◤**Myself :**
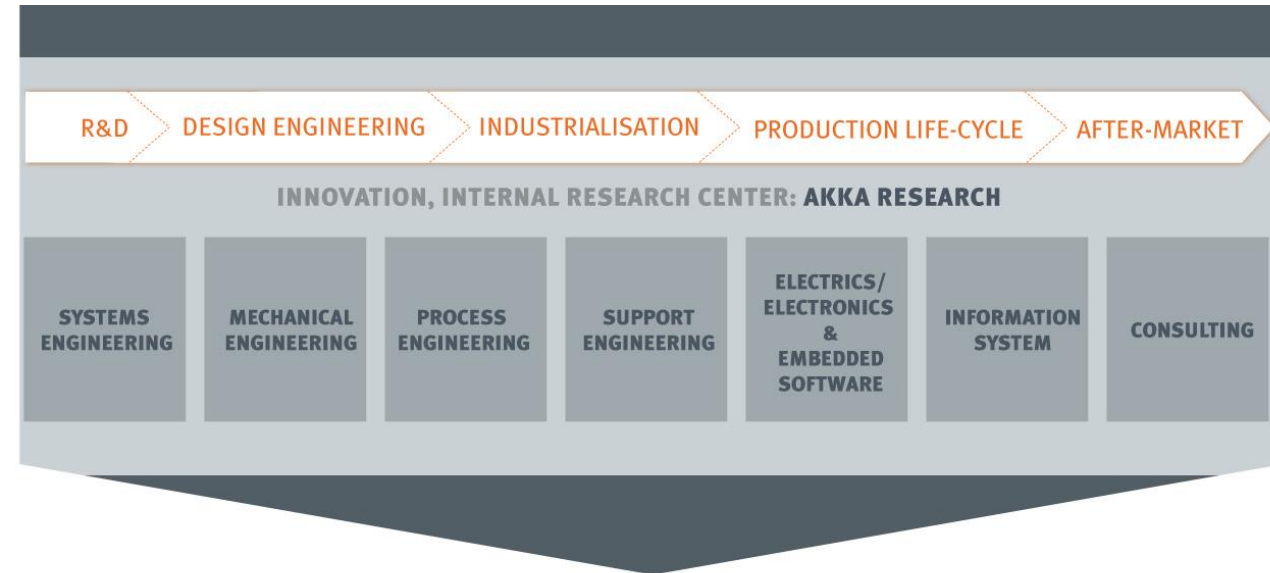
- Deputy head of Innovation at AKKA Technologies for autonomous driving since 2015

- Previously worked in research at INRIA (PhD) with VALEO group
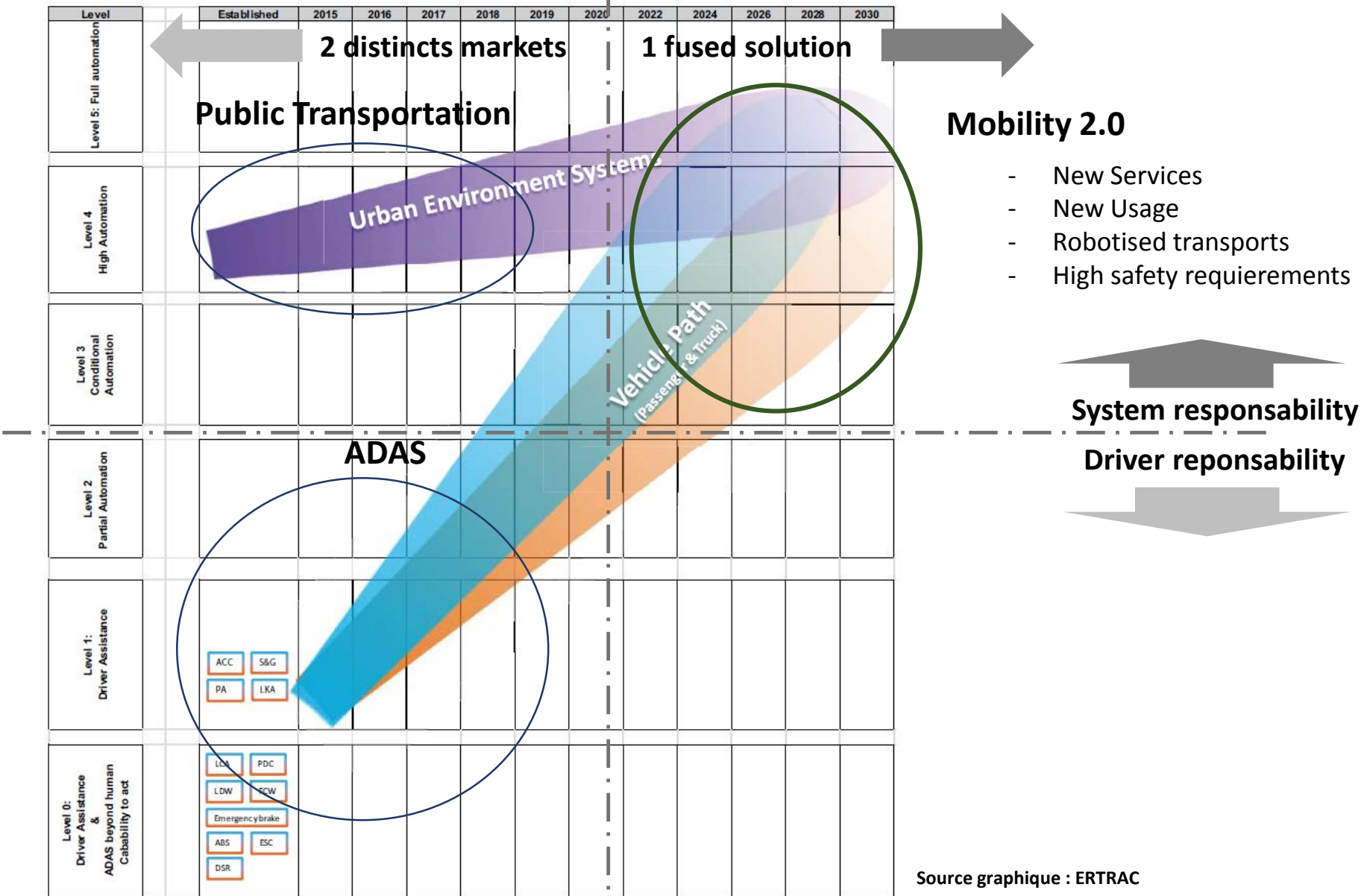
◤**AKKA Technologies:**

- Provide engineering and expert services to industry

- 1,2 B€ of turnover

- 13 000 persons

- Active in 20 countries over the world

◤**Topic of this talk:**

- Outline context and technical challenges linked with growth

- Highlight the importance of ICT in this growth

- Insist on the System approach required to deal with ICT integration in massively produced vehicles

| R&D | DESIGN ENGINEERING | INDUSTRIALISATION | PRODUCTION LIFE-CYCLE | AFTER-MARKET |

INNOVATION, INTERNAL RESEARCH CENTER: AKKA RESEARCH

| SYSTEMS ENGINEERING | MECHANICAL ENGINEERING | PROCESS ENGINEERING | SUPPORT ENGINEERING | ELECTRICS/ ELECTRONICS & EMBEDDED SOFTWARE | INFORMATION SYSTEM | CONSULTING |

Autonomous driving context

2 distincts markets   **1 fused solution**

Public Transportation

Mobility 2.0

- New Services
- New Usage
- Robotised transports
- High safety requierements

System responsability

Driver reponsability

ADAS

Source graphique : ERTRAC

The technical shifts behind autonomous driving

| New services / usages | → | Shift of added value toward services | → | Market value of ICT |

| Robotized functions | → | Need to see further than platform sensors | → | Technical value of ICT |

| Safety Constrains | → | Need to confront and support robotized system decisions | → | Safety value of ICT |

ICT as AD friendly infrastructure

User friendly infrastructure:

- Road infrastructure received lots of investment to fit with human ergonomy and to enhance its comprehensions of road rules

- Since robots would share the road with humans, infrastructures have to be thought for robots users

ICT as main "robots' feeling":

- ICT allows to share information with robotized system without perceptions problems

- ICT enables all the autonomous system to collaborate in their driving tasks

Current infrastructures were designed as human friendly
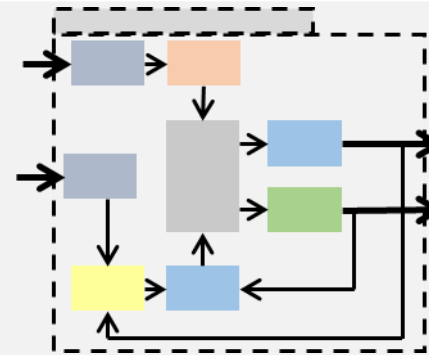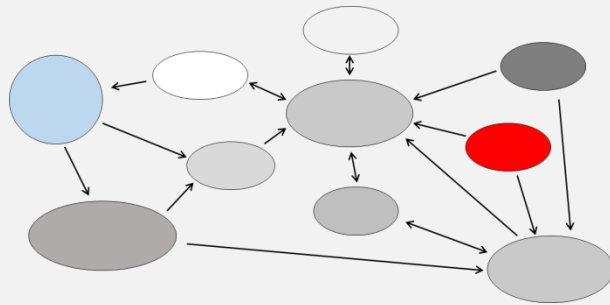
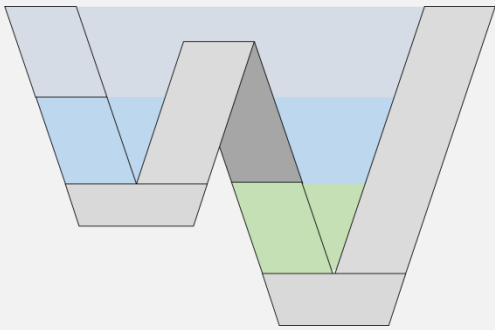ICT is the key to robot friendly support

System Engineering approach for ICT
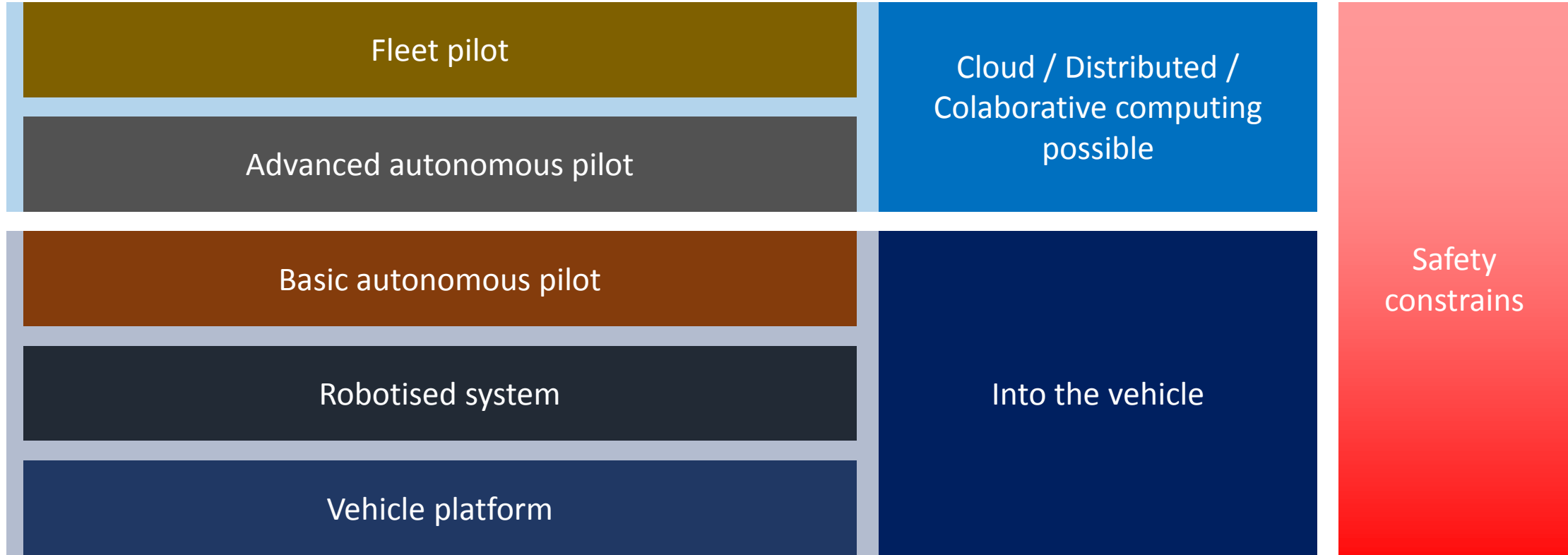
System design:

- Apply top-down approaches to answer services requirement before addressing ICT technical issues
- Integrate infrastructure in this process
- Design functional requirements of ICT support to autonomous functions both into the vehicle and the infrastructure
- Clear responsibility involvement of design stakeholders

System balance:

- Balance this support with functional then organic safety into the vehicle
- Characterize the ICT limits at an industrial scale

Multi-layers Autonomous cars

Fleet pilot	**Cloud / Distributed / Colaborative computing possible**	**Safety constrains**
Advanced autonomous pilot		
Basic autonomous pilot	**Into the vehicle**	
Robotised system		
Vehicle platform		

Using advanced ICT and AI solutions while insuring system safety:

- Secure low levels architectures and integrity

- Monitor orders from advanced autonomous pilot

- Authorize cloud / distributed / collaborative support at an abstract level