

Panel

***Advances in Wireless
Communications: Next Challenges***

MODERATOR

Robert Bestak (CTU in Prague, Czech Republic)



**InfoWare
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Panelists

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Femtocells

- Why

- Indoor coverage
- Capacity

- What is FAP

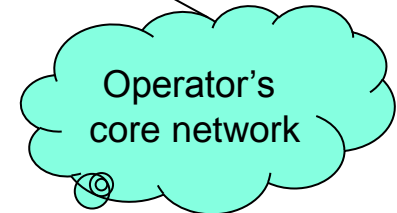
- ...Femto Access Point
- Small lower power base station
- Located in user premises
- Connected via subscriber line
- Operates in licensed spectrum



- Low coverage
- Low power
- Low price

Femtocell
(FAP, HNB, HeNB, ...)

xDSL, cable, WiMAX, etc.



User

- Coverage
- Capacity
- Price
 - Femtozone tariffs
- Devices
- New services
 - Home PBX, Remote control, etc.

Operator

- Coverage
- Capacity
- CAPEX/OPEX savings
 - Sites, access infrastructure, etc.
 - Power, backhaul, site rental, etc.
- Traffic offload
- Fast deployment of
 - New services
 - New technologies

- Backhaul
- Spectrum
- Services
- Power
- Security
- QoS



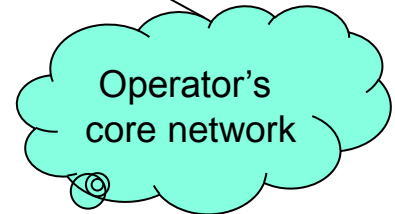
Challenges

- Interferences
- Mobility
- Security
- Backhaul
- Location/Synchronization
- Scalability
- ...



FAP

backhaul





Alexandre Bouard, BMW Group
Panel discussion - VEHICULAR'13 - 22.07.2013, Nice, France

ADVANCES IN WIRELESS COMMUNICATIONS: NEXT CHALLENGES

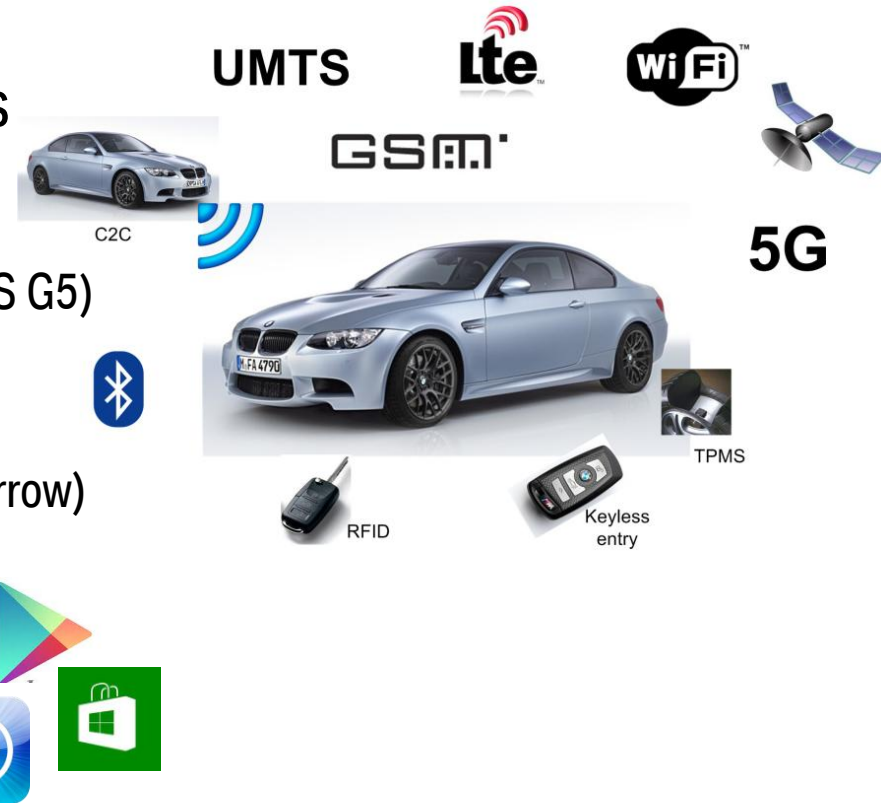
THE AUTOMOTIVE SECURITY ASPECTS

**BMW
GROUP**



INCREASING NETWORKING POSSIBILITIES

- Increasing number of C2X interfaces
 - Long range (e.g., LTE, UMTS, GSM)
 - Short range (e.g., RFID, Bluetooth, Wi-Fi, ITS G5)
- Rapid evolution of all standards
 - 2G/3G → LTE (tomorrow) → 5G (after tomorrow)
- Plethora of use cases and devices
 - Infotainment vs Safety
 - Third-party applications



In addition to the functional challenges (design of smart antennae and software management),
Car manufacturers have to cope with security.

SECURITY AND WIRELESS INTERFACES

- **Cars are safety-by-design, rather than security-by-design systems**

- Unprotected C2X interfaces
- Unprotected software components

- **2 main risks**

- Integrity related (service disruption)
- Confidentiality related (secret leaking, privacy infringement)



Company effort

- Threat analysis
- Design/implementation of secure SW and on-board communication architecture
- Penetration testing

Cooperative effort

- EU and German-funded projects
- Cooperation with subcontractors
- Standardization committees

ICWMC/VEHICULAR

Advances in Wireless Communications: Next Challenges



Trip to Nice – Station 1

Local Railway Station



Trip to Nice – Station 2

Linz City Tram



Trip to Nice – Station 3

Linz Main Train Terminal



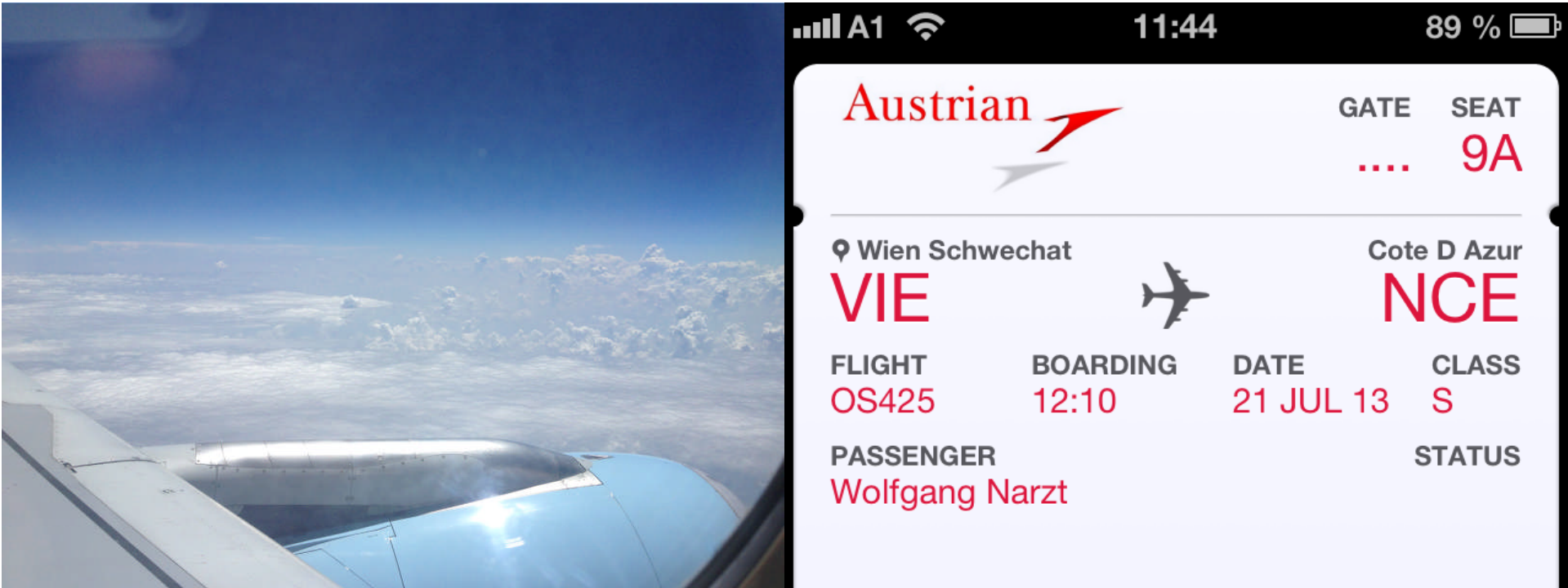
Trip to Nice – Truth

Went by Car



Trip to Nice – Station 4

Vienna International Airport



Trip to Nice – Station 5

Nice International Airport



Confused?

Can't it be easier?

