in which mobility companies - especially established ones that weren't born digital - can approach the challenges they face. Some of the most important questions that must be answered in the coming years include how to go about extracting value from data, what kinds of services customers want and how companies need to change the way they work to create these services.



Helmut Scherer
MANAGING DIRECTOR, GERMANY

helmut.scherer@futorice.com



Introduction

100 YEARS AGO, the way we move people and things underwent a major transformation and changed the world with it. The driver for this change was the internal combustion engine - and oil, the fuel that powers it.

Since then we've built our infrastructure to conform to that early 20th century conception of how people and goods move. Changes since the first two decades of the previous century have been minor - it's still all about the internal combustion engine and space for objects equipped with said engine to move and park, with private ownership as a major driver in the consumer market.

You may own the vehicle. But who owns the journey?

This mobility paradigm is on its way out and the change has an impact on everything from transportation of goods to space usage in cities. And lots more.

This time around the change is driven by data, but it goes a lot deeper than just knowing your customer. For established mobility operators - ones not born digital - the change requires a move into the service business. For a company accustomed to designing, manufacturing and selling equipment, this requires a transformation in the way things are done - on all levels. The change is cultural.

The truth is, everything is about to change, so fasten your seatbelts. It's going to be a bumpy and exhilarating ride.



Data is the engine (and the oil) of the 21st century

OIL MADE THE 20TH CENTURY MOVE and data is shaping almost all aspects of life in the 21st. As with any raw material, the way a company works with data will define its role in the value creation chain. The oil industry runs from crude oil extraction to petrochemical production and all the way up to the development of high-value, petroleum-based consumer products. The process of extracting, optimising and then packaging data runs along similar lines. Automotive companies will need to climb up the data value creation chain to achieve higher margins.

FINDING THE SWEET SPOT IN THE VALUE CHAIN

In the oil industry, the sweet spot in the production chain where the greatest profits are found has emerged at the intersection between integrated operations and specialty products. It's here that products that are independent of the underlying commodity inputs are created. The key is to find a spot where price is determined by market demand - not the price of the raw material.

For the auto data value chain, the equivalent sweet spot can be found at the intersection of integrated operations and data-based services, where services that elevate the customer value beyond the commodity input of data can emerge.

To reach this point, auto OEMs must move away from the cost leadership approach of merely producing and selling raw data and shift into a more specific niches, like using data to create specialist insights or launching new services or businesses in complementary industries.

To date, no traditional carmakers have taken this step. Apple and Google have been trying to cover the entire value chain, although they still have not



mastered the source – vehicle (data) production. This is something that could give auto OEMs a distinct advantage as they progress along the data value chain.

Further up the chain, the personal data economy allows brands to create totally new value propositions, with the potential to disrupt entire markets. For example, armed with rich vehicle and driver data, carmakers could launch new insurance products and use the data insights co-generated with customers to offer helpful suggestions on how to improve driving and lower the cost of premiums. This would give auto companies a significant advantage over traditional insurance providers.

Moving up the chain

A POWERFUL DATA strategy that redefines the role of data in all aspects of the company's business is needed. The change in strategy must be supported by the right kind of platform and ecosystem. Auto brands were some of the first to implement data platforms as the foundation of a data business. Now they should move away from the engineering approach they took to build it and embrace a more customer-centric outlook to utilise it for more high value-added services.

With the infrastructure in place, carmakers can launch lighthouse initiatives that demonstrate the potential to the wider organisation, start generating new revenue streams and amplify existing ones. After that, the amount of data a carmaker can generate and the potential new services it can launch become virtually endless.

To date, consumers have arguably been passive in their relationship with brands over their data, often turning a blind eye to how companies have extracted value from it. Thankfully, this is beginning to change. While new legislation like GDPR is strengthening consumer's data rights, consumers themselves become more data-literate.

Looking further ahead, consumers will likely become "suppliers" in the data economy, actively demanding that companies deal transparently with their data and expecting a concrete countervalue in return from brands. This new relationship between brands and consumers represents a key opportunity for the automotive sector. A PwC report predicted that by 2030, 20% of the automotive industry's profit potential will come from data-driven service offerings rather than new car sales.

Unlike fuel, data can be used, reused, enriched and sold in multiple ways. Who earns customer's trust can make endless use of this unlimited resource. Using it to make the brand experience a superior one will make the brand more attractive, bind customers to the brand and bring profit to new levels.

Data and connectivity are turning every car into an oil field of data. If carmakers are to tap into this, they must stake their claim within the emerging data value chain by redefining their data strategy and becoming more customer-centric and service-oriented - or risk missing out on the real profit drivers of the 21st century.

Brand, quality and engineering still matter. **But now you also need to master mountains of data and dynamic service ecosystems. Are you ready?**



Food for thought

SIX WAYS TO MAKE MONEY WITH DATA

- Selling insights to customers
- Empowering the sales force with data
- Using data in marketing and advertising
- Selling data to players up and down the industry value chain.
- Selling data to players outside your own industry
- Using data to increase company valuation

The Next Generation of Data-Driven Automotive Services

THE FIRST GENERATION OF SERVICES evolved around the driver's journey and usually within the heart of the OEM's value proposition: providing a product (and now a service) that moves people from A to B. Some early examples are BMW's DriveNow and Daimler's Car2Go, which tapped into growing consumer demand for car sharing services.

The boundaries of these services were not only limited, but also defined by the product's capabilities. The increased data generating capacity of modern cars as well as the enhancement of this data through the personal data of multiple car users (owners, drivers, passengers) enabled the widening of the service spectrum into new industries. This development represented the second generation of services, a phase in which most carmakers are still focused. BMW's CarData is part of this new wave of enhanced services. The platform allows BMW car owners to use their personal and vehicle data to access services from multiple third-parties, such as garages, insurance companies and fleet managers.

However, although today's cars are "data platforms" on wheels, they are still triggering services that are defined by whatever data the physical product can deliver, while mostly trying to claim ownership of both generated and collected data. Thus, the speed of service innovation and customer satisfaction is still heavily reliant on the product development cycle of the vehicle.

The next generation of data-enabled auto services will be a mix of product, data and consumer-triggered services that will mostly live outside of the vehicle's value creation chain. It will no longer be the vehicle, but rather its data that will fuel the new service ecosystem. This ecosystem will be a web of interlinked data, physical products, product related services as well as public and third-party services. We're seeing the early stages of this already with Peer-to-Peer mobility schemes and the more holistic services they are helping to facilitate.

The Evolution Of Vehicle Data Enabled Services

1st Generation

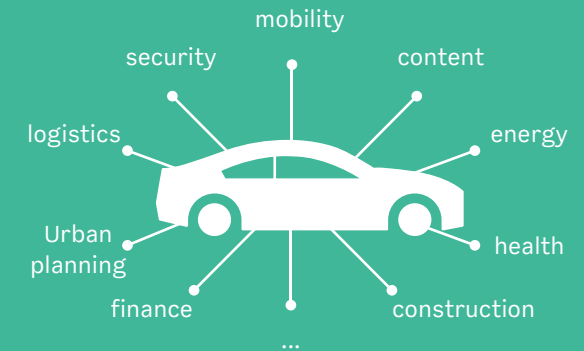
- Service
- Product driven
- One journey
- Core



2nd Generation

- Platform
- Product & data driven
- Connected journeys
- Innovation

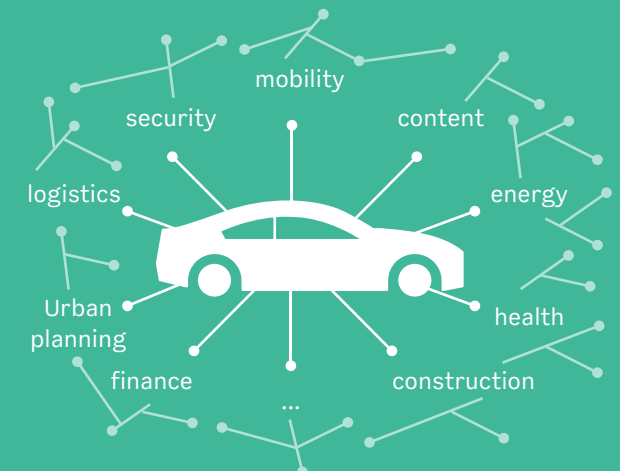
Connection:
One-way



3rd Generation

- Ecosystem
- Customer & data driven
- Connected life
- Disruption

Connection:
Two-way



FROM CORE TO DISRUPTION

The business models of the 1st and 2nd generation of services are mainly aimed at elevating the core product by creating supporting services that enhance and personalize customer experiences. They took the automotive OEMs on an innovation journey exploring new business models that utilized the consumer's vehicle as the main asset.

While this is viable in a product-based service environment, it becomes more difficult in the product-agnostic ecosystem of 3rd generation services. The products become less relevant than the data they are generating. This shift will change the way that carmakers look at issues like data ownership, privacy and compensation, as it will no longer be possible to treat their customers with one product, one journey or one use case.

FROM OWNERSHIP TO PARTNERSHIP

While the flow, the infrastructure and most of the data of the 1st generation of services were owned and controlled by the service provider, aka the auto brand, it becomes a shared responsibility as well as shared property within the new ecosystem that is built on partnerships. The implications of this is huge for carmakers. Not only will they need to revisit their governance, but also adopt new approaches for reward and compensation of different players within the ecosystem.

The evolution of these services will also pressure carmakers to leave their positions as the central players in a manufacturing value creation chain and become key players in a service ecosystem that has the potential to elevate their products, but also enhance their business models and profitability. Making a success of this new approach will depend on carmakers being able to think outside the automotive box, and get much closer to the consumer by transforming their role from supply to partnership. Everything we thought we knew about the auto OEM is about to change dramatically.



In modern ecosystems, the first one to scale gets to set the rules.

CAR UTILISATION

The average European car parked 92% of time



1% sitting in congestion

1.6% looking for parking

5% driving

Average European car has 5 seats but carries 1.5 people/trip

LAND UTILISATION

5% The roads reach peak throughput only 5% of the time and, even then, are just 10% covered with cars

50% of most city land is dedicated to streets and roads, parking, service stations, driveways, signals, and traffic signs

Source: Growth Within - A Circular Economy Vision for a Competitive Europe (Ellen MacArthur Foundation)



An aerial photograph of a city at dusk or dawn. The sky is a mix of orange, pink, and blue. Several tall skyscrapers are visible, some with lights on. A river flows through the city, with bridges crossing it. The overall scene is a vibrant urban landscape.

Value-To-Market: an alternative approach to service innovation for the mobility sector

FOR ESTABLISHED COMPANIES - especially OEMs - in the mobility sector to successfully transform themselves into innovative companies capable of delivering world-class data-driven services, companies need to profoundly rethink the way they develop and launch their products. Thanks to our increasingly digitised world, almost any product can now be transformed into a connected platform for offering long-term, value-added services to customers. Companies that remain focused on creating finite products will increasingly find themselves outmanoeuvred by rivals and locked out of the bigger profits that sit further up the value creation chain.

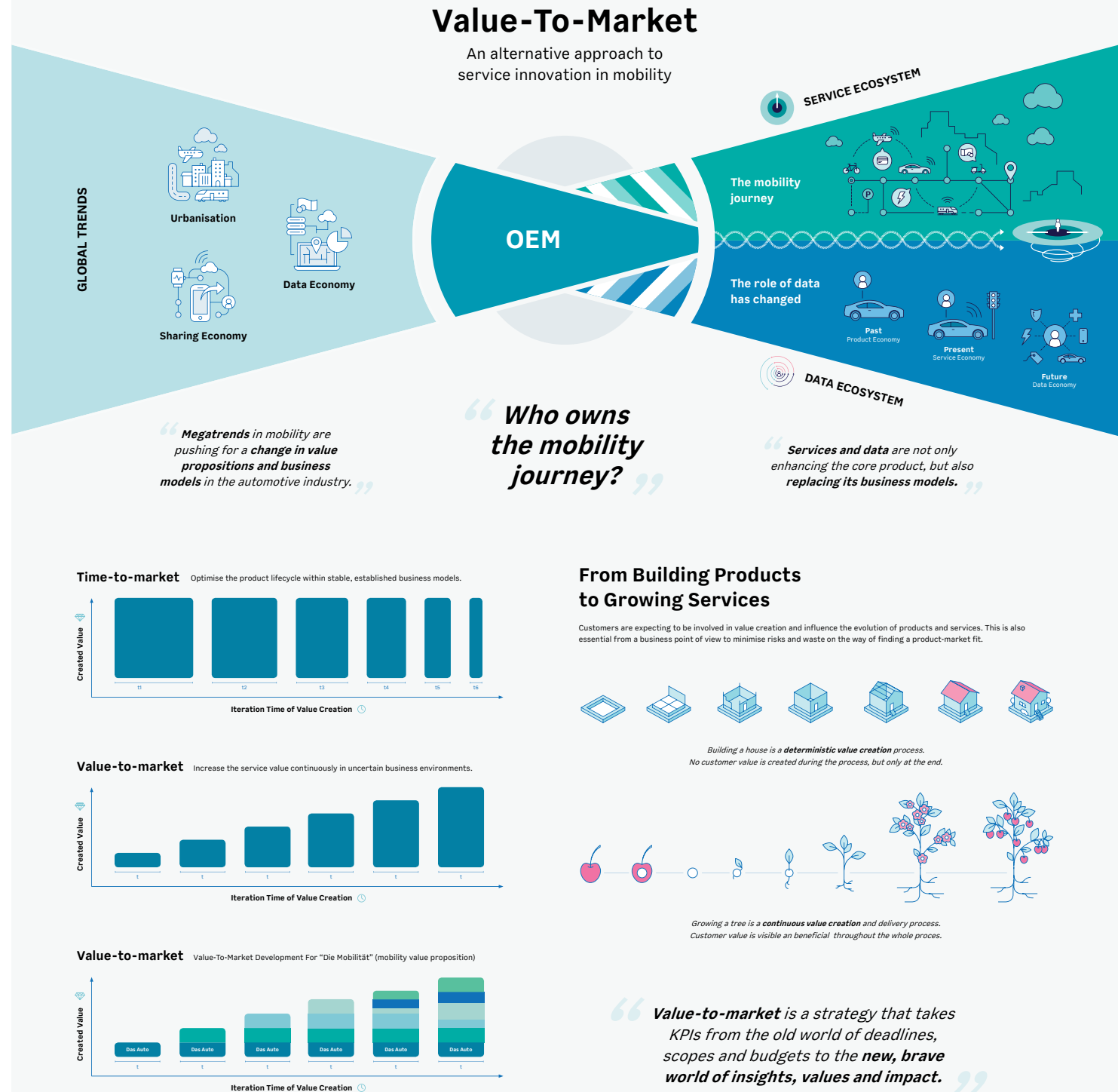
The shift of focus from product to service is igniting most of the innovative work that's currently emerging in mobility. Carmakers and other large-scale mobility players have understood the need to step up their game and offer services that enable, complement and enhance core products. (e.g. connected car services) or that create new ecosystems around them (e.g. shared mobility services).

The creation of successful services adheres to different rules than creating products. The unidimensional view of the 'time-to-market' approach will need to shift towards one based on long-term value generation. For product companies, like e.g. traditional carmakers, this will require radical change at all organisational levels.

Value-To-Market - An Alternative Approach to Innovation

IN ORDER TO SHIFT THINKING around the development and launch of mobility products, mobility companies must embrace a longer-term 'Value-To-Market' (VTM) approach. With continuous validation and improvement at its heart, VTM strategies try to assess, create, validate and improve innovative services by always putting the measurement focus on the value to be created and delivered rather than on the process of creation and delivery.

A VTM strategy refocuses the assessment view to measure the perception in the outside world more carefully than internal processes. It is a strategy that takes KPIs from the old world of deadlines, scopes and budgets to the new, brave world of insights, values and impact.



Food for thought

PROBLEM-SOLVING FUNDAMENTALS




The saying “ideas are cheap, execution is everything” now rings truer than ever. All companies in various areas of mobility - from consumer services to freight - are racing to find their competitive edge in new technologies. Many of the ingredients for success are not really a question of the operating environment, but in the hands of the companies and their management. To increase your chances of success, you should:

1. Invest in strong and capable teams - freedom and responsibility are key
2. Drive your transformation in a holistic manner - starting with management
3. Work persistently towards your goals - it's a marathon, not a sprint

Mobility Trends

	Core customer/ user needs	Core company capabilities
Past	<ul style="list-style-type: none"> • Travel from A to B • Safety & comfort • Independence, freedom, status 	<ul style="list-style-type: none"> • Engineering, supply-chain mgmt, manufacturing, automation • Design, branding
Present (H1)	<ul style="list-style-type: none"> • Connected & personalised • Shared / pay-per-usage • Electric 	<ul style="list-style-type: none"> • IoT & Digital services • Data-harnessing • Partnering & collaboration
Future (H2-3)	<ul style="list-style-type: none"> • Holistic: Mobility-as-a-service • (Semi) Autonomous travel • In-transit entertainment & services 	<ul style="list-style-type: none"> • Vehicle-to-everything connectivity • ML; predictive & adaptive systems • Holistic ecosystem management

Competitive Landscape

	Core customer/ user needs	Field is wide open, full of newcomers
Past	<ul style="list-style-type: none"> • Travel from A to B • Safety & comfort • Independence, freedom, status 	
Present (H1)	<ul style="list-style-type: none"> • Connected & personalised • Shared / pay-per-usage • Electric 	
Future (H2-3)	<ul style="list-style-type: none"> • Holistic: Mobility-as-a-service • (Semi) Autonomous travel • In-transit entertainment & services 	

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We are 500+ people in Berlin, Helsinki, London, Munich, Oslo, Stockholm, Stuttgart, and Tampere.

germanysales@futurice.com

Johannes Stock
GLOBAL HEAD OF DESIGN
johannes.stock@futurice.com

Yannick Engel
INNOVATION DIRECTOR
yannick.engel@futurice.com

Raid Naim
HEAD OF DIGITAL TRANSFORMATION
raid.naim@futurice.com

Irina Brüningk
DIRECTOR AI & DATA SCIENCE
irina.brueningk@futurice.com

www.futurice.com/automotive