Technologies Driving Growth & Innovation in Automotive Electronics

Vishal Suresh

Asst. Director – Business Development & Strategic Partnerships

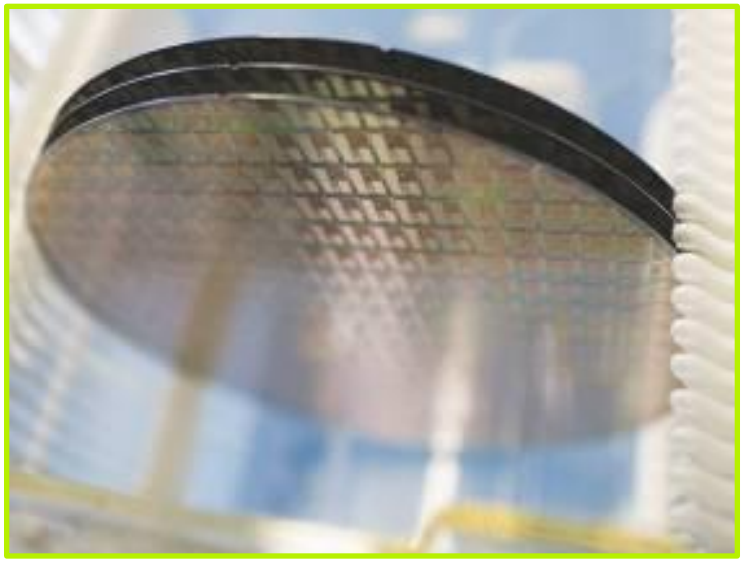
May 21, 2011

The next 30 mins…or so…

- NXP
- HPMS
- Automotive market
- Areas of innovation
- Connected Mobility
  - Car entertainment
  - Car access
  - Telematics
- Summary

NXP Semiconductors

NXP Semiconductors N.V. (NASDAQ: NXPI) provides High Performance Mixed Signal and Standard Product solutions that leverage its leading RF, Analog, Power Management, Interface, Security and Digital Processing expertise.



Our innovations are used in a wide range of automotive, identification, wireless infrastructure, lighting, industrial, mobile, consumer and computing applications.

A global semiconductor company with operations in more than 25 countries, NXP posted revenue of $4.4 billion in 2010.

Our innovations are used in a wide range of applications

Wireless infra

Lighting

Industrial

Mobile

Automotive

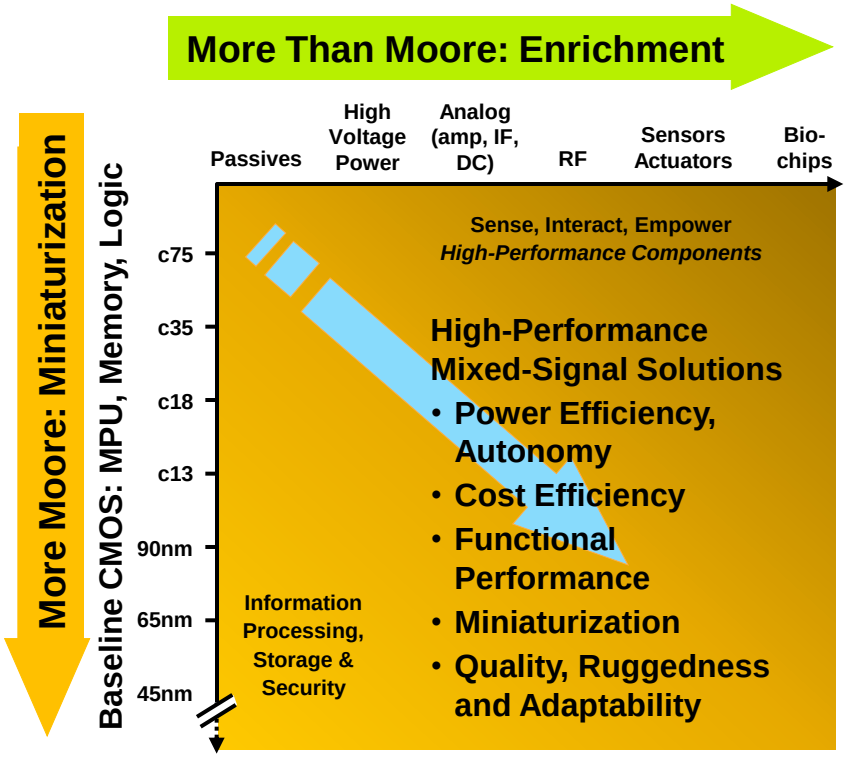
Identification

Consumer

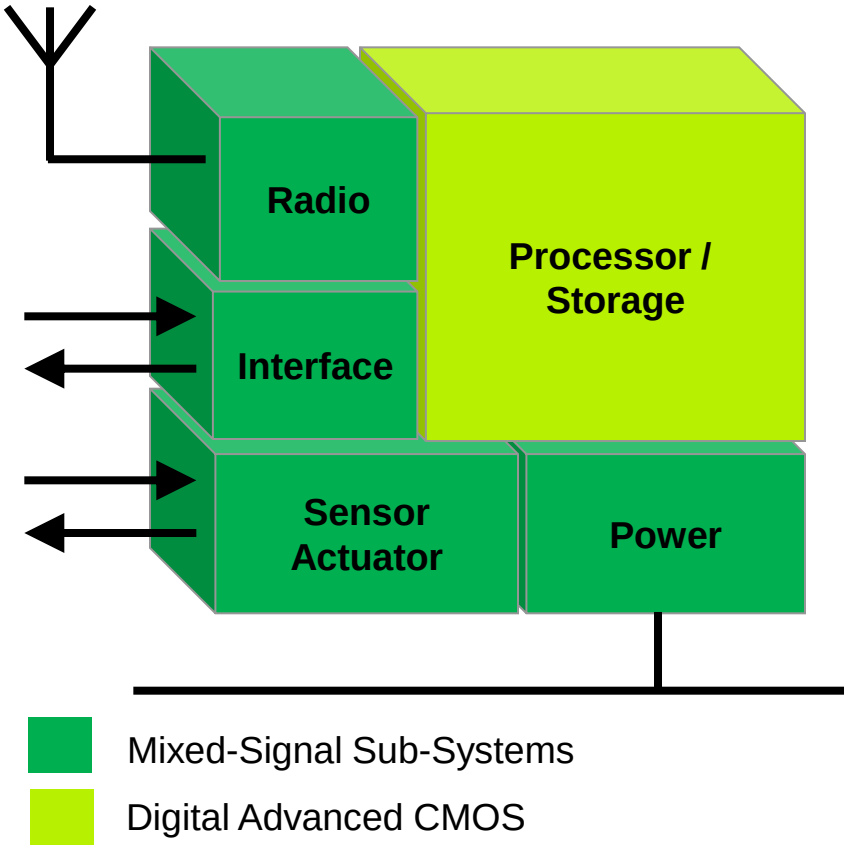
Computing

High Performance Mixed Signal Solutions

More Than Moore Required

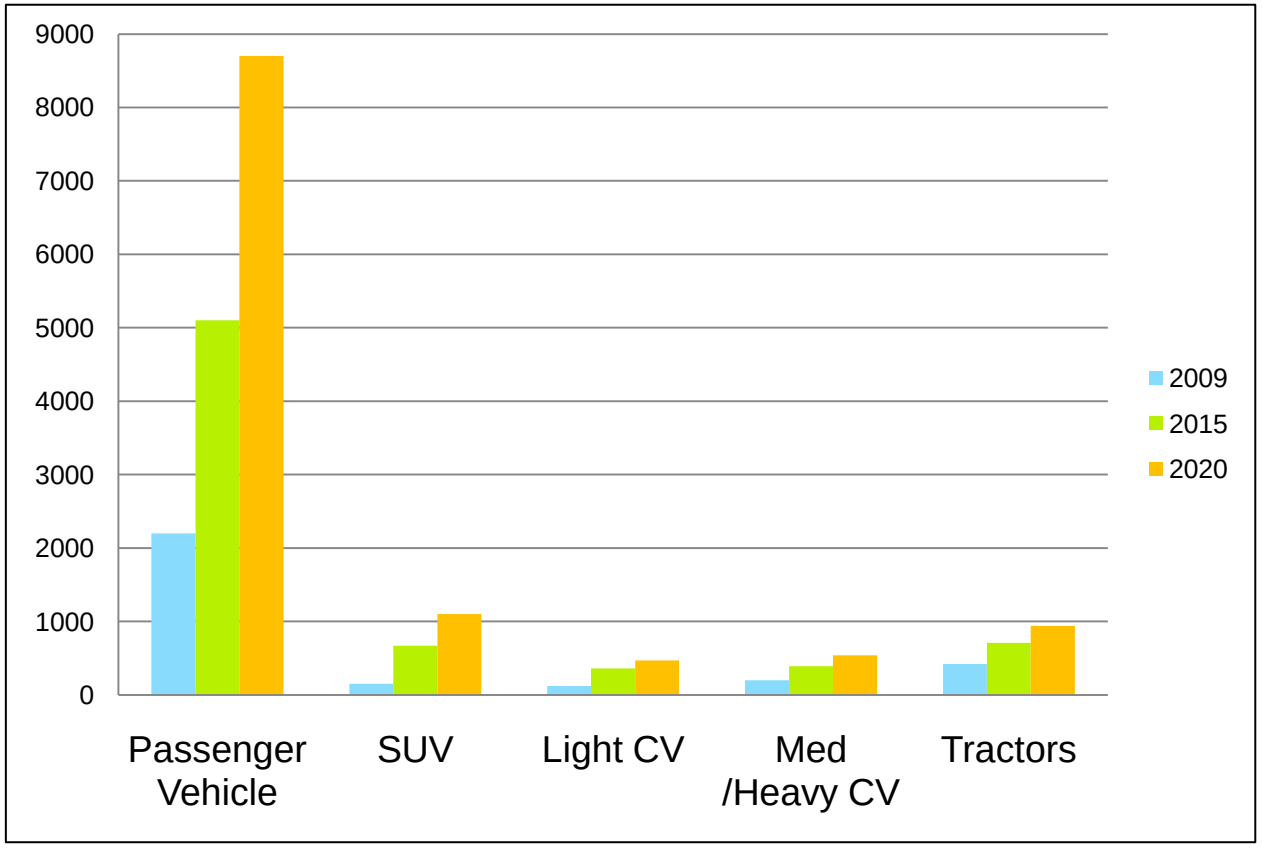


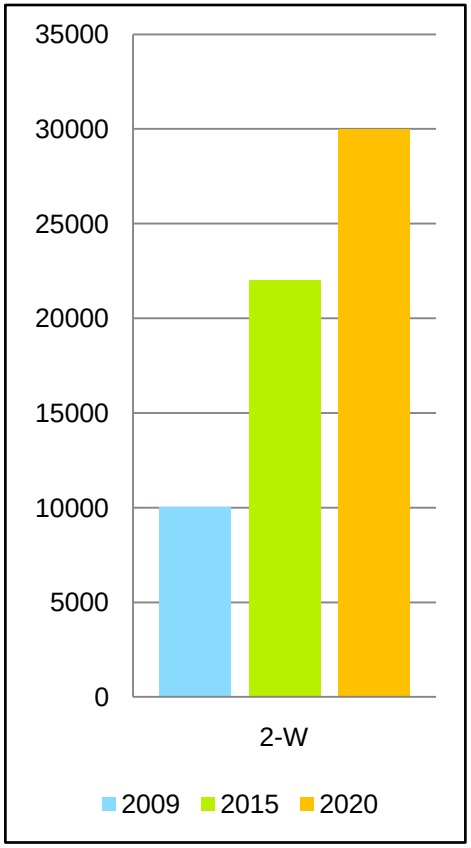
Application Optimized Mix of Analog and Digital



India Automotive Production Trends:

Growth across all segments





Source: ACMA – EY Vision 2020 Report

Two Wheelers : Increased use of Electronics

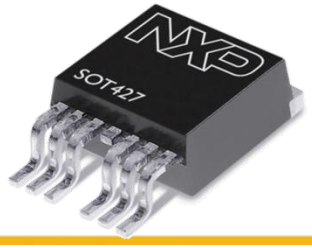
Immobilizers

LED lighting

ABS Sensors

Cluster products

Automotive IC's and discretes



Networking

CAN lin

Speed, angular sensors

Driving innovation in Automotive HPMS

Established leadership positions

Driving growth and Innovation

2011 and beyond

In-vehicle networking (IVN)
CAN / LIN
- Transceivers
- System Basis Chips

NXP #1

Car access & immobilizers (CAI)
- Immobilizers and Remote Keyless Entry

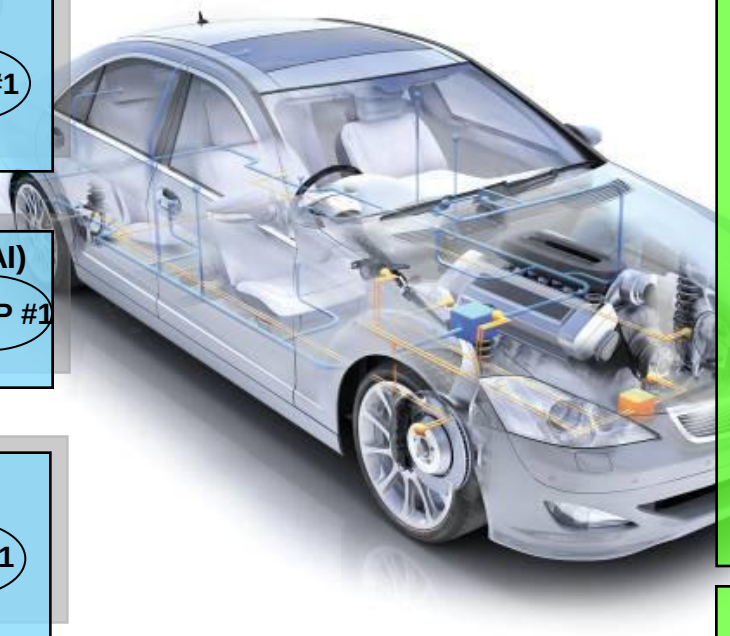
NXP #1

Car entertainment
- Radio/Audio DSP
- Tuner
- Audio Amplifiers

NXP #1

Magnetic Sensors
- Speed (ABS,engine)
- Angular (steering, throttle)

NXP #3



Automotive small signal discretes
- Diodes, Transistors, RET's
- Vreg's: Linear Regulator

Connected Mobility

Car entertainment
- Multi Standard Digital Radio
- Digital 1-Chip Radio

Car access
- Passive Keyless Entry / Go
- Connected Key: 2-way, NFC

Telematics and Car ITS
- e-Call & Eco routing
- Car-2-x communications

CO2 reduction

- FlexRay & Partial Networking
- LED Driver IC
- Battery Management & Isolation

Connected Mobility

Location-based services
(NFC, Telematics with GPS/GSM)

Personalization
(Crypto/authentication, NFC)

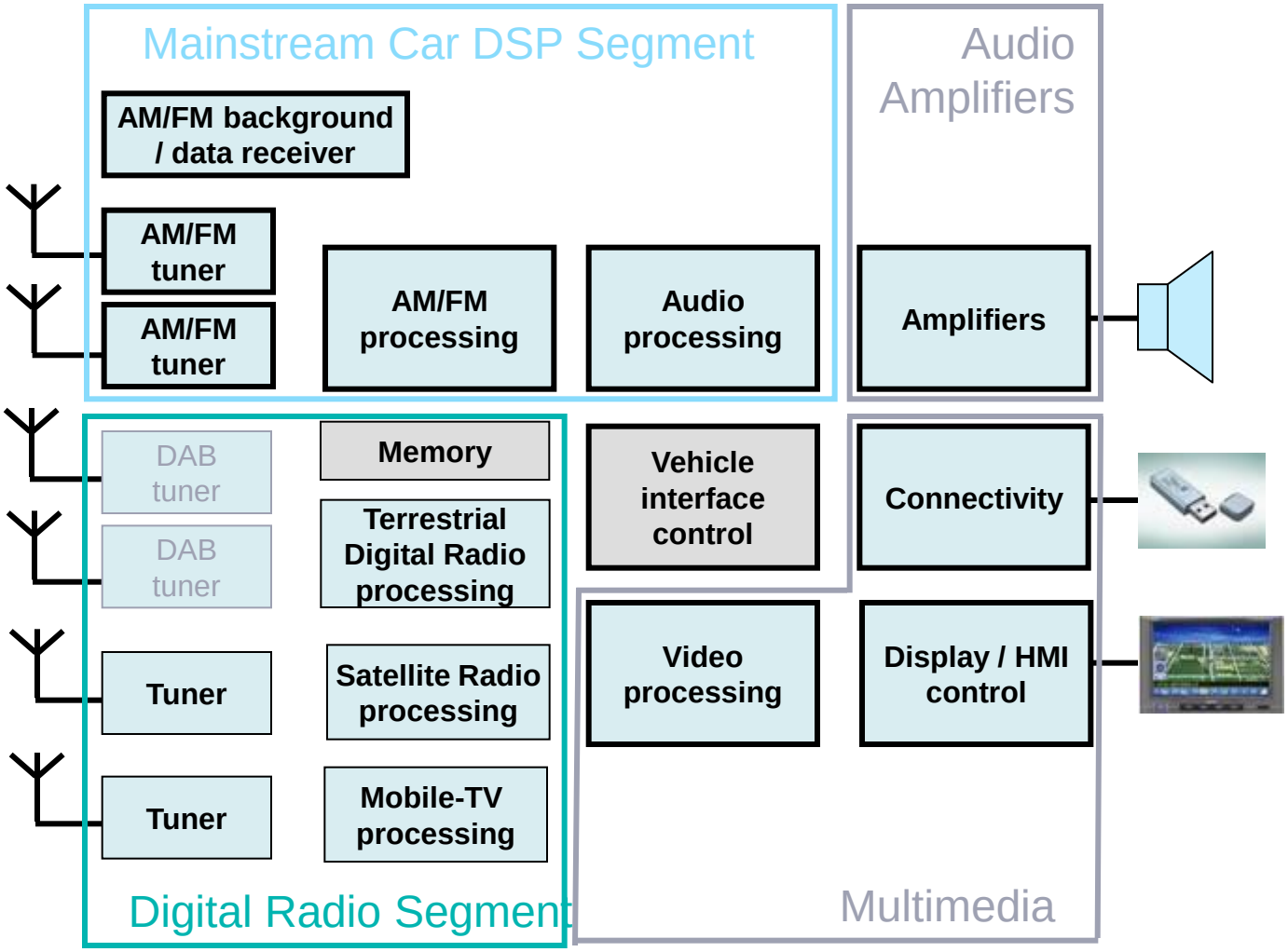
Broadcast Reception
(AM/FM, Software-defined radio, digital radio)

Remote Car Management
(Authentication, Telematics with GPS/GSM, RF Crypto)

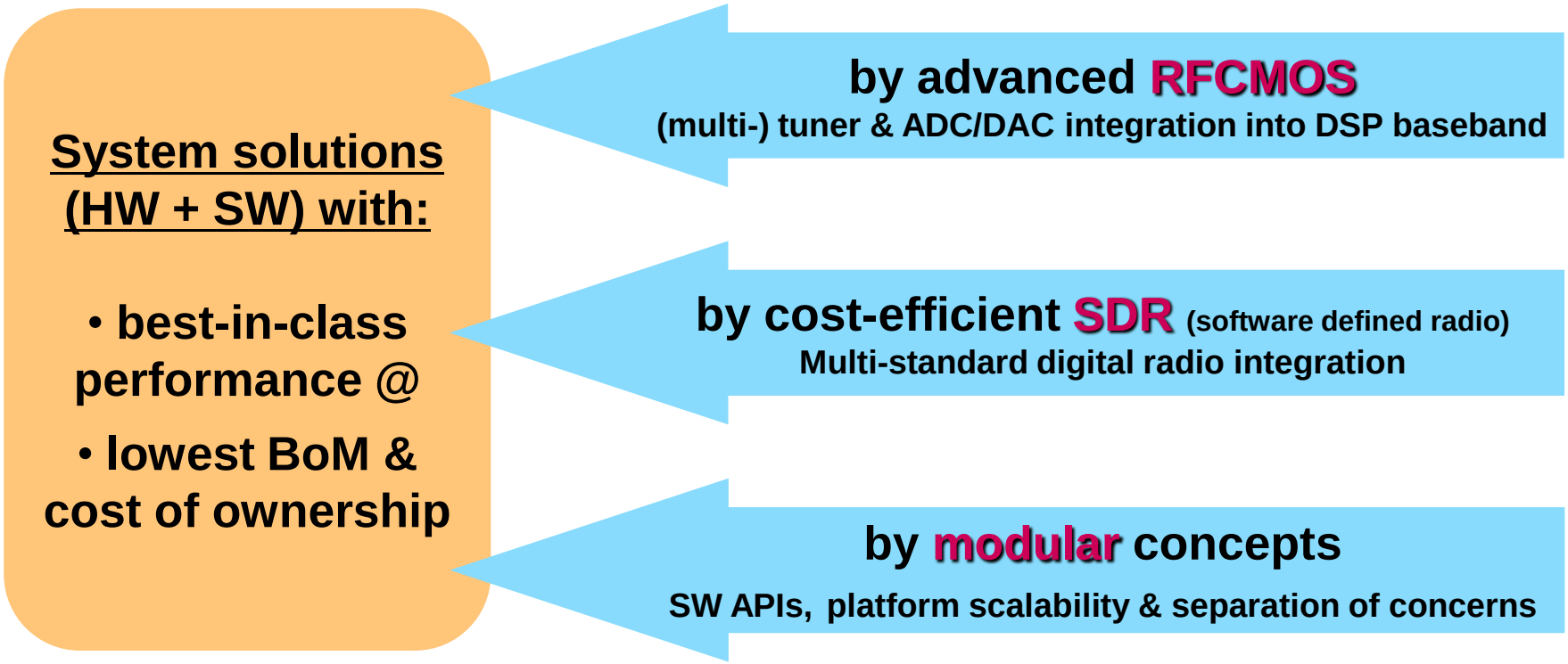
Car-to-x Communication
(Software-defined radio with 802.11p, telematics with GPS/GSM, crypto/authentication)

CAR RADIO

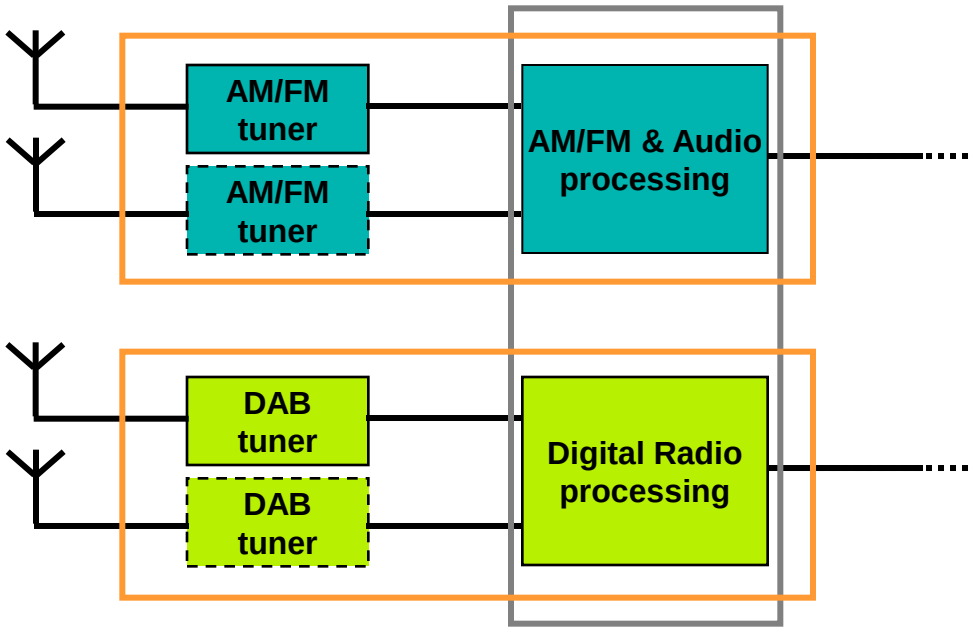
Car Entertainment application



Strategy in Car Radio / Audio Roadmap



Car Radio Integration Strategy

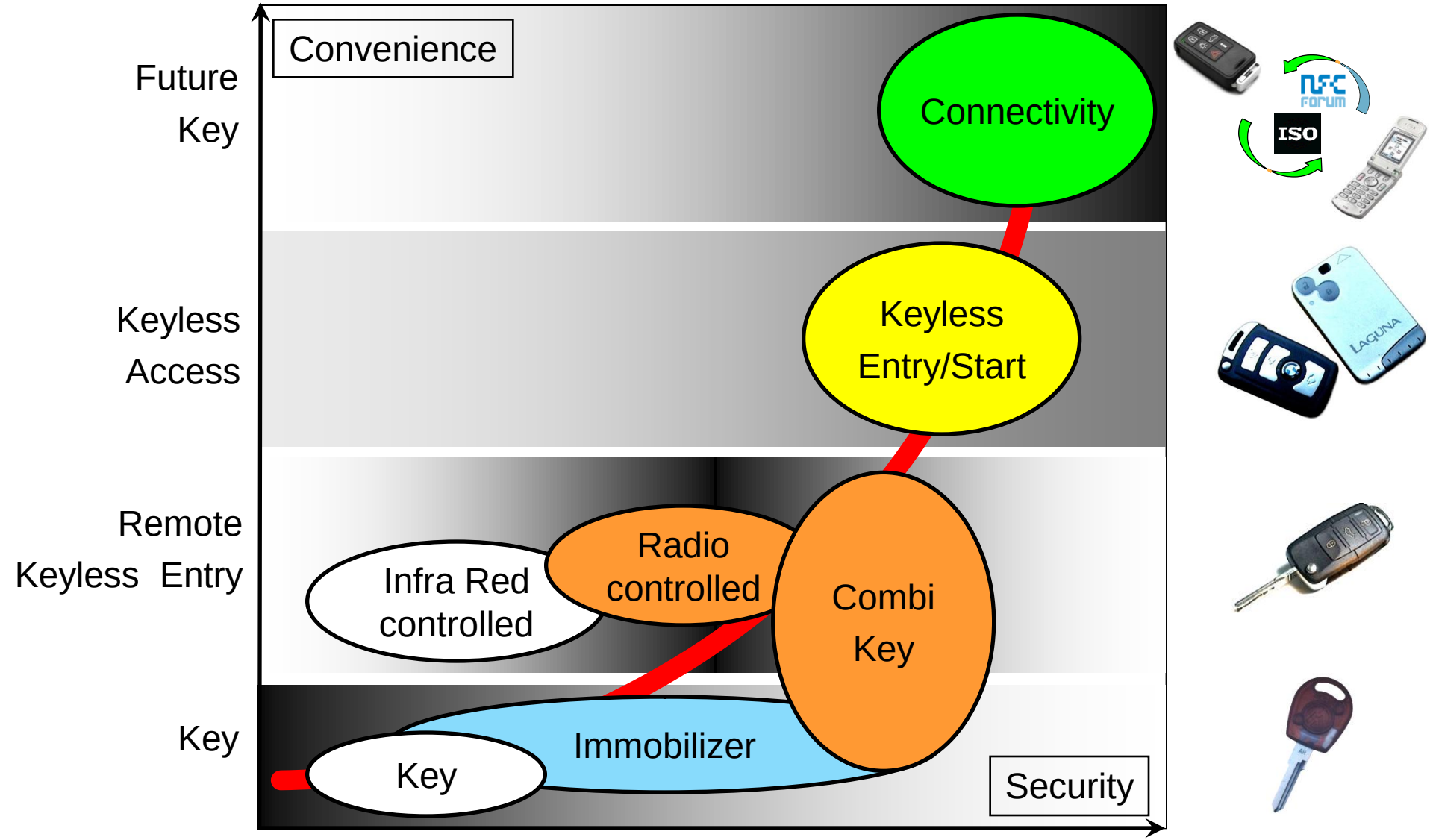


Benefits of Hor. integration:

- Right modularity
  - No integration mix of high and low takerate features
  - E.g. Dig. Radio on/off the board
  - Support distributed architectures
- Minimal system cost overhead for AM/FM only applications
- Clear separation of concerns; no use case / concurrency trade-offs
  - E.g. between AM/FM <-> Dig. Radio
  - Less Software complexity (R&D)
- Less ICs due to multi-tuner RFCMOS integration
- SW-defined for lower cost-of-ownership and earlier time-to-market

CAR ACCESS

System Evolution – Vehicle Immo. & Access

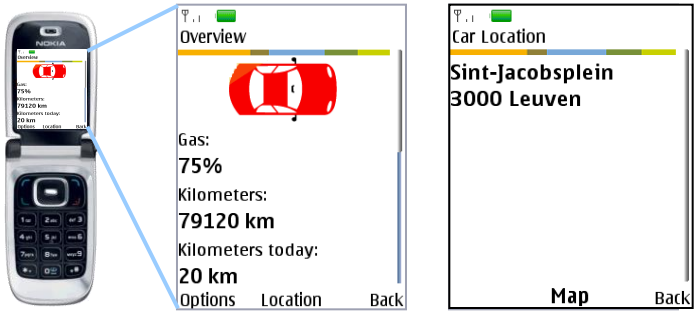


Future Key Roadmap – Connectivity

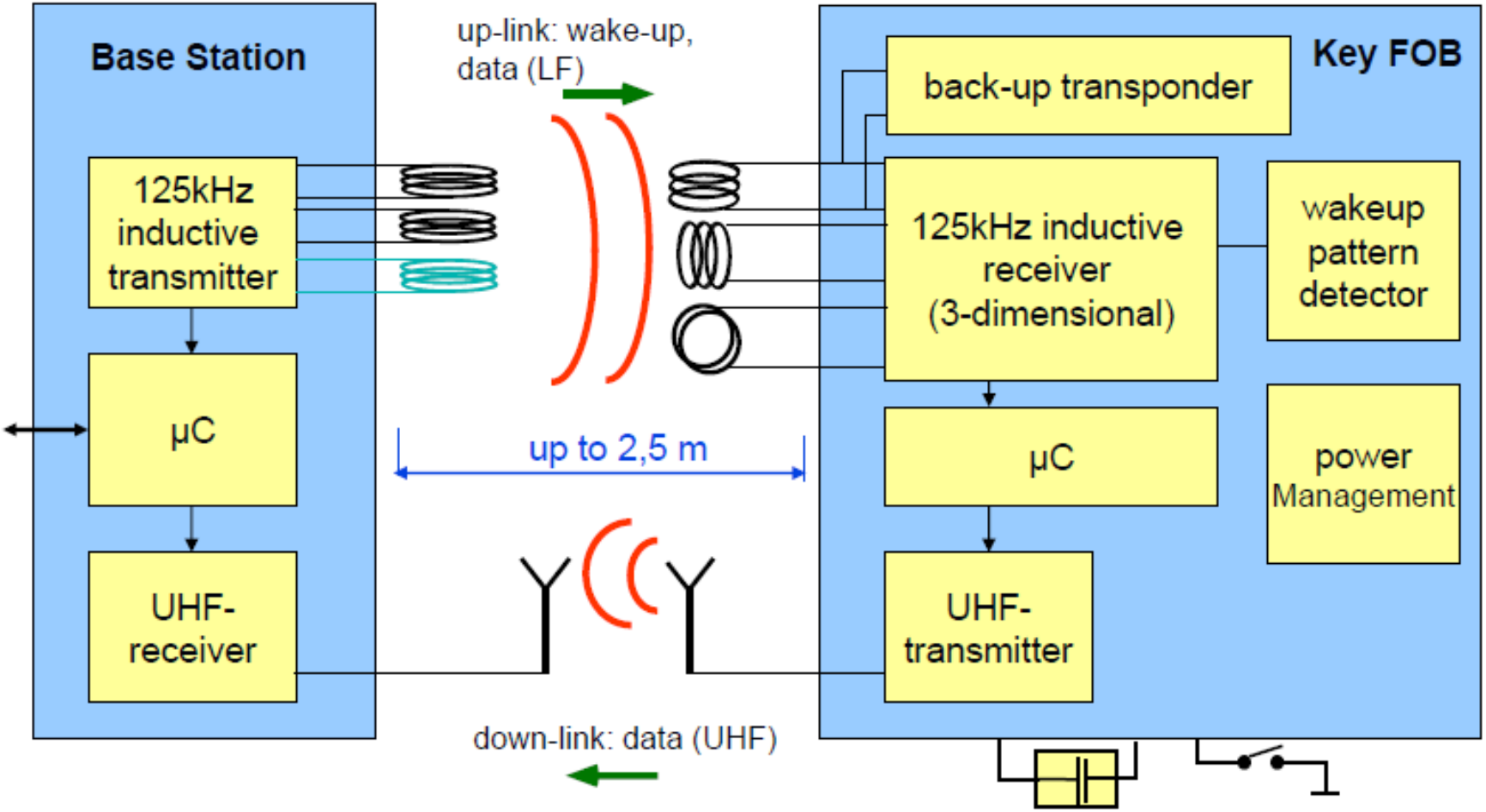
- Enables intuitive application use case
  - Trip Preparation
  - Car Status
  - Car Finder
  - Vehicle Configuration Management

- Prototype Demo available that uses a NFC enabled mobile phone
- NFC forum in place to accelerate adaptation in consumer electronics, mobile devices and PCs

MasterCard International, Panasonic, SONY, Microsoft, NXP, SAMSUNG ELECTRONICS, NEC, RENESAS, VISA, NOKIA



System Block Diagram

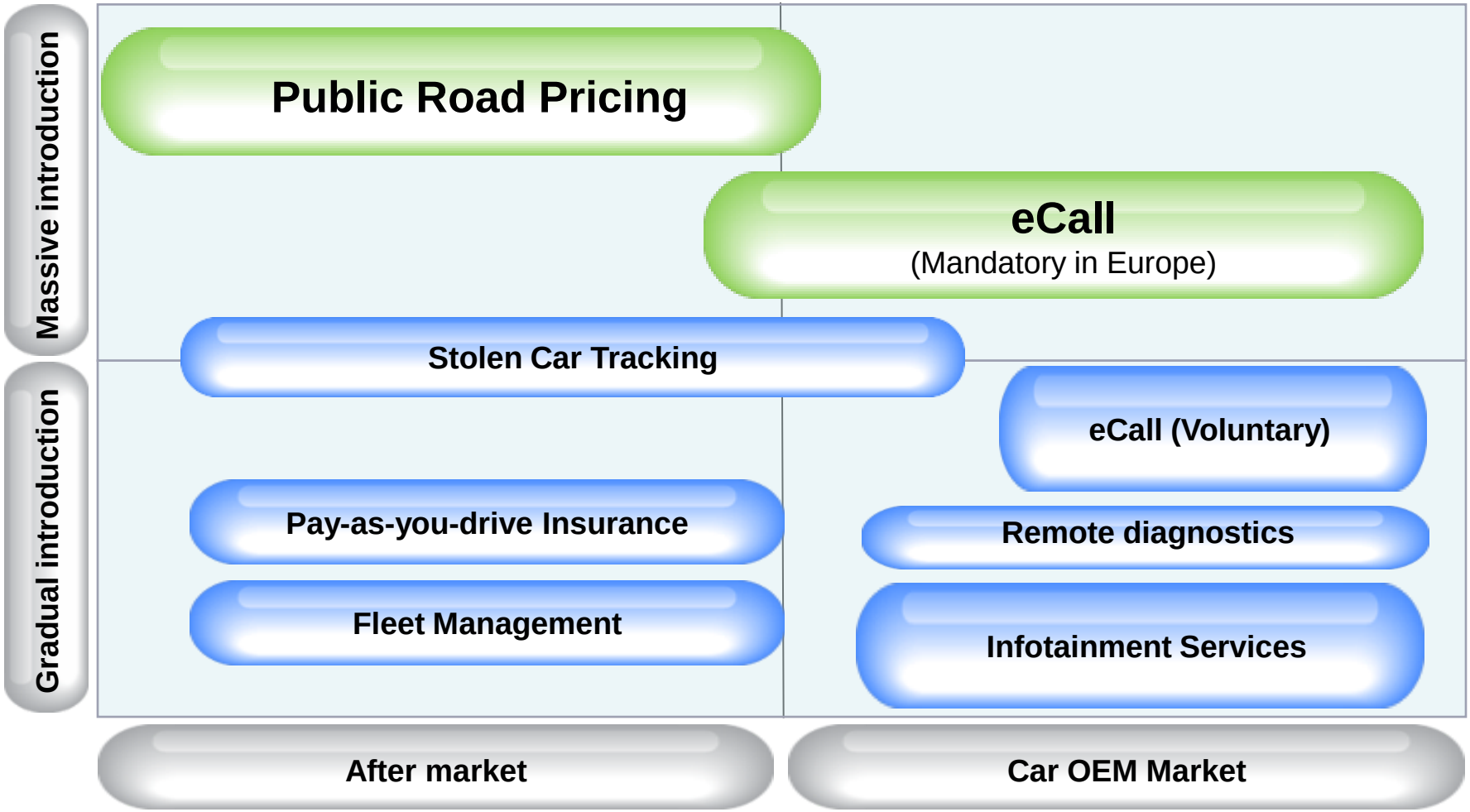


TELEMATICS

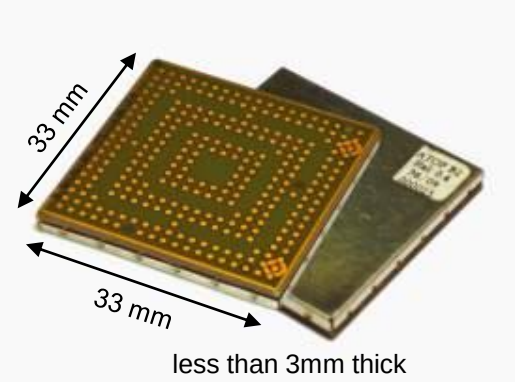
Innovation in Telematics

Breakthrough in cost & security for high volume markets

& many other possible application fields outside Automotive

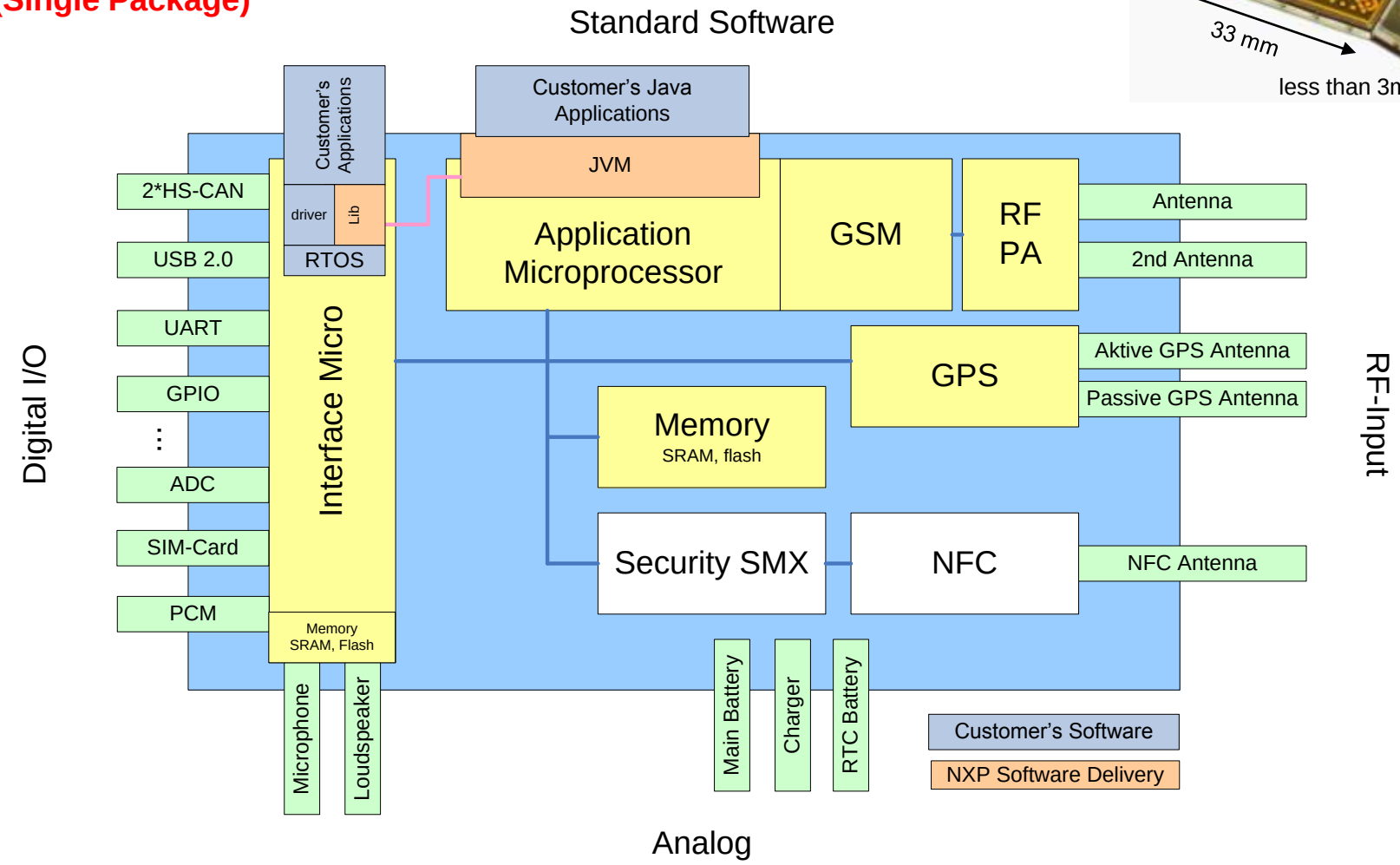


Automotive Telematics OBU Platform

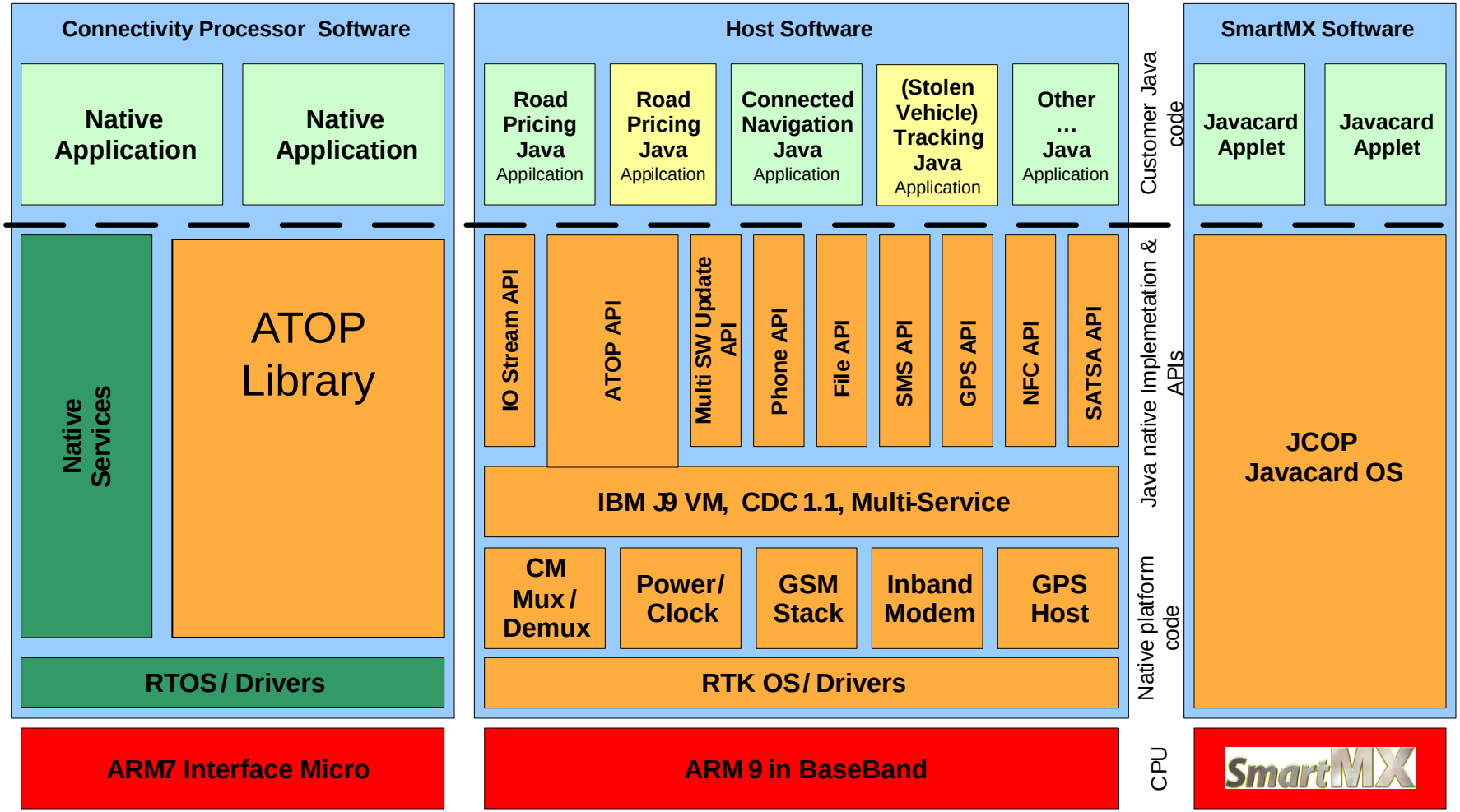


ATOP2.5G

(Single Package)



Software Architecture



Other Areas

- Electrical power steering
- Reduced emissions
- Dual clutch systems
- Start-Stop systems
- LED lighting

Summary

- Semiconductors driving Innovation in Automotive electronics
- Connected mobility concepts driving safety & connectivity
- Innovations you have seen today:
  - Integration in car radio platforms leading to lower power consumption, cost & TtM
  - Telematics
  - Car access & connected key concepts
- Energy efficiency is another key area for innovation
- Many other concepts under development
- Do contact me if you have interesting ideas & would like to partner with NXP in a product / concept development exercise using any of these technologies [vishal.suresh@nxp.com]

Thank You !