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# The Great Mobility Tech Race Winning the battle for future profits

Research Highlights

JANUARY 11, 2018

## Executive summary

Auto industry is facing unprecedented change; in technology, society and regulatory trends

Automotive is being re-shaped by shifts towards electrification, self-driving vehicles and shared mobility

This level of change is poised to have a significant effect on the vehicle and mobility market...

...but also on the players in the industry and their profitability

Value creation is likely to shift away from traditional OEMs and move more towards suppliers

And, there is a new set of technology players and profit pools that emerge driving new value in the space

Three major trends will converge over the next 10-15 years, profoundly changing the automotive industry

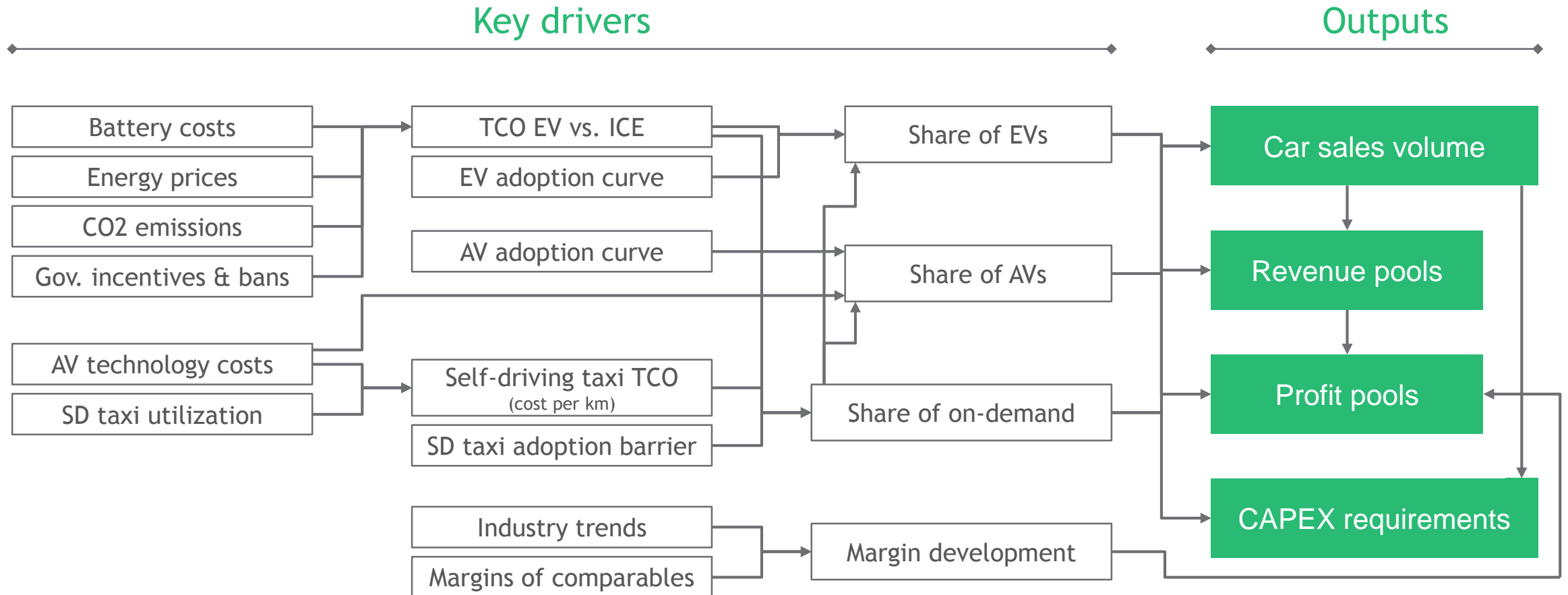


# The auto industry faces never-before seen change



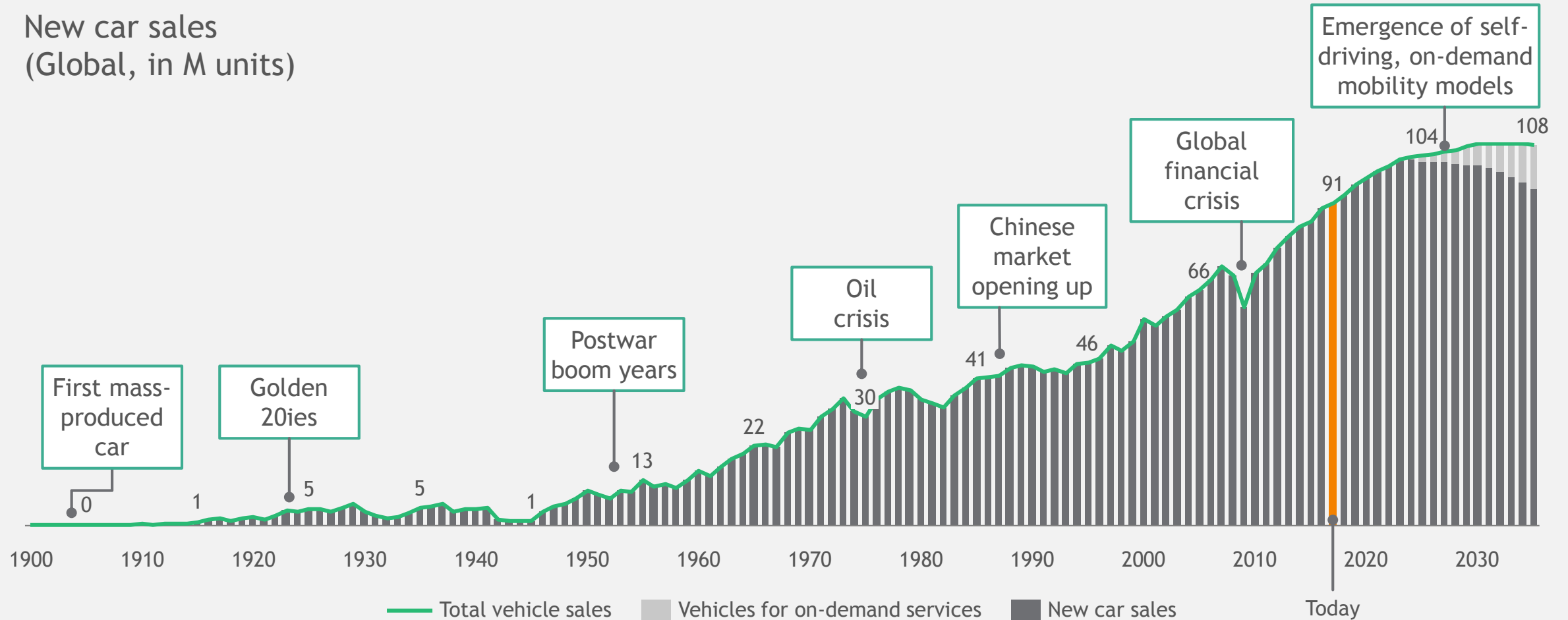
# Key change drivers reinforce each other—with large implications for the industry

Schematic



# Car sales volume will stall—bringing decades of growth to an end

New car sales  
(Global, in M units)

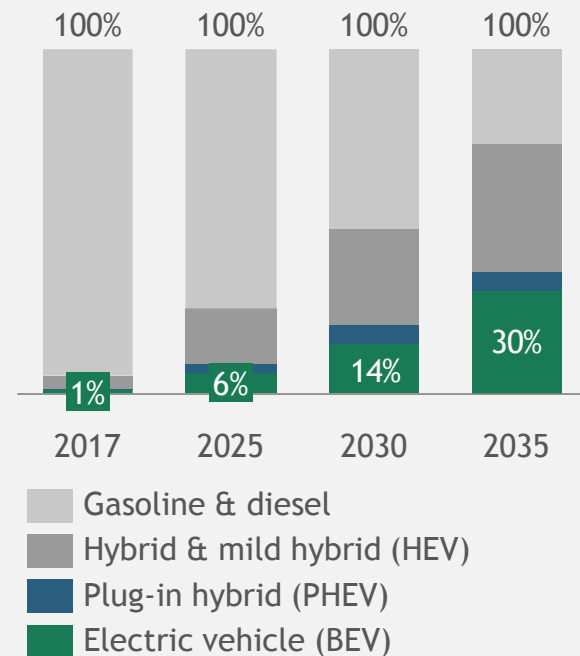


Source: BCG analysis

# Electrification, self-driving cars, and on-demand shared mobility offerings will change the face of the industry

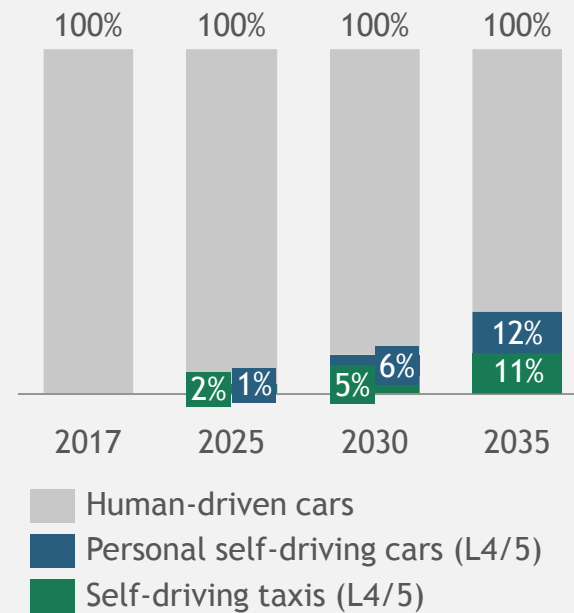
## Electrification will become more prevalent

Share of new car sales



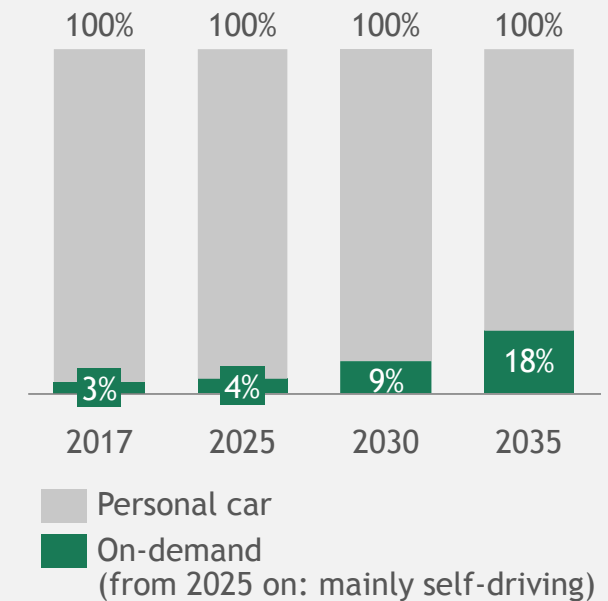
## Self-driving cars will hit our streets in

Share of new car sales



## Shared mobility offerings will gain acceptance

Share of on-road passenger miles



# We looked at three scenarios for how the industry could develop and focused on the most likely one

Selected drivers	Conservative	Most likely	Aggressive
Battery costs	Decrease 2% p.a.	Decrease 5% p.a. - in line with consensus estimates	Decrease 10% p.a.
Consumer EV adoption	Hesitant	Gradual - driven by steady infrastructure expansion	Rapid
Energy prices (gas, electricity)	Gas down, electricity up (gas: \$1.50/gallon; electricity: 0.15 \$/kWh)	Constant (gas: 2.50 \$/gallon; electricity: 0.12 \$/kWh)	Gas up, electricity down (gas: \$3.50/gallon; electricity: 0.10 \$/kWh)
CO <sub>2</sub> emissions regulation (e.g., CAFE)	Targets are relaxed	Currently expected regulation	Targets are tightened
Autonomous Vehicle components costs	Decrease 5% p.a. (2025-2035)	Decrease 12% p.a. (2025-2035), in line with similar technologies	Decrease 20% p.a. (2025-2035)
Commercial deployment of self-driving on-demand services	Deployable for mass use in cities by 2027	Deployable for mass use in cities by 2025	Deployable for mass use in cities by 2021
AV legislative framework	Worked out by 2027	Worked out by 2025	Worked out by 2021

..... Modeled scenario .....

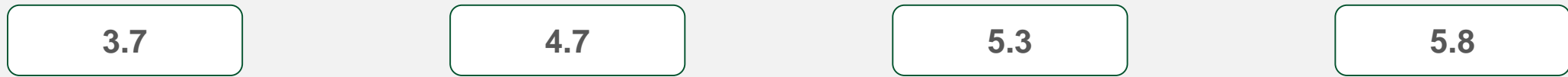


Profit pools will grow in areas where incumbents do not possess competitive advantages

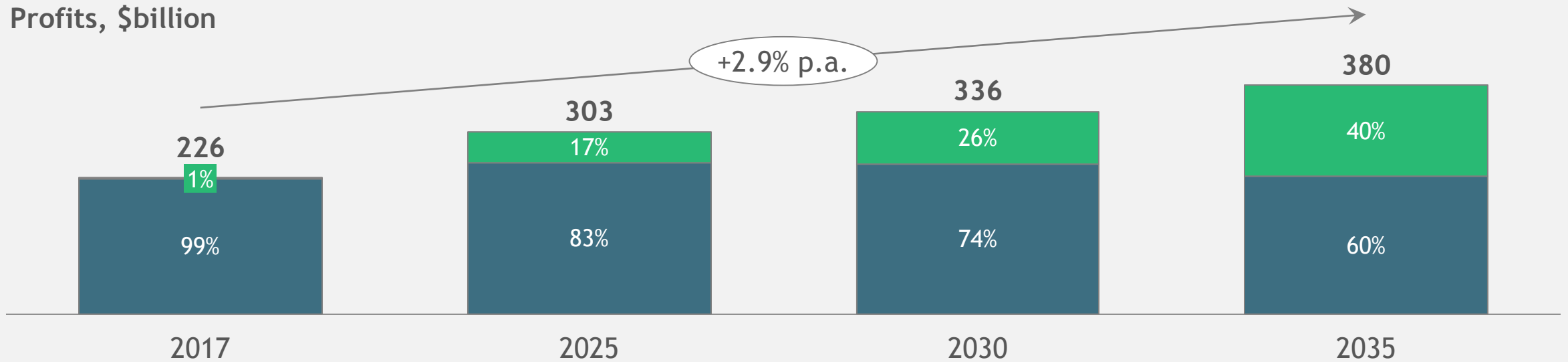


# The mobility industry will continue to grow, but profit pools will shift to new technology

Revenues, \$trillion



Profits, \$billion

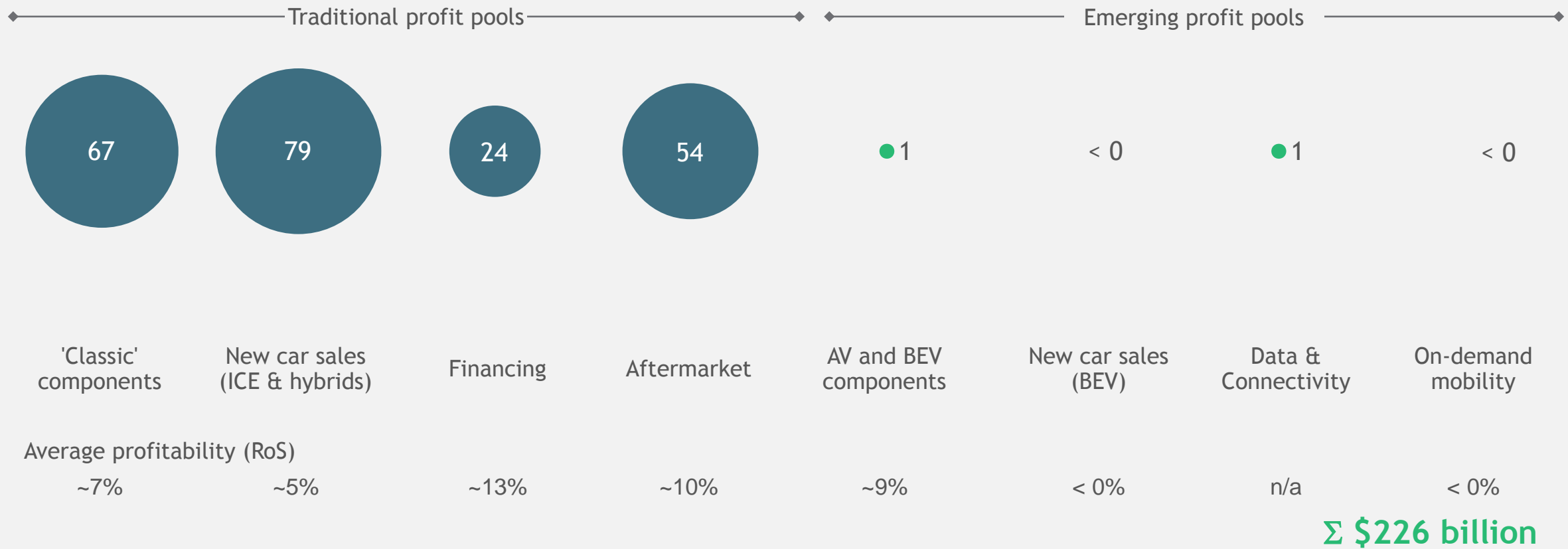


- **Emerging profit pools** (incl. AV & BEV component suppliers, BEV car sales, data & connectivity and on-demand mobility)
- **Classic profit pools** (incl. classic component supply, ICE car sales, financing and aftermarket)

Source: BCG analysis  
 AV=autonomous vehicles; BEV=battery-powered electric vehicles; ICE=internal combustion engine

# Today, the long-established car business is driving industry profits

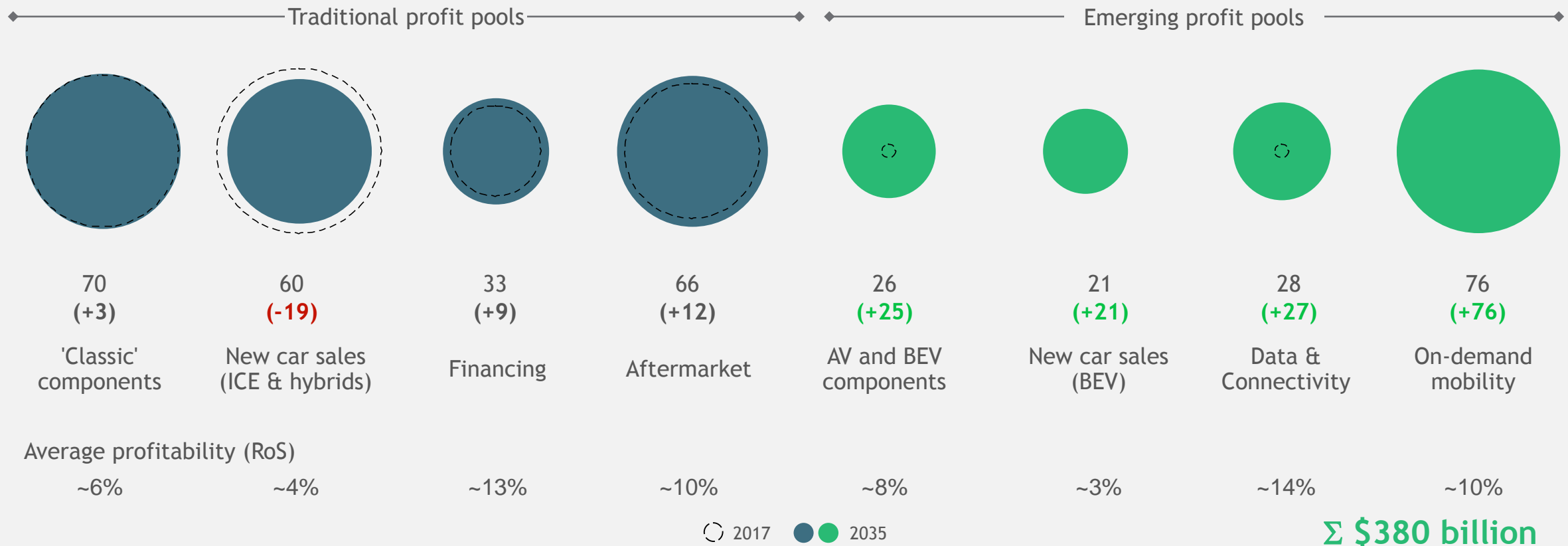
Profit pools - today (2017, in \$B)



Source: BCG analysis

# But future growth takes place in fields in which auto players do not possess competitive advantages

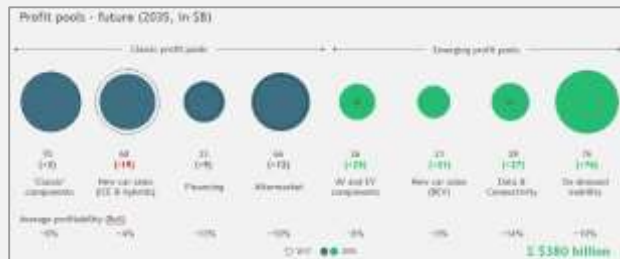
Profit pools - future (2035, in \$B)



Source: BCG analysis

**Σ \$380 billion**

# We expect a significant structural shift in profit pools



New-car sales stall after 2025 as on-demand models in cities pick up

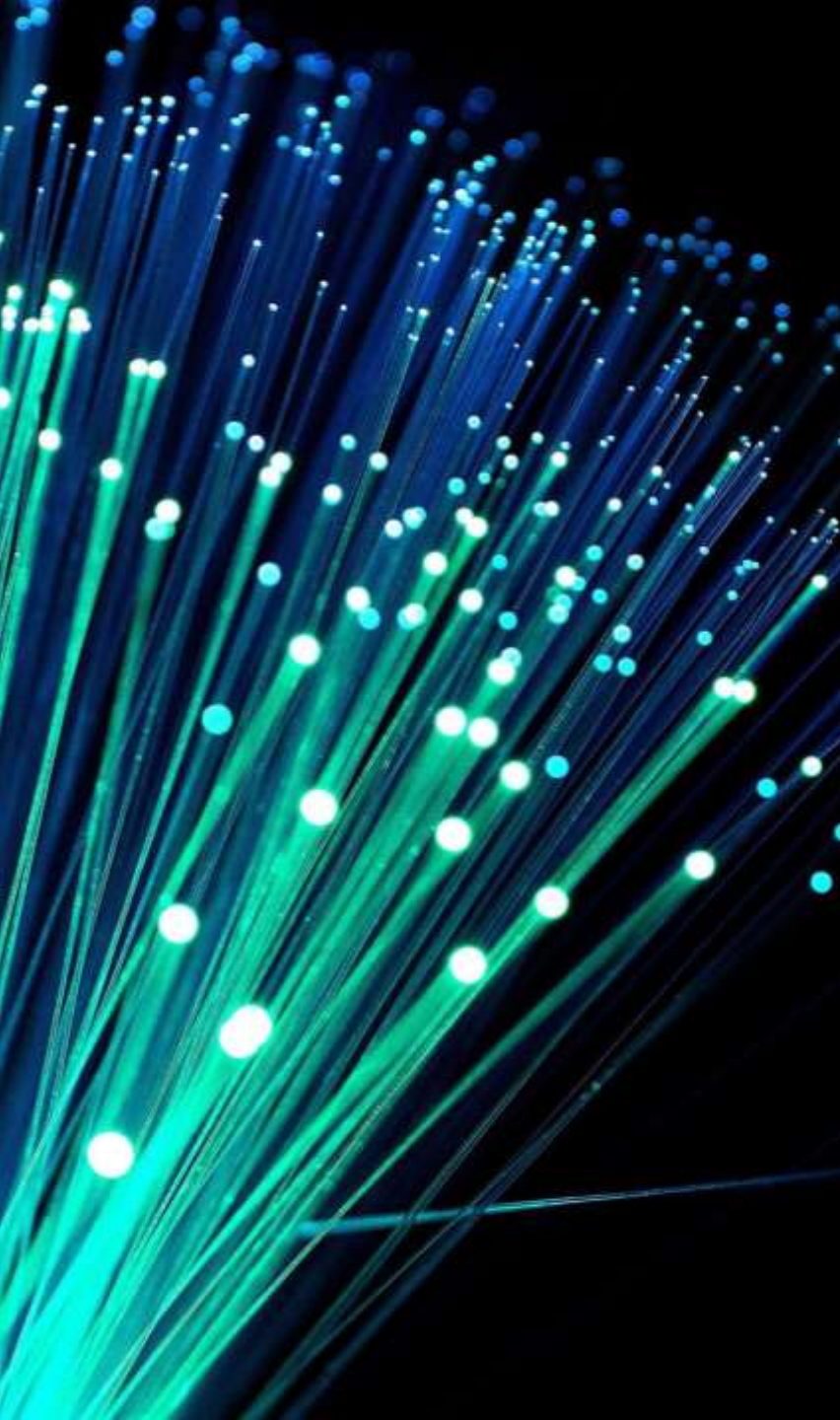
New-car sales margins structurally decline with electrification and higher share of fleet business

With growth of AV and BEV components, value creation shifts further away from OEMs to suppliers

Aftermarket business negatively affected by switch to electrified vehicles (EVs), but effect comes slowly

On-demand mobility explodes, as self-driving cars make services affordable and convenient

New profit pools in data & connectivity emerge, taking off with self-driving cars

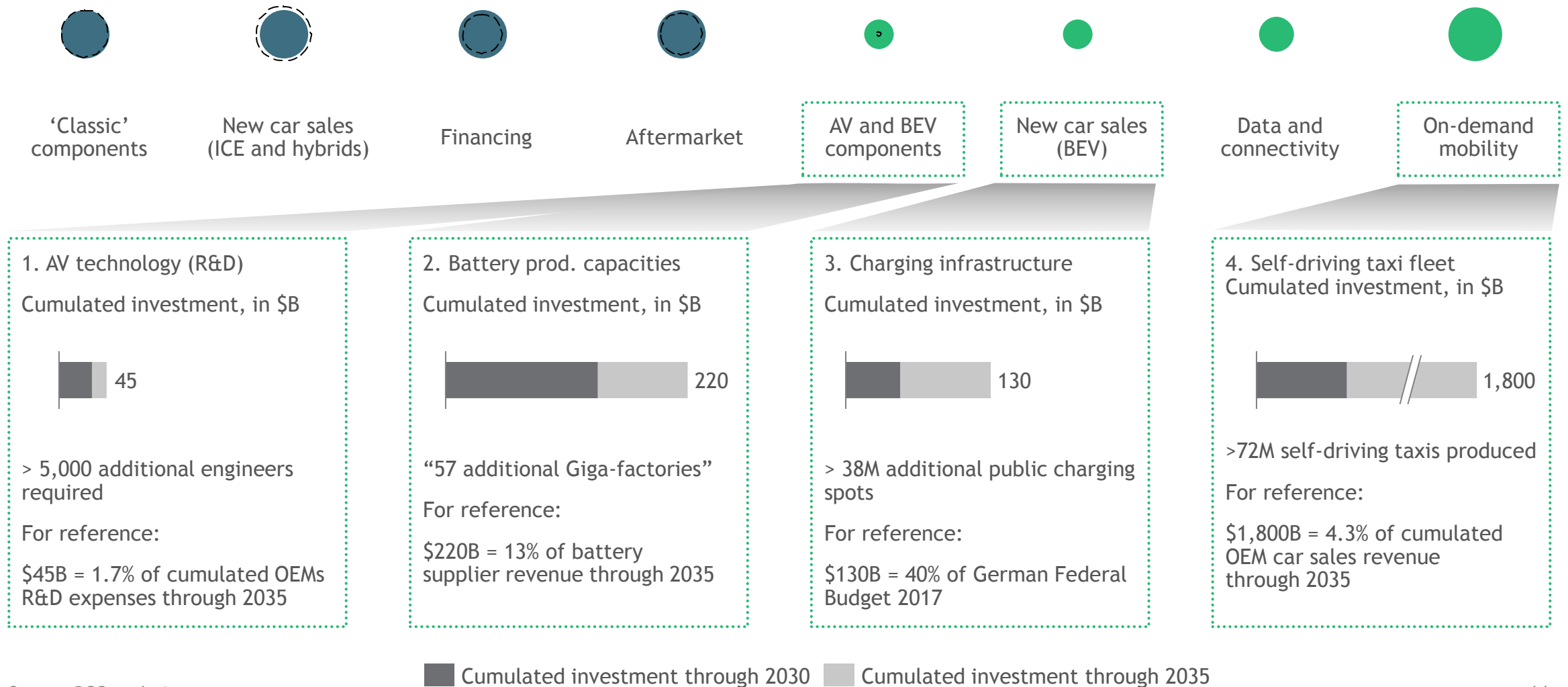


**Substantial investments** will be necessary to unlock growth areas

They include

- AV technology
- Battery production capacity
- Charging infrastructure
- Self-driving taxi fleets

# Substantial industry wide investments required to unlock growth areas: >\$900B through 2030 (> \$2.4T through 2035)

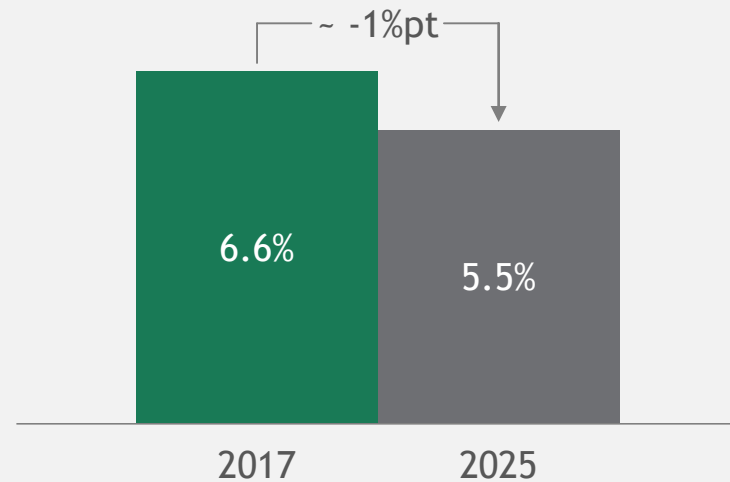


# OEMs face a 'double whammy' challenge: margins will decline while growth areas require new investments

Simulated effect on OEM profitability in the medium-term

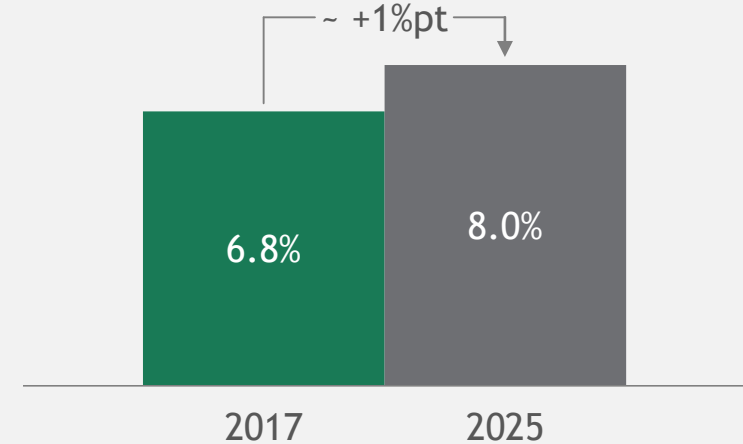
While profit goes down...

Ø OEM RoS



...Investments will need to go up

Ø OEM CAPEX/revenue

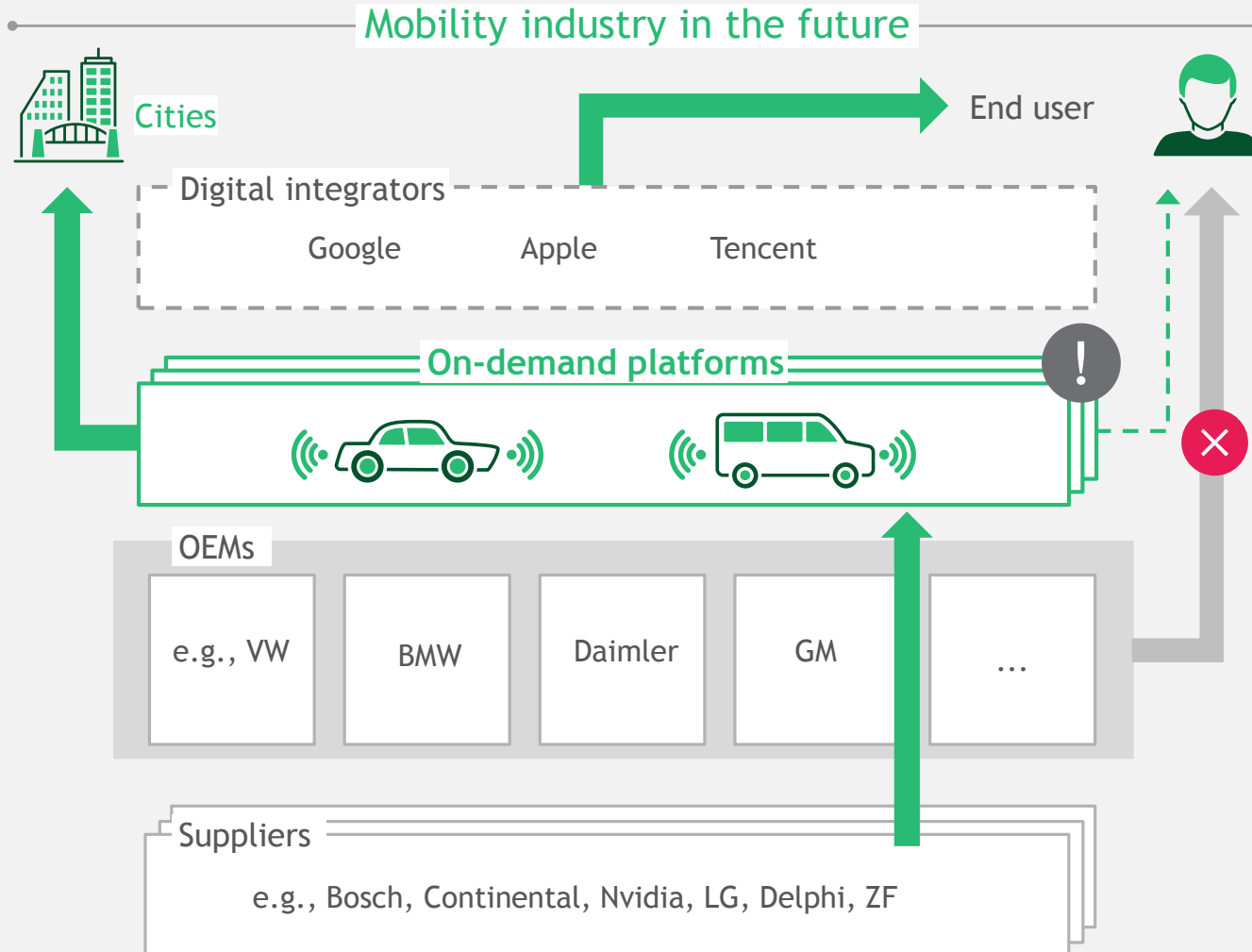




Market landscape is transforming, with new tech players having good chance to gain momentum

```
var container = $('#...');  
container.attr('class', ...);  
container.html('');  
  
switch (options.type) {  
  case 'vertical':  
    vertBarGraph(...);  
    break;  
  case 'horizontal':  
    horizBarGraph(...);  
    break;  
}
```

# Shift in market structure expected



**Cities:**  
Emerge as new relevant players, with a strong influence on future urban mobility

**Digital integrators:**  
Tech giants natively integrate services—and capture the customer interface

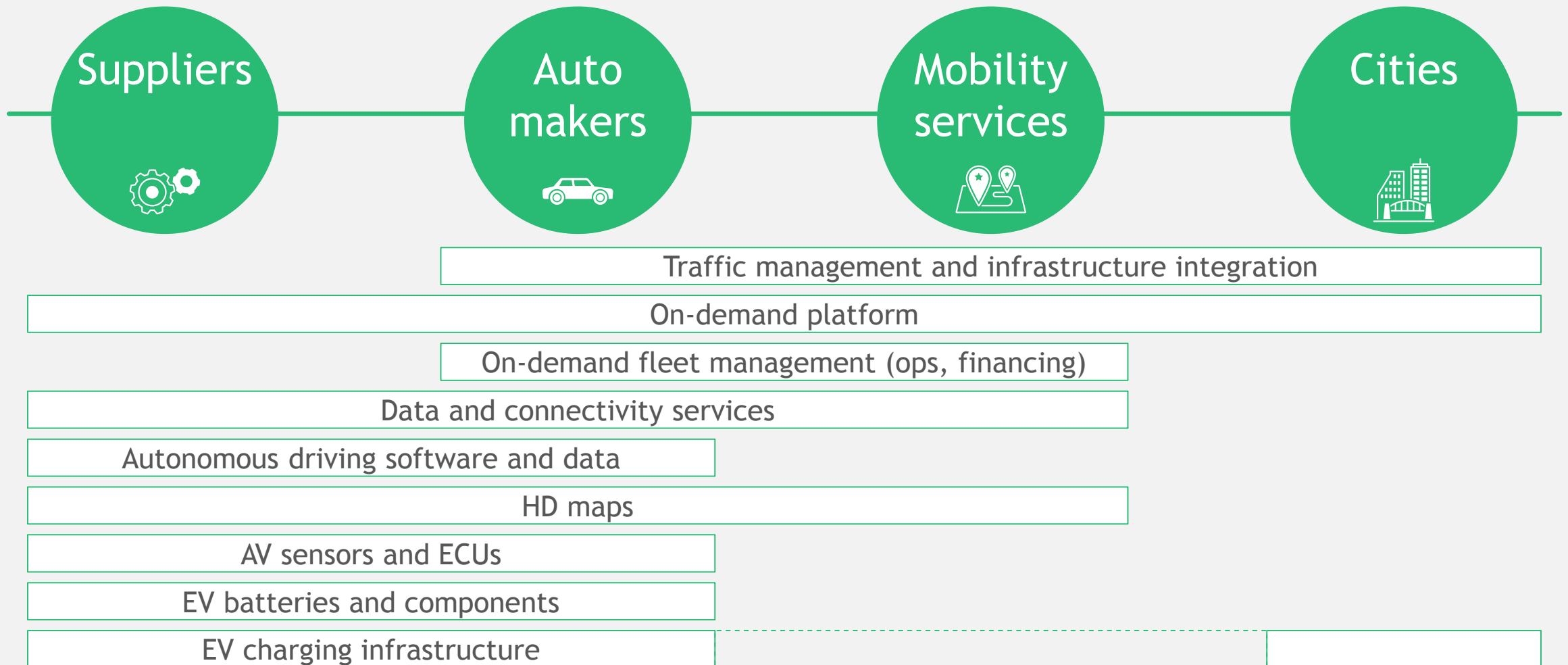
**On-demand platforms:**  
Broker autonomous on-demand rides

**OEMs:**  
Face stronger suppliers and risk losing the customer interface

**Suppliers:**  
Electronics and software become crucial—newcomers find themselves in strong positions

# Large option space for industry players still exists

Not exhaustive



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## Selected publications and research



### The Reimagined Car: Shared, Autonomous, and Electric

A report by BCG  
December 2017



### Connected Vehicles and the Road to Revenue

An article by BCG  
December 2017



### Making Autonomous Vehicles a Reality: Lessons from Boston and Beyond

A report by BCG and the World Economic Forum  
October 2017



### Self-Driving Vehicles, Robo-Taxis, and the Urban Mobility Revolution

A report by BCG and the World Economic Forum  
July 2016

To request more information on this research, please contact [BCG-Info@bcg.com](mailto:BCG-Info@bcg.com).

To request a media interview, please contact Eric Gregoire at [gregoire.eric@bcg.com](mailto:gregoire.eric@bcg.com).

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