

future of mobility

IPSOS  
WEB-SESSION

# Electrification, Connectivity & Automated Driving

October 13<sup>th</sup>, 2020

GAME CHANGERS





# Introductions



**Alexandra Stein**

Chief Client Officer,  
Ipsos in Germany



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Germany Service Line Leader,  
Ipsos Automotive & Mobility  
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Head of Consulting  
Ipsos Strategy3, China

# Agenda

**THE NEW  
MOBILITY ERA**

**QUESTIONS &  
ANSWERS**

1

**IPSOS AUTOMOTIVE  
SESSIONS**

2

**CHINA'S TECH-DRIVEN  
INTELLIGENT CONNECTED  
VEHICLES FOR THE NEXT  
DECADE**

3

4

# Our 4 Automotive Web-Sessions

“Mobility behaviours and automotive purchase intentions in troubled times”  
Tue, October 6, 2020, 11:00 AM – 12:00 PM CEST

**“The future of mobility - electrification, connectivity, and automated driving”**  
Tue, October 13, 2020, 11:00 AM – 12:00 PM CEST

“Accelerating in digital – the new customer journey”  
Tue, October 27, 2020, 11:00 AM – 12:00 PM CEST

“Looking beyond automotive – emotional branding in other sectors”  
Tue, November 10, 2020, 11:00 AM – 12:00 PM CEST





# Agenda

## THE NEW MOBILITY ERA

## QUESTIONS & ANSWERS

1

**IPSOS AUTOMOTIVE  
SESSIONS**

2

**CHINA'S TECH-DRIVEN  
INTELLIGENT CONNECTED  
VEHICLES FOR THE NEXT  
DECADE**

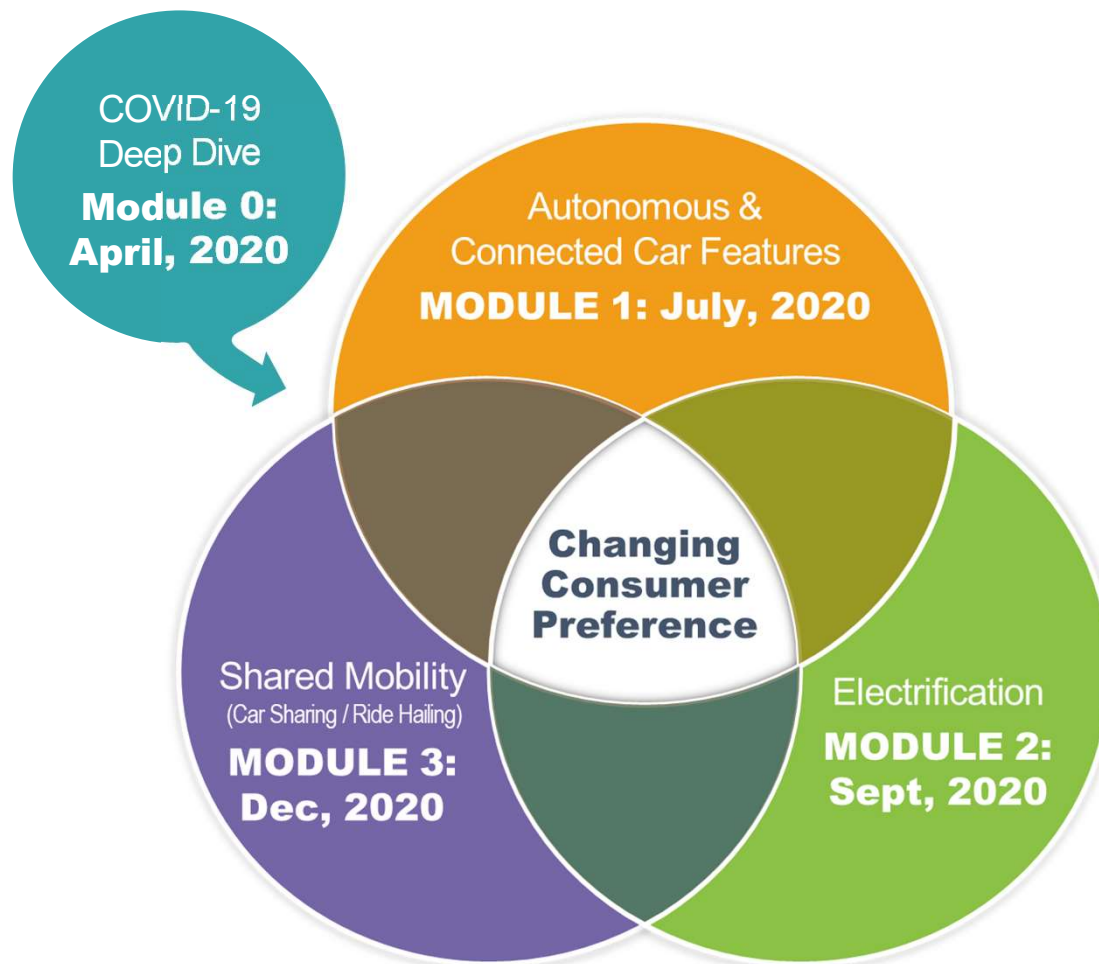
3

4

# IPSOS MOBILITY NAVIGATOR

A SYNDICATED STUDY  
FOCUSED ON THE

## KEY TRENDS IN MOBILITY



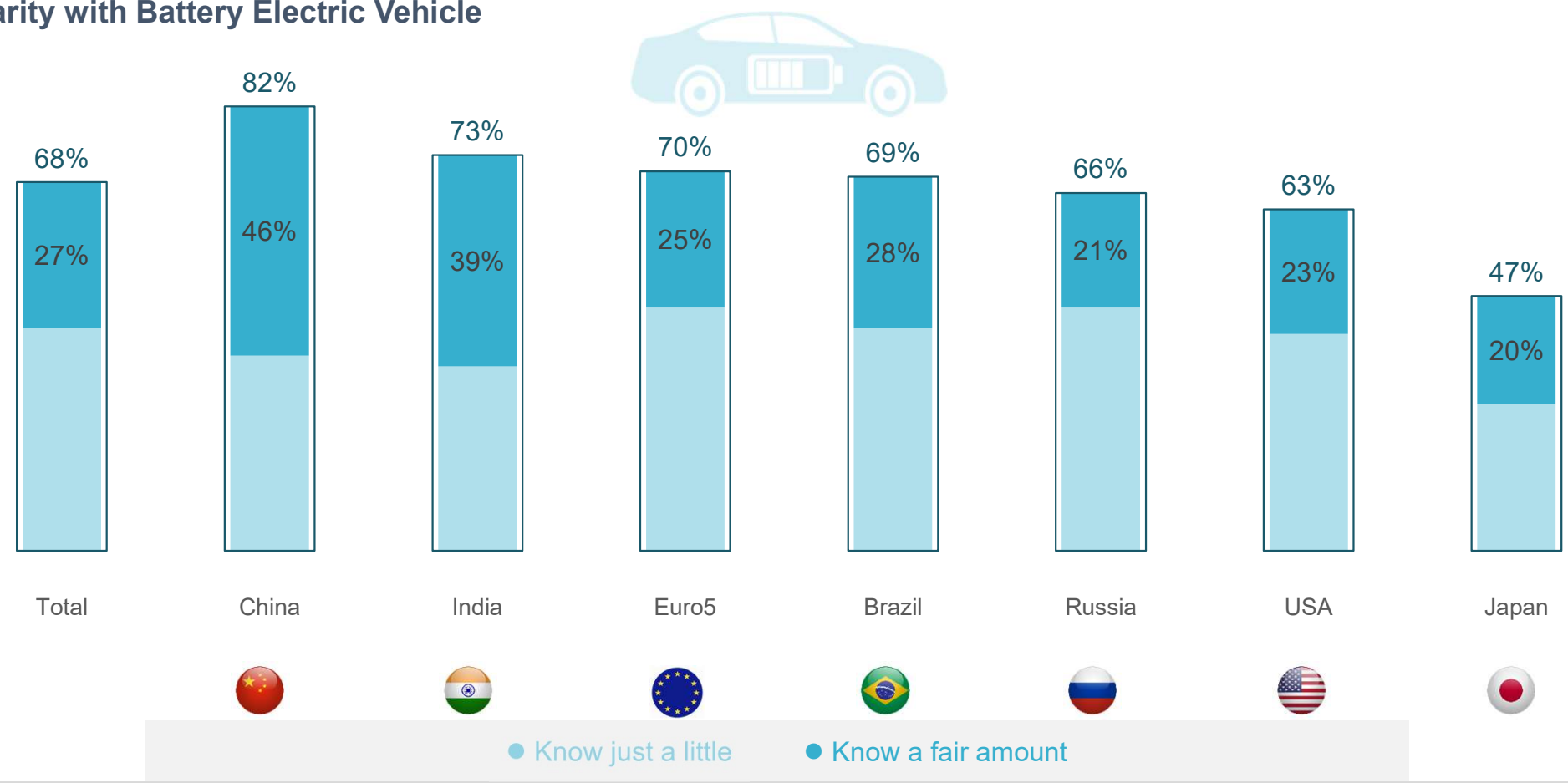
*future of mobility*

## **WHAT DO CAR OWNERS THINK ABOUT ELECTRIFICATION?**



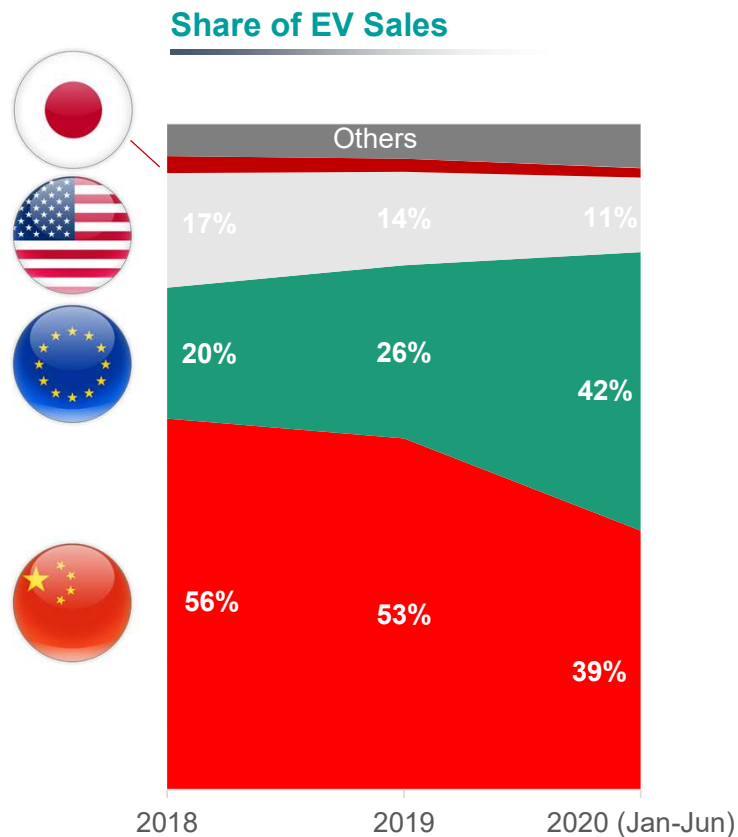
# Globally only 27% know BEV quite well, but car owners in China and India are more familiar with BEV than in Europe, Brazil and Japan.

Familiarity with Battery Electric Vehicle

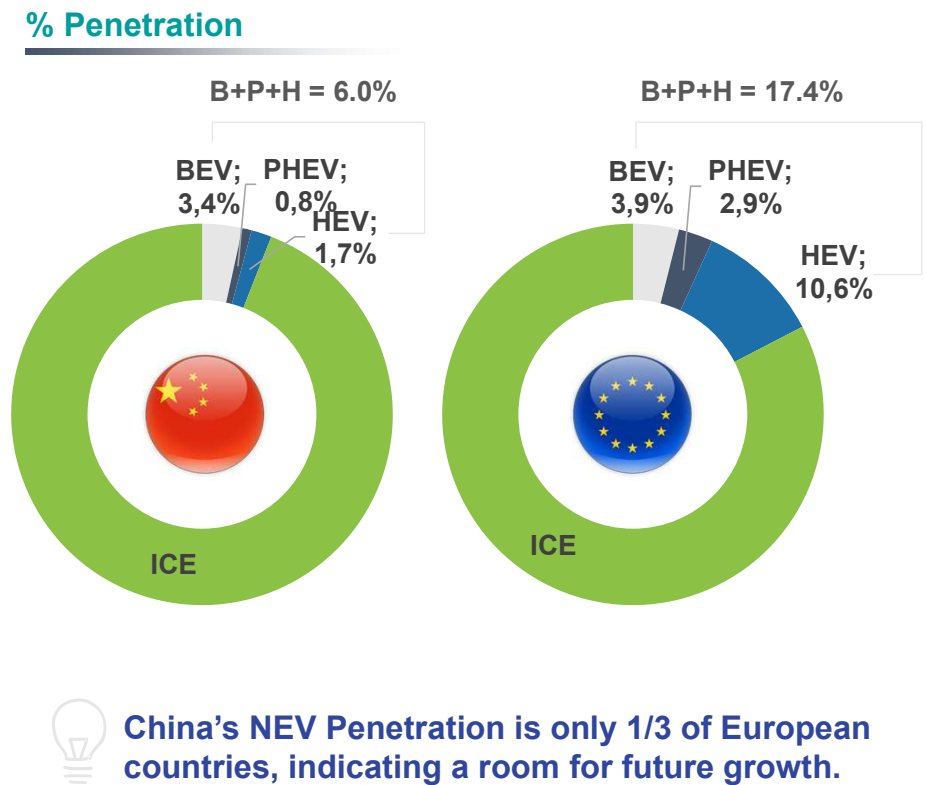
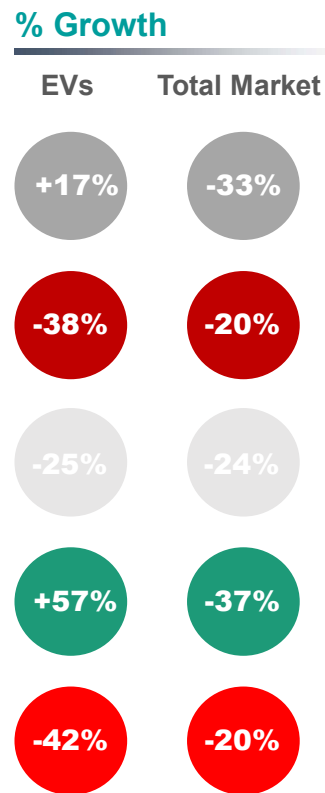




# Sales of EV are obviously depending on subsidies: As a consequence sales in China dropped and in Europe increased even despite Covid19.

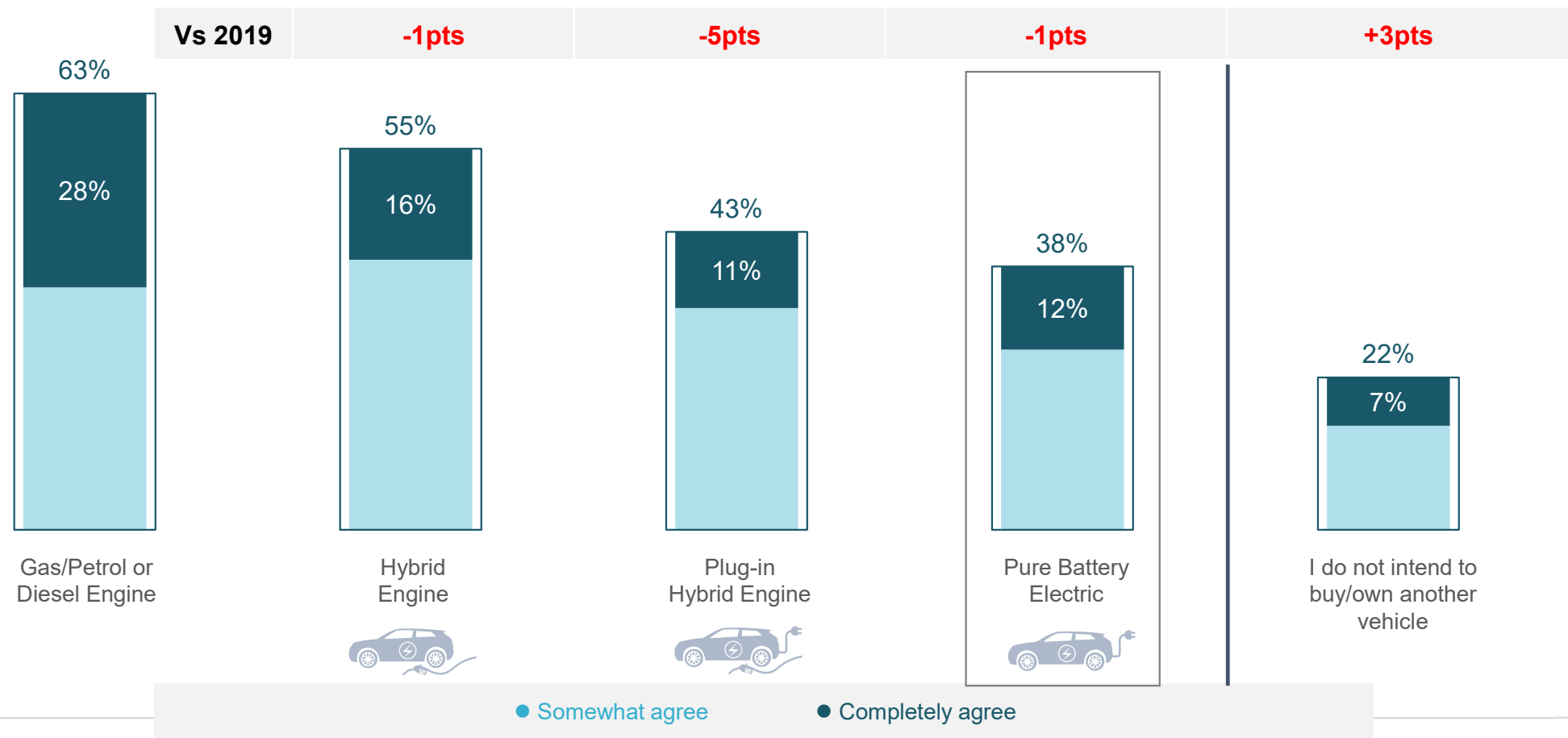


Source: EV Volumes & CPCA



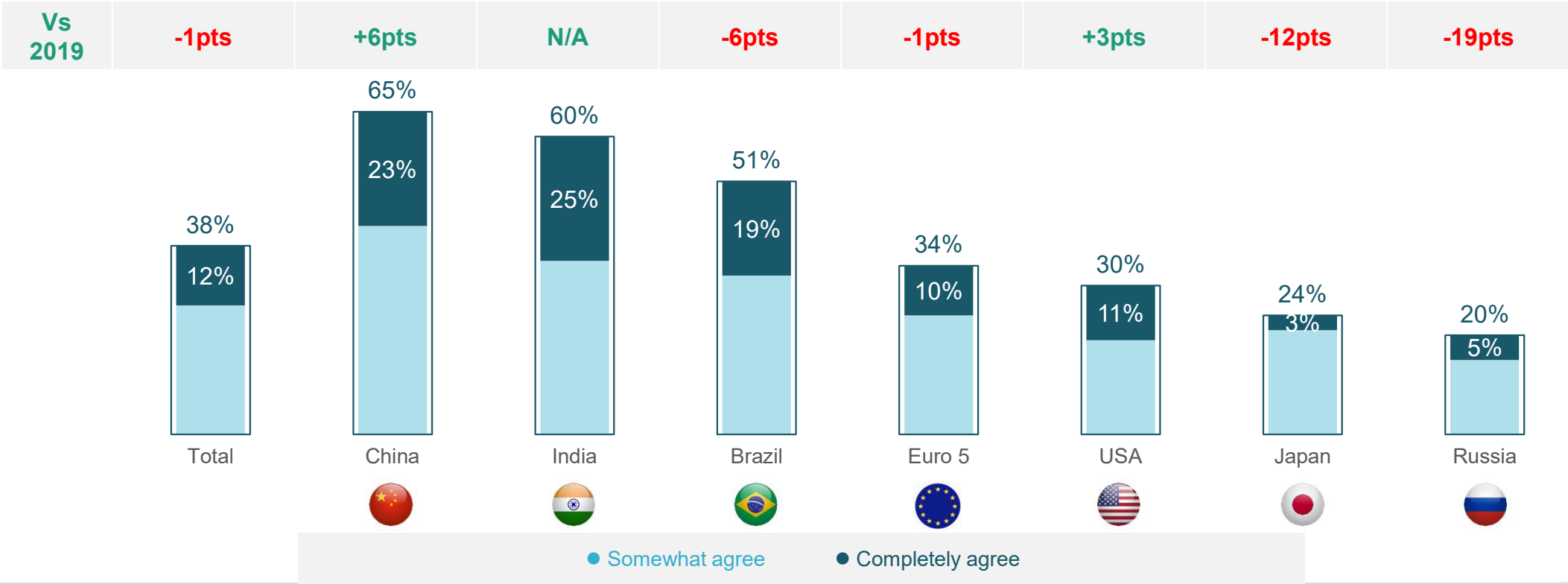
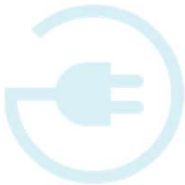
# 38% of car owners seriously consider a BEV for next purchase, 12% seriously

I would consider a vehicle with...



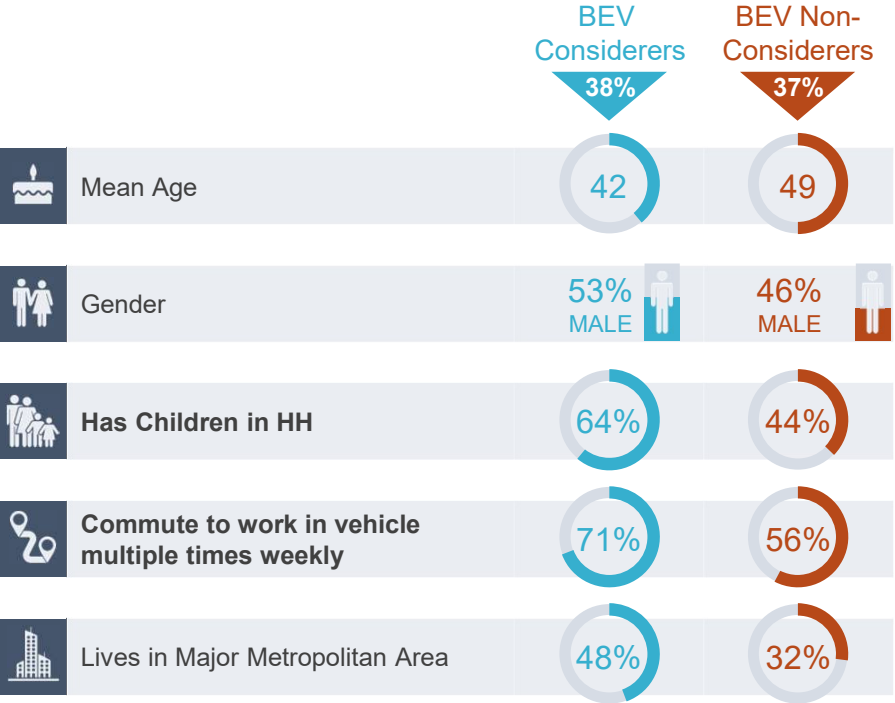
# Currently BEV are far more considered in China, India and Brazil as in Western markets

I would consider a pure battery electric vehicle

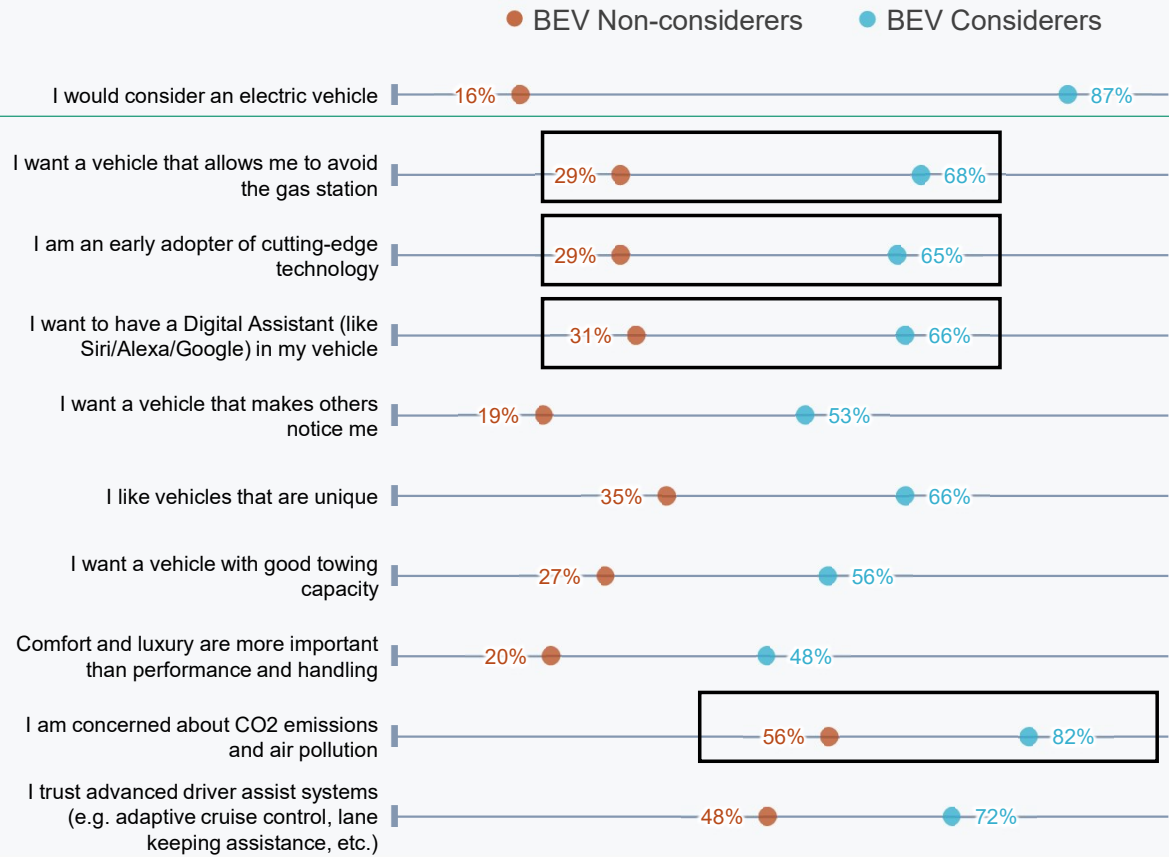




# Young urban male with children are more likely to consider E-cars.



## Attitudes of BEV Considerers (% Agree)



**Environmental factors, convenience and low cost of ownership are the main benefits. On the other hand Battery life, driving range and charging infrastructure are the main barriers.**

**Benefits** Impacting BEV Consideration  
(Showing top 10 benefits)

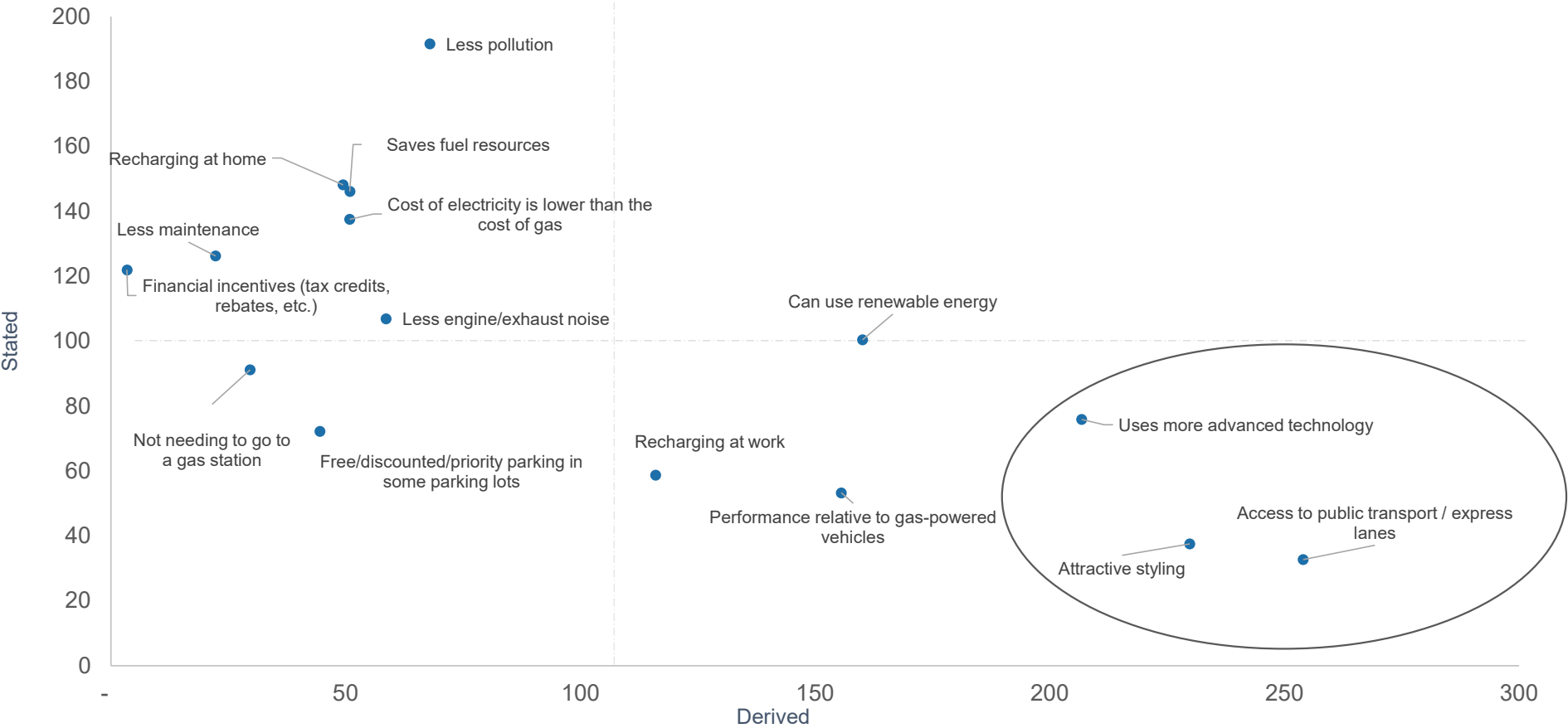
|   |     |
|---|-----|
| Less pollution                                    | 42% |
| Recharging at home                                | 32% |
| Saves fuel resources                              | 32% |
| Cost of electricity is lower than the cost of gas | 30% |
| Less maintenance                                  | 27% |
| Financial incentives for purchasing               | 26% |
| Less engine/exhaust noise                         | 23% |
| Can use renewable energy                          | 22% |
| Not needing to go to a {gas / petrol} station     | 20% |
| Uses more advanced technology                     | 16% |

**Barriers** Impacting BEV Consideration  
(Showing top 10 barriers)

|  |     |
|--|-----|
| Battery life                                   | 38% |
| Driving range                                  | 35% |
| Few public charging stations                   | 35% |
| Recharging time                                | 34% |
| Affordability                                  | 28% |
| Battery pack replacement cost                  | 27% |
| Higher overall cost of ownership               | 25% |
| Unproven reliability (i.e. not 'tried & true') | 14% |
| Few models available                           | 14% |
| Figuring out how to charge at home             | 14% |

# Apart from stated benefits there are underlying factors driving interest

Benefits Impacting BEV Consideration Derived\* by Stated

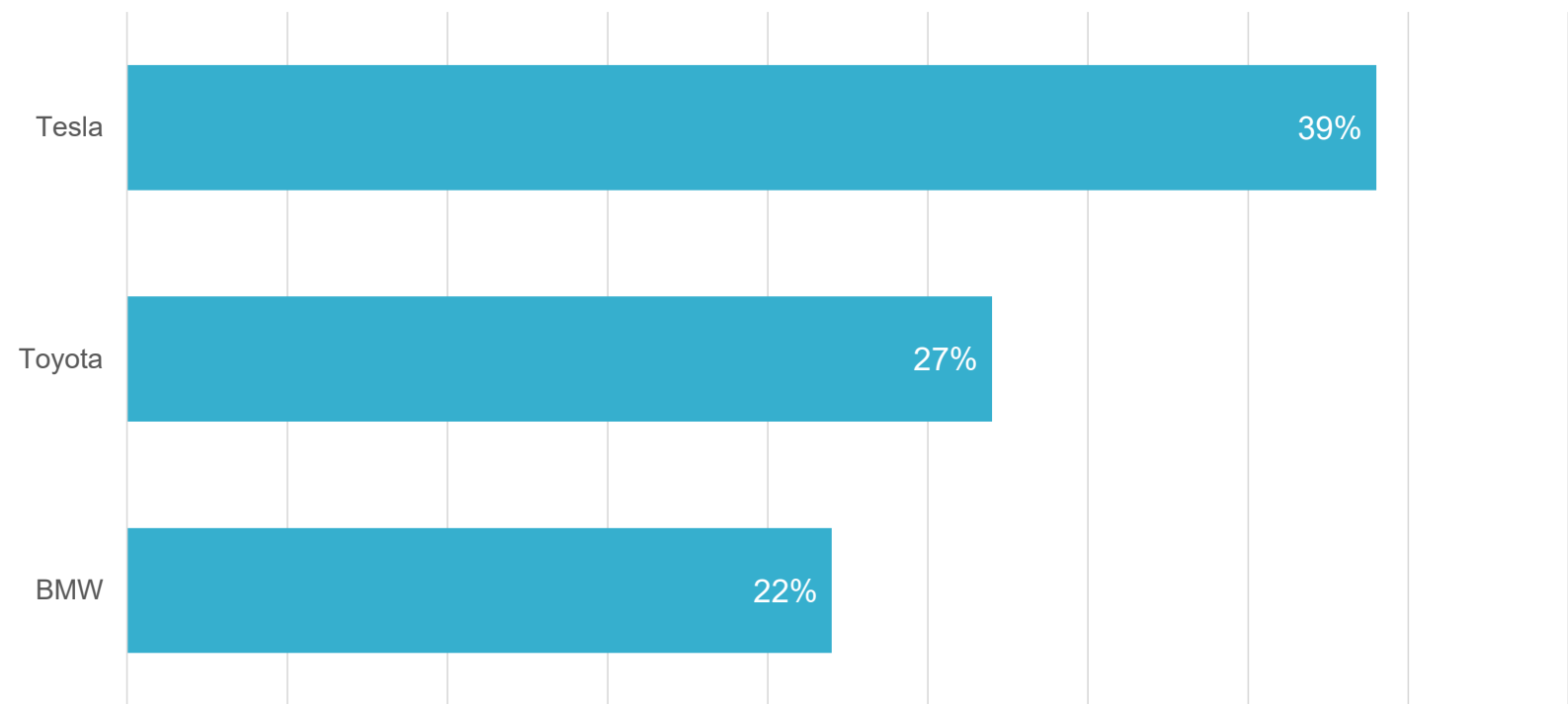


\*Derived regression analysis compared to BEV consideration.



# Tesla, Toyota and BMW are perceived to be the primary providers of BEVs in the next 5 years, which is the same as 2019.

Companies do you feel will be the primary provider of BEVs in the next 5 years?  
(Showing Top 5)



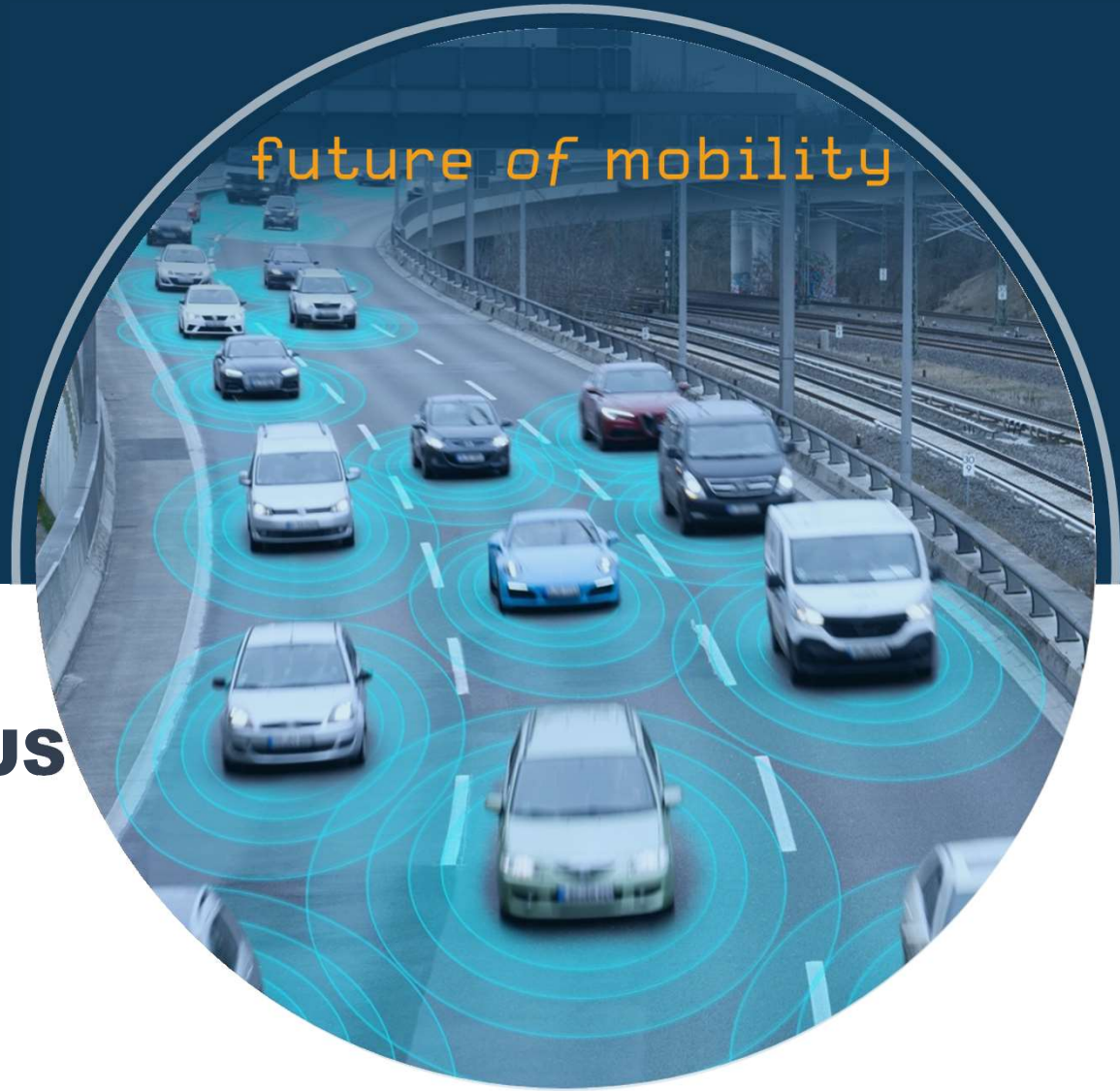
# Key Insights & Implications

- Despite CoVid 19 the interest for and consideration of electric cars remain on same level in Europe and US. In China future consideration is growing although subsidies has been reduced. We should see **increasing BEV acceptance** going forward
- **Environmental factors, convenient home charging** and **low cost of ownership** are the most mentioned **benefits** most likely to increase BEV consideration.
- There are additional underlying key motivators for BEV buyers including **access to express lanes, attractive styling** and **advanced technology**. Marketing communications highlighting these features will be beneficial in expanding the adoption of BEVs.
- The primary **barriers** limiting ownership of BEVs are **battery life, range, lack of public charging stations, recharging time** and **affordability**.
- Assuming the industry will continue in improving all those factors, **the share of BEV will grow!**



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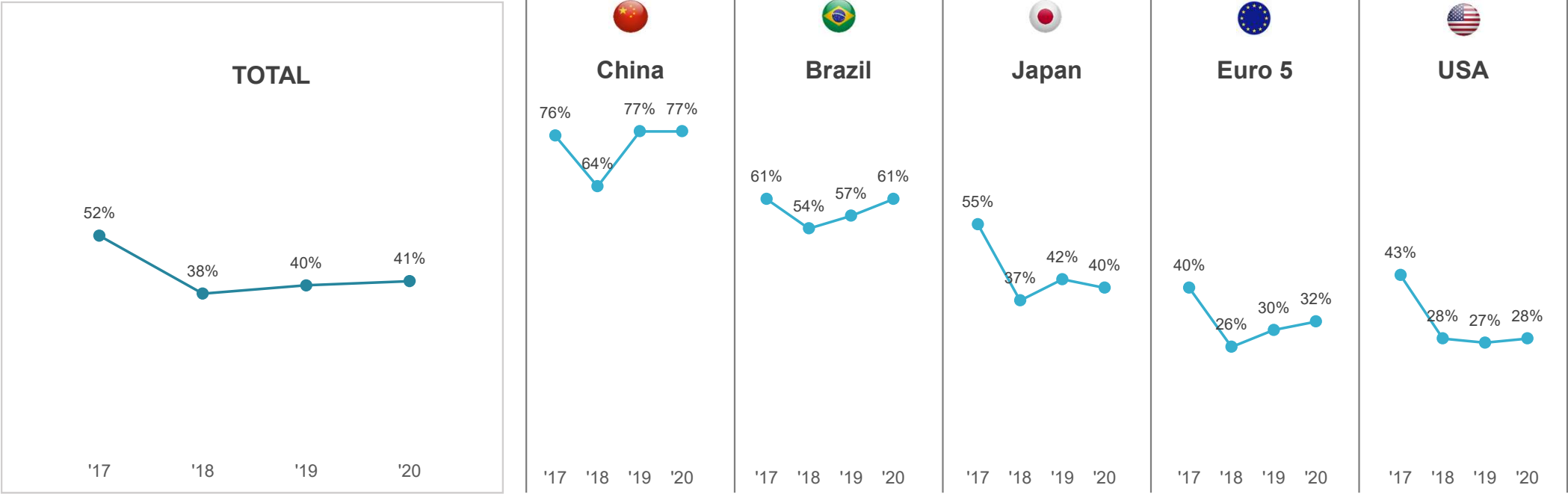
# WHAT DO CAR OWNERS THINK ABOUT AUTONOMOUS & CONNECTED CAR FEATURES





# Interest in an Autonomous Driving Vehicle is coming back slowly after dropping a couple years ago.

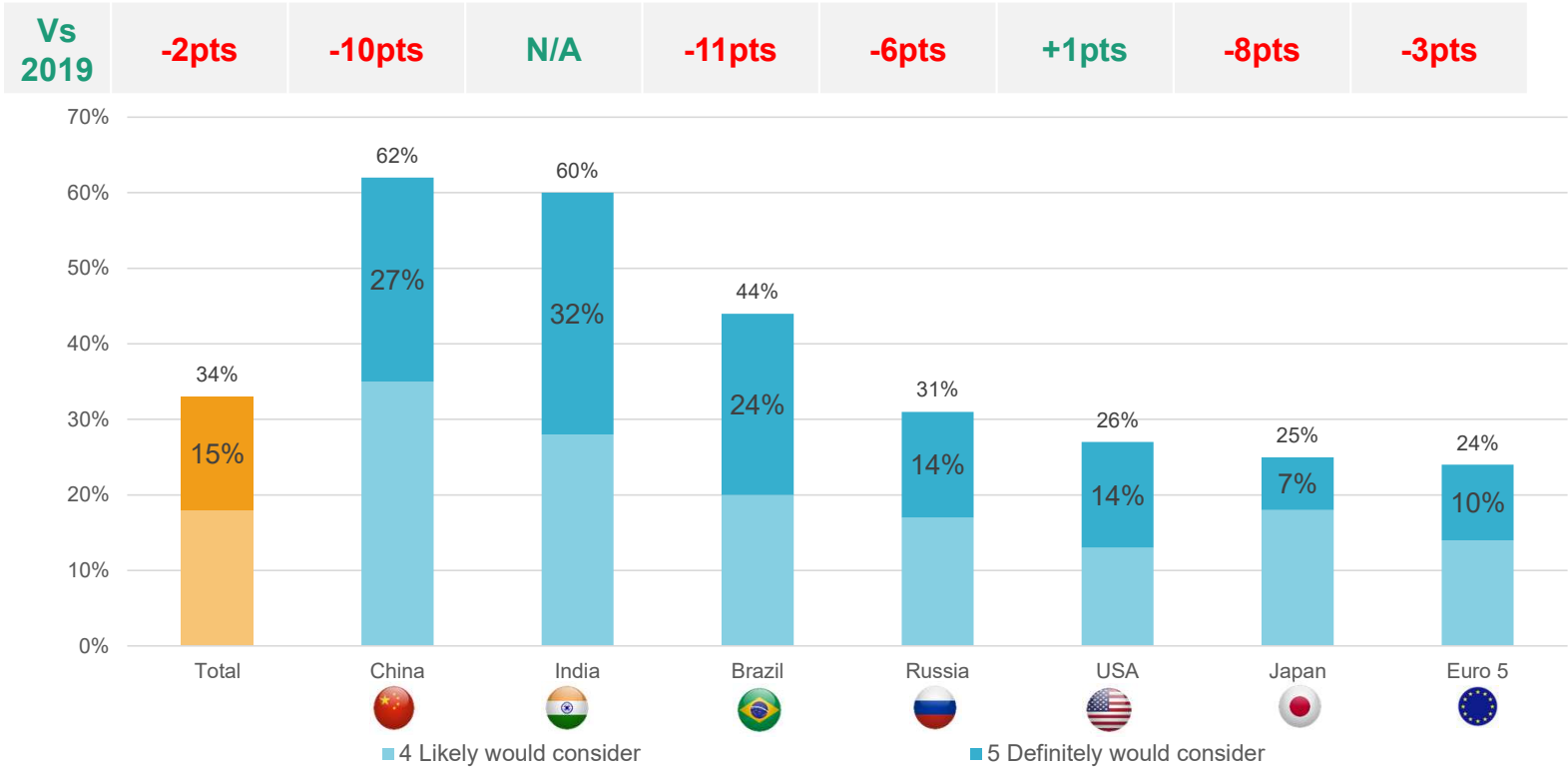
## Interest in Autonomous Driving Vehicle



Top 2 Box %

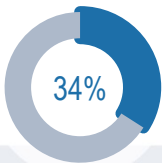
# Globally, one-third would consider a fully autonomous vehicle. BRIC countries have higher consideration than the US, Japan, and EURO5.

Likelihood to Consider a Vehicle with Autonomous Mode



# Who is most likely to consider a vehicle with autonomous mode?

## Likely Considerer



More likely 18-39 (Gen Y/Z)



Skews male



Parent to multiple children



Longer commute, typically in personal vehicle



Lives in a large metro area



- ✓ Trust ADAS; value safety
- ✓ Early adopters; like digital assistants
- ✓ Enjoy driving; want a well-rounded, versatile vehicle
- ✓ Less manufacturer loyalty

## Moderate Considerer



On average 40-54 (Gen X)



Even gender split



Parent to one child



Average commute, use public transit, walk, and bike more often

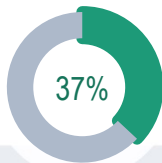


Lives in a smaller metro area



- ✓ View cars as more than simple transportation
- ✓ Cares about styling
- ✓ Less price-sensitive

## Unlikely Considerer



Primarily 55 or older (Baby Boomers)



Skews female



Empty nesters



Shorter commute, work from home, or retired



More often live in a suburban or rural area

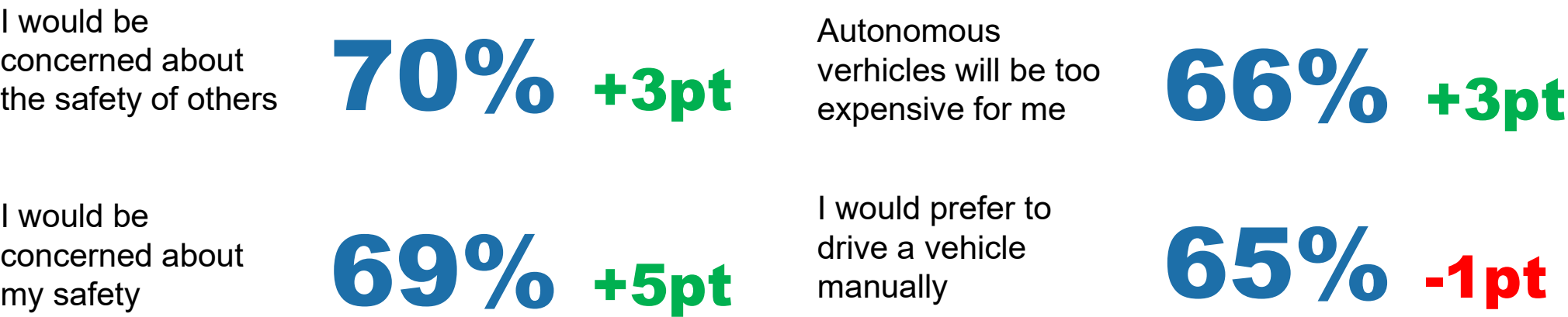


- ✓ Pragmatic
- ✓ Want a vehicle that has good gas mileage
- ✓ Looking for a low total cost of ownership

# Safety has become even more important as last year








## Agreement with Statements Related to Autonomous Vehicles

Top 2 Box





# Accident Avoidance, Advanced Driver Assistance Systems and Emergency Services have the highest interest

| Autonomous /<br>Connected Feature     | TOTAL |  USA |  China |  Japan |  Brazil |  Euro 5 |  Russia |  India |
|---------------------------------------|-------|---|---|---|--|--|--|---|
| Accident Avoidance                    | 68%   | 61%   | 86%   | 62%   | 78%  | 62%  | 73%  | 82%   |
| Advanced Driver Assistance Systems    | 62%   | 53%   | 78%   | 49%   | 72%  | 56%  | 66%  | 78%   |
| Emergency Service                     | 62%   | 52%   | 77%   | 40%   | 77%  | 58%  | 61%  | 82%   |
| Proactive Vehicle Alerts              | 55%   | 47%   | 82%   | 34%   | 72%  | 46%  | 63%  | 75%   |
| Automated Parking                     | 54%   | 37%   | 80%   | 37%   | 69%  | 46%  | 61%  | 78%   |
| Voice-Activated In-Vehicle Controls   | 49%   | 40%   | 71%   | 25%   | 67%  | 42%  | 53%  | 74%   |
| Vehicle Updates/Alerts                | 49%   | 44%   | 66%   | 27%   | 66%  | 43%  | 49%  | 74%   |
| Vehicle Service/Description Assistant | 46%   | 40%   | 69%   | 22%   | 63%  | 37%  | 52%  | 74%   |
| Remote Vehicle Status Updates         | 46%   | 32%   | 71%   | 26%   | 63%  | 36%  | 55%  | 72%   |
| Autonomous Driving Vehicle            | 43%   | 28%   | 77%   | 40%   | 61%  | 32%  | 44%  | 68%   |
| In-Vehicle Enhancements               | 43%   | 32%   | 67%   | 25%   | 66%  | 34%  | 45%  | 69%   |
| Personal Productivity Assistant       | 40%   | 31%   | 66%   | 16%   | 61%  | 30%  | 47%  | 70%   |
| Remote/Shared Vehicle Locator         | 40%   | 25%   | 69%   | 20%   | 66%  | 31%  | 38%  | 71%   |
| Personalized Content                  | 37%   | 25%   | 62%   | 18%   | 59%  | 28%  | 32%  | 68%   |

Top 2 Box %

# ACCIDENT AVOIDANCE

FEATURE RANKED **1** OUT OF 14 FEATURES

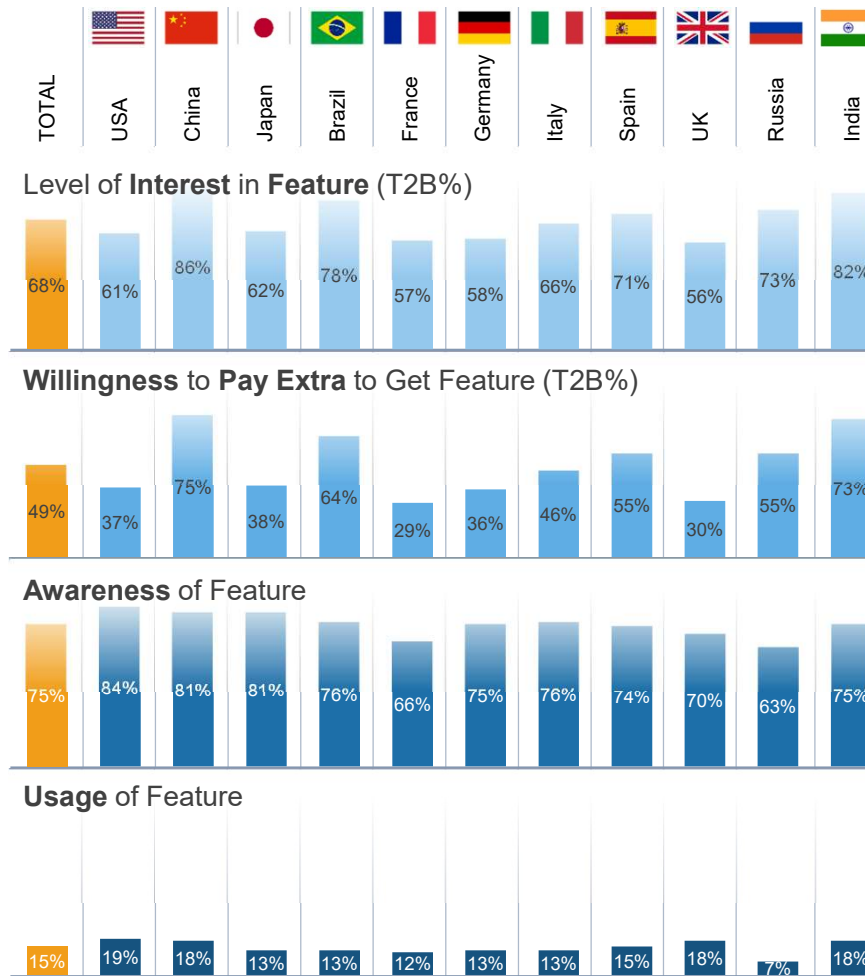
RANKED BY COUNTRY:

Interest

Awareness

|  |         |   |   |
|--|---------|---|---|
|  | USA     | 1 | 2 |
|  | China   | 1 | 4 |
|  | Japan   | 1 | 1 |
|  | Brazil  | 1 | 4 |
|  | France  | 1 | 5 |
|  | Germany | 1 | 5 |
|  | Italy   | 1 | 4 |
|  | Spain   | 1 | 6 |
|  | UK      | 1 | 3 |
|  | Russia  | 1 | 7 |
|  | India   | 1 | 7 |

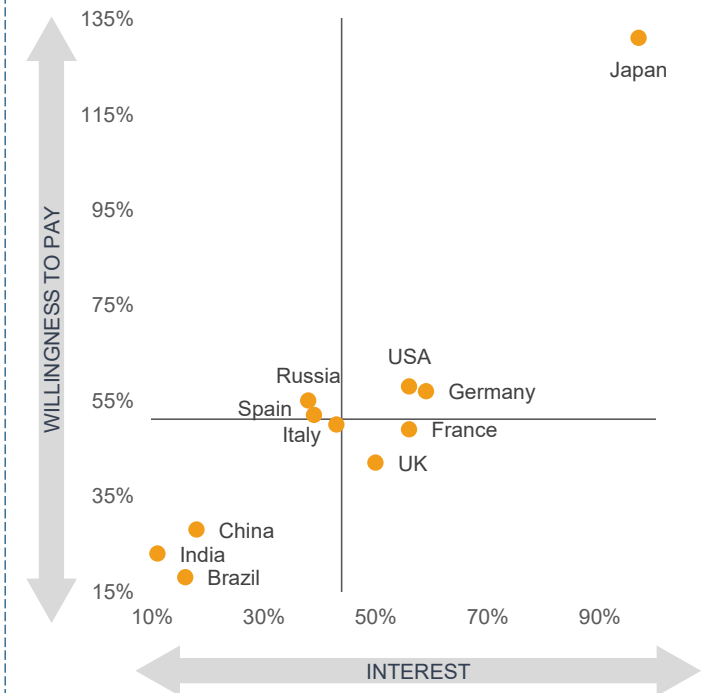
Accident Avoidance will apply automatic emergency braking and steer the vehicle away from obstacles to avoid an accident



## Key Findings

- Accident Avoidance has the highest overall interest, ranking first in every single country.
- This feature also has high awareness as three-fourths of new car buyers know about it.
- Japanese new car buyers have the strongest interest in and willingness to pay for Accident Avoidance relative to other features.

## Interest vs Willingness to Pay



Normalized data – difference from country average  

$$\left[ \frac{\text{Feature \%} - \text{Country Average \%}}{\text{Country Average \%}} \right]$$



# Key Insights & Implications

- **Interest** on Autonomous driving as well as **consideration** of purchasing (semi-) autonomous vehicle **remain on same level, in some markets even declined**
- Main reason may be the news about accidents with autonomous vehicles, as customers have more concern about **safety** of their own and others on the road.
- To broaden the interest, companies need to do two things:
  - Trial: once consumers experience autonomous whether as the driver or rider will help to acceleration acceptance. The capability of **semi-autonomous** can be leveraged to **showcase** what is possible in certain situations.
  - Safety: position how the new features can improve safety by “helping” to **avoid accidents** altogether.
  - Plus, communicating the **level of control** a consumer has in any of the advanced or connected car features is important. Consumers desire to know they will be alerted with either sound, visual or haptics to provide confirmation of movements by the vehicle. The added communication between the vehicle and the consumer will build trust and confidence in the features to know their limitations and when to use them most appropriately.



## IPSOS S3 WHITEPAPER ON CHINA'S CONNECTIVITY TRENDS PUBLISHED JULY 2020







# The car of the future is being redefined...

The automotive industry is increasingly seeing new waves of promising ICT technologies such as artificial intelligence, connectivity solutions, 5G, cloud service, and more. Over the next 5-10 years, auto + technology integration will be further enhanced

- How will new technologies further empower the auto industry?
- How will new technologies redefine “the car of the future”?
- More importantly, how should auto OEMs identify opportunities and leverage technological trends to take the lead...

# ICT technologies are penetrating across mobility scenarios

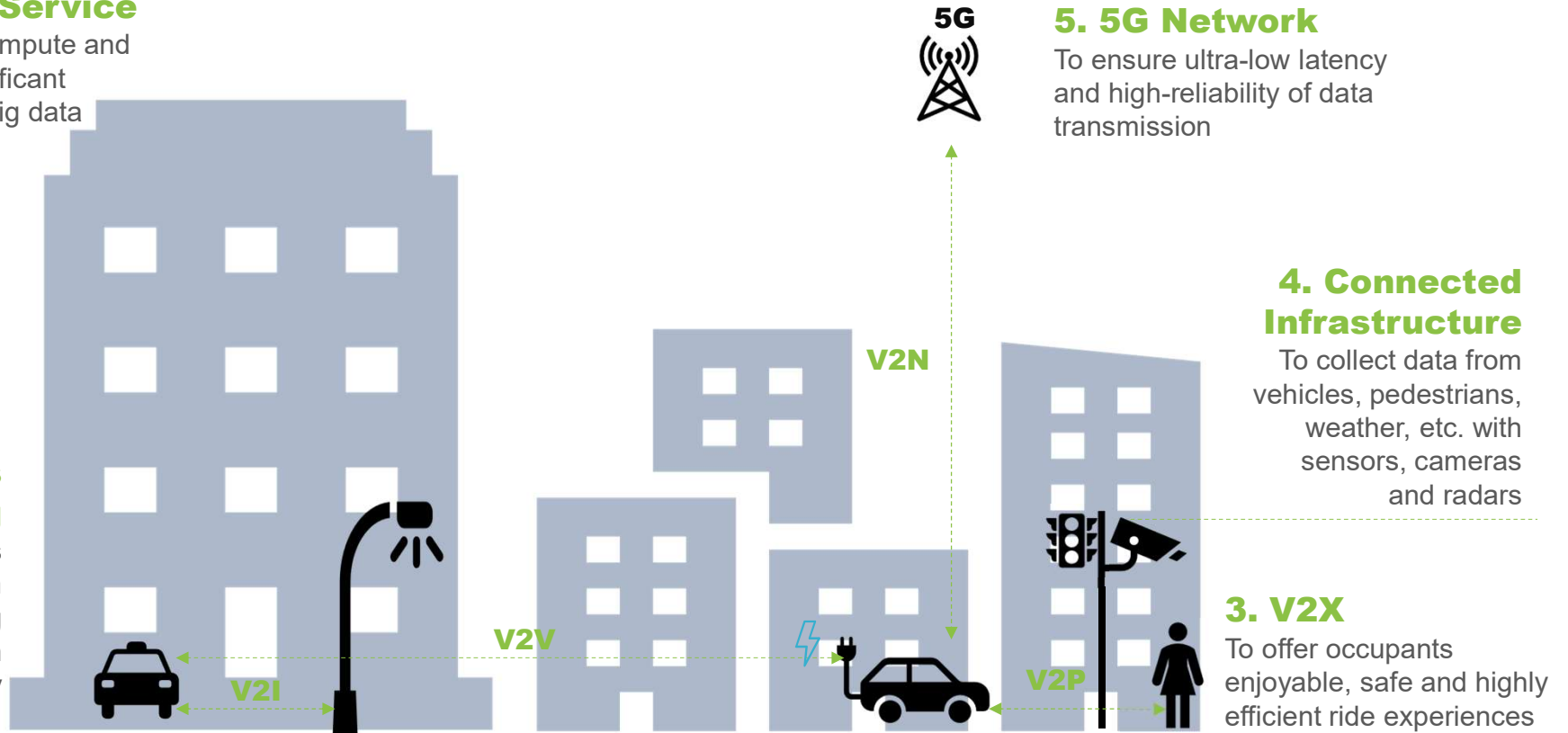
## 1. Cloud Service

To collect, compute and analyse significant amounts of big data



## 2. Autonomous Driving

To achieve full autonomous driving in the long-term through AI, machine learning and hardware with high computing capacity



## KEY TOPICS

### > INTELLIGENT CONNECTED VEHICLES

Key milestones for intelligent connected vehicles and future developmental directions

### > AUTONOMOUS DRIVING

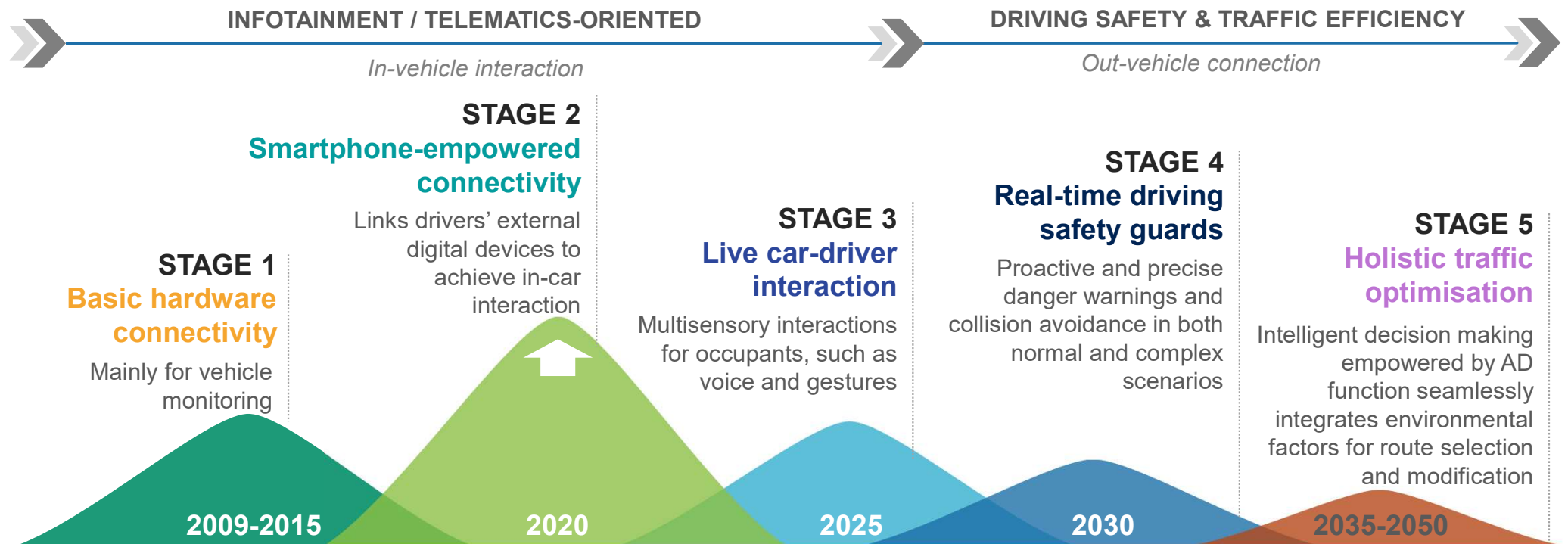
Current status quo and future trends of ICV-enabled AD in China

### > IMPLICATIONS FOR OEMs

Key opportunities and challenges brought about by new technology integrations



**Stage 2 have currently achieved wide-spread adoption mainly via individual digital terminals, while Stages 3 and 4 are expected to gain more prominence in the next decade**





# Auto operating system upgrading and AI-driven multisensory function continue to drive ICV\* development



As one of the key elements of the HMI (Human-Machine Interface) system, the AOS (Auto Operating System) plays an important role in addressing driver and occupant requirements.

Most AOS (e.g. Apple CarPlay and Android Auto) currently still leverage external digital terminals such as smartphone maps to achieve basic functions and interactions.

Further modular integration, application ecosystem development and adoption of new AI-derived technologies will enable independent, highly efficient and multisensory connections between cars, drivers and occupants.



*The evolution of AI will be very similar to that of the internet over the past 20 years, but it will happen faster: In 10 years, AI is expected to penetrate every aspect of human life and become a daily tool – a must for work, commuting, and life*

*– Baidu, Business Intelligence Consultant*

To achieve multisensory interactions, AI-empowered applications (such as computer vision, voice and nature language processing) are expected to be widely adopted by the auto industry

# AOS is still at the development stage; further function comprehension and integration are expected by both OEMs and tech companies

## Key development trends of AOS in China

### A multi-functional applications ecosystem is emerging

- **More infotainment functions** will be launched in AOS to enable enjoyable ride experiences
- Functions to further ensure **driving safety and efficiency** will be launched synchronously with the process of AD development

### Hardware and software modules will be further integrated

- **Both hardware** (e.g. vehicle control, power system) and **software modules** (e.g. infotainment/telematics) linked to AOS will be integrated into a few domains, which may help reduce energy consumption

### OEMs and tech companies are competing in the AOS market

- Tech companies (such as BATH\*) are developing AOS by leveraging their mobile application ecosystem
- OEMs have also started developing their own AOS to ensure data ownership and business independence

## Key AOS providers/OEMs

### ANDROID



### LINUX



### QNX

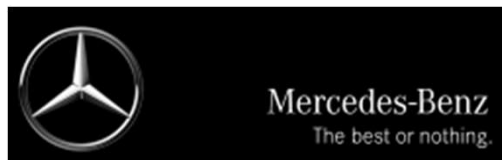


# Mercedes-Benz and Alibaba are exploring different ways to develop AOS

**To ensure autonomy, Mercedes-Benz is investing heavily in AOS & software development**

Ola Kallenius, CEO of Mercedes-Benz, believes that AOS really matters for an OEM's future. Mercedes-Benz set up Mbition (a software development company) for MB.OS development in 2017 with the aim of applying it in all MB car models by 2024.

Through applying its own AOS, MB aims to offer better driving experiences, and enhance ownership of its customers' driving data. MB also has plans to explore new revenue models via big data analysis, software upgrades, etc.



**Alibaba chose “AOS + TSP\*” integration to realise user-friendly HMI and to aggressively build up its ecosystem**










AliOS integrates the applications in Alibaba's ecosystem with its TSP server to realise one ID for all applications via Alipay verification. This provides consumers with more convenience and enables comprehensive consumer data collection.

In addition, Alibaba is developing AOS-based applications to achieve an in-car ecosystem that will also fully link with its existing ecosystem by leveraging one user ID.



# AI-derived technology applications are poised to further empower ICV multisensory live interactions

## AI technology implications for ICV

| AI tech           | Purpose  | 2020 scenario  | 2030 scenario  | <p>3 types of AI application providers are expected to co-exist and enhance cooperation in the future</p> <p><b>1. Universal Giants</b></p> <p> </p> <p> </p> <p><b>2. AI Application Specialists</b></p> <p> </p> <p> </p> <p><b>3. Industry-Focused Players</b></p> <p></p> |
|-------------------|--|--|--|--|
| CV                | To extract info based on imagery, e.g. facial/image recognition<br><i>Tech maturity is high: Accuracy rate hit ~99% (Sense Time)</i>         | In-car: Face/gesture detection<br>Out-car: Traffic light, traffic sign and pedestrian detection              | Wide-adoption  |  |
| Voice Recognition | To identify, distinguish and authenticate the voice of an individual speaker<br><i>Tech maturity is high: Accuracy rate hit ~98% (Baidu)</i> | Intelligent voice assistant that follows basic voice instructions  | Wide-adoption  |  |
| NLP               | To automatically translate human language into specific actions<br><i>Tech maturity is medium: Accuracy rate hit ~70% (iFlytech)</i>         | Can conduct human interactions at very basic levels; bottlenecks still exist, requiring further improvements | With breakthrough in NLP, the intelligent voice assistant will interact with the driver in more humanised ways |  |



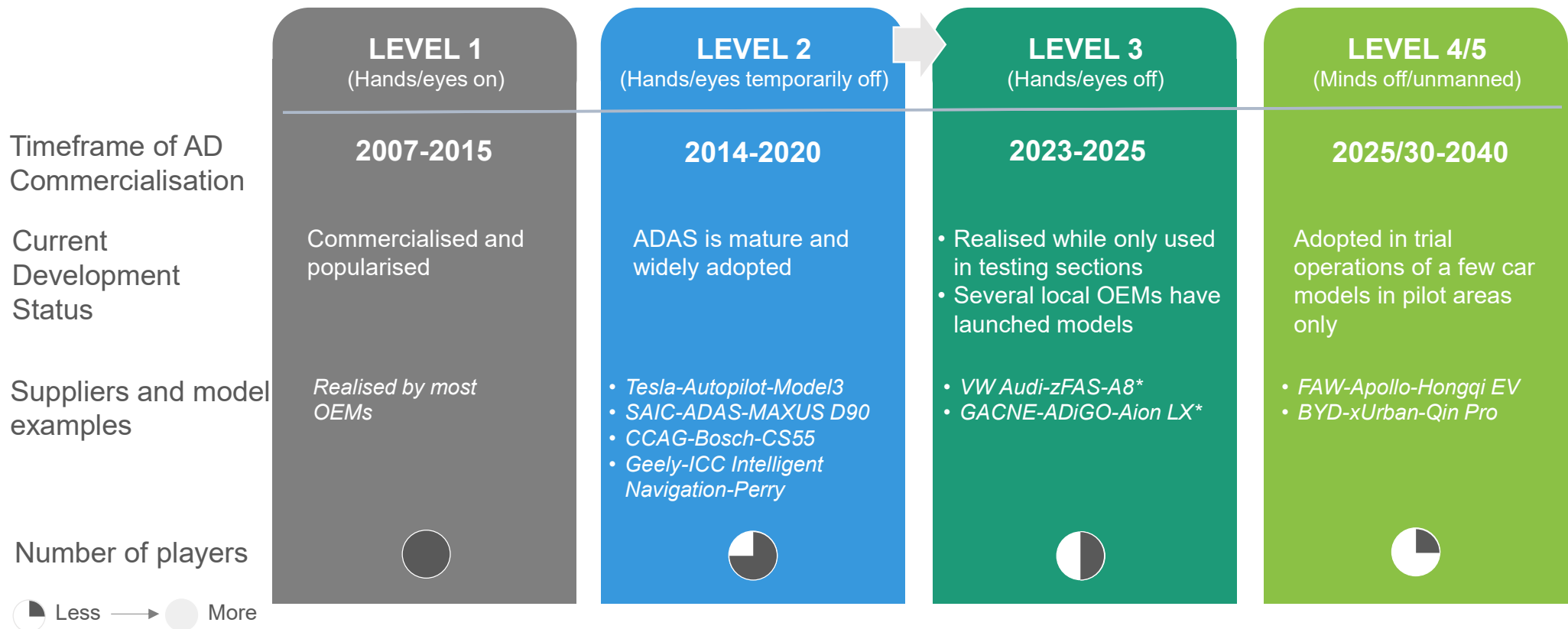


# Autonomous Driving

is the biggest thing since the Internet

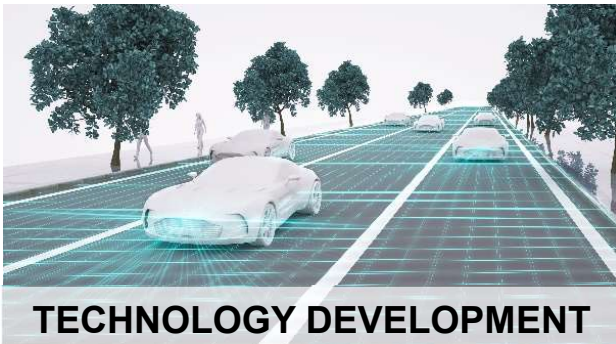
General Motors, 2017

# AD in China is aggressively moving from stage L2 to L3; L4/L5 are expected to be achieved in the next 5 to 10 years



Remark: \*As L3-level policies in China are not yet implemented, VW Audi plans to give up loading L3 system in the next-generation A8 model, GACNE-Aion Lx cannot fully function

# Continuous technology development, supportive regulations and consumer education are necessary to further drive AD commercialisation



Internet giants and OEMs will enhance collaborations and further push technology development in the following 3 directions:

1. **Environment Sensing**
2. **Computing**
3. **Car Control**



AD commercialisation also faces challenges caused by unsystematic regulations:

- Lack of intelligent infrastructure/road classification
- Unclear liability mechanism for accidents
- No market access rules for imported ICVs



Overall, end-users still show low confidence in machine capability and have zero tolerance for mistakes that endanger human safety

Privacy protection and data security will emerge as another concern along with AD/AI development











## “Camera + Radar + CV” solution aggressively promoted by Tesla continues to lead the market; wider adoption of LiDAR will depend on cost reduction

There are many important robocar sensors, but for primary perception, the two most researched and debated are LiDAR and cameras.

– Brad Templeton,  
Founder of *ClariNet*

### Comparison of Representative Sensing Solutions

Level:  Low →  High

|   | Camera +<br>Radar + CV<br>(e.g., Tesla)   | Camera +<br>Radar + LiDAR<br>(e.g., Audi A8)  |   |
|---|---|---|---|
| <b>Data collection speed</b>            |    |    | In the next 5 years, Camera + Radar + CV will continue to be the mainstream solution due to high cost-effectiveness and lower sensing requirement of L2 |
| <b>Data comprehension*</b>              |    |    |   |
| <b>Data accuracy</b>                    |    |    |   |
| <b>Energy consumption for computing</b> |  |  | With AD-L3 full commercialisation, LiDAR will be considered a must-have   |
| <b>Cost</b>                             |  |  |   |

# The AD platform market is highly fragmented and led by foreign tech and hardware players

## Future trend



## Four dimensions to evaluate AD platforms

### Processor Kit

- High performance, low energy consumption and multi-scene applicability are believed to be an evolving trend of processors.
- The processors of NVIDIA and Intel-Mobileye are widely adopted by other AD-related products. **Google, Baidu and Tesla have shifted from using external chips to self-developed chips.**

### Sensor Kit

- Most platforms use a combination of LiDAR (optional) + radar + camera.
- Most platforms use 6-15, while Google has 29 cameras with a detection range of 500 m.

### Algorithm

- High scene compatibility and high road test performance (low disengagement rate) are perceived as must-haves for advanced algorithms.
- Baidu's and Google's algorithms are compatible with various scenarios with low disengagement rates.

### Auto Industry Experience

- Early and in-depth involvement in the auto industry (e.g. Tesla and Visteon) facilitate platforms knowledge of car structures, use scenes and industrial pain points.

## Key AD platform players

### Tech Giants



### Hardware Manufacturers



### Auto Parts Supplier



### OEM





# OEMs are exploring different business models to develop AD technologies and adapt to the increasingly competitive industry landscape



## ALLIANCE BUILD-UP

Leading OEMs have been involved in two kinds of alliances to overcome AD tech barriers

- Cooperation with other OEMs to share R&D costs and exchange technologies
- Cooperation with tech companies to build a comprehensive development system

### OEM + OEM



*Since 2017, VW and Ford have cooperated in their global AD/EV R&D and have utilised channels together*

### OEM + Tech



*BMW and Intel-Mobileye started developing AD in 2016 and plan to reach mass production by 2021*



*In 2020, Volvo and Waymo will cooperate to promote BEV application of AD tech*



## ACQUISITION

OEMs have acquired tech SMB/start-ups (including chip providers and AD service firms) to leverage their tech savviness to expedite AD development



**CRUISE**

*In March 2016, GM acquired Cruise Automation (founded in 2013), a self-driving service provider, for \$600 million - 1 billion, asking it to run independently for further AD technology research*



## SELF-DEVELOPMENT

A few OEMs have established new business units or companies to develop AD without cooperating with tech companies



*In March 2018, Toyota invested \$2.8 billion to establish a new firm, Toyota Research Institute-Advanced Development, which will focus on AD software R&D*

## E/EA\* integration and centralisation are evolving alongside AD development; mass application for OEMs, however, may still be a long way off



E/EA centralisation is believed to be critical for energy saving, especially for NEVs facing driving distance challenges



Compared with NEV start-ups, E/EA transformation is more difficult and costly for traditional OEMs to realise

### 1 Distributed E/EA (Today)



### 2 Centralised E/EA (Future)

- High energy consumption due to limited functions per ECU, with every ECU processing its raw data and communicating with others in the network

- Lower energy consumption due to reduction in total number of ECUs (e.g. from 30~40 to 3~5 for a NEV car)
- Replacing ECU with cloud computing will be the ultimate goal

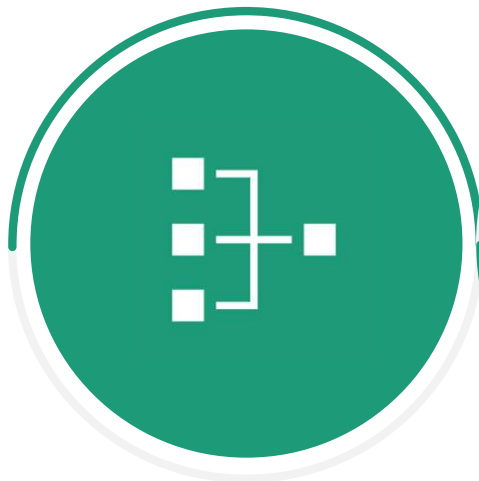
### 1 NEV start-ups leads E/EA integration

- NEV start-ups intend to design car models and build plants adapted to centralised E/EA structure from the onset

### 2 Seek short-term profitability

- With majority market share, most traditional OEMs still hold a wait-and-see attitude for E/EA integration.
- Delayed implementation will likely weaken such OEMs' future competitiveness in ICV

# E/EA integration is believed to be necessary for ensuring efficient interaction between computing and car control while optimising energy consumption



## E/EA UPGRADING

Traditional distributed E/EA needs to be further integrated in the next 3-5 years



## ENERGY ALLOCATION OPTIMISATION

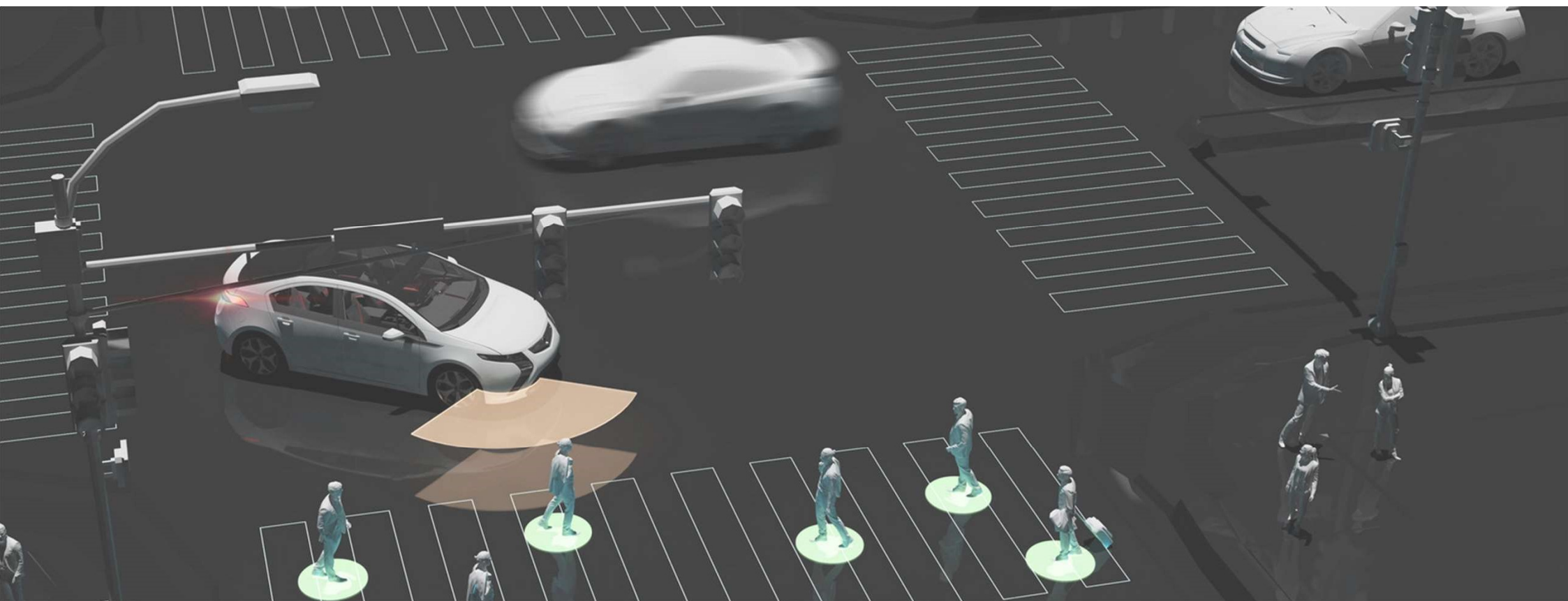
Try to minimise energy/battery consumption to handle normal/standardised traffic conditions, while saving reserve energy for complex computing



## COOPERATIVE VEHICLE INFRASTRUCTURE SYSTEM

Avoid excessive use of data computing capacity by leveraging CVIS, which can allocate part of data computing to out-vehicle cloud

- Currently, some OEMs such as Geely and Tesla have taken proactive steps on E/EA upgrading
- To maintain competitiveness, it is critical for traditional OEMs to complete the transformation

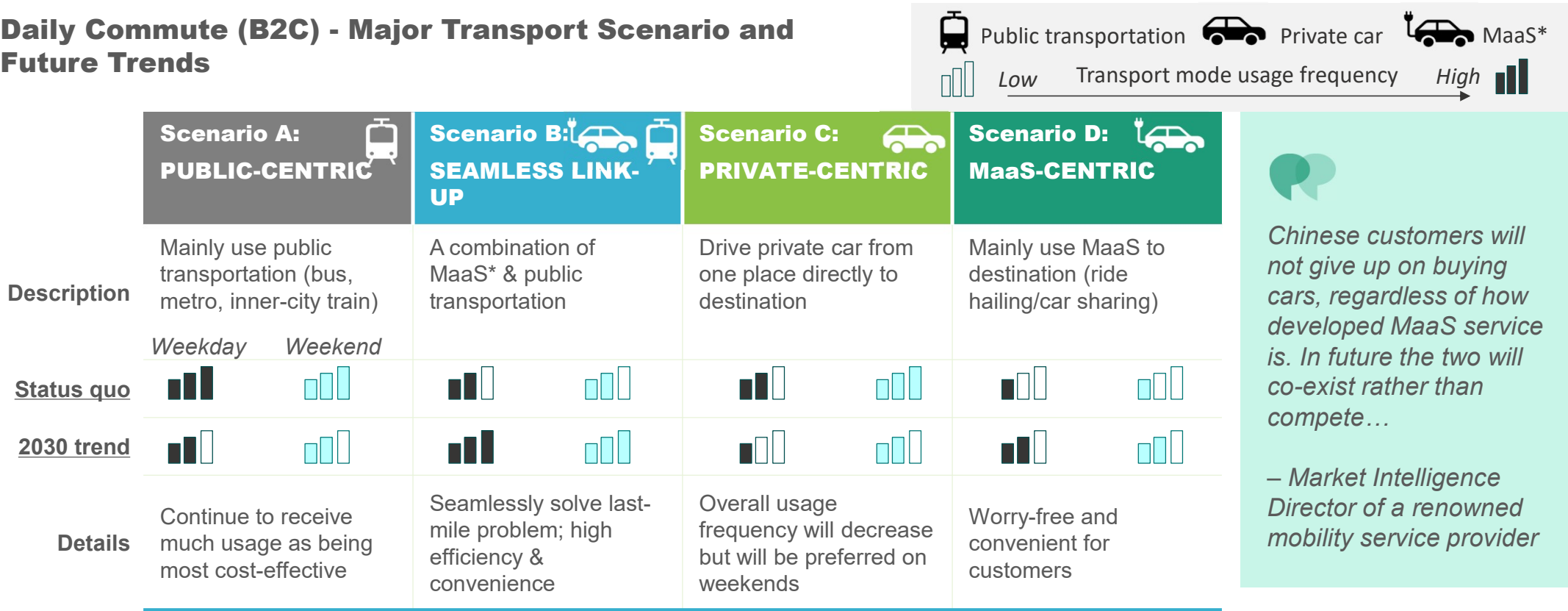


In the long run, the driver can sit back and let AI do the driving while communicating with the voice assistant to invoke other functions and enjoy enhanced in-vehicle entertainment. Combined with MaaS, general transportation will reach a higher level of efficiency.

— **Market Intelligence Director of a renowned mobility service provider**

# Over the next 5-10 years, seamless link-up scenario will be mainstream while MaaS-centric scenario will be popular; car ownership will continue with less actual usage

Daily Commute (B2C) - Major Transport Scenario and Future Trends





# Full AD is not expected to be applied in MaaS until 2030; Non-OEM B2C MaaS model is expected to become dominant and will provide high-quality services



**Full autonomous driving for MaaS will be difficult to achieve by 2030**

**Further technology developments, systemic regulations and consumer education / confidence remain key areas to be addressed**

For MaaS, employment of a large number of drivers in China poses as an additional barrier to its adoption



**Non-OEM B2C MaaS model is trending**

Non-OEM B2C MaaS model refers to drivers employed by MaaS platforms (e.g. Didi premium and luxe)

**B2C model will gain further market share and gradually take over C2C in next 5-10 years** as market standardisation will require more professionally-trained drivers

# IMPLICATIONS FOR OEMs

## COMPETITIVE COOPERATION



In a high-tech-driven industry, cooperation (alliance and M&A), especially for core technologies such as AD, AI and cloud services, is believed to be the more viable solution (as opposed to self-development) for developing a competitive edge

Evaluate internal talents/resources and optimise organisational structure (talent recruitment vs. development) to ensure smooth/efficient development and effective transition

## E/EA INTEGRATION AND PRODUCT UPGRADING



Along with ICV development, E/EA integration will be a necessity for OEMs. A roadmap with a clear timeframe for E/EA integration and a product strategy for E/EA application is of the utmost importance

On the other hand, emissions reduction/energy saving will still be key directions for product improvement in areas such as component weight & size reduction



# IMPLICATIONS FOR OEMs

## SHIFTING CUSTOMER FOCUS



With MaaS becoming increasingly mature, new mass segment car sales will be mainly driven by mobility service providers. OEMs should reconsider their target customer groups and increase marketing efforts on MaaS fleet operators

OEMs should also assess internal resources and capabilities to decide if they should venture into offering their own MaaS services or cooperate with MaaS operators via customised offerings

## CONSUMER-TAILORED ICV DESIGN



In addition to driving behaviour, it is also critical to understand in-car HMI behaviours such as voice interaction and AOS function preferences to achieve smart human-machine interactions

OEMs should aim AOS and application ecosystem efforts towards specific target audience groups (e.g. B2C-individual drivers and B2B-mobility service platforms) to increase value-add and differentiation

# QUESTIONS & ANSWERS

GAME CHANGERS





# THANK YOU.



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