

The automobile as massive data gathering source and the consequences for individual privacy

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Have You been ever asked that by Your car?

Winterkorn: Your cars data is mine!

What is he talking about?

Who controls the data?

The automobile as massive data gathering source and the consequences for individual privacy

Agenda

1. OBD2
2. Stakeholder
3. Data retention
4. Help?



1. OBD2: What does Your car know and who else?

Technical units/standards:

ECU (Engine Control Unit), OBD2 (On-Board Diagnostics 2), CAN-Bus (Controlled Area Network), On Board Navigation,...

All data,

- Being measurable by sensors or actuators,
- In a granularity, length and structure (e. g. thresholds) depending on the size of memory

Simple data:

pace, fuel level, GPS coordinates, acceleration, rpm, ...

Deduced data:

Fuel consumption, average pace, speeding, ...

Other data:

Cell information

There is no ownership on data? There is an ownership on database structures.



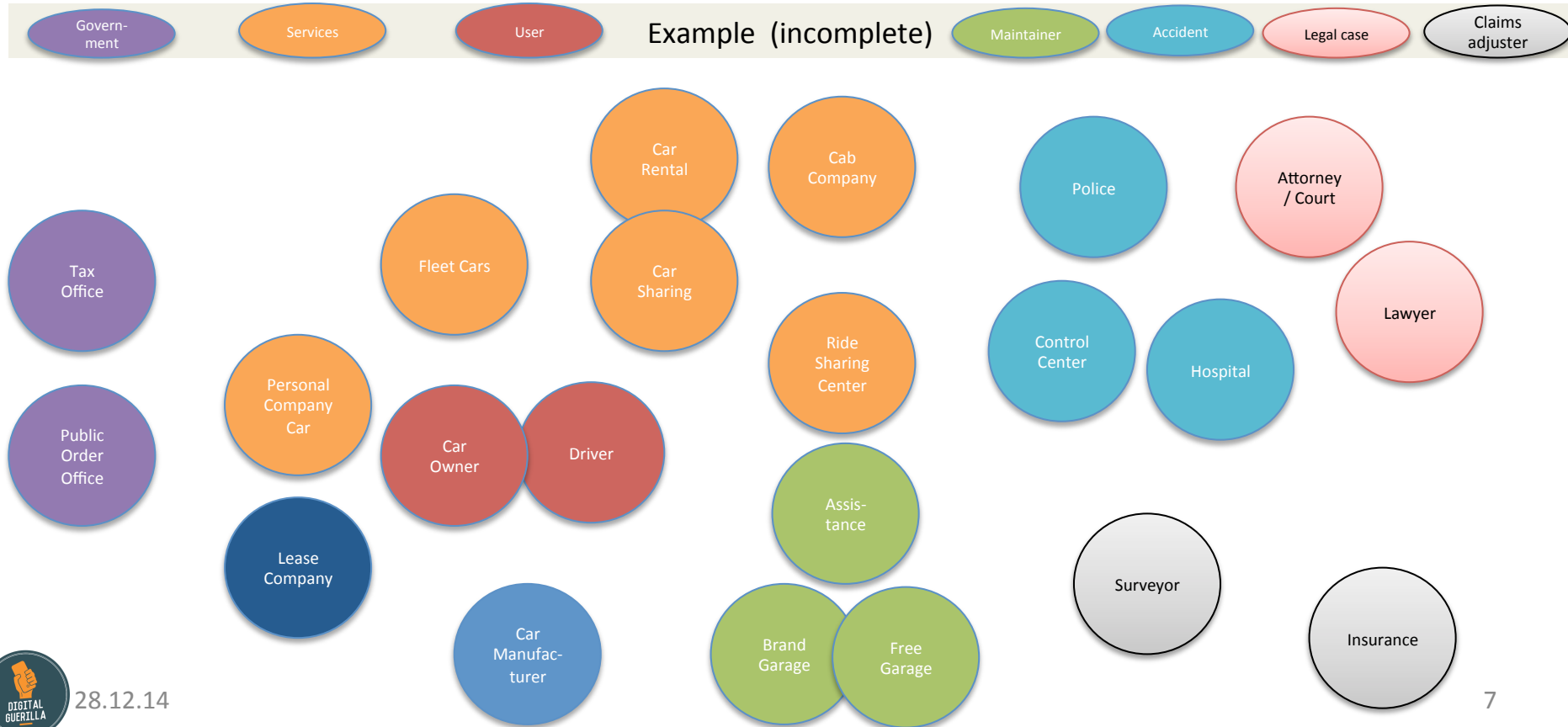
1. OBD2: What does Your car know and who else?

Successful attacks via

- wired OBD2 interface
 - Physical access needed to the interior of the car
- installed wireless interface (WiFi, Bluetooth)
 - Can be easily accessed from the cars surroundings



2. Your cars stakeholder



2. Your cars stakeholder

Winterkorn on the 16. Technical Congress of the VDA (Verband der Automobilindustrie) in Hannover at March 20th, 2014 :

automobil-produktion.de: “Was wir nicht wollen, ist, dass diese Daten unserer Kunden irgendwo hinwandern.” (We don't accept that the data of our customers trickle somewhere else.)

tagesschau.de: VW-Chef Winterkorn reklamierte den Besitzanspruch für all diese Informationen: "Die Daten gehören uns!" (VW-CEO Winterkorn claims the ownership of all those information: „This data belongs to us!“)

Principles of VDA from November 10th, 2014:

- a) Car related data (as mileage)
 - Maintenance service relevant technical data (class of car related data)
- b) Personal related data (as address)
 - Personal related data are under control of the driver. If the usage/storage is denied some services are excluded.
- c) Assistance and infotainment data must be erasable.



2. Your cars stakeholder

Our Study (requested: 41/answered: 17/answered with content: 7)

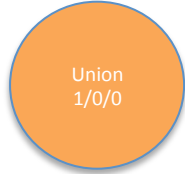
Manufacturer



Maintainer



Services



Claims adjuster



2. Example stakeholder: assistance/automobile association

Business model: Road side assistance / mobilize car (“older” cars)

Activities: Small repairs on the road / transport to garage / replacement vehicles

Requested data: Car related data (ECU & OBD2), malfunctions, access to change data

Remarks: asking for open interfaces, partially supplying car manufacturers / insurances for mobility warranty services (together with car rental)

2. Example stakeholder: garages/dealer

Business model: Repair, maintenance and warranty of cars

Activities: Repair, warranty, maintenance

Requested data: Car related data (ECU & OBD2), car and personal related data of the car manufacturer, malfunctions, access to change data

Remarks: Automobile craftsmanship is requesting „interoperable, standardized, secured and open accessible platform” for the type approval at EU level to support competition and free choice of the car owner

3. Data retention / big brother?

What data is stored?

- Car related data (mileage, malfunctions, speed, etc.)
- Personal related data (location, time and dates)
- Even more personal data (Your phone calls contacted to the address book, music titles You listened, etc.)

Who else has access to Your data?

- Unless You control the data, everyone who has access to Your car.
- Your garage, Your car manufacturer, Your automobile association, etc.
- Mobile devices and all apps, car specific apps (navigation system, etc.)

3. Data retention / big brother?

Where is the data stored?

- a) In the your car (unknown duration & structure).
Tendency by cheaper memory, more services and better problem solving:
More and more precise data and longer duration
- b) In the computer centers of your car manufacturer (car related data, service related data, person related data)
Tendency by cloud-services, always-on, more services, covering car life-cycle:
More and more precise data and longer duration
- c) In your garage (car related data, service related data, person related data)
Tendency by cloud-services, always-on, more services, covering driver life-cycle:
More and more precise data and longer duration
- d) In the computer centers of Google, Microsoft, Apple,... By using apps on your smart phones connected to your car.
Tendency by big data:
More and more precise relations.

4. What would help?

- **Awareness**
- Open interfaces & standards
- Encryption (access keys) of all data starting in the car
- Transparency (single point of information): Which data is stored where and how long and who has access?
- Data privacy declaration in simple speech



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