SIEMENS VDO
Automotive

Mobility Services and Applications for the Connected Car

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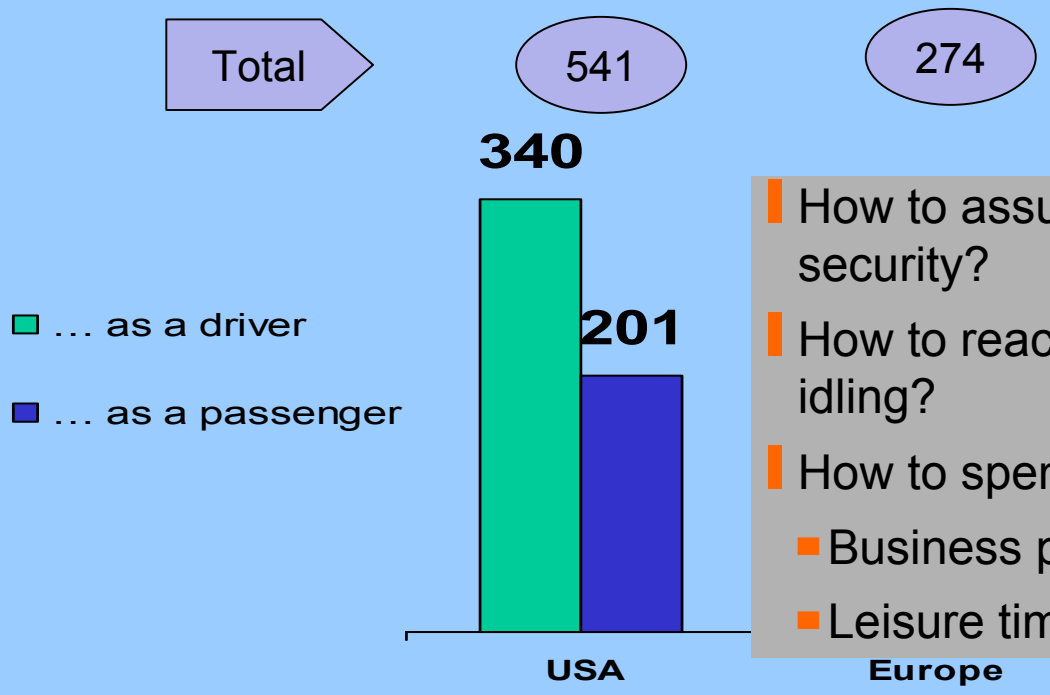
United power of automotive electronics

Consumers spend several hours in their cars

Average time spent in vehicles [hours / year]

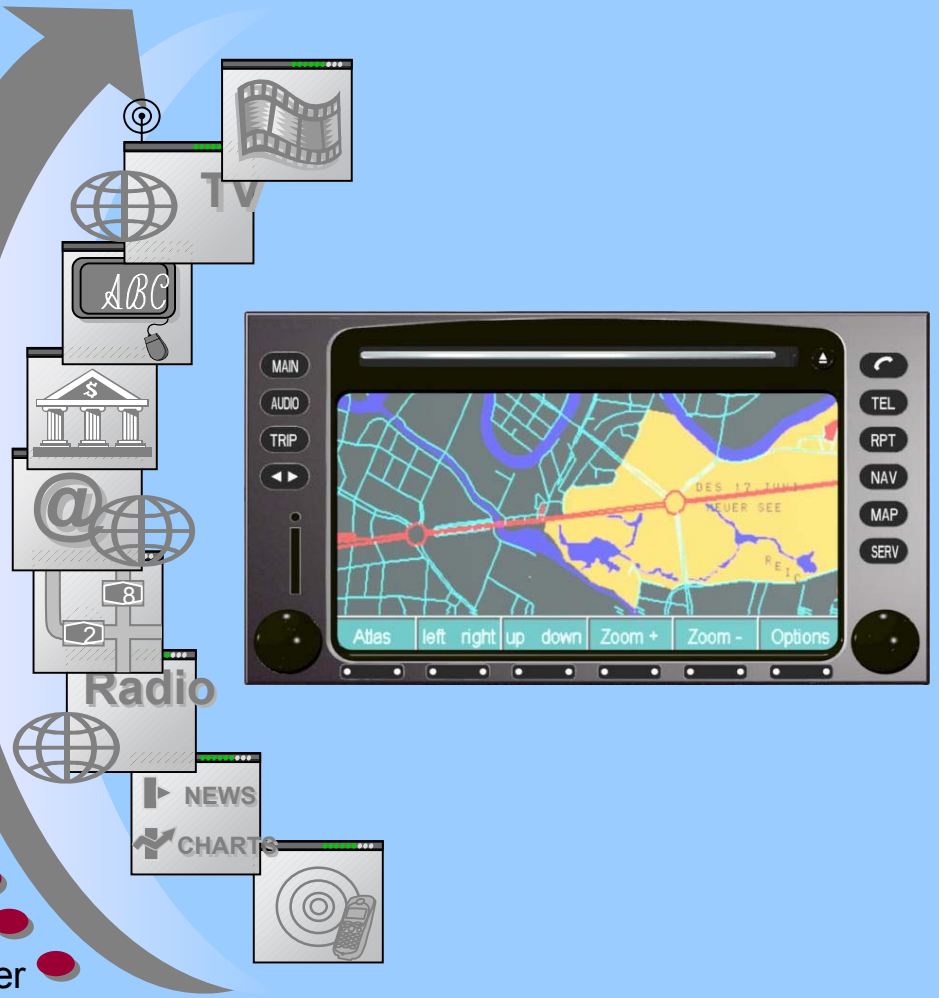


- How to assure mobility, safety and security?
- How to reach the destination without idling?
- How to spend that time productive?
  - Business preparation
  - Leisure time planning

Source: Roland Berger & Partners

In search for the killer application

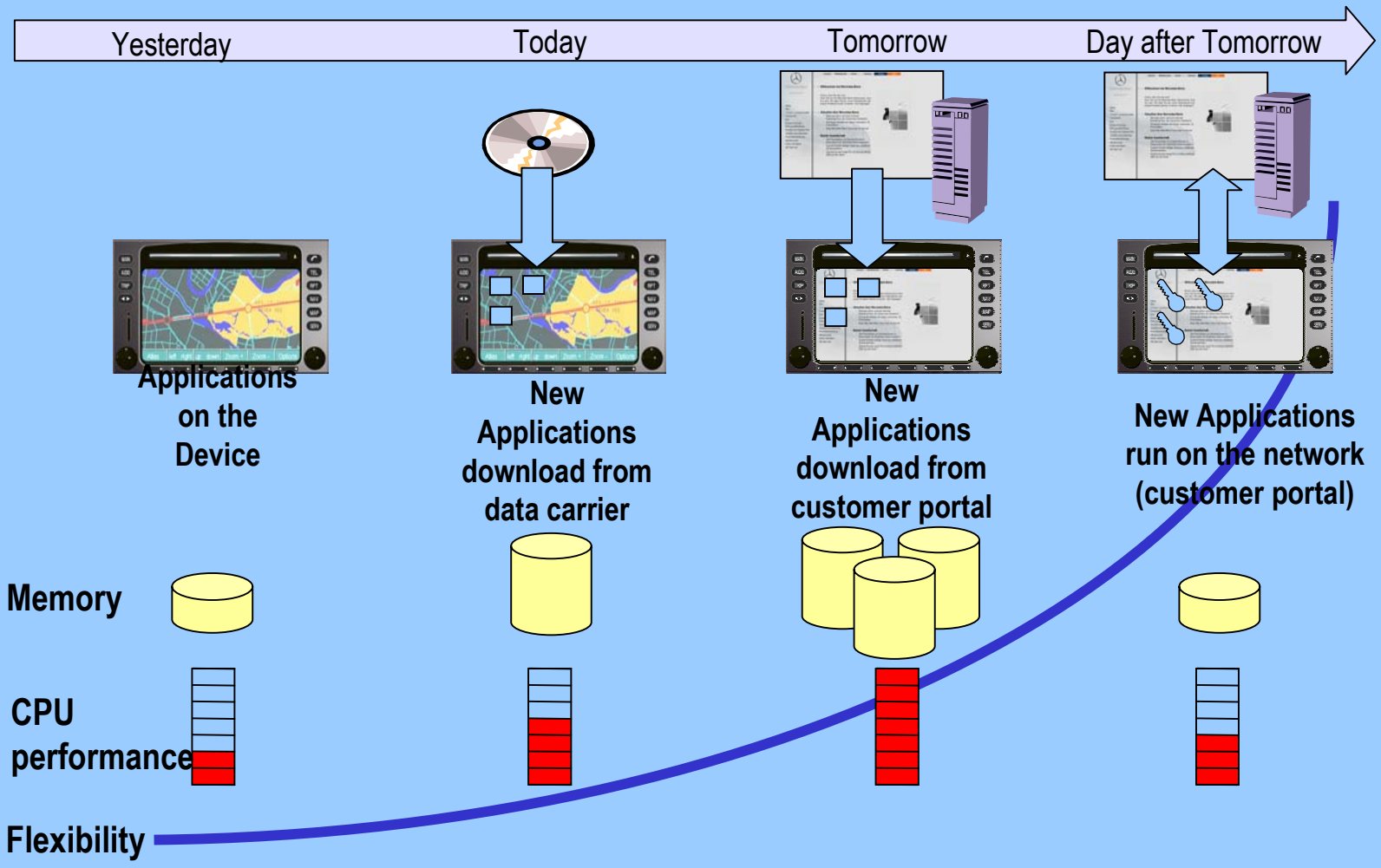
- Night vision
- Predictive navigation
- Offboard applications
- Internet(Portal access)
- Electronic toll systems
- Rear view camera
- Wireless interface (IrDA,Bluetooth)
- Offboard navigation
- DVB Terrestrial and Satellite
- Car office (e-mail, fax, video conf.)
- TV(analog)
- DVD Navigation & Entertainment
- Personality,authentication
- Text to Speech
- Speech recognition and control
- DAB (Digital Audio Broadcast)
- Enhanced Audio (MP3, DSP)
- Dynamic navigation w/ RDS-TMC
- Telematics, Telemetry
- Phone
- Radio / Audio
- Trip computer



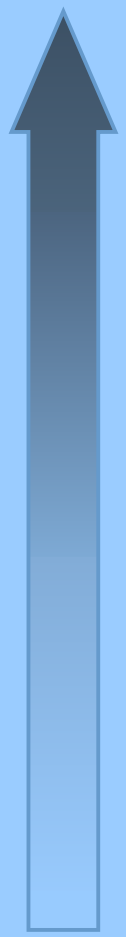
Some finding of a Hansen Report on telematics, May 2002

- The emerging telematics market has not yet taken flight
- Worldwide there are (at year end 2001) 2.4 million telematics subscribers
- Despite heavy investments in Europe and Japan, 97% of all telematics subscribers are in the US. Japan has roughly 1.5% and Europe, just 0.75%.
- 83% of all subscribers are subscribed to OnStar.
- Obstacles: too few viable business models, high prices, imperfect human machine interfaces, and fast, always-on communications are still too expensive.
- In five years the market will begin growing quickly as the cost of telematics content and services comes in line with what consumers are willing to pay.

Evolution of System Models

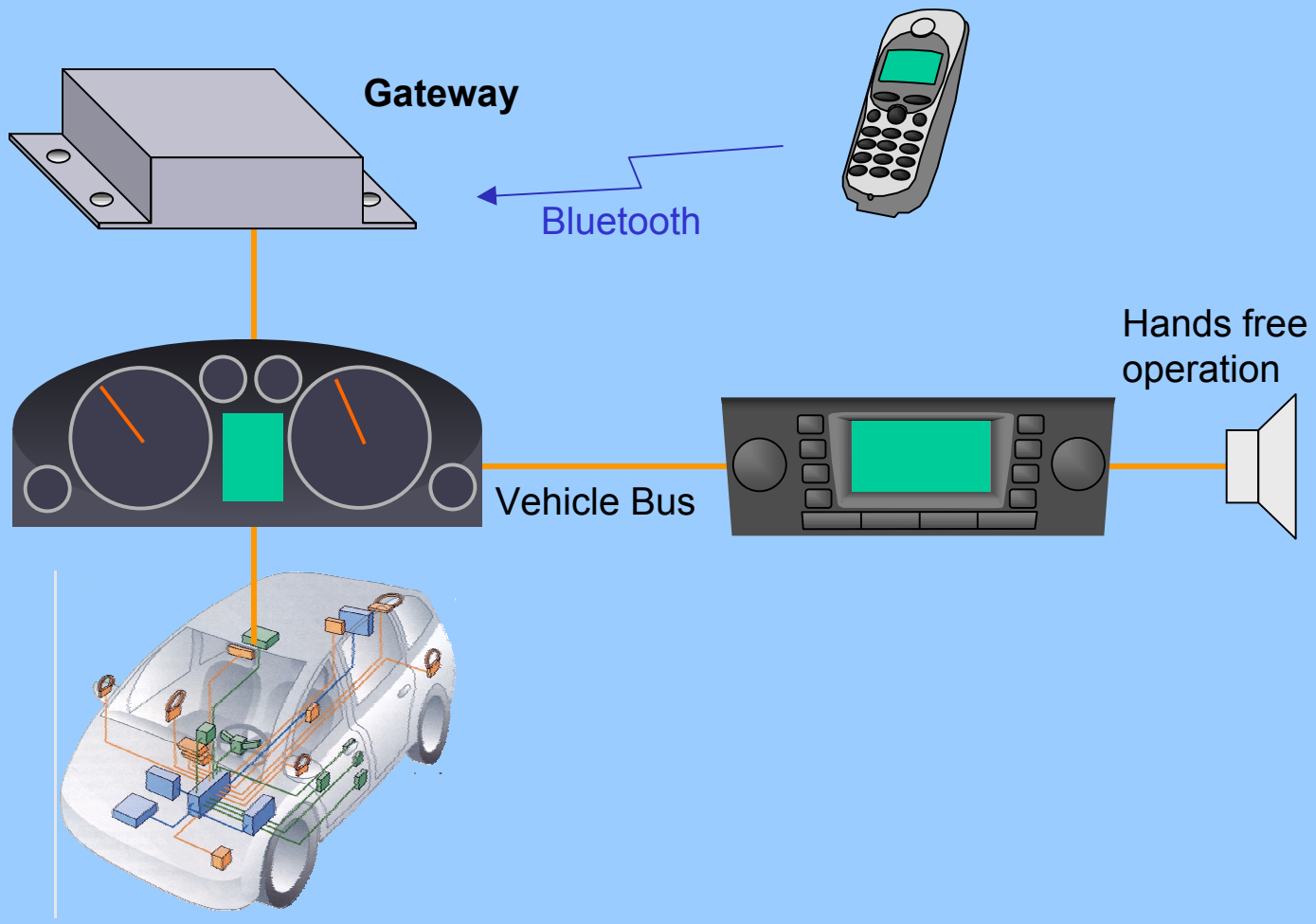


The services are different

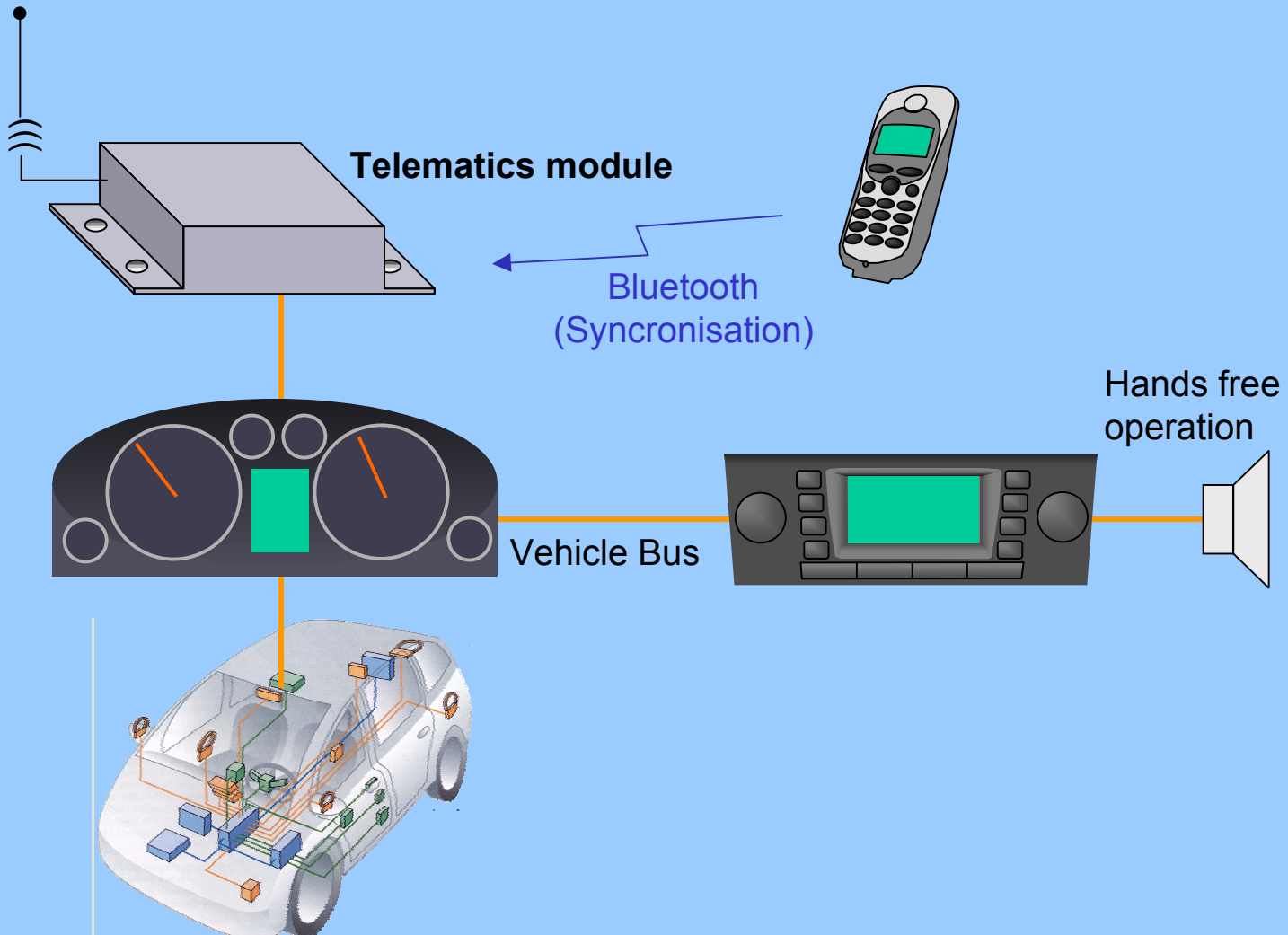


	e.g.
manufacturer	remote diagnostics / maintenance
vehicle	Reduction of environmental burden, e/b-call
driver	off-board navigation, connectivity to public transport
user	Location based services (closest Italian restaurant)

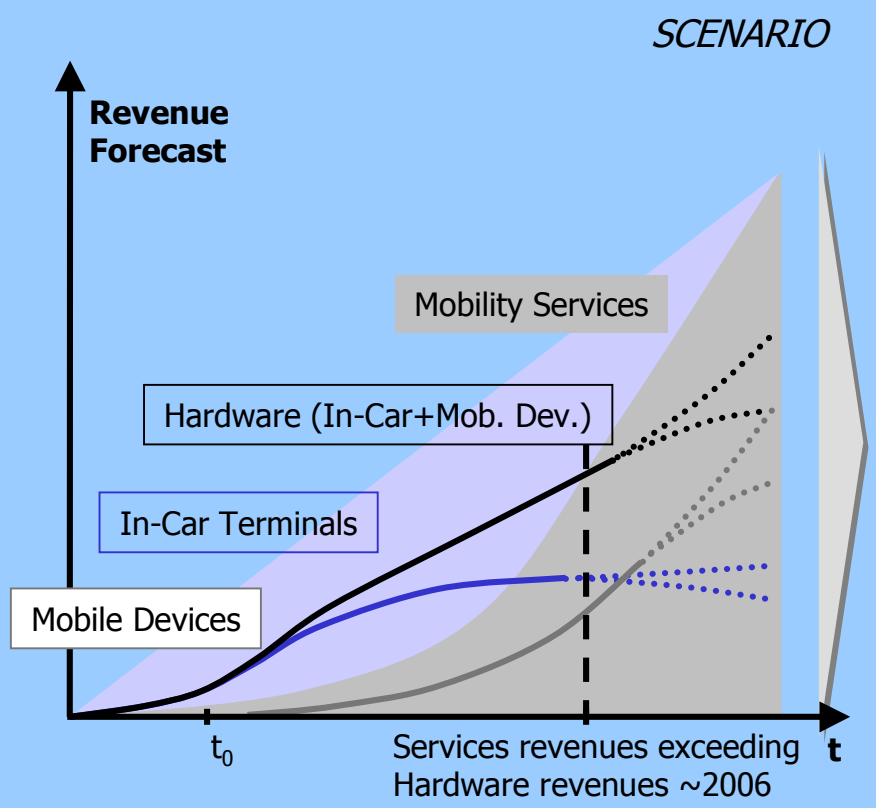
System Architecture (Mobile as a Telematics Device)



System Architecture (In-Car Terminals)



Although timing and size of the market window are uncertain, substantial business opportunities are expected both for in-car and mobile device mobility services



Comments

- Mobility service enabled in-car terminals and mobile devices will develop in parallel, but in-car terminals emerging first
- Due to shorter innovation cycle on mobile devices and standardization this segment is expected to grow faster
- Service provider have to take both under consideration - mobile devices and in-car terminals
- In the beginning hardware will be more profitable
- In the long run hardware will be commodity Functionality and differentiation increasingly determined by software and services
- From 2006 onwards service segment will is expected to generate higher revenues

Car Multimedia is under Influence of the Triple C

Communication

Connectivity

Consumer Electronics/
Entertainment

The Lifecycle Conflict

Multimedia is driven by...

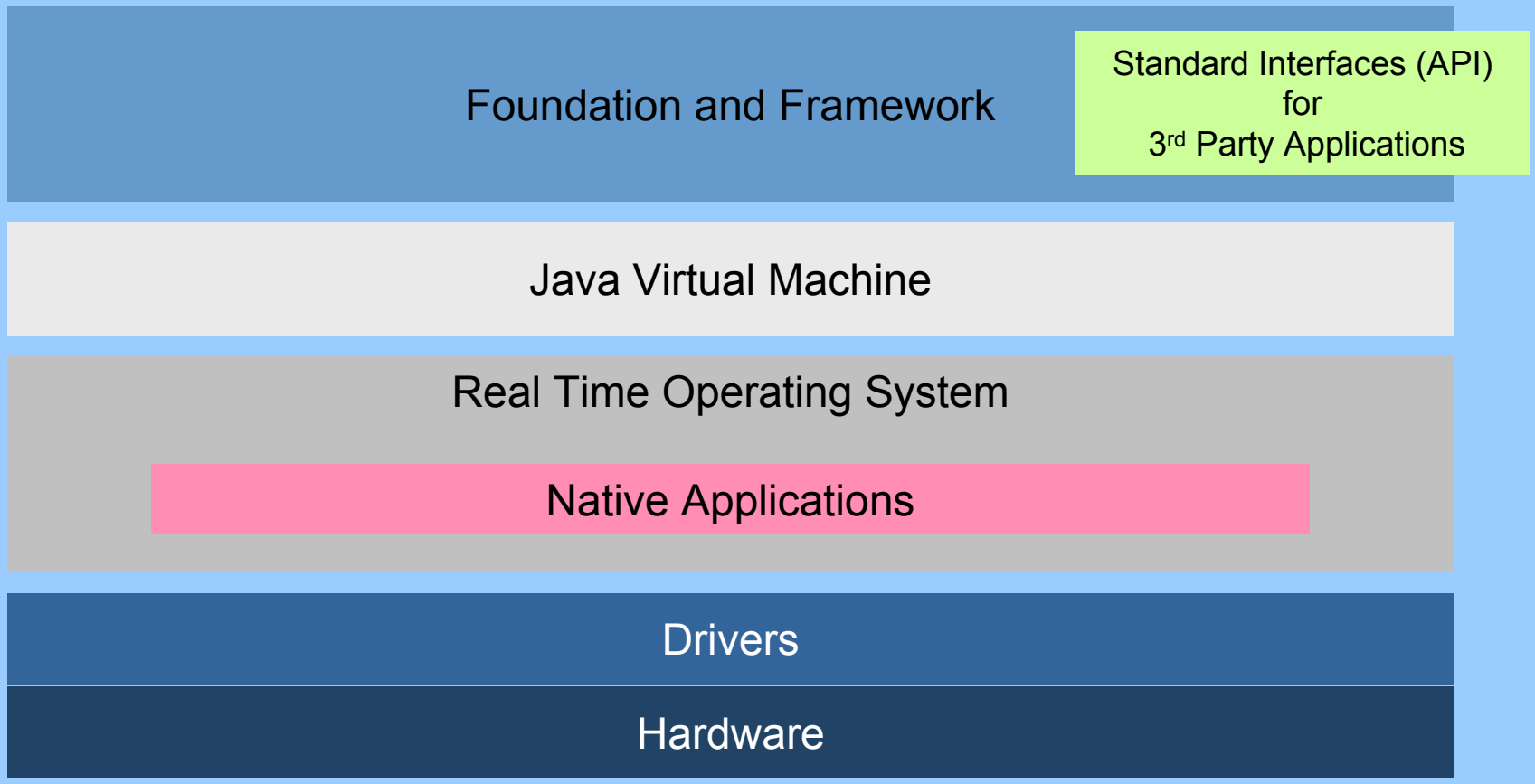
IT & Consumer Electronic Industrie

Lifecycles of 6 -18 months

vs. Automotive Industry

Lifecycles of about 7 years

Top Level Architektur (TLA)



Conclusion

- Trend to service based applications is visible
- In-car devices and mobile devices will enable different telematic services
- The Top Level Architecture separates the software development from the hardware development