



From ADAS to AD, Processor and Car Architecture Evolution

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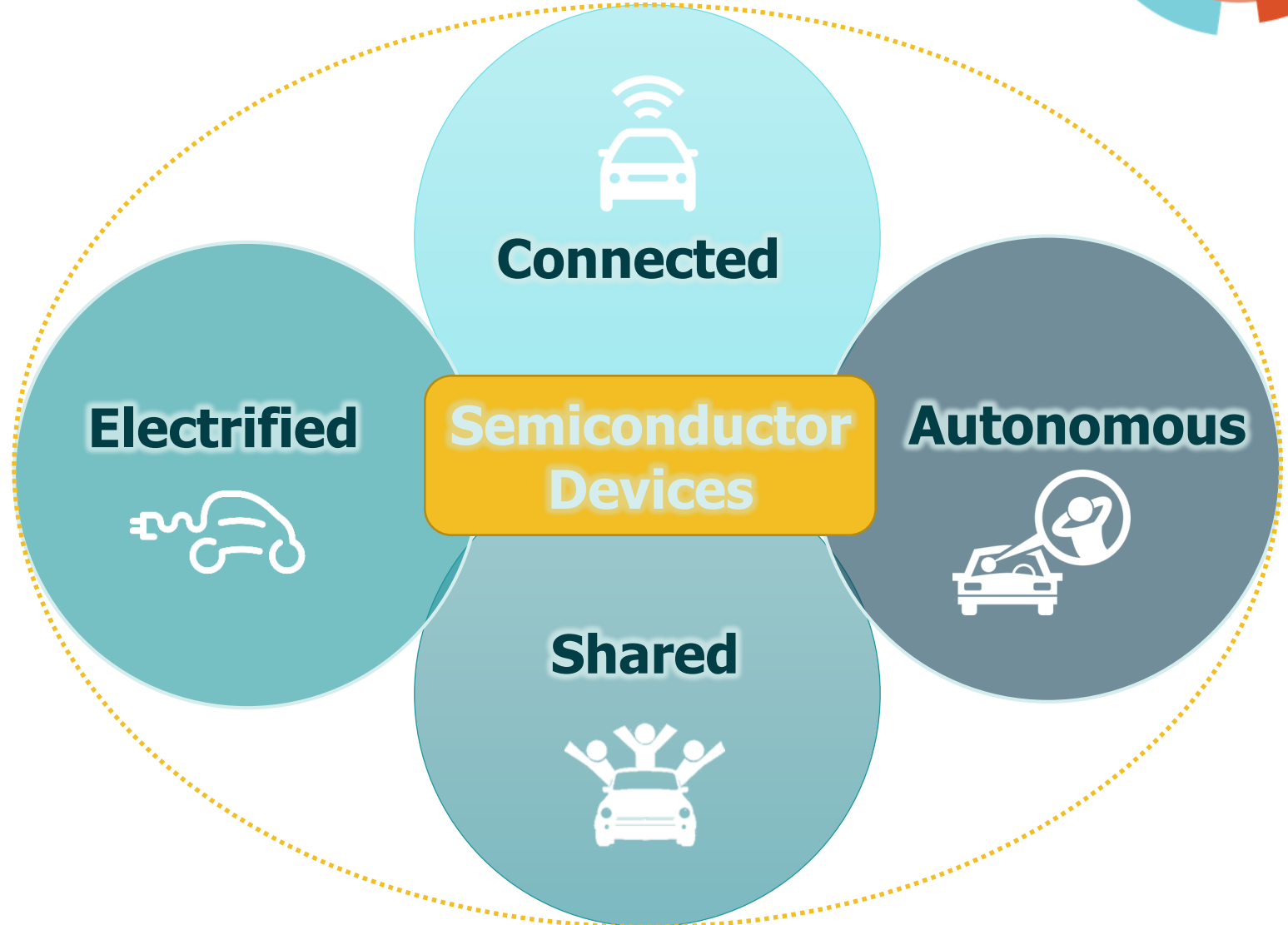
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The future automotive C.A.S.E.

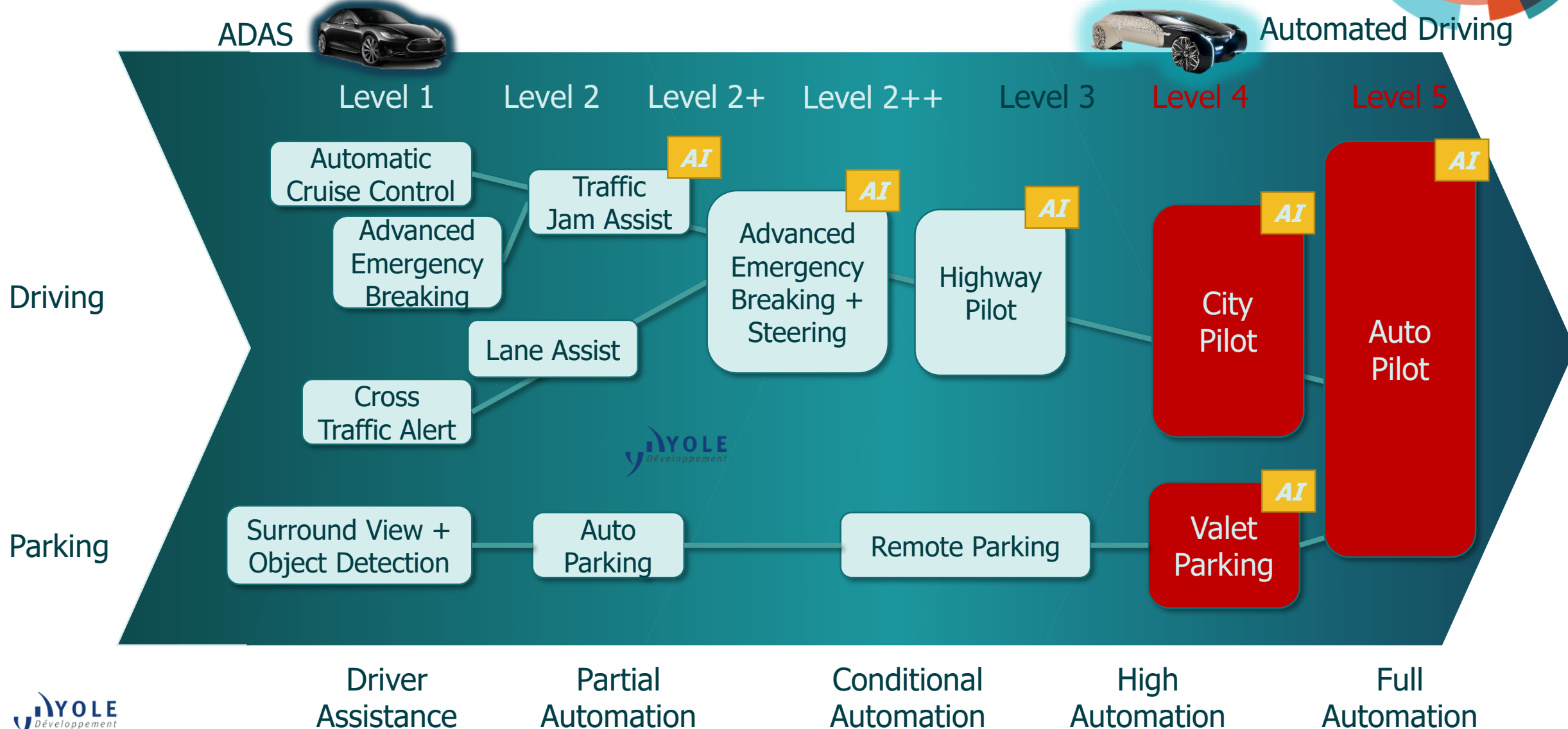


Semiconductors will be critical for future automotive challenges:

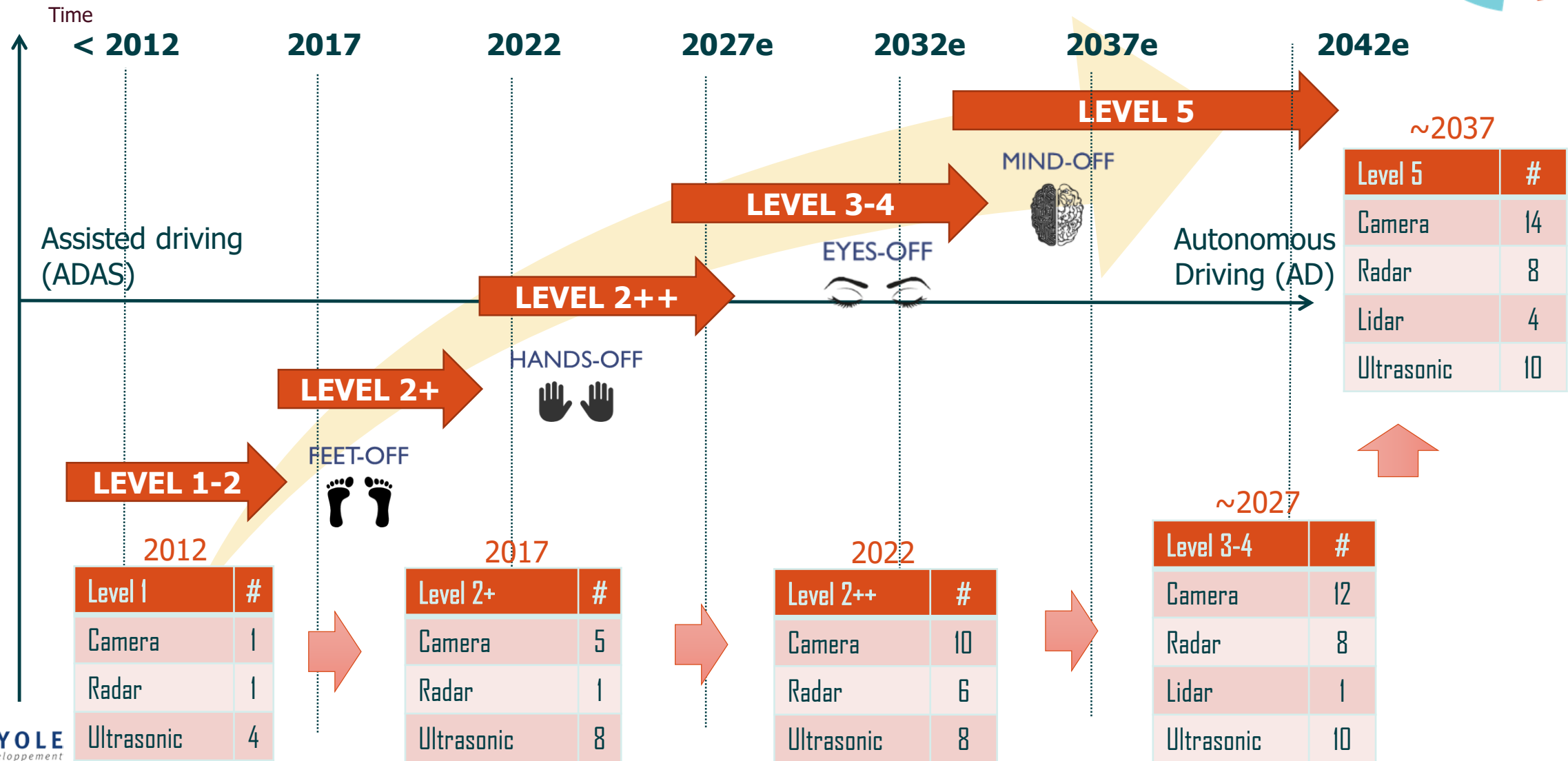
- **Emissions**
Transition to electrified powertrain and sharing schemes
- **Safety & traffic congestion**
Transition to ADAS Level 1-2 and connected vehicles



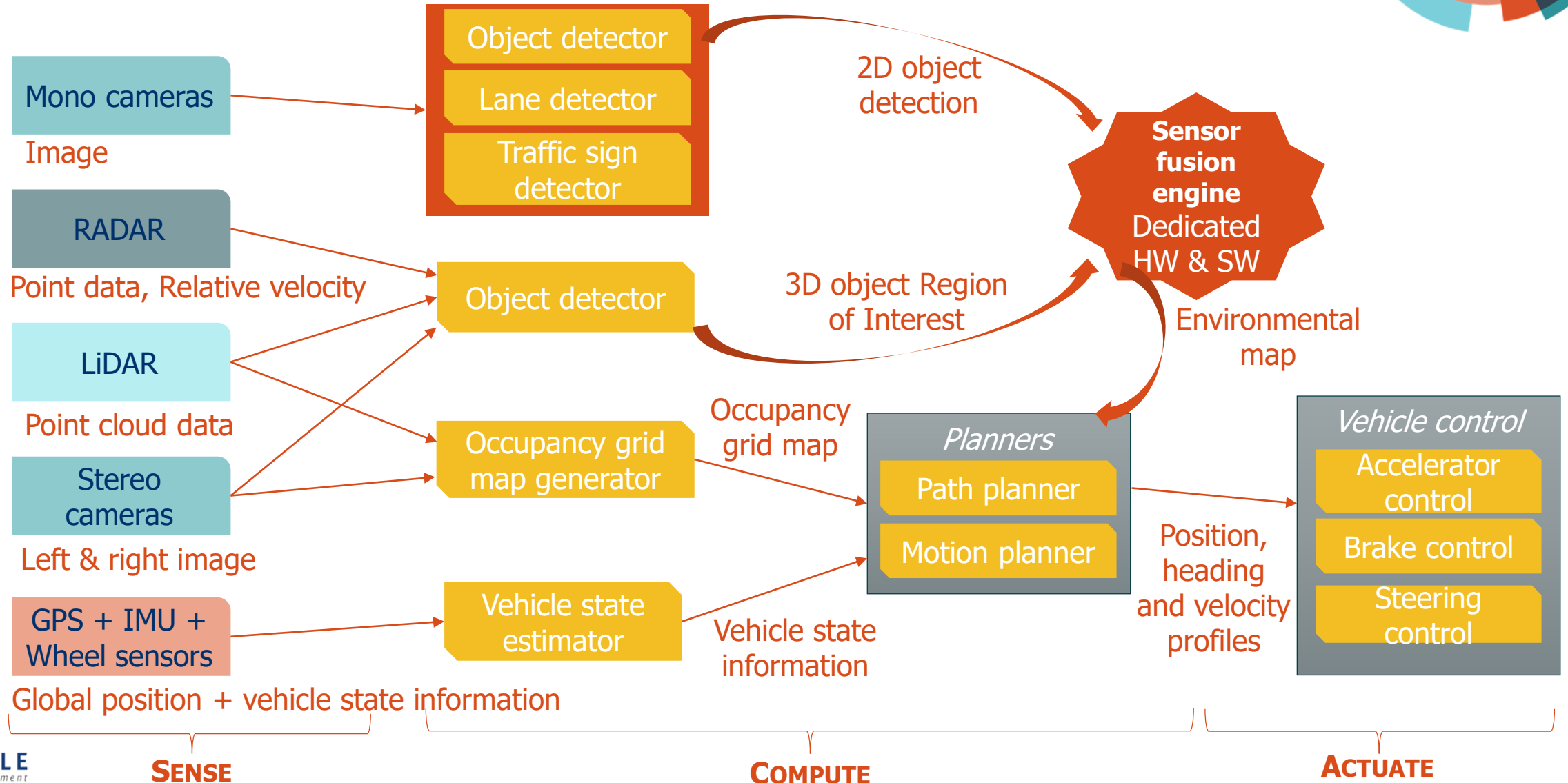
From ADAS to AD: Evolution of functionalities toward full autonomy



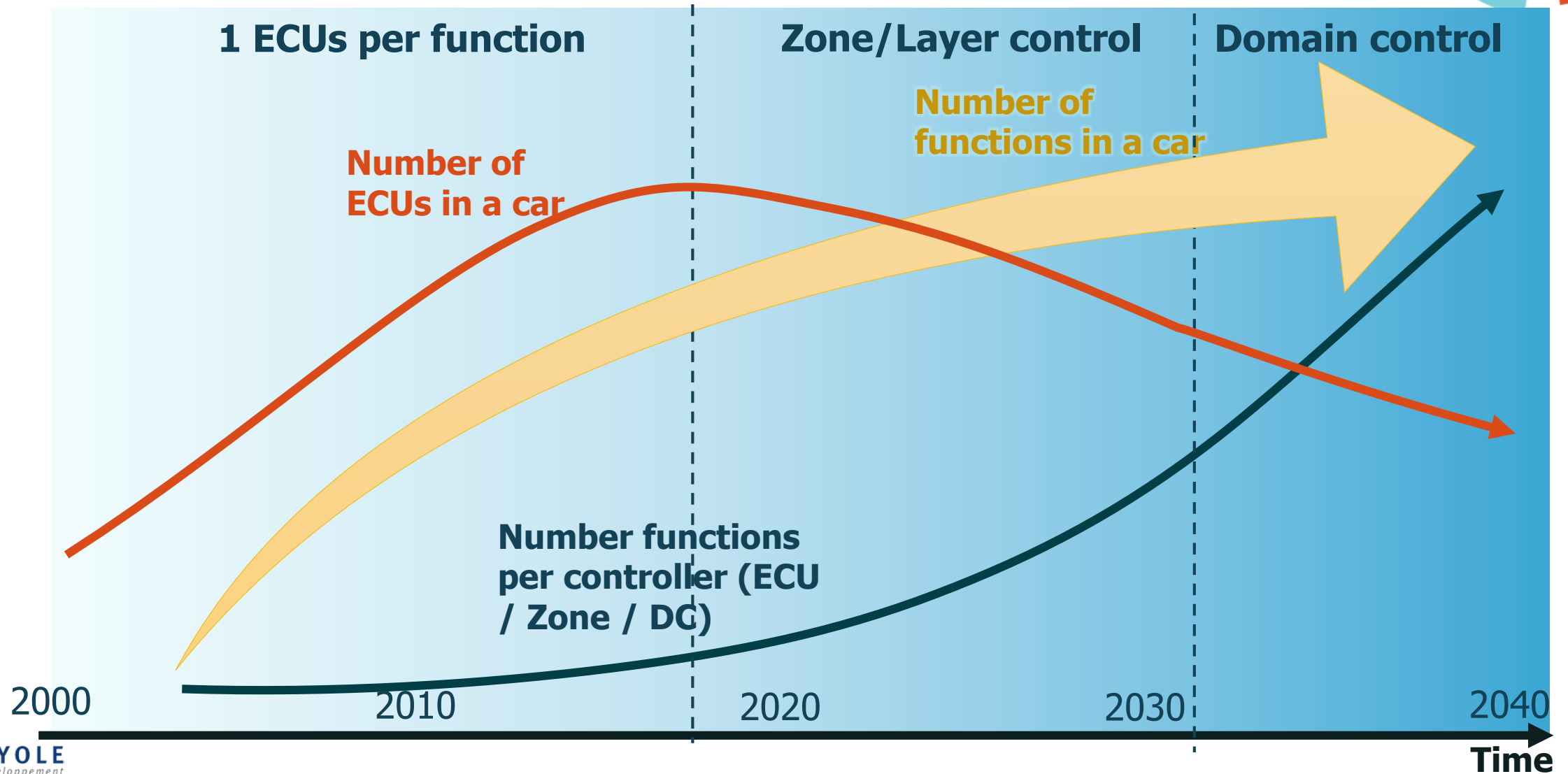
Sensing for ADAS to AD – sensors type PER VEHICLE



Software pipeline for autonomy



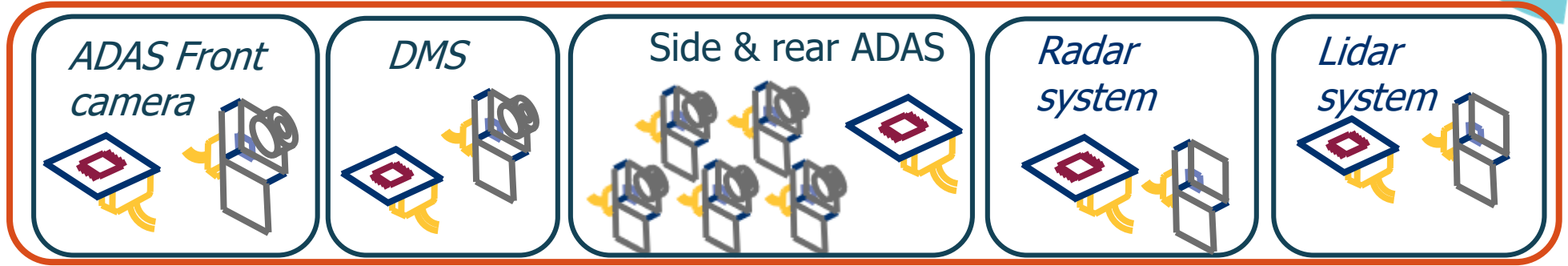
Number of ECUs per car evolutions



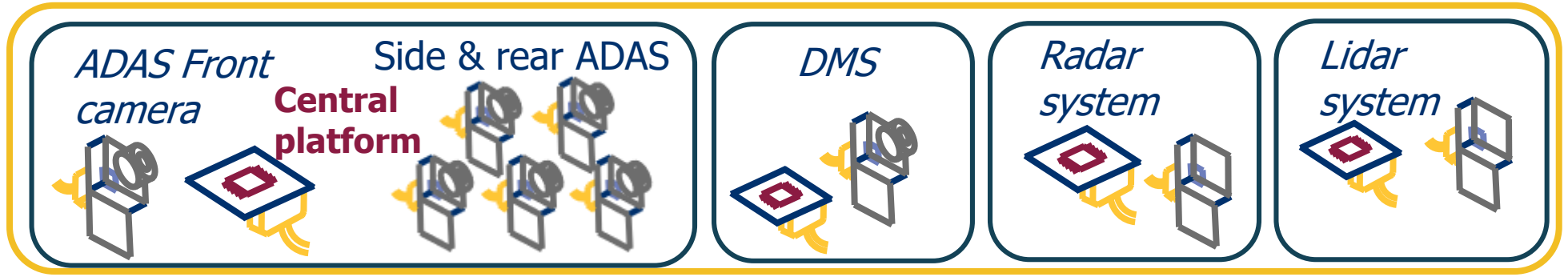
ADAS/AD architecture pipeline



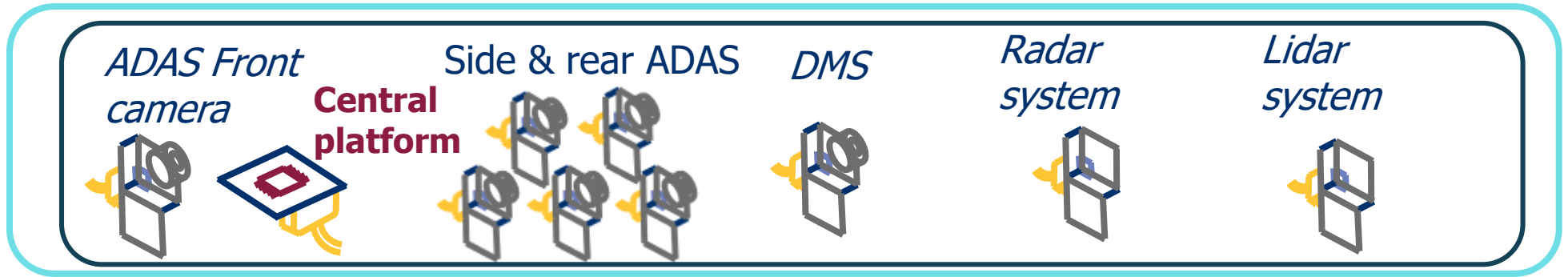
Total decentralization



Partial centralization



Total centralization



ADAS application technologies in 2022



Imaging



Radar



Lidar



Actuating

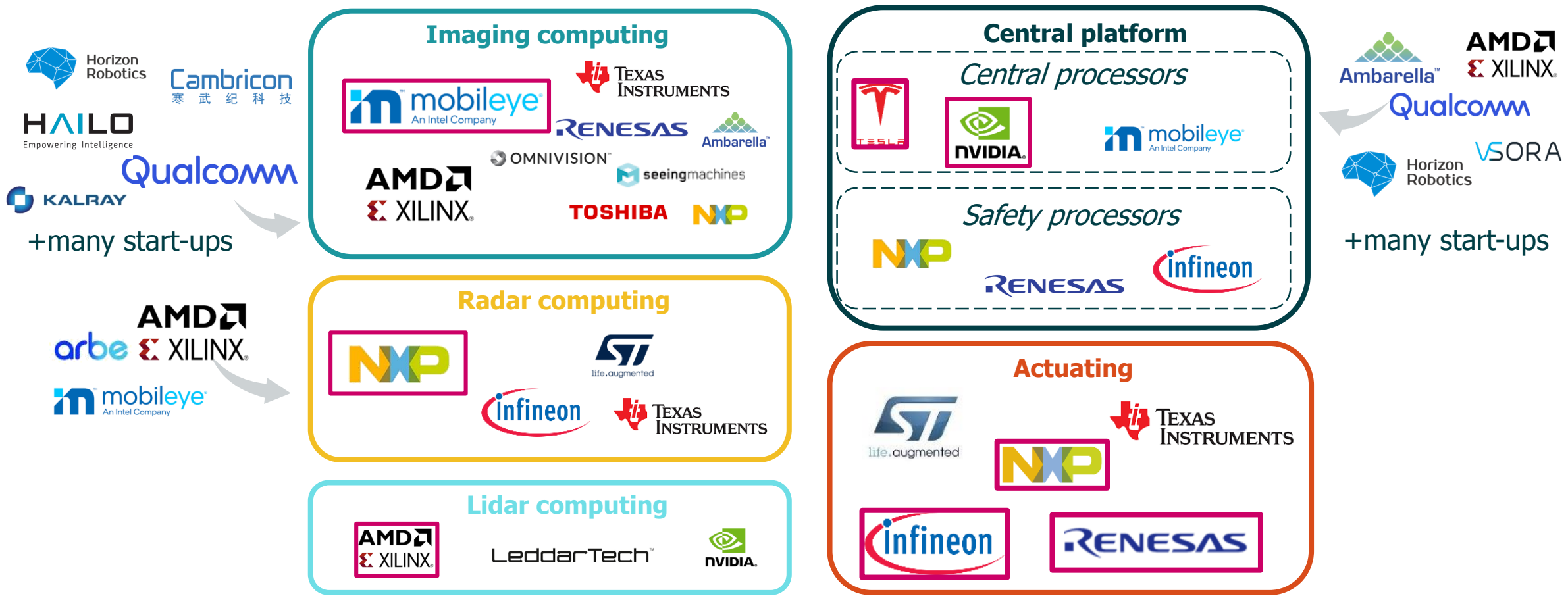


Central platform



	System	Type of sensor	Type of computing
	Driver monitoring	2D or 3D Camera	SoC, AI-SoC
	ADAS Front camera	Camera (mono, stereo, triple)	AI-SoC
	ADAS surround camera ECUs	Camera	SoC, AI-SoC
	Night vision	Thermal camera	AI-SoC
	ADAS Radar	Radar	MCU, SoC
	ADAS Lidar	3D Lidar	AI-SoC
	Control systems & others		MCU
	Fusion platform & ADAS domain controller		SoC, AI-SoC

ADAS processors companies



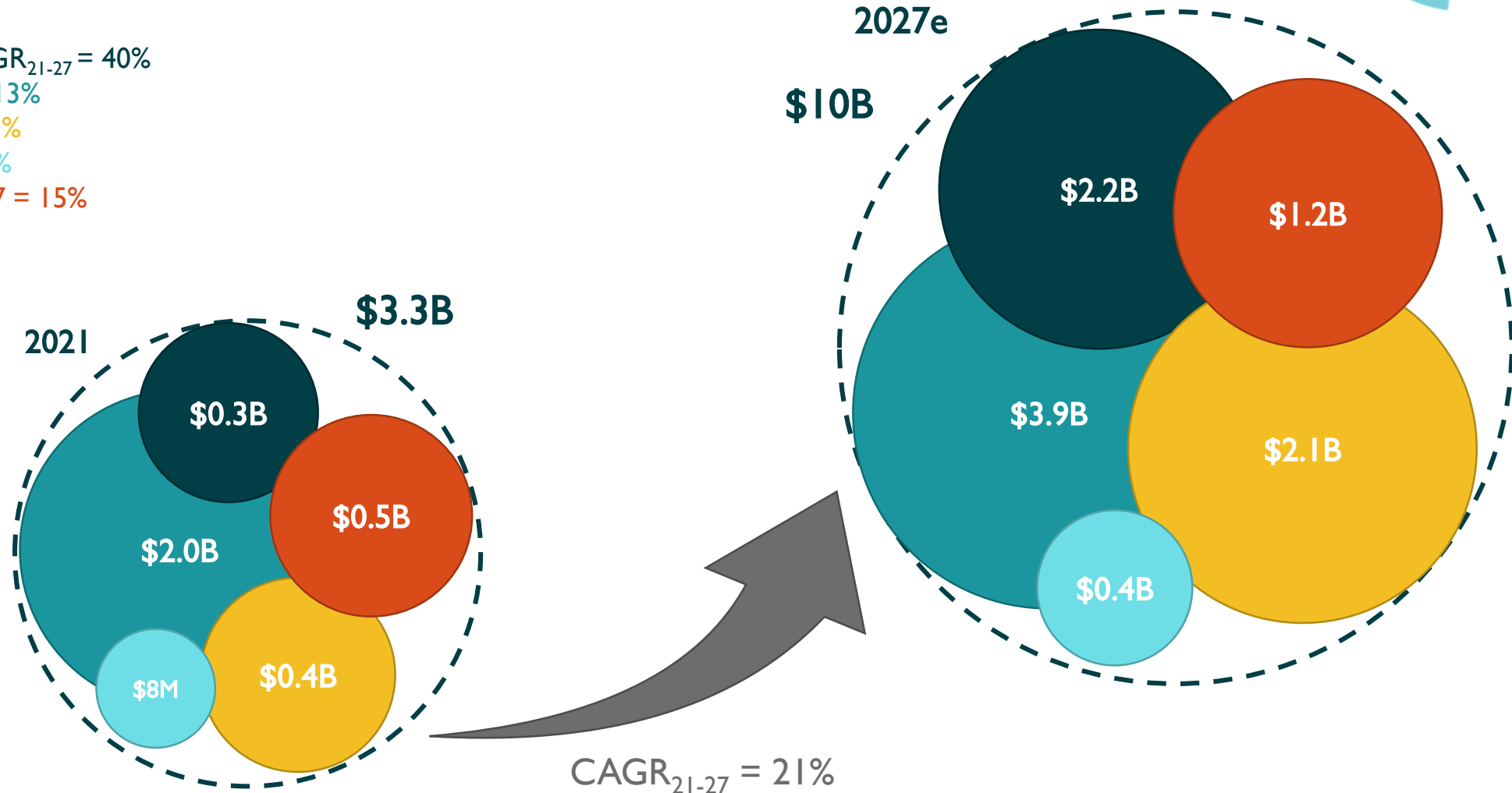
Non-exhaustive list

Border denotes leader(s)

ADAS processor revenue forecast, by application



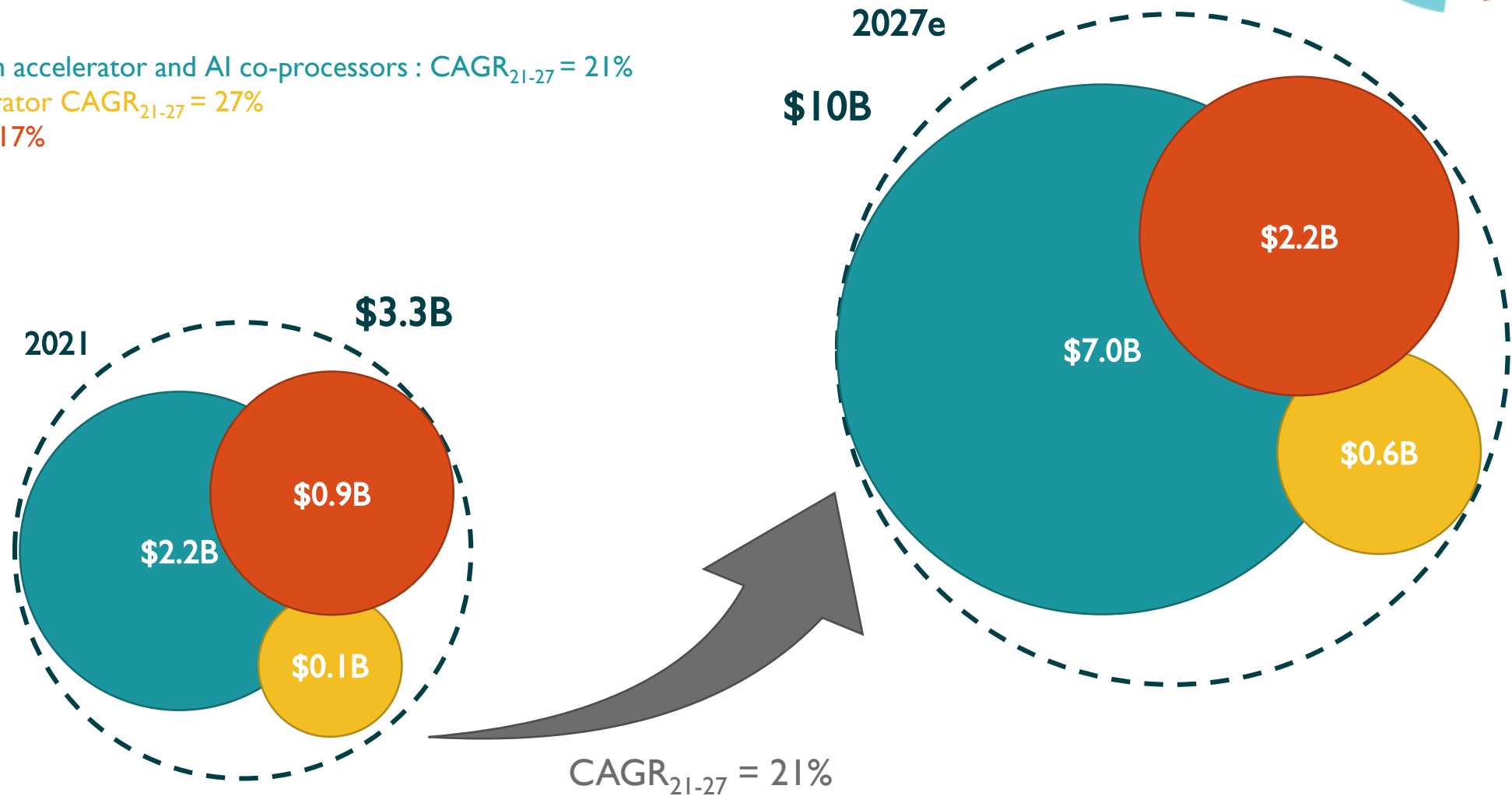
- Central compute: $CAGR_{21-27} = 40\%$
- Imaging: $CAGR_{21-27} = 13\%$
- Radar: $CAGR_{21-27} = 23\%$
- Lidar: $CAGR_{21-27} = 94\%$
- Actuating: $CAGR_{21-27} = 15\%$



ADAS processor revenue forecast, by technology



- AI-enabled SoC with accelerator and AI co-processors : $CAGR_{21-27} = 21\%$
- SoC without accelerator $CAGR_{21-27} = 27\%$
- MCU: $CAGR_{21-27} = 17\%$



Yole Développement reports

Computing and AI technologies for automotive 2022

<https://www.i-micronews.com/event/computing-and-ai-technologies-for-automotive-2022/>

Microcontroller Market Monitor Q1 2022

<https://www.i-micronews.com/products/microcontroller-quarterly-market-monitor/>

