

Thailand Next Step to CAV and Shared Mobility



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TOPICS

1. THAI AUTOMOTIVE INDUSTRY SCENARIO IN 2030

2. GOVERNMENT MEASURES TO ENHANCE NEXT GENERATION AUTOMOTIVE IN THAILAND

3. NEXT GENERATION AUTOMOTIVE EFFECTS ON THAI SUPPLY CHAIN

4. CONCLUSION

1. THAI AUTOMOTIVE INDUSTRY SCENARIO IN 2030

Environment concern

Super Aged Society

High-Income Nation

Human-Robot collaboration

E-Government & E-Commerce

Urbanization

SMART MOBILITY



THAILAND IN 2030

WHAT IS SMART MOBILITY ?

Accessible

Connect

Comfort & Safety

Clean & Efficiency

Affordable price



E

ELECTRIFIED



S

SHARED



A

AUTOMATED

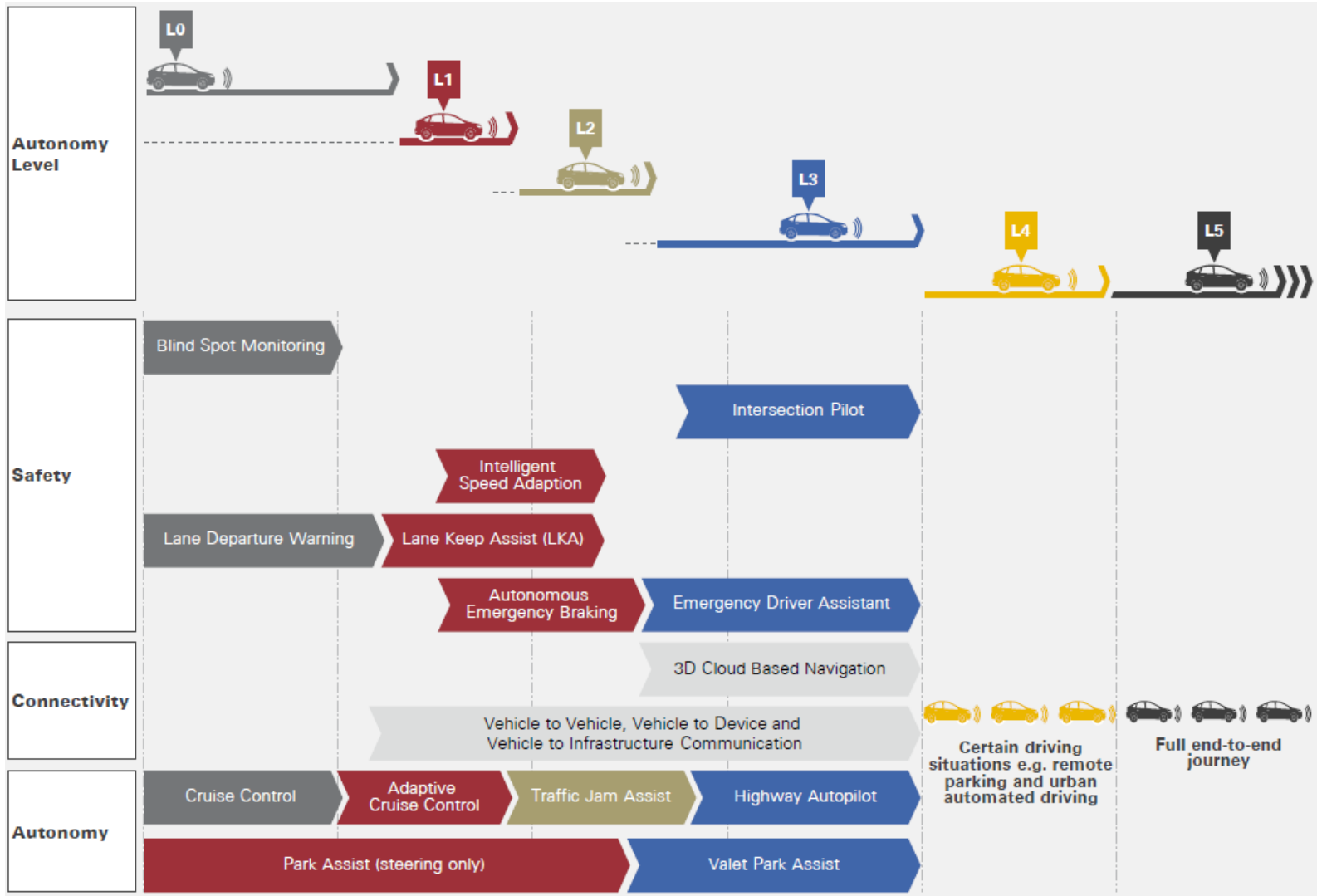


C

CONNECTED

SMART MOBILITY
RELATED TECHNOLOGIES

CONNECTED & AUTONOMOUS VEHICLE TECHNOLOGY

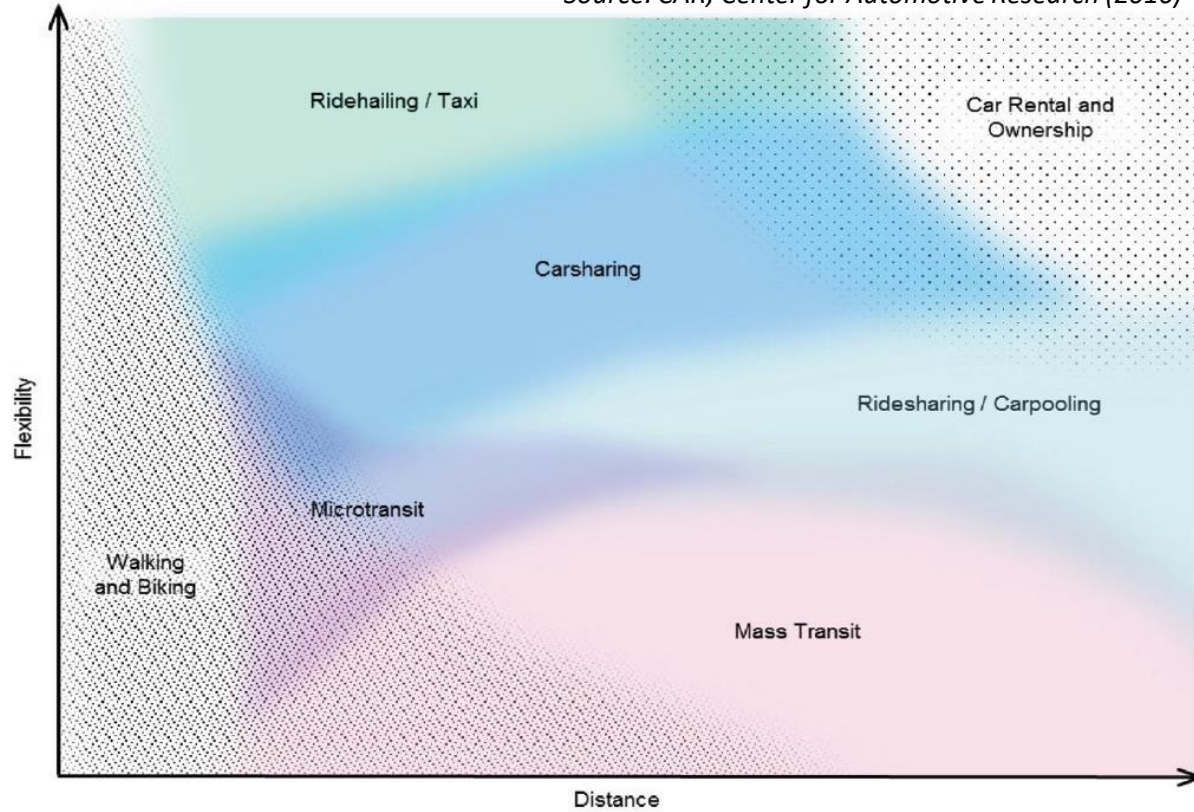


Source: KPMG (2015)

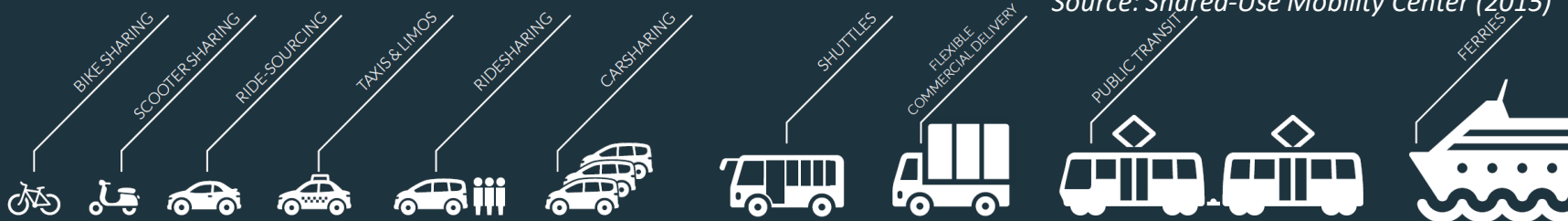
SHARED MOBILITY TYPE

Ideal Use Cases for Different Modes of Transportation

Source: CAR; Center for Automotive Research (2016)



shared-use mobility
MODES



POTENTIAL BENEFITS OF C-A-S-E TECHNOLOGY

Driving Externality	Connectivity (Full V2X)	Autonomy* (L4,5)	Shared Autonomy (L4,5)**	Electrification***
Safety	★	★	★	○
Congestion	★		●	○
Emissions	●	○	○	★
Land Use	○		●	○
Mobility	○	★	★	○

★	Strong benefits	○	Weakest benefits/no impact
●	Some expected benefits		Uncertain impact

*Autonomy is defined for this purpose as individually owned vehicle.

**Shared Autonomous Vehicles (SAV) are on-demand self-driving vehicles that operate as part of a privately or publicly managed fleet.

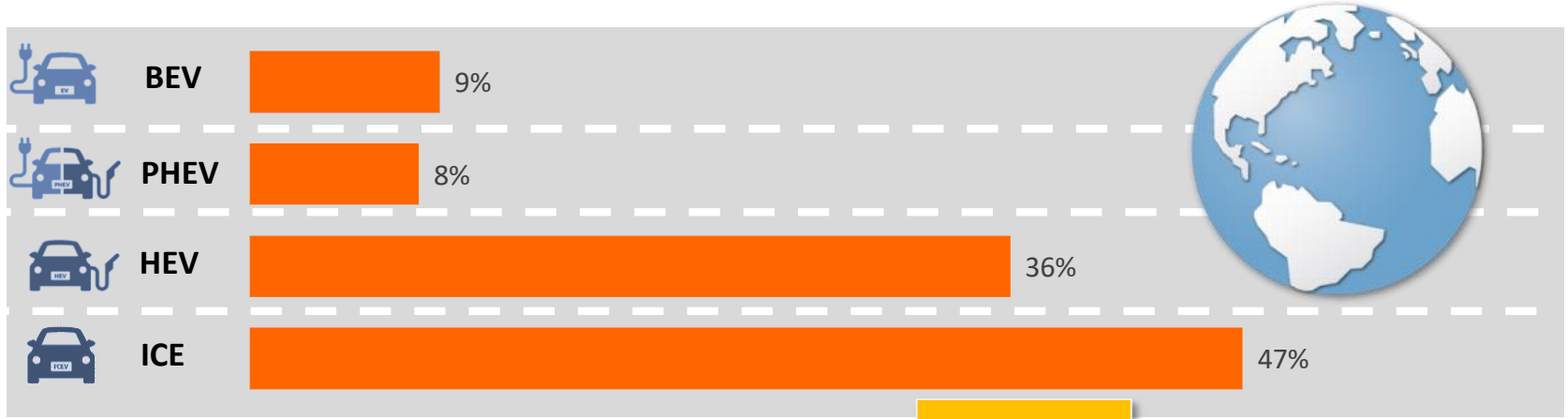
***While not a focus of this NCHRP research, the team provides assumptions of potential benefits of electrification based on known literature.

Source: Transportation Research Board of the National Academics, USA (2017)

GLOBAL VEHICLE TECHNOLOGY FORECAST IN 2030

ELECTRIFIED

Source: IHS, IEA



YEAR 2030

CONNECTED

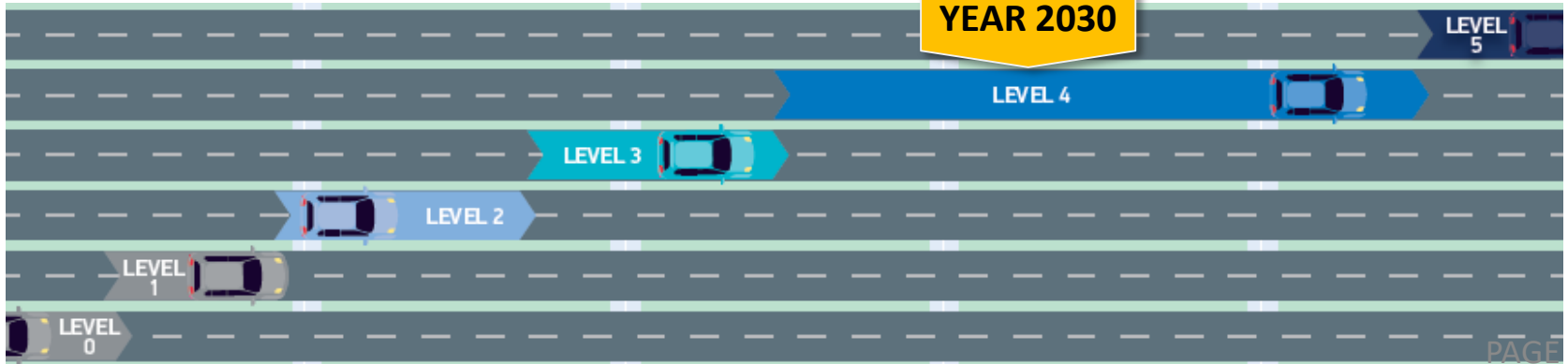
Source: SMMT (2019)



YEAR 2030

AUTOMATED

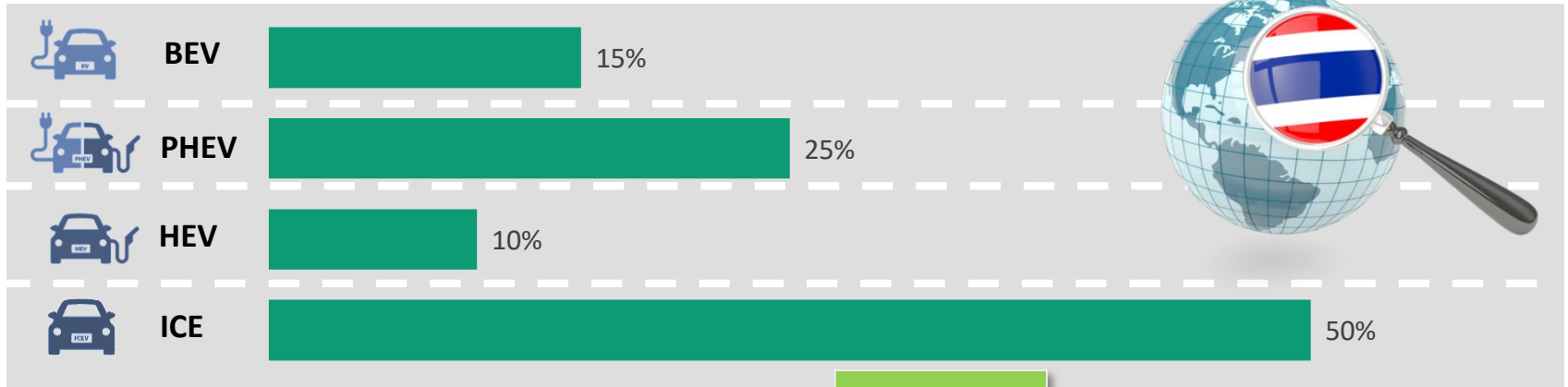
Source: SMMT (2019)



THAILAND VEHICLE TECHNOLOGY FORESIGHT IN 2030

Source: Thailand Automotive Institute

ELECTRIFIED

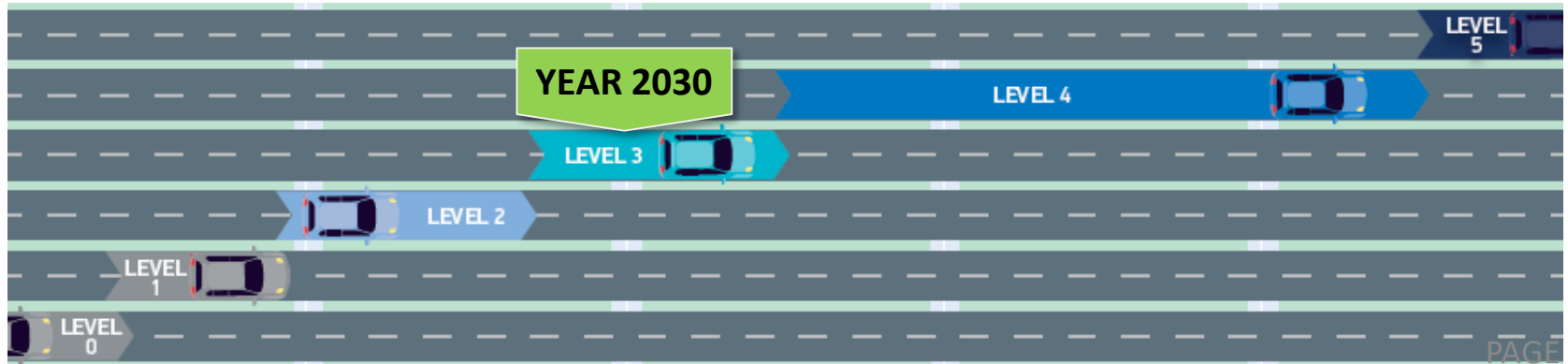


YEAR 2030

CONNECTED

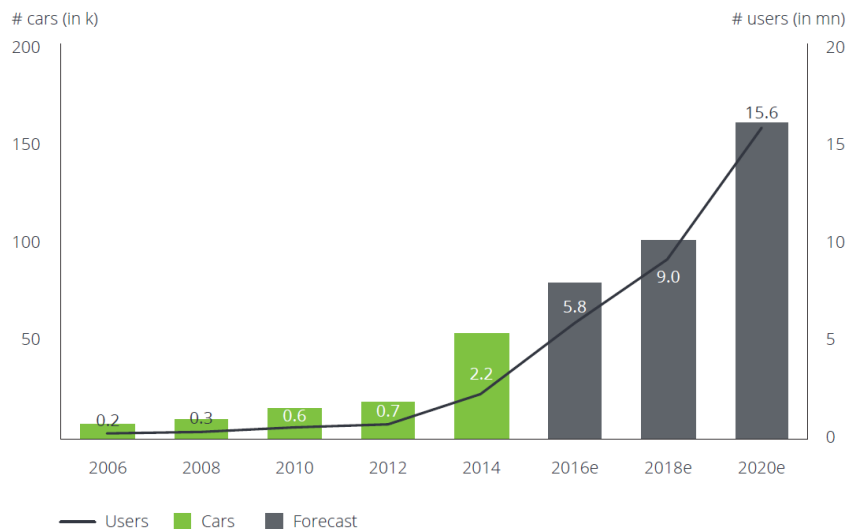


AUTOMATED



EUROPE

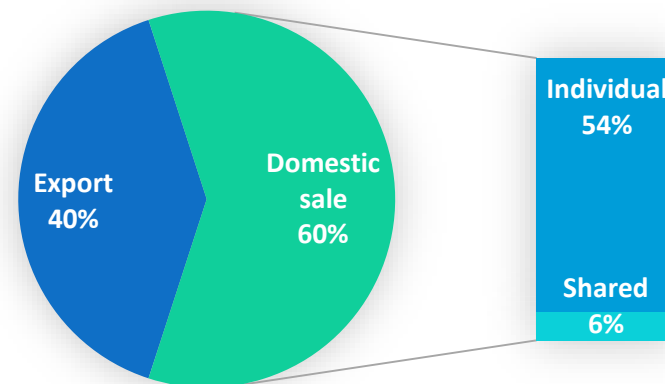
Fig. 3 – Car sharing market development for Europe* (2006–2020):



Source: Deloitte (2017)

THAILAND

➤ Shared car ratio to new car sales



10% of domestic sales

Source: Thailand Automotive Institute

2. GOVERNMENT MEASURERS TO ENHANCE NEXT GENERATION AUTOMOTIVE IN THAILAND

DEMAND

INCENTIVE FOR PUBLIC
OR COMMERCIAL USE



Truck



Bus



Van

SUPPLY

STRENGTHEN
ENTREPRENEUR
CAPABILITIES



Software
Engineering



Manufacturing
Management

INFRASTRUCTURE

PREPARE
INFRASTRUCTURE



Telecom
Infrastructure



Road & Sign



Traffic Law
and Regulation



Product Safety
and Standard

CASE STUDY; Mobility-as-a-Service in Lyon, France

Mass Transit :: Metro | Tram | Bus



Mass Transit
Common Ticket

BIKE SHARING

CAR SHARING

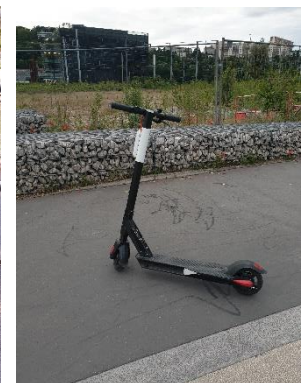
Drive Sharing :: Car | Motorcycle | Scooter | Bicycle



Station-based



Free-Floating

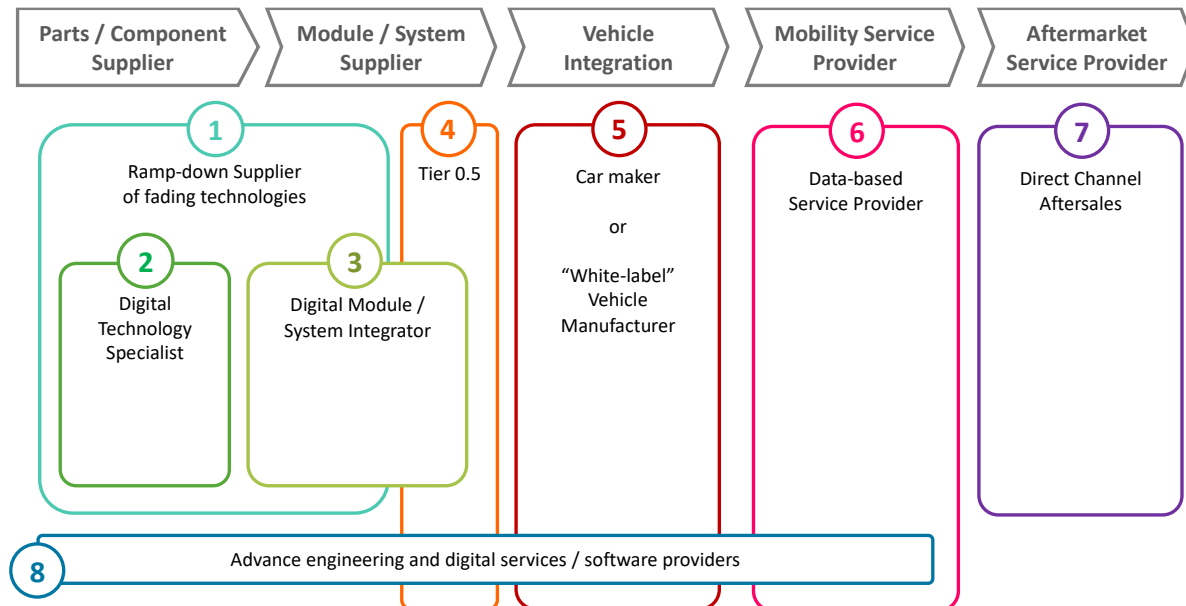
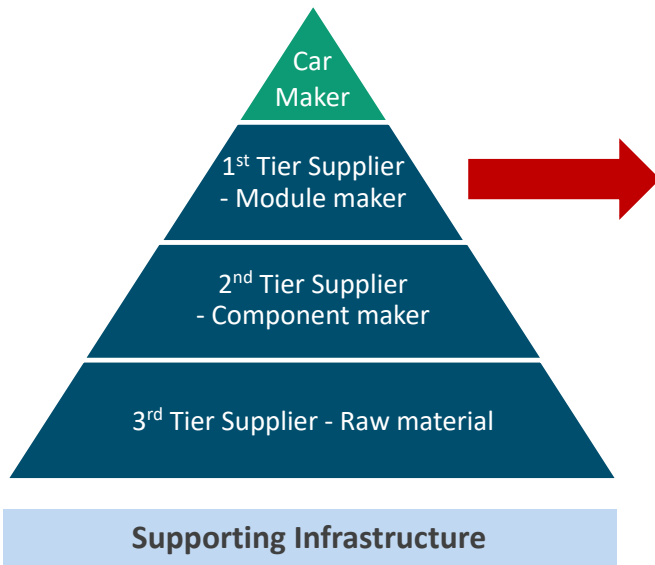


3. NEXT GENERATION AUTOMOTIVE EFFECTS ON THAI SUPPLY CHAIN

Change in automotive supply chain – How are we survive ?

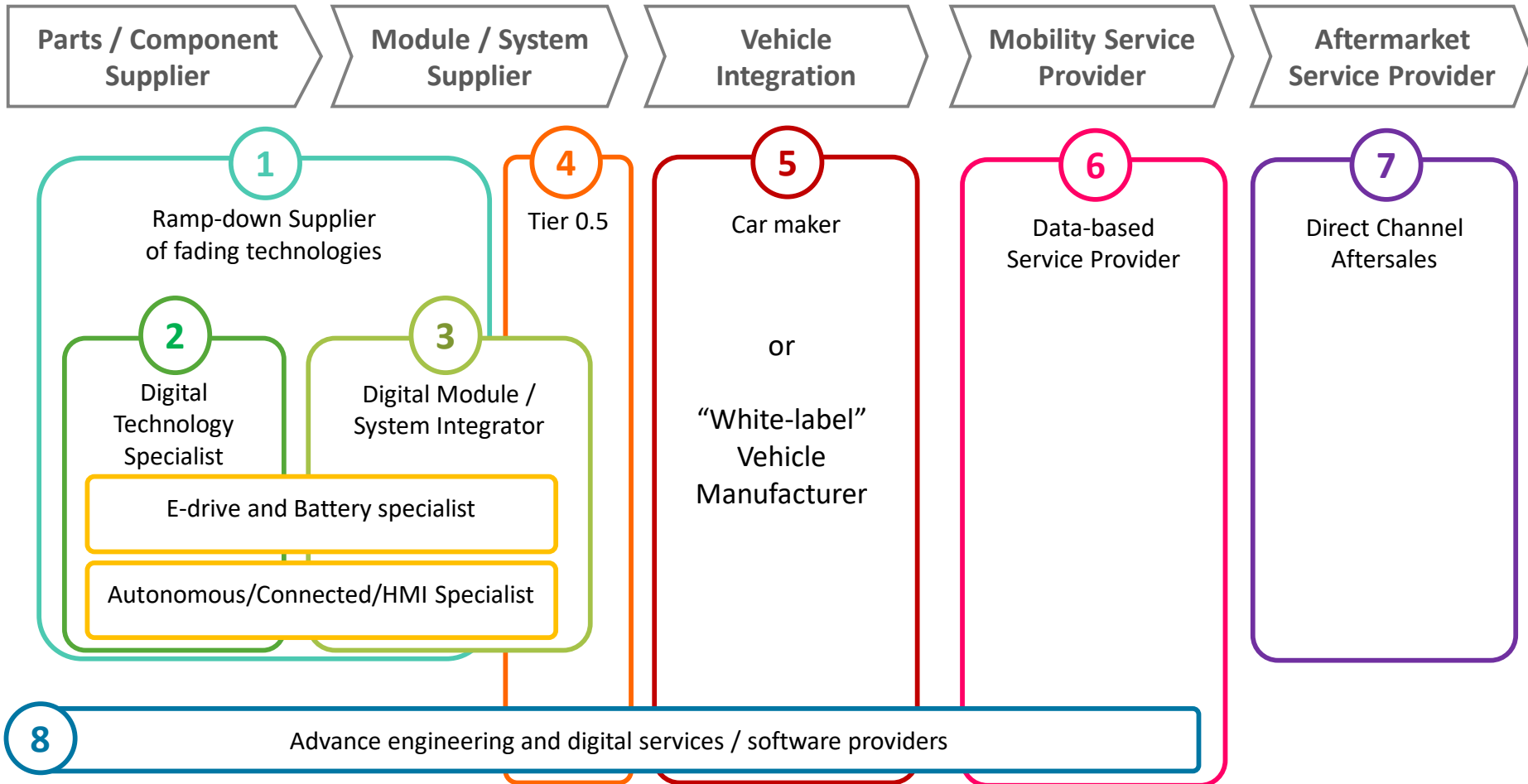
2019

2030



Source: OLIVER WYMAN (May 2018)

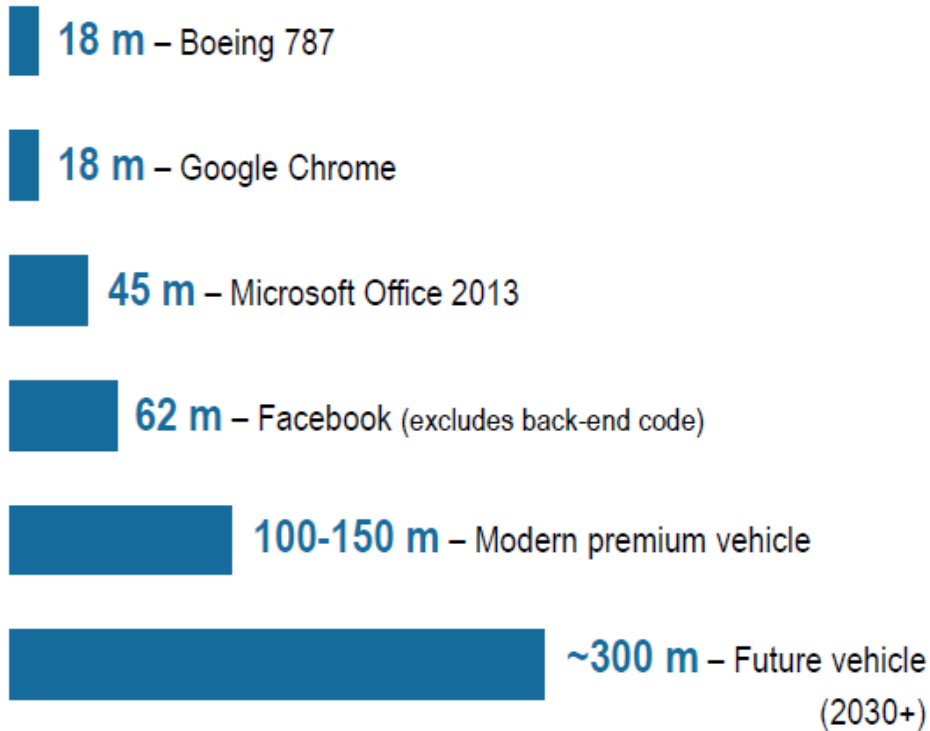
NEW AUTOMOTIVE SUPPLY CHAIN



Source: OLIVER WYMAN (May 2018)

FUTURE CARS WILL DEPEND INCREASINGLY ON SOFTWARE

Software reliance of future vehicles [# of lines of software code]



- > Some of the hardware components will be replaced with more streamlined design and improved software functionality
 - E.g. infotainment console
- > The convergence of consumer electronics and the automotive industry leads to increased number of lines and higher complexity of the software code
- > As vehicle software becomes the main differentiator, suppliers need to build up the necessary competencies to ensure future competitiveness

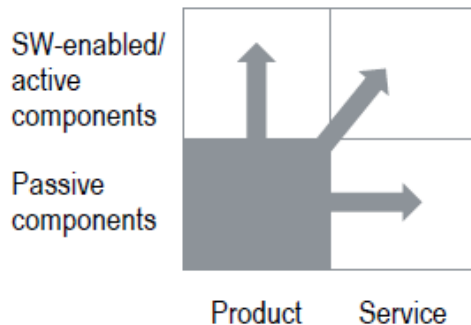


Source: Lazard, Roland Berger

Expanding from selling hardware only to selling features and services

Shift from hardware-only to software-enabled & service offering

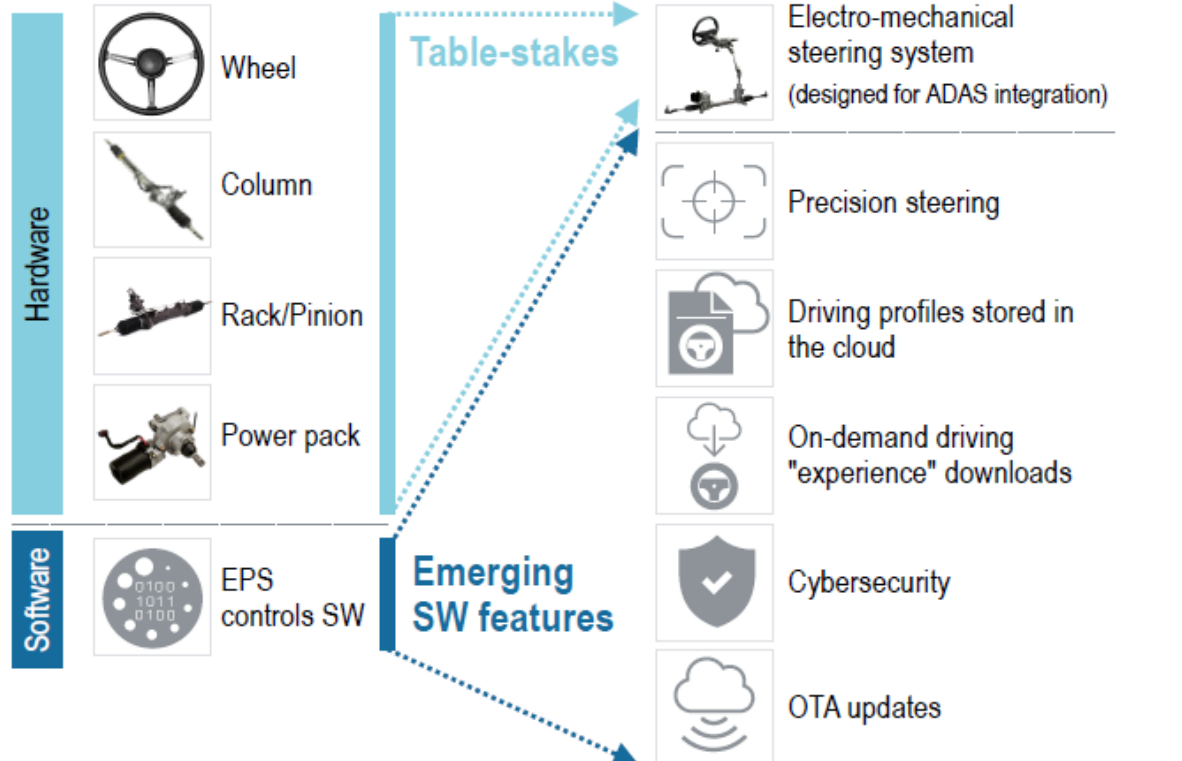
Expansion options from traditional business models



Example: Steering Systems

Traditional mechanical system

Future BEV autonomous system




Source: Lazard, Roland Berger

Example:

Future leadership on vehicle dynamics requires closing gaps on new electronics and software capabilities

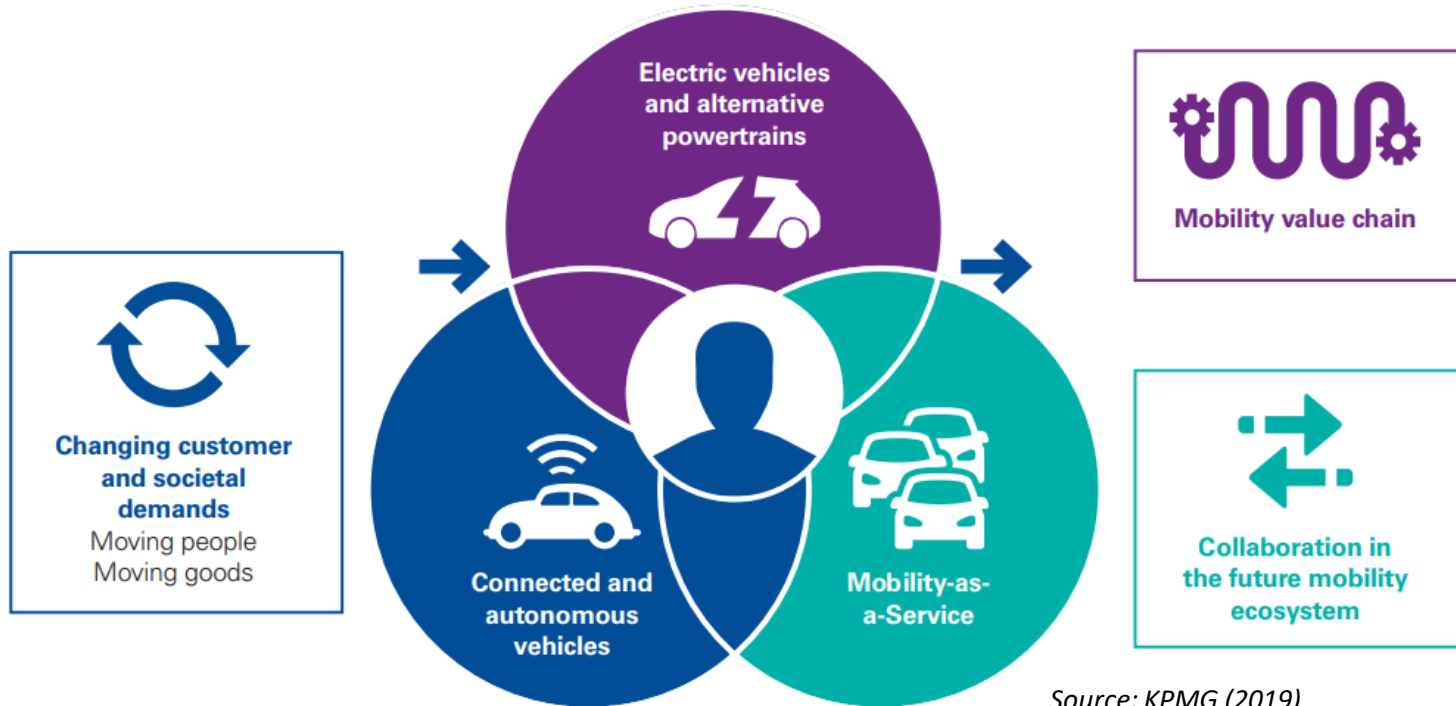
Conventional vs. advanced vehicle dynamics skills and capabilities required

	Conventional body controls	Advanced body controls
Fundamental knowledge	Motion control	Motion control
	Fluid management	Fluid management
		Electro-mechanical actuation
		ADAS systems design
		...
Physical capabilities	System design	System design
	Manufacturing efficiency	Manufacturing efficiency
	NVH management	NVH management
		Software modelling
		Mechatronics implementation
		ECU integration & sensor fusion
		Sensors
		Cybersecurity
	...	

 New knowledge and capabilities required to build advanced vehicle body controls

Source: Lazard, Roland Berger

4. CONCLUSION



Thailand will become the main player in this value chain or just remains as a production base for conventional parts of vehicle ?



VISION

“The leading organization of automotive and auto parts industry development with environmental-friendly business ecosystem and modernization”

3 CORE FUNCTION

to promote and support activities to strengthen Thai automotive industry



NEXT GENERATION AUTOMOTIVE RESEARCH CENTER

Think-tank of Thailand automotive industry



HUMAN RESOURCES DEVELOPMENT

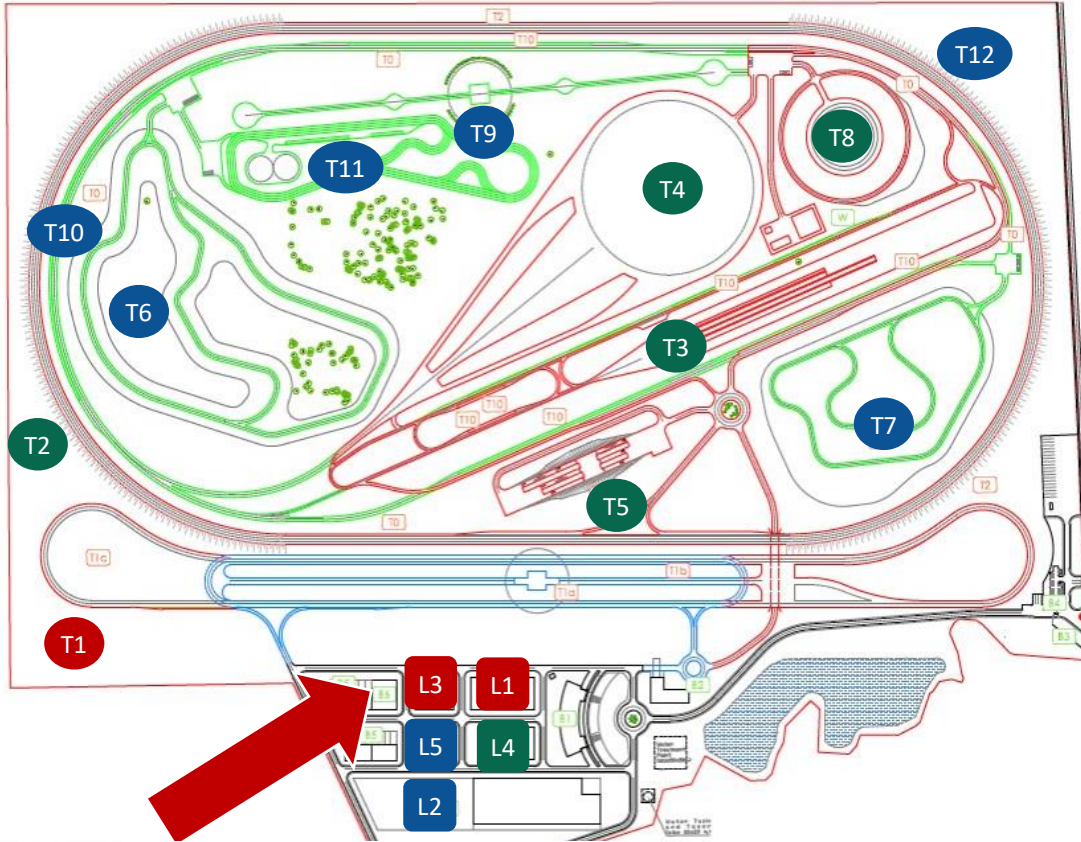
Supporting for change of processes and products



TESTING and RESEARCH & DEVELOPMENT CENTER

Testing for next generation vehicle standard and product development

LAYOUT



TEST TRACK

- T1 UN R117 Track
- T2 High Speed Track
- T3 Braking Track
- T4 Test Hill
- T5 Dynamic Platform
- T6 Handling Track
- T7 Wet Handling Track
- T8 Skid Pad
- T9 External Noise Test Track (ISOc10844:2014)
- T10 Noise Vibration & Harshness (NVH)
- T11 Accelerated Fatigue Track
- T12 Steering Pad

LABORATORY

- L1 Tire Lab
- L2 Passive Safety Lab
Powertrain Lab
- L3 Battery Lab
- L4 Certification Lab
- L5 EMC

NOTE

- 1st Phase
- 2nd Phase
- Further Phase

Battery Lab



THANK YOU | ขอบคุณครับ

