



FUTURE MOBILITY CHALLENGES

and their reflection in the education system

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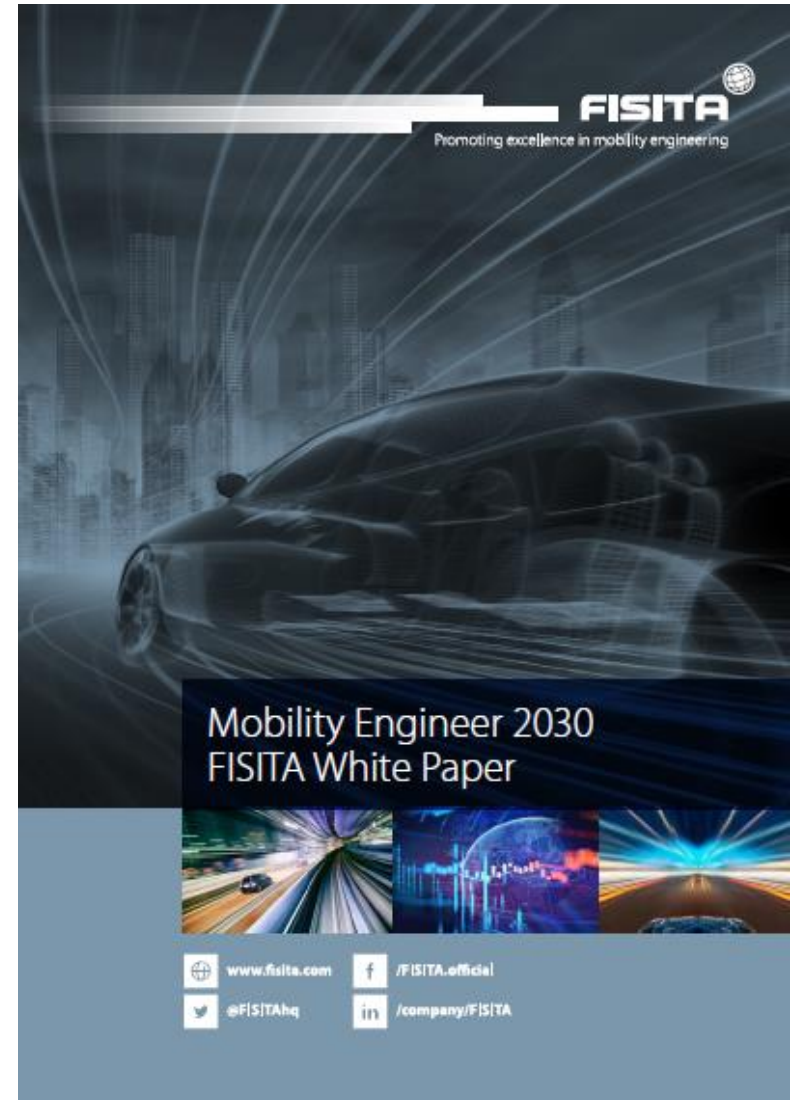
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- ▶ Number of cars is increasing, **but**
 - ▶ The cars are not used for the majority of time
 - ▶ From ownership to sharing
 - ▶ From driver to driverless (levels 1 - 5)
 - ▶ From stand alone to connected
 - ▶ Comfortable tool for mobility

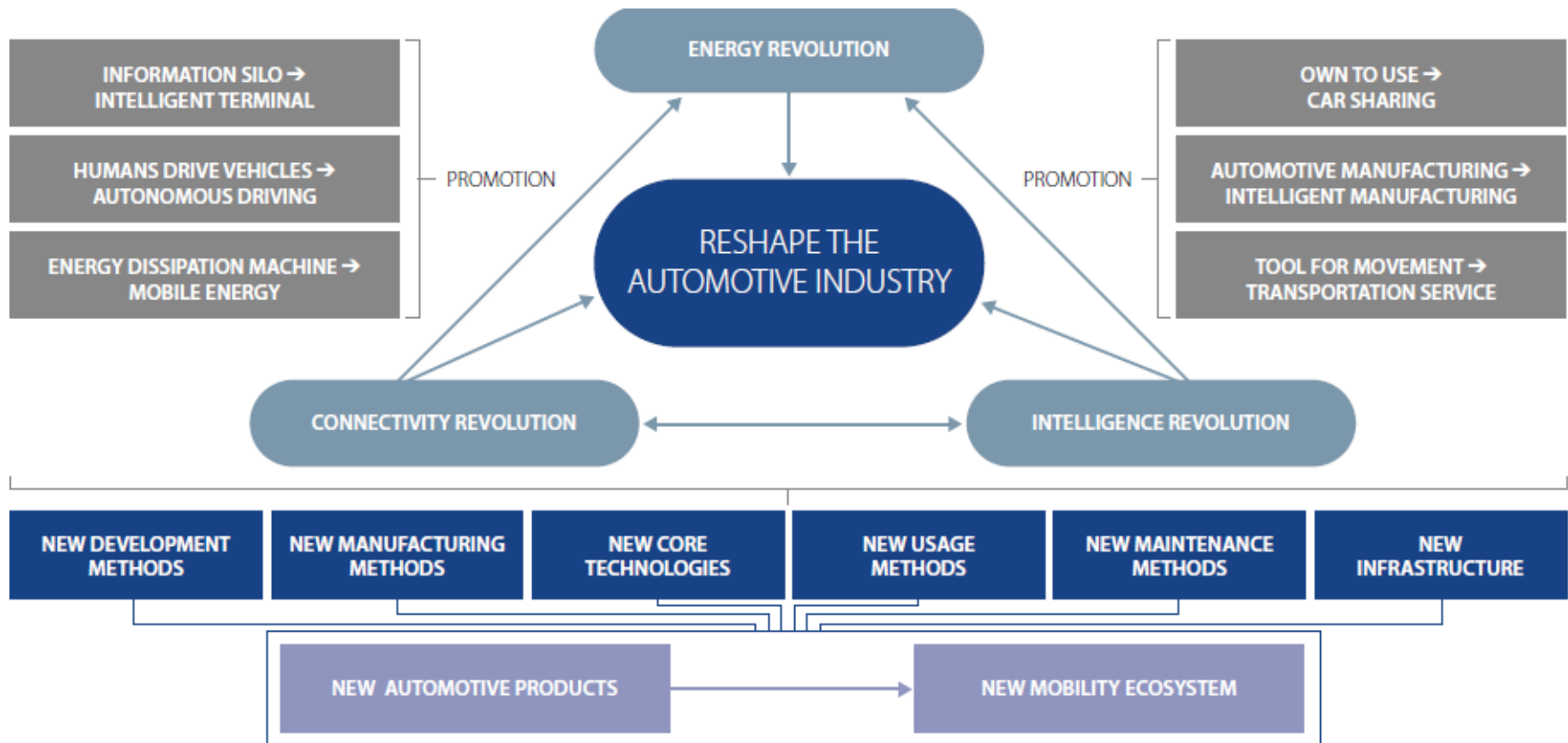


- ▶ FISITA launched a White Paper
 - ▶ <http://www.fisita.com/2030>
- ▶ Research
- ▶ Development
- ▶ Production
- ▶ Maintenance
 - ▶ Important for contemporary educating students and long-life educating engineers



REDEFINITION OF AUTOMOBILES

- ▶ Automobiles transforming into mobile and connected terminals from simple tools for movement



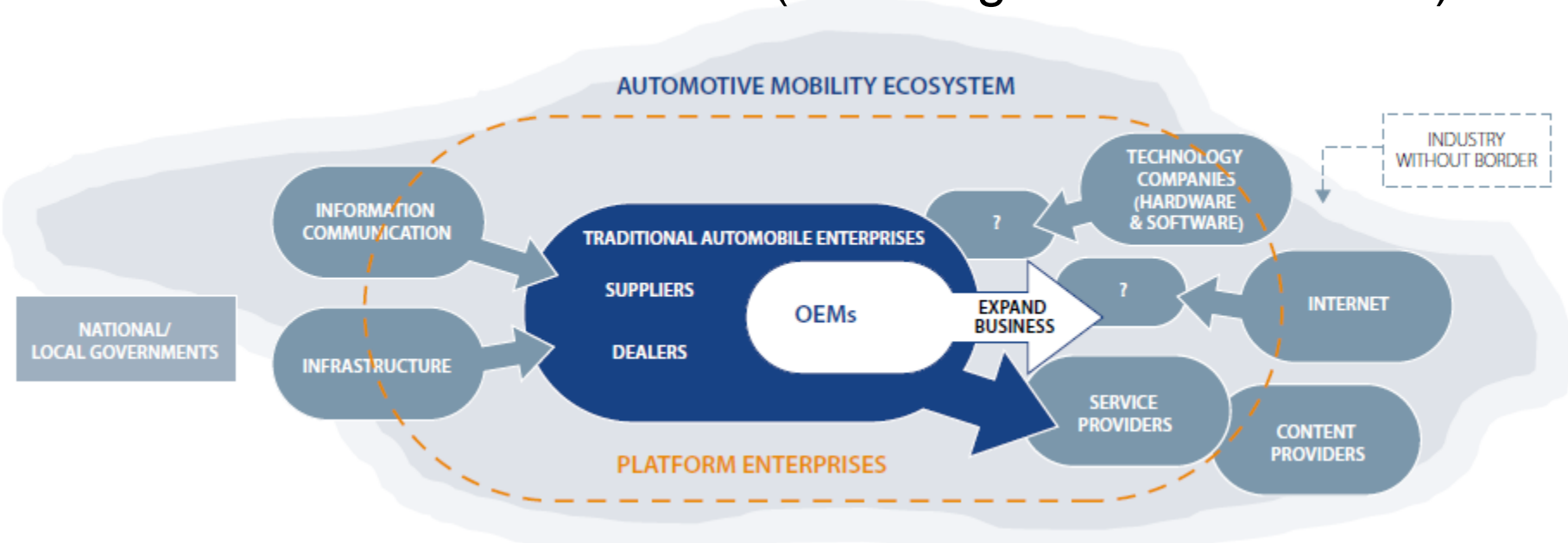
► SAE defines the levels of automated driving



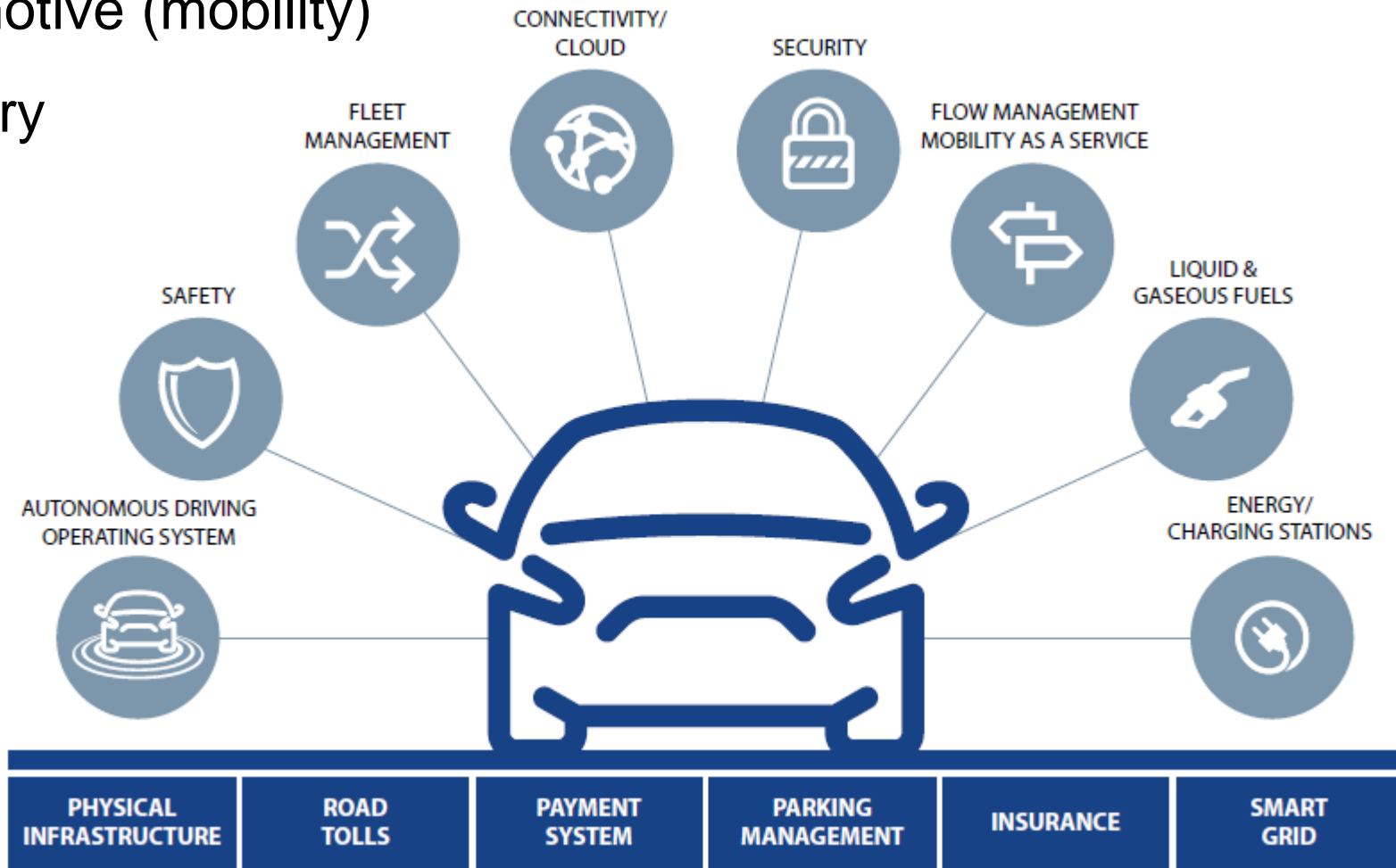
SAE J3016™ LEVELS OF DRIVING AUTOMATION

	SAE LEVEL 0	SAE LEVEL 1	SAE LEVEL 2	SAE LEVEL 3	SAE LEVEL 4	SAE LEVEL 5
What does the human in the driver's seat have to do?	You are driving whenever these driver support features are engaged – even if your feet are off the pedals and you are not steering			You are not driving when these automated driving features are engaged – even if you are seated in “the driver’s seat”		
	You must constantly supervise these support features; you must steer, brake or accelerate as needed to maintain safety			When the feature requests, you must drive	These automated driving features will not require you to take over driving	
What do these features do?	These are driver support features			These are automated driving features		
	These features are limited to providing warnings and momentary assistance	These features provide steering OR brake/acceleration support to the driver	These features provide steering AND brake/acceleration support to the driver	These features can drive the vehicle under limited conditions and will not operate unless all required conditions are met	This feature can drive the vehicle under all conditions	
Example Features	<ul style="list-style-type: none"> • automatic emergency braking • blind spot warning • lane departure warning 	<ul style="list-style-type: none"> • lane centering OR • adaptive cruise control 	<ul style="list-style-type: none"> • lane centering AND • adaptive cruise control at the same time 	<ul style="list-style-type: none"> • traffic jam chauffeur 	<ul style="list-style-type: none"> • local driverless taxi • pedals/steering wheel may or may not be installed 	<ul style="list-style-type: none"> • same as level 4, but feature can drive everywhere in all conditions

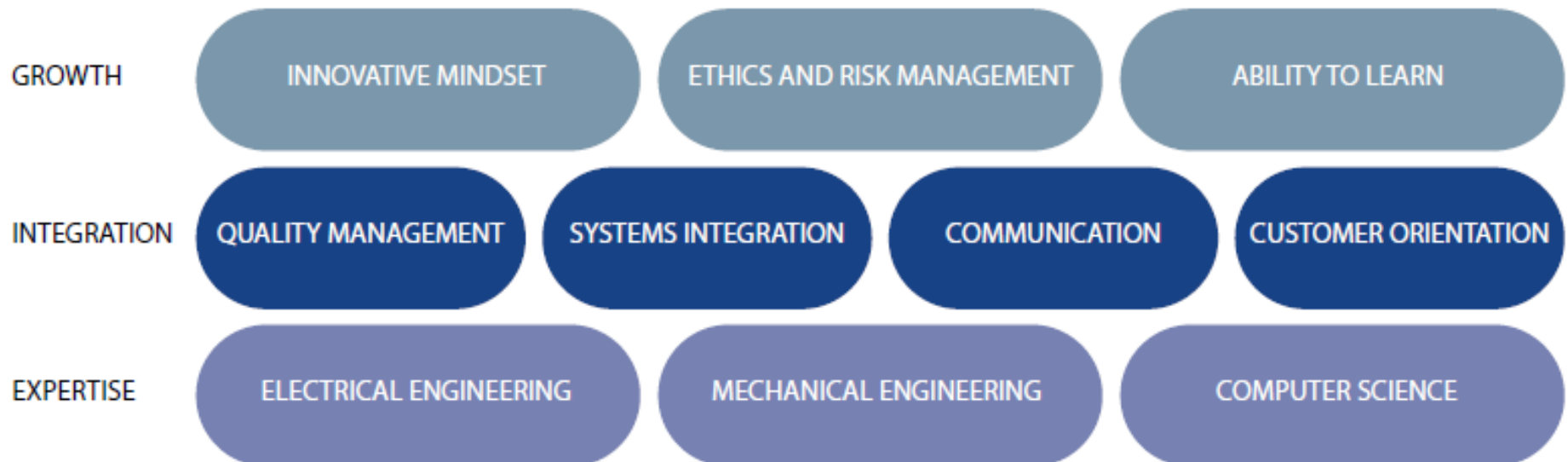
- ▶ Attributes of a modern mobility device
 - ▶ Mechanics
 - ▶ Electrics and electronics
 - ▶ Software
 - ▶ Device and Environment (including business models):



- ▶ The surrounding environment of the future automotive (mobility) industry

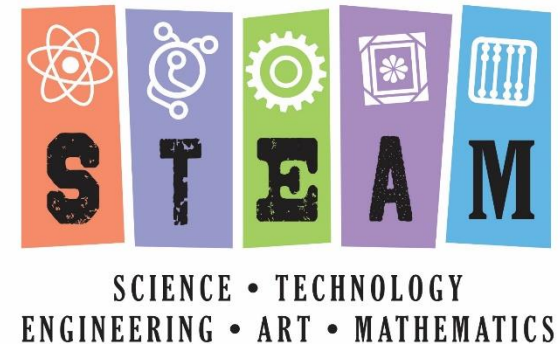


- ▶ Future education
 - ▶ Expertise
 - ▶ Integration skills
 - ▶ Ability to grow
- ▶ Depending on the individual role
 - ▶ Different weights of skills
 - ▶ Skills profiles as opposed to engineering disciplines



SO WHAT NEXT?

- ▶ Mentors, who attracts students and keeps their attention
 - ▶ Interesting up-to-date (multi-disciplinary) topics
 - ▶ Innovative technologies
 - ▶ STEAM (Science, Technology, Engineering, Art, Mathematics)
- ▶ Permanent link to schools' teachers
 - ▶ Information on current status in research and development
 - ▶ Choise of suitable talents
 - ▶ Development of talents



THANK YOU FOR YOUR ATTENTION

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