Aviation

CEPT workshop on new spectrum solutions for industry sectors
Copenhagen - Thursday, 2nd May 2019

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Trends and Use Cases
Digital Convergence: Need for holistic approach to services

- **Digital Communications**: all objects interconnected through wireless in airports worldwide

- **Spectrum availability**: mobile substituting fixed communications

- **New SIM**
  - new business models and entrants

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**Digital Applications**

- PTT/TETRA
- Cellular
- Wi-Fi

**Mission critical**
**Operation critical**
**Business**
**Passengers**

**+ Reliability**
**Objects**

**- Reliability**
Addressing PAX experience and operational Reliability
Introducing dedicated networks

**TODAY**

- PMR/LMR
- Service Provider
- WIFI

**TOMORROW**

- Service Provider
- WIFI
- Private LTE

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**SHARED NETWORK**

- WiFi experience Not Optimized
- Concern: Reliability, non Predictable Performance

**DEDICATED NETWORK**

- Best WiFi Experience
- Best Reliability and Predictable Performance
AIRPORT DIGITIZATION
The value of data: driving new use cases

- Green Airport
- PAX Experience
- Situational & Operational Awareness
- Improve & Guarantee Turnaround Time
- Asset Location Management
- Connected Aircraft
- Collision Avoidance
- New Business Models
- Automated Runway Inspection
- Video Analytics Security
- Marshal Car Real Time Awareness
- Green Airport
- PAX Experience
- Situational & Operational Awareness
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Private LTE Wireless Operations

- APRON Operations
- Runway Automation
- Marshal Car
- PAX Experience
- De-Icing Requests
- CCTV Connectivity
- Crew Operations
- Emergency Response

- Reliable
- Autonomy
- Financials
- Investment Protection
Improved turnaround
Reliable broadband services

Below Wing
- Baggage Services
- Bag Manager Tablet
- Ground Services Tablet
- Aircraft data offload

Above Wing
- Critical Voice PTT
- Pilot real time data
- Aircraft Services
- Crew Tablet Onboard

Reliable
Autonomy (Priority Setting)
Scalable
Multiservice
Digital Transformation
Emergency Response
Increased situational awareness

- Security officer with bodycam & PTT phone
  - Landside / Airside
- Wireless CCTV
  - Landside / Airside
- Command and Control room:
  - Controls PTT, PTV and VMS
- Remotely controlled PTZ* Camera on firefighter truck for management situational awareness
- Smart Phone: Video Surveillance (Camera) and PTT

* Pan, Tilt, Zoom
Firefighter Vehicle

Increased situational awareness at Airside

Improved situational awareness, outside CCTV Coverage

Remotely Controlled PTZ Cam
Inspection, Maintenance & Tracking
Airline, MRO

Private Broadband Wireless

Fuselage Inspection

Remote Expert Real time visual insight

ULD Inspection

Cargo Scanning Inside A/C

CARGO

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**PRIVATE 5G USE CASE**

- **HIGH THROUGHPUT DEMAND**
- **CONNECTED AIRCRAFT**
  - Terabytes of data generated during flight for analysis, including predictive maintenance
  - Secure fast Turnaround time requires high throughput connectivity
  - Sensitive telemetry data securely transported over private network to AOC
  - Additional use case to upload new IFE content

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Airport Private LTE deployment

APRON – Gate Zones

- Secure data capacity during Peak Hour Turnarounds
- Dedicated Per Gate CAPACITY at the APRON
- Indoor Small Cell for COVERAGE guarantee Including deep indoor

- Wider Area coverage Taxiways, remote APRON
- Terminal coverage re-using DAS
- LTE Airside – WiFi Landside Handover

Handover
Airport Private LTE deployment
Airfield Zone

Wider Area coverage
- Runways, parking, Hangars, Sea

Local redundant Core for
- 5G Performance
- Keep traffic local
- Reliability: Operational continuity
Harmonisation of European Spectrum

• National dedicated enterprise spectrum (e.g. Germany 3.7Ghz, France):
  ➢ Good, but….aviation is airports and airlines. European coordination and Harmonization on frequency bands needed because cross country mobility is a requirement (plus the business case is more viable on a wider market).

• US CBRS-like spectrum:
  ➢ Good approach, however, in Europe we need to secure mission critical support as well for those industries that require such service.

• Mobile Operator Licensed spectrum:
  ➢ OK for passenger services and devices, but lack of expertise in aviation specific solution limits innovation and is barrier to adoption.

• Solution:
  ➢ Harmonisation and Coordination of European Spectrum allocated for Enterprise (here Aviation) use cases.
Thank you!

Questions?