

Connected cars: Business models, market dynamics, and the regulatory framework

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**The Future of Consumer IoT Products: Testing the Interaction of
Competition Policy and Sector Regulation in the Digital Economy**

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1. Traditional business models in automotive sector

Traditional business model of car manufacturers:

- production and sale of cars
- provision of repair and maintenance services (includ. spare parts) on secondary markets (aftermarkets) (also through authorised dealers)

Old competition problem:

- strategies of car manuf. for foreclosing independent service providers (ISPs) from these secondary markets
- danger of eliminating the business models of ISPs
- would also reduce choice of consumers regarding repair services etc.

Well-established competition policy for protecting competition on aftermarkets:

- independent spare part producers and repair/maintenance service providers
- block-exemption regulation and since 2007 as part of type-approval regulation
- mandated access regime to essential repair and maintenance information (RMI) including OBD-adaptor for access to diagnostic data

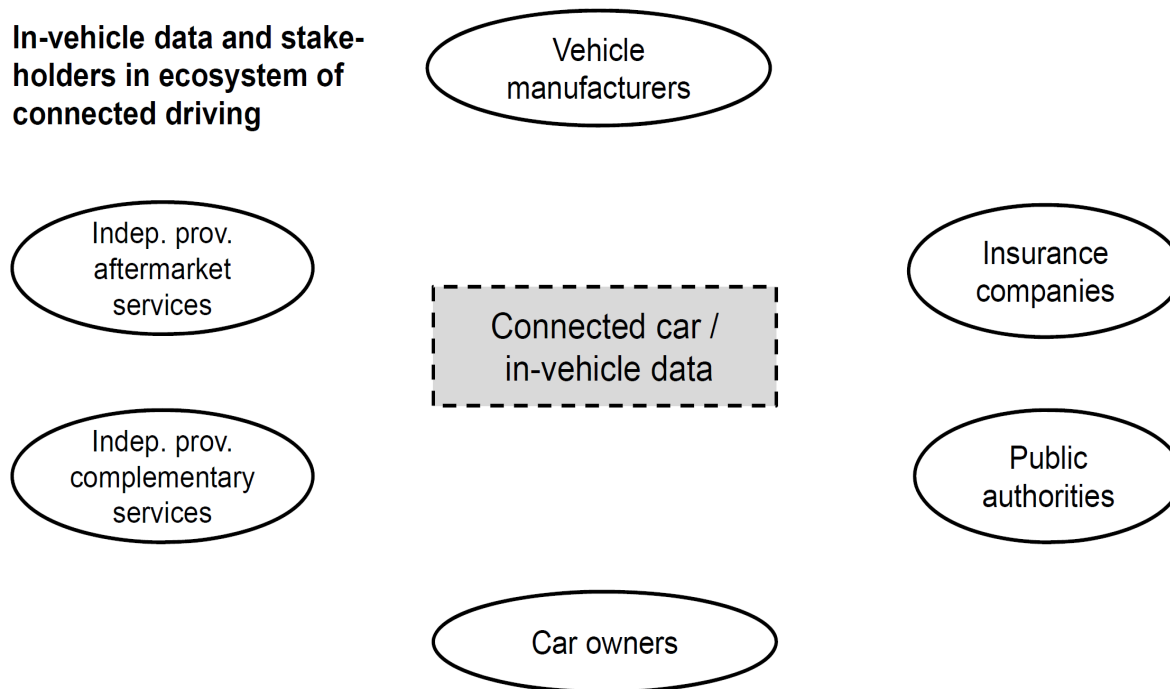
=> implications for business models in automotive sector

2. Transition to connected cars and new business models (1)

Transition to connected car is a fundamental game changer I:

- CC can generate a huge amount of different types of data that can be used by many stakeholders, e.g. for providing services / data-driven innovation etc.
- many new business models are possible for new innovative services based upon this data and / or directed to the car user

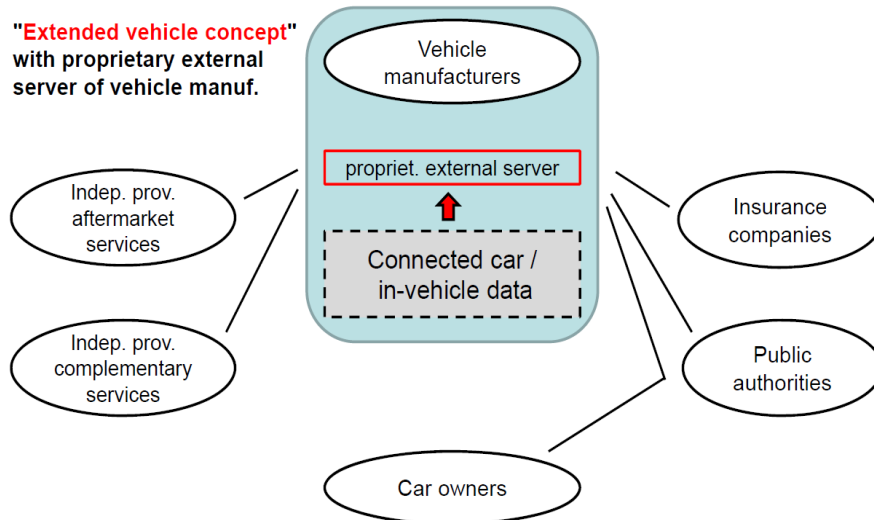
In-vehicle data and stakeholders in ecosystem of connected driving



2. Transition to connected cars and new business models (2)

Transition to connected car is a fundamental game changer II:

- OEMs can become gatekeeper to entire ecosystem by specific technical design
- “Extended vehicle”: data governance concept of vehicle manufacturers (VM)



- all data are directly transmitted to a proprietary server of the VM
- VM has **exclusive control over**
 - 1) **access to the data** and
 - 2) **technical access to the car** (closed system / no interoperability)**=> Gatekeeper position**

- if ISPs want to offer services based upon in-vehicle data or need technical access to the car, they need to have a contract with the OEMs
- **VMs can get control over secondary markets in this ecosystem** and can foreclose independent service providers

2. Transition to connected cars and new business models (3)

Implications for the (potential) business models of stakeholders?

Business model of OEMs:

- OEMs can control access to secondary markets in the ecosystem and are monopolists regarding the in-vehicle data
- they could choose whether
 - + they provide certain services themselves (or by their authorized dealers), or
 - + sell the entry to these markets to ISPs for an access price (for access to in-vehicle data or for access to functions / resources of the cars),
 - + or make exclusive agreements with some ISPs
- they can exclusively monetise the data to the data economy

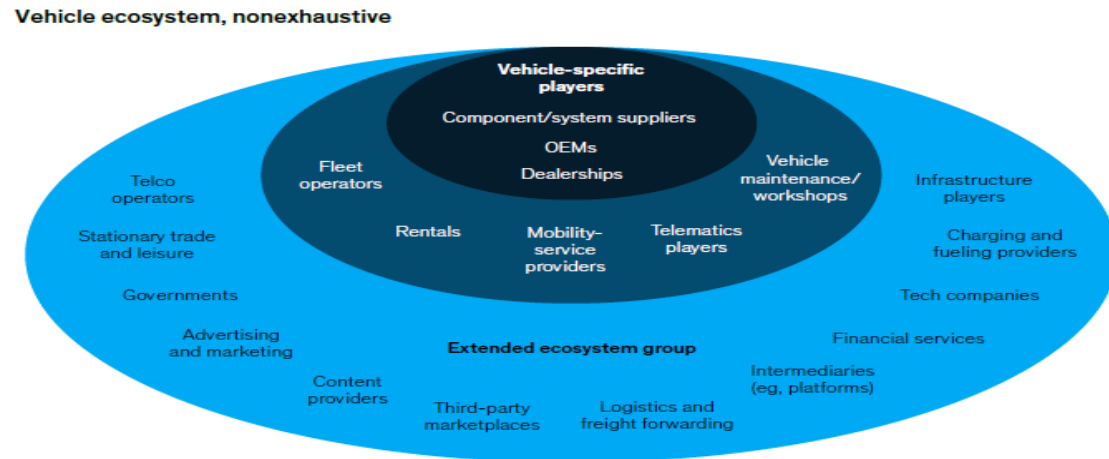
Business models of ISPs:

- data-driven innovation and entry into secondary markets only possible under the terms and conditions of the OEMs, who set the rules for these markets and can reap the profits from them (also regarding innovations of ISPs)
- gatekeeper position of OEMs has huge implications for business models of ISPs

3. Problem I: OEMs are slow to use the new opportunities

Big problems of traditional OEMs to adapt their business model (McKinsey 2021)

- still stick too much to their old business model of selling cars instead of creating value throughout the entire life-cycle of connected cars
 - + more revenues from monthly subscription, data monetisation
- problems with software development
- reasons: not customer-oriented enough, not resetting the organization, not establishing ecosystems for scaling
- need for more partnerships:



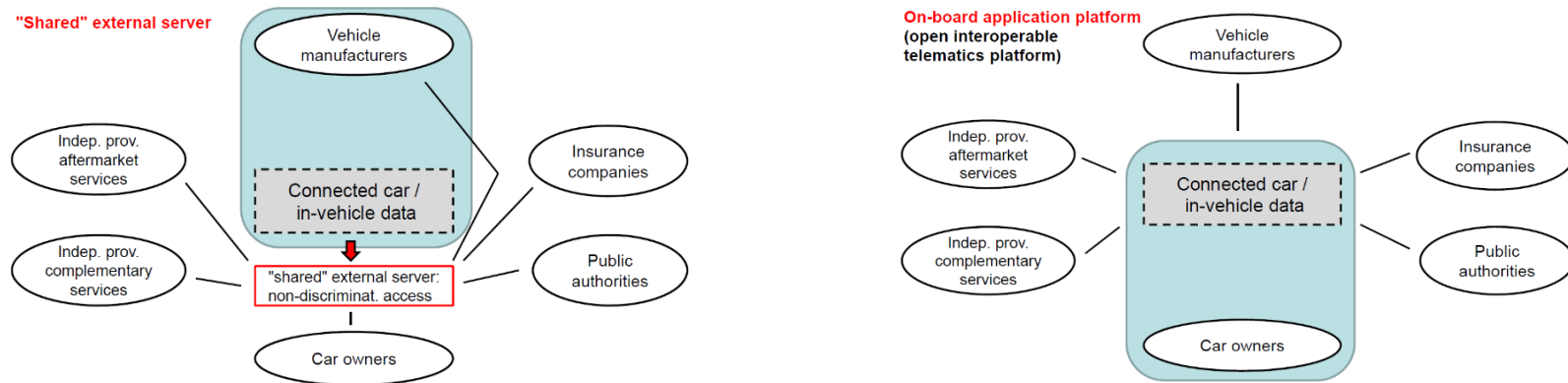
- Big problem: large tech firms (integration w. smart phone: Apple Car Play, Android Auto) => traditional OEMs feel threatened

4. Problem II: Negative effects on competition and innovation

- secondary market for aftermarket and complementary services are controlled by OEMs: no free entry and no (undistorted) competition, leading to
 - + negative effects on competition (with higher prices)
 - + negative effects on innovation regarding new services in mobility sector
 - + negative effects on consumer choice
- Is this solved by competition between OEMs (on primary markets)?
 - + OEMs could compete with their entire ecosystems (systems competition)
 - + long-term investment of users and large information problems regarding future services make it unlikely that these problems are solved
- => we have a big problem for competition and innovation!
- => negative effects for market dynamics (innovation of new services by ISPs might be blocked through not enough access to in-vehicle data and resources)
- Is this solved by existing type-approval regulation? (or competition law?)
 - + no, because type-approval regulation has not been updated to the new technology of connected cars (despite reform in 2018; Kerber/Gill 2019)
- Commission has acknowledged problem and announced proposals for solving it

5. Policy options and policy proposals (1)

Discussion about access to in-vehicle data and resources (since 2016: C-ITS)
Alternative data governance solutions: (instead of „extended vehicle concept“)



- option 1: **data trustee solution**: "shared server" operated by neutral entity
- option 2: **open interoperable telematics platforms**: car users have direct control over whom to give access to data and the car
- **both solutions would eliminate gatekeeper position of VM** and allow much more business models for all stakeholders in ecosystem of connected driving
 - + TRL study 2017: both solutions superior to "extended vehicle" concept
- option 3: accepting „extended vehicle“ but limiting negative effects through regulation with FRAND-like access to in-vehicle data, functions, and resources

5. Policy options and policy proposals (2)

Commission has announced (and delayed!) reform of TAR for years

Fall 2021: Commission announced: first Data Act, and afterwards reform of TAR

(Horizontal) Data Act proposal (Feb 2022):

- new rights for users of IoT devices to access and share generated IoT data with third parties (ISPs, esp. also for aftermarket services and data driven innovation) under FRAND rules („reasonable compensation“ for data holders)
- problem: data sharing mechanism expected to be weak and ineffective and will not lead to much unlocking of data or enable aftermarket services etc. (Kerber 2022)
- not be sufficient for solving access problem in connected cars (Kerber/Gill 2022)

(Sectoral) policy initiative for reform of TAR (March 2022):

- additional sectoral regulation with several policy options, esp. for additional non-discriminatory access to functions and resources of CC, and governance rules
- need of a strict FRAND-like access regulation to data, functions, and resources for keeping secondary markets open for competition, innovation, consumer choice (voluntary self-regulatory ideas of VMs (ACEA 2021, VDA 2021:Adaxo) not suitable)

Long-term: perhaps need to go beyond „extended veh.“ (OEM-specific ecosystems) to achieve an integrated mobility system of automated / autonomous driving

6. Conclusions

Basic problem of IoT devices:

- manufacturers can design their device in a way that grants them
 - (1) exclusive control over the generated data, and
 - (2) exclusive control over technical access to IoT device
- opens up new business opportunities (models) for manufacturers
- but also reduces / eliminates business opportunities and might disincentivize / block innovation activities of many other stakeholders

Need for appropriate set of rules / regulations for protecting and enabling competition, innovation, and market dynamics about

- data governance
- interoperability and standardisation