Connected car

App based dongle solution as shortcut to connectivity

Study – Extract

Munich, September 2016

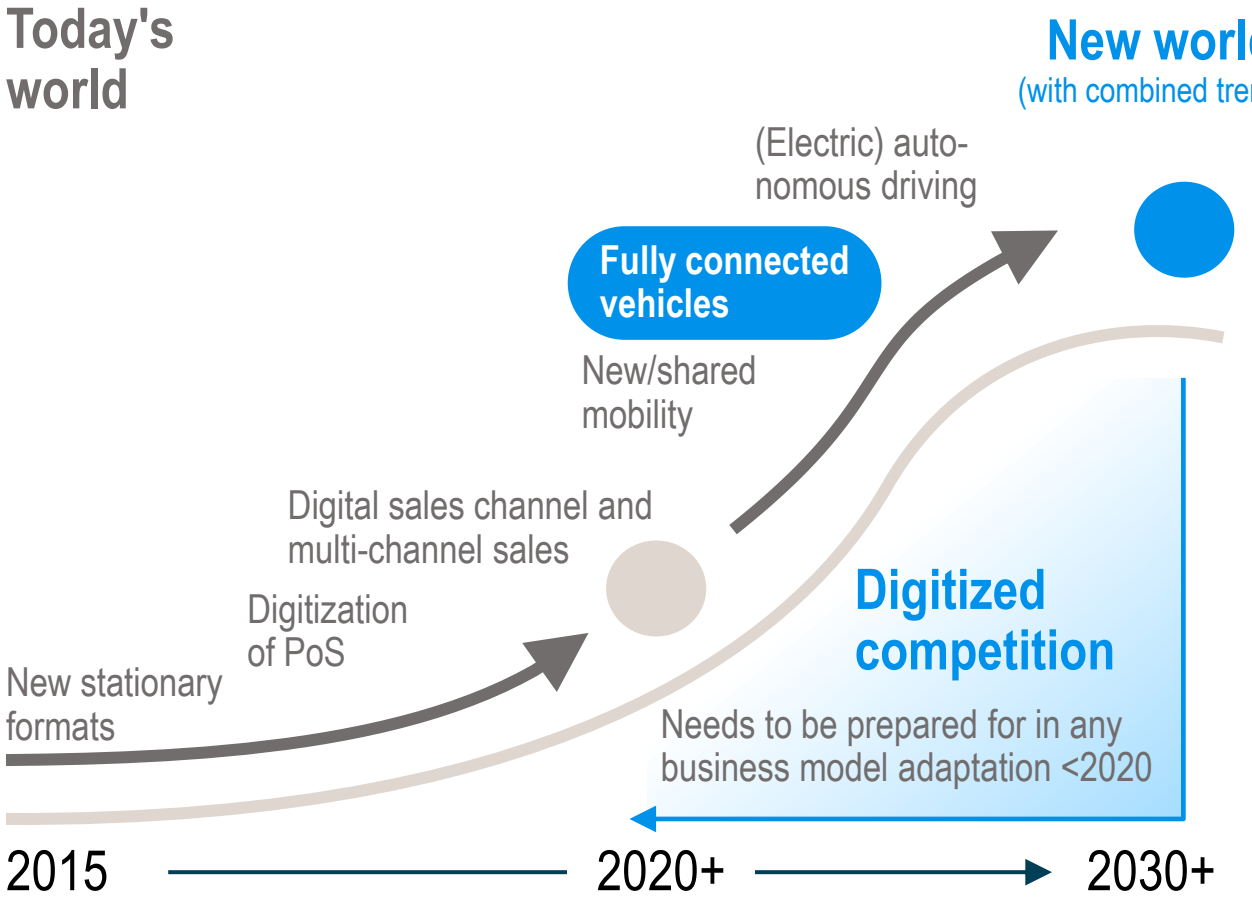
Management summary

- The **connected car** is currently one of the **hot topics** in the automotive industry – Increased data transfer capabilities open up limitless potential for **new products and services**
- However, while OEMs are developing their highly sophisticated **proprietary connectivity packages**, other players are coming in with **retrofit solutions** and continuing to capture the **customer interface**
- **Network effects** create irreversible **lock-in** of users in connectivity services but OEM solutions are only **slowly penetrating the car parc**
- **App based dongle solutions** offer the best preconditions to quickly **establish a connectivity ecosystem** with **daily relevance** for its users based on **smartphone integration** and coverage of relevant **use cases**
- **OEMs** should accept a **dongle based offer as a shortcut** to achieving their connectivity ecosystem – Benefit from multibrand mindset and cooperation, rapid car parc penetration and relevant customer base
- **Non-OEM** players should foster a **shared technical platform as an open industry standard** based on cross-industry cooperation to establish applicable use cases and become relevant for their users

Source: Roland Berger

Connected car is currently **one of the hot topics** in the automotive industry – Data transfer opened limitless potential for new products

The evolution of the automotive ecosystem



Audi strategy 2025

*All **new cars** to be **online** in the future with **Audi connect** as **standard** equipment*

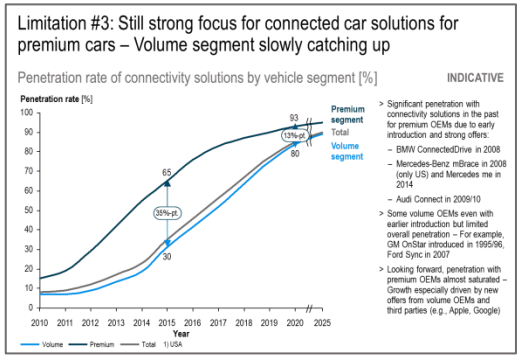
***Digital business models** expected to account for **half of turnover** in 2020*

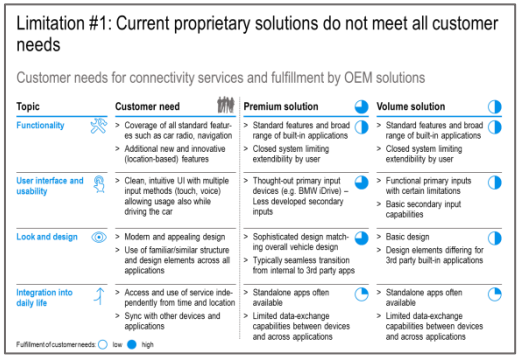
1/3** of the **R&D budget** is planned for the development of **software** and **digital services

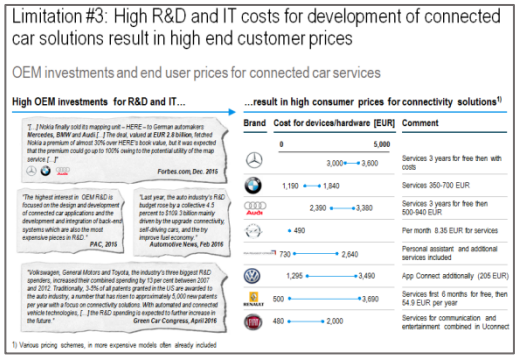
Source: Audi; Press research; Roland Berger

Current OEM connectivity applications are subject to certain limitations, which results in slow market penetration

Limitations of current OEM connectivity solutions







1 Slow penetration of car parc due to premium focus of built-in solutions

> Premium OEMs have the broadest connected car service portfolio – Volume OEMs are following behind with more cost-efficient and less sophisticated solutions

> Slow and limited penetration of car parc with built-in solutions possible

2 Current proprietary solutions do not meet all customer needs

> Proprietary OEM connected car solutions struggle to meet all customer requirements – Often market push instead of market pull

> This might also be due to the fact that the necessary awareness and know-how on the OEM side is not yet fully developed

3 High R&D and IT costs increase end customer prices

> OEMs are required to make significant investments in R&D, IT and new business models in order to offer connected car solutions

> These costs need to be passed on to the customer in the form of high initial prices for hardware and services

Source: Roland Berger

Due to OEMs limitations alternative solutions have already been developed – Dongle technology as attractive shortcut

Overview of connectivity solutions

	Solely app based solution	Cigarette lighter based solution + app	App based dongle solution	Blackbox	Proprietary solution
	1 	2 	3 	4 	5 
Cost	<5 EUR	<30 EUR	10-150 EUR	>70 EUR	2,000-3,000 EUR
Business focus	B2C	B2C	B2C and B2B	(B2C) and B2B	B2C and B2B
Level of integration	No integration	Plug-in	Fixed installed	Fully integrated	Fully integrated (with delivery)
Function-alities	GPS tracking Micro-billing	GPS tracking Micro-billing Speed control Accident recognition Braking behavior	GPS tracking Micro-billing Speed control Accident recognition Braking behavior Diagnosis/vehicle data	GPS tracking Micro-billing Speed control Accident recognition Braking behavior Diagnosis/vehicle data	GPS tracking Micro-billing Speed control Accident recognition Braking behavior Diagnosis/vehicle data Entertainment Individual services
User examples	AXA evopark	HUK-COBURG Aus Tradition günstig	TankTaler	DirektVersicherung	BMW ConnectedDrive

Source: Roland Berger

OBD dongles have strong potential to disrupt the current OEM-centric connectivity ecosystem in the automotive industry

Reasons why dongle solutions will be successful

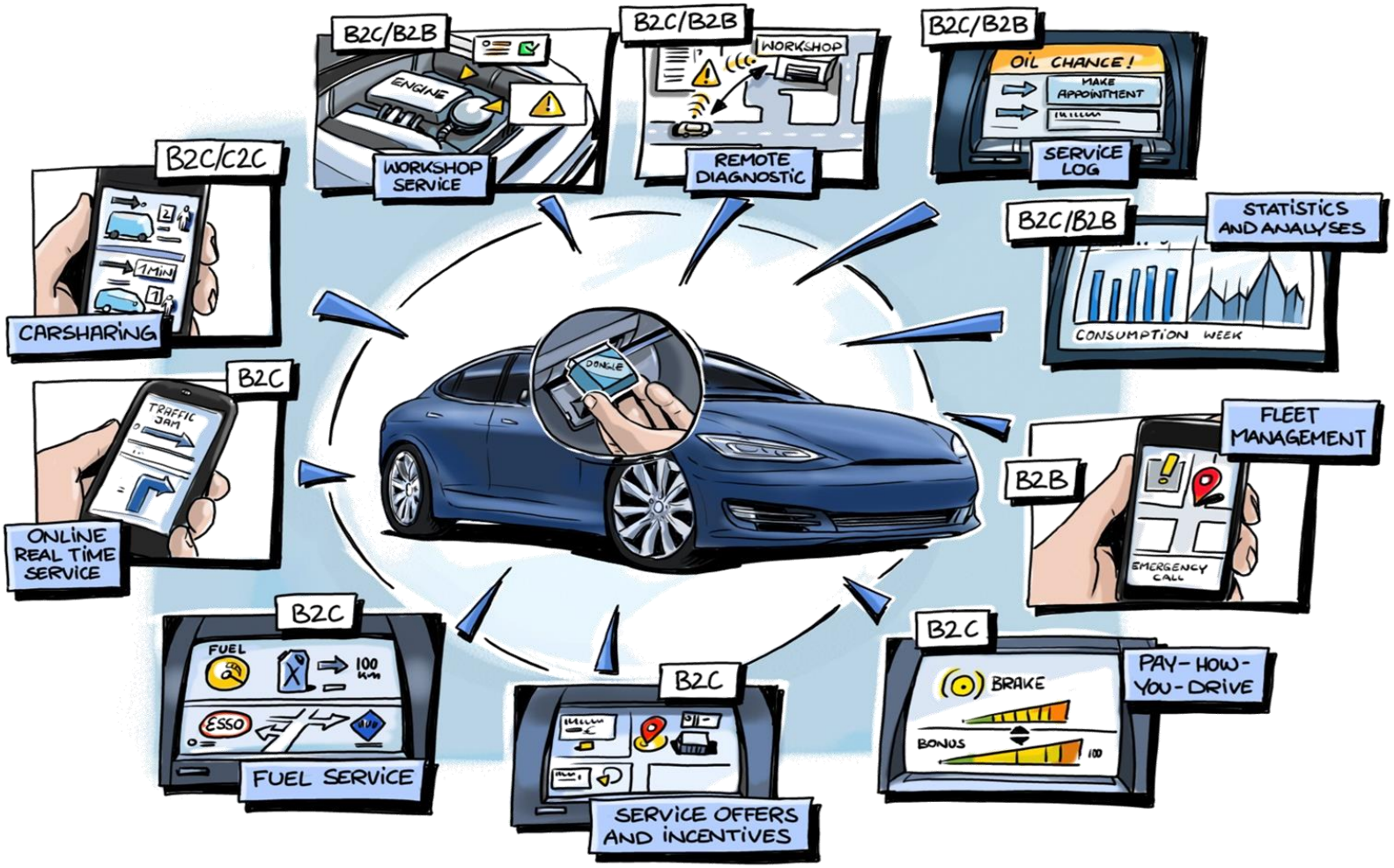
App based dongle solutions …

1. … are **technically feasible** and data are available for different players **supported by current legislation**
2. … can be used with the **entire available car parc** registered since 1996 and for new car sales as long as the port is not yet blocked
3. … are **independent from the car itself** (hardware and software requirements, brand, etc.) and **cheap compared to OEM solutions**
4. … **connect the car with mobile phones** and thus turn the most important tool in daily life into a **perfect co-driver**
5. … **enable all relevant use cases** from the customer perspective and leverage customer benefits for both B2C and B2B

Source: Roland Berger

From a B2C and B2B customer perspective, all relevant use cases can be implemented with app based dongle solutions

Selected use case scenarios



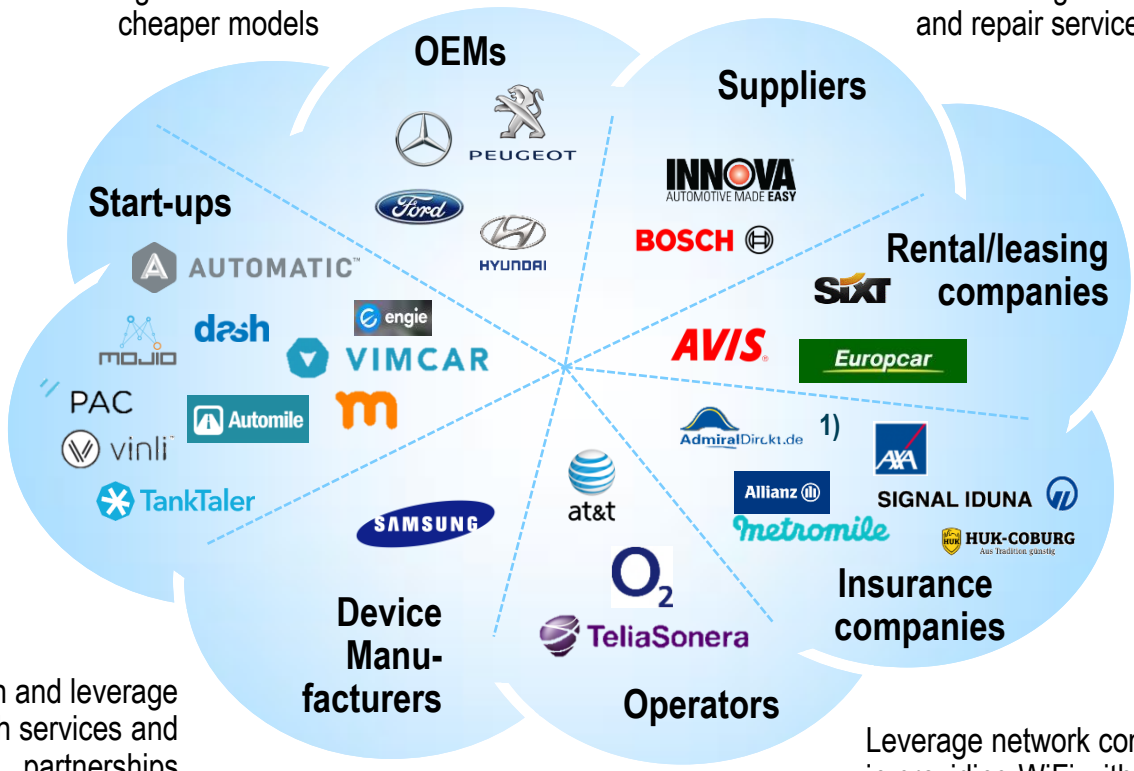
Source: Roland Berger

Different players, also from outside the automotive industry, have already seen the potential of connectivity solutions based on OBD

First players with dongle solutions and related services

Retrofit car parc and dongle solution for cheaper models

Remote diagnostics and repair services



Mainly app based business models with bundling of services

Rental companies track the status of their vehicle parc including turnaround management optimization, journey logs and tracking services

Usage based insurance services

Dongle production and leverage usage through services and partnerships

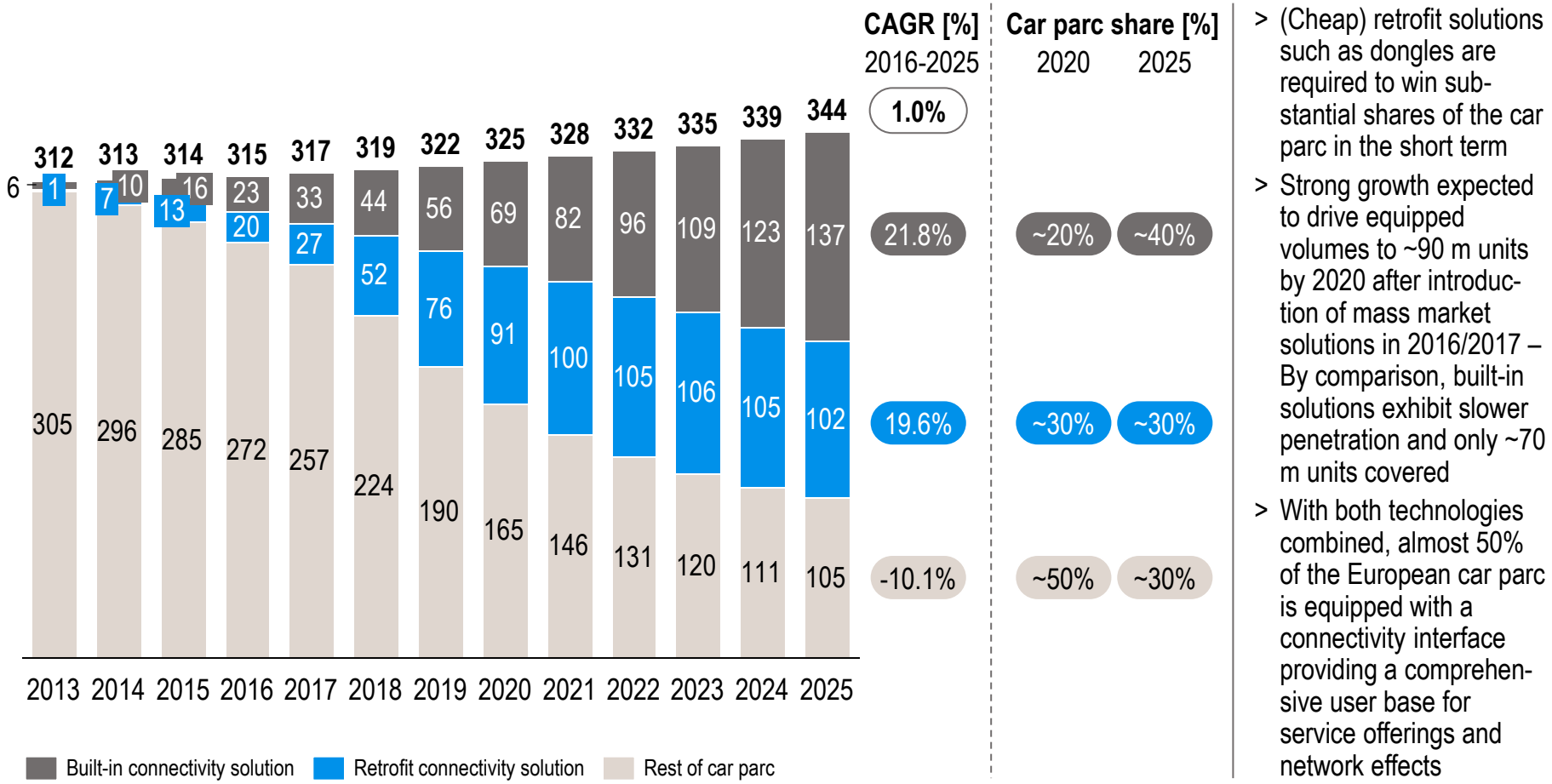
Leverage network competencies especially in providing WiFi within the vehicle

1) AdmiralDirekt uses Bluetooth adapter via cigarette lighter and does not use OBD based vehicle information

Source: Company information; Roland Berger

Retrofit solutions such as dongle are required to equip substantial shares of the car parc with connectivity solutions

Penetration of built-in/retrofit connectivity solutions in car parc [%]



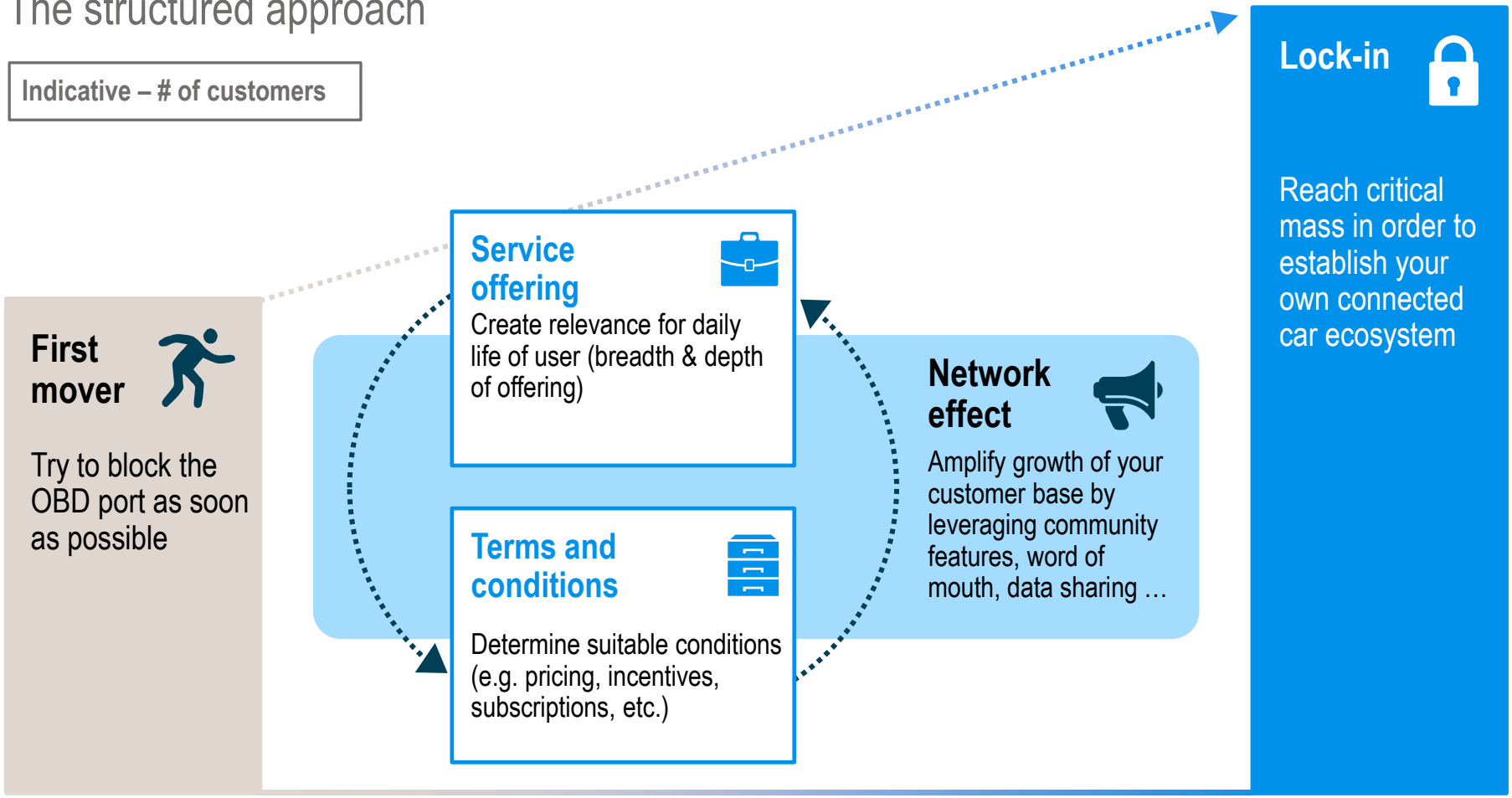
- (Cheap) retrofit solutions such as dongles are required to win sub-stantial shares of the car parc in the short term
- Strong growth expected to drive equipped volumes to ~90 m units by 2020 after introduc-tion of mass market solutions in 2016/2017 – By comparison, built-in solutions exhibit slower penetration and only ~70 m units covered
- With both technologies combined, almost 50% of the European car parc is equipped with a connectivity interface providing a comprehen-sive user base for service offerings and network effects

Source: Company information; IHS; GSMA; Roland Berger

To successfully participate in the connected car and build up your own ecosystem you should apply a structured approach

The structured approach

Indicative – # of customers



Source: Roland Berger

OEMs should accept dongle solutions as a possible shortcut to a proprietary solution before other players achieve lock-in

5 steps for OEMs

1

Think **multibrand** and **cooperate** with 3rd parties to increase user base and customer benefits

2

Bring your own app based dongle solution quickly on the market with basic services to block the OBD port in new car sales

3

Penetrate existing car parc with your dongle solutions via your own repair shop network

4

Leverage existing access to all vehicle data to identify additional services for the customer

5

Benefit from your new offering – e.g. by additional service **revenues** and sharing of **development costs** for connected car services across a larger customer base

Use the dongle technology as a **shortcut** to establish a holistic **connectivity ecosystem** in terms of services and customer base

Source: Roland Berger

Other players should focus on cooperation to foster a shared technical platform as an open industry standard

5 steps for non-OEMs

1

Agree on **cooperation** with other players to create relevant services based on dongle

2

Foster the development of a **shared technical solution** as an open platform

3

Find a way to get your app based dongle solution into the existing **car parc** as quickly as possible

4

Get access to the right **data points** and develop a whole ecosystem

5

Start **monetizing** your solutions – Which does not have to be driven by selling the device or charging for the service directly

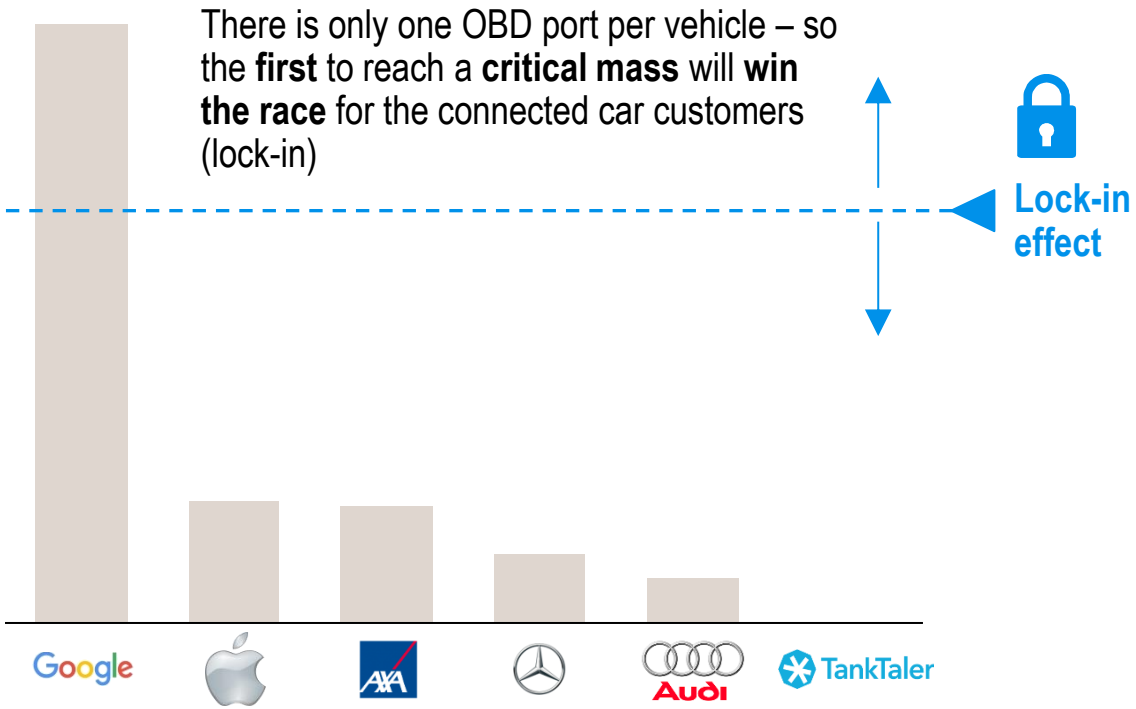
Become the **daily companion** of end users and create a sustainable lock-in effect

Source: Roland Berger

Overall, it will be key to take actions and acquire a critical mass of users to win the race for the connected car

Lock-in effect of connectivity solutions – Outline

# of customers [Germany]



War gaming

> One of the **players** (especially non-automotive) with a **huge customer base** like Google Android (>40 m users) hands out **free** OBD dongles + app

> With services offered based on **crowd interaction**, additional benefits arise for customers (network effect) – Google could achieve a **lock-in effect**

Source: Company information; Roland Berger

Please contact us for further information

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