

A large commercial airplane is parked on a tarmac at night. The aircraft is illuminated by ground lights, and its cabin door is open. Various ground service equipment, including baggage carts and service vehicles, are positioned around the plane. In the background, airport buildings and city lights are visible under a dark sky.

AeroMACS – A Global Standard for Airport Surface Communications

Declan Byrne
President
WiMAX Forum

WiMAX Increasingly Used as Solution for Vertical Markets



Smart Grid

Rural Broadband

High Speed Rail

Aviation

Oil & Gas

Mobile Backhaul

WiMAX – Evolving to Meet the World's Wireless Broadband Needs

North America

- Sprint/Clearwire attract over 11M subscribers and use 3G/WiMAX/Wi-Fi devices
- Canadian Utilities using WiMAX for Smart Grid Networks, including BC Hydro
- Marathon Oil using WiMAX for Smart Field Connectivity
- US FAA Chooses WiMAX for Aviation industry Terrestrial Communications infrastructure upgrade

CALA

- WiMAX used for connectivity among ships and workers at the Panama Canal
- WiMAX network used to connect teams at the Heineken Regatta
- WiMAX connecting new Smart Cities projects in Brazil

Europe

- EUROCONTROL chooses WiMAX for Aviation industry Terrestrial Communications infrastructure upgrade
- WiMAX used in massive Smart Field deployments in Russian Oil & Gas companies, including Nizhnevartovsk

Middle East / Africa

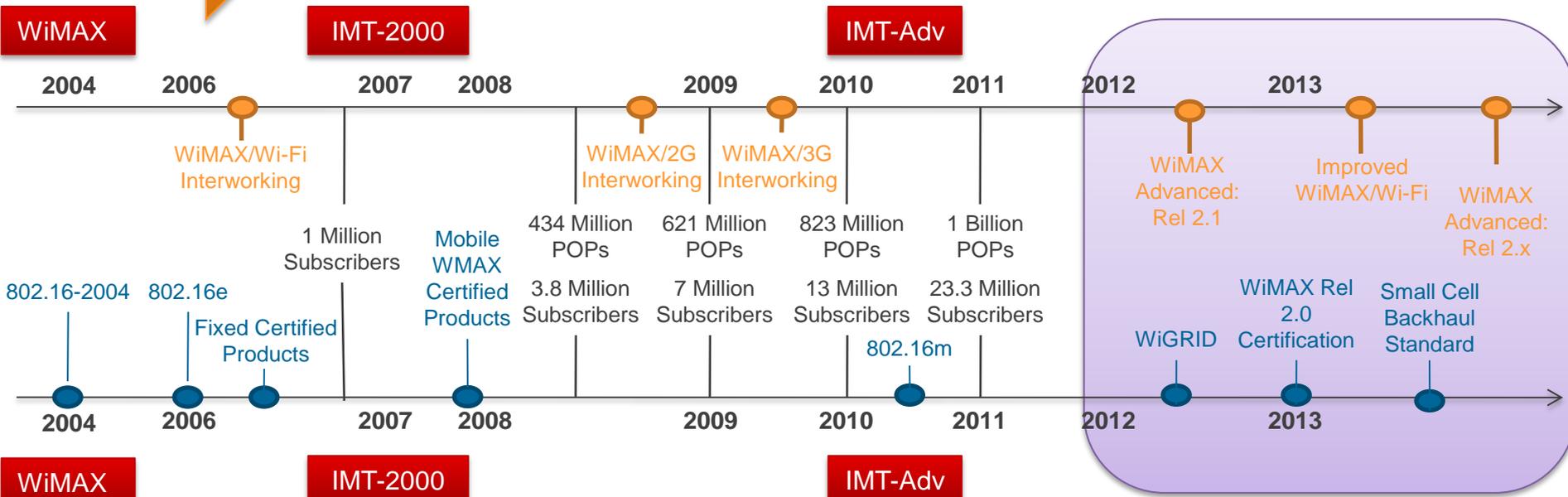
- WiMAX used in Smart Field deployments for Oil fields in Oman
- WiMAX connecting government applications in Afghanistan, Iraq, etc.
- WiMAX used by major Int'l operators – Orange, MTN
- New Deployments in Cote d'Ivoire, Botswana, more

Asia

- UQ Communications connecting 3.6M subscribers
- KDDI – Building 100K Wi-Fi APs on WiMAX
- YTL Communications – First converged Voice and Data operator nationwide, Connect 10K schools nationwide & over 500k subs
- P1 – WiMAX/LTE coexisting networks and devices
- Global Mobile WiMAX connects 3,000 Wi-Fi APs, 800 connected buses
- Vee Time WiMAX for High Speed Rail
- WiMAX the #2 broadband technology in Pakistan
- Australian Smart Grid deployments, including SP Ausnet WiMAX to the meter
- WiMAX used for Disaster Recovery, Public Safety, High Speed Rail, Power Plant CCTV, and other uses in Taiwan

WiMAX Continues its Technological Evolution and Market Expansion

WiMAX Open Ecosystem Development



WiMAX Standard Development

WiMAX in Multi Radio Access Technology Network Deployments

Fixed/Nomadic WiMAX

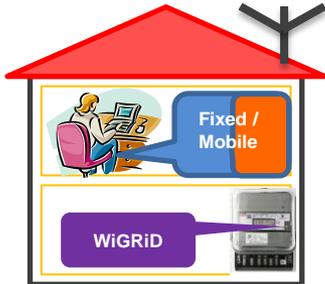
Mobile WiMAX

WiMAX Advanced

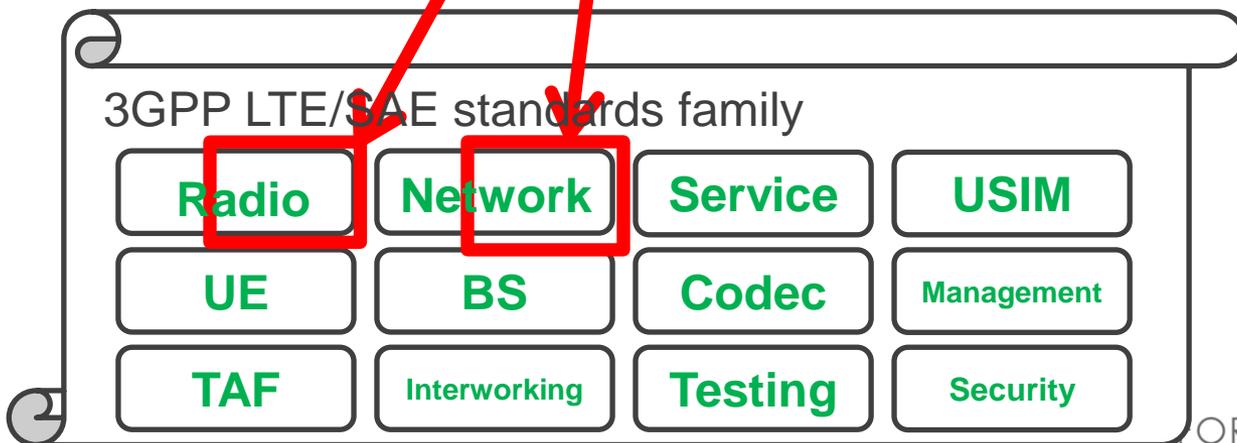
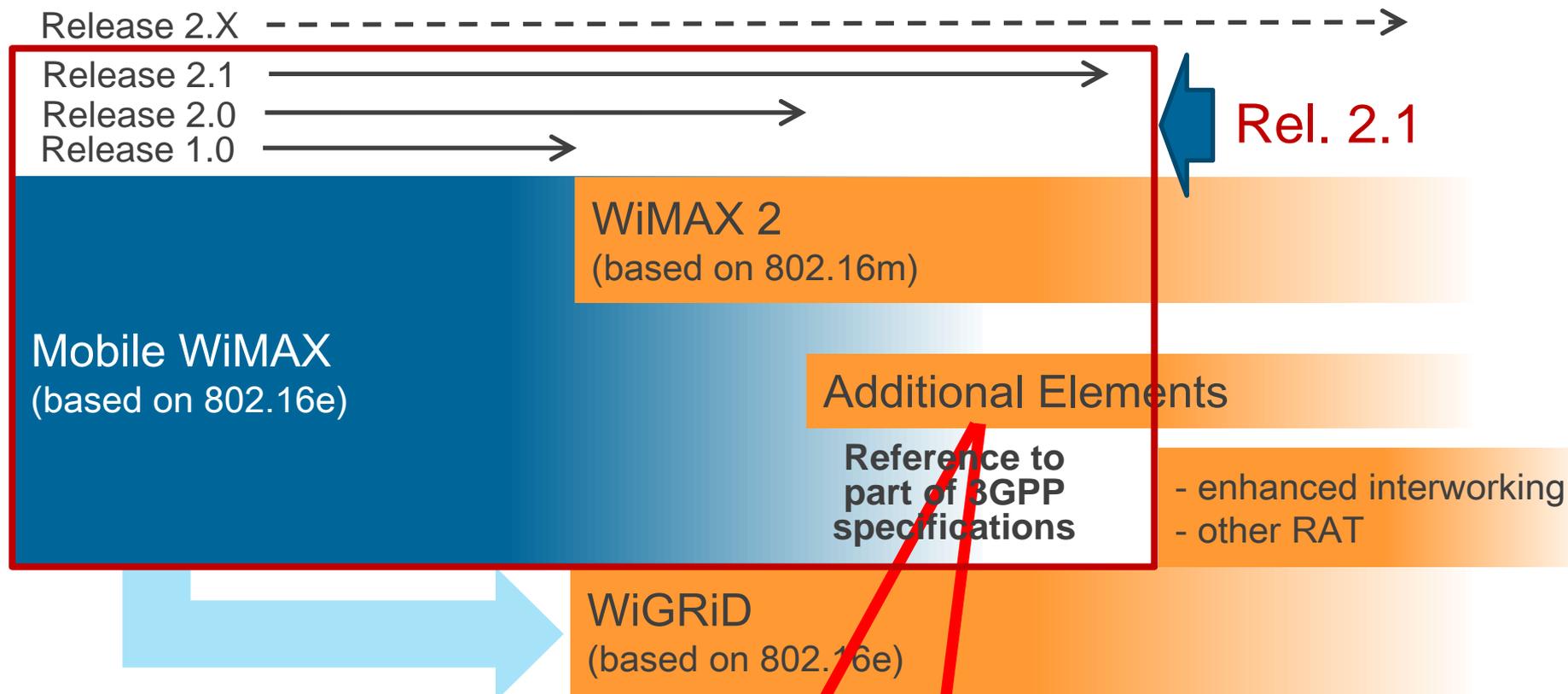
Fixed /Nomadic/
Mobile



Mobile WiMAX / WiMAX Advanced



Technology Roadmap of WiMAX Advanced



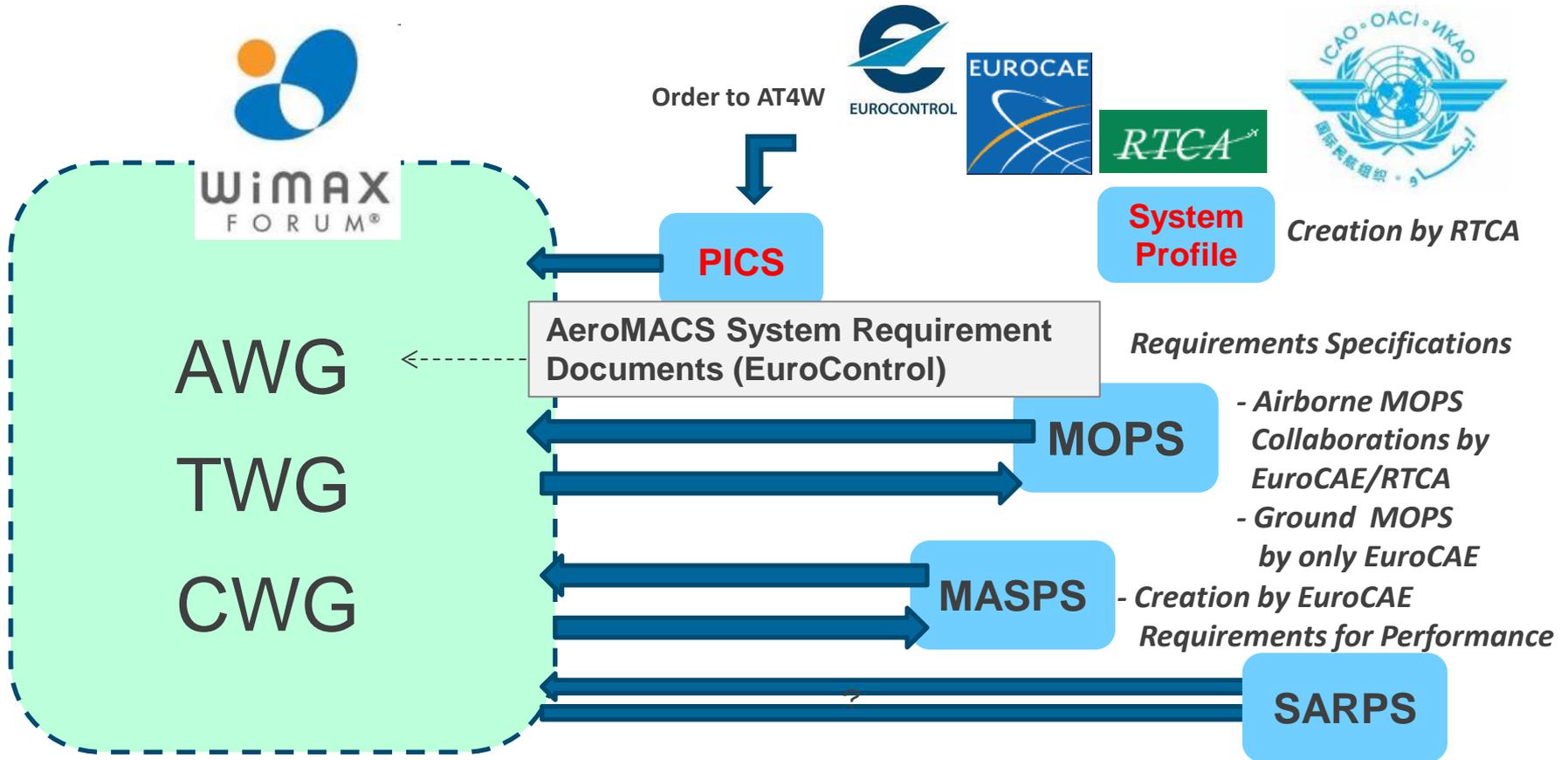
WiMAX Forum Focal Point for Industry



WiMAX Forum's Role

- Define requirements and technology profiles that drive network and air interface specifications and certification
- Formal platform for Aviation Industry to collaborate with WiMAX Forum
- Promote WiMAX Technology

Collaborative Standardization Project



MOPS = Minimum Operational Performance Specification

MASPS = Minimum Aviation System Performance Specification

CRSL = Certification Requirement Status List

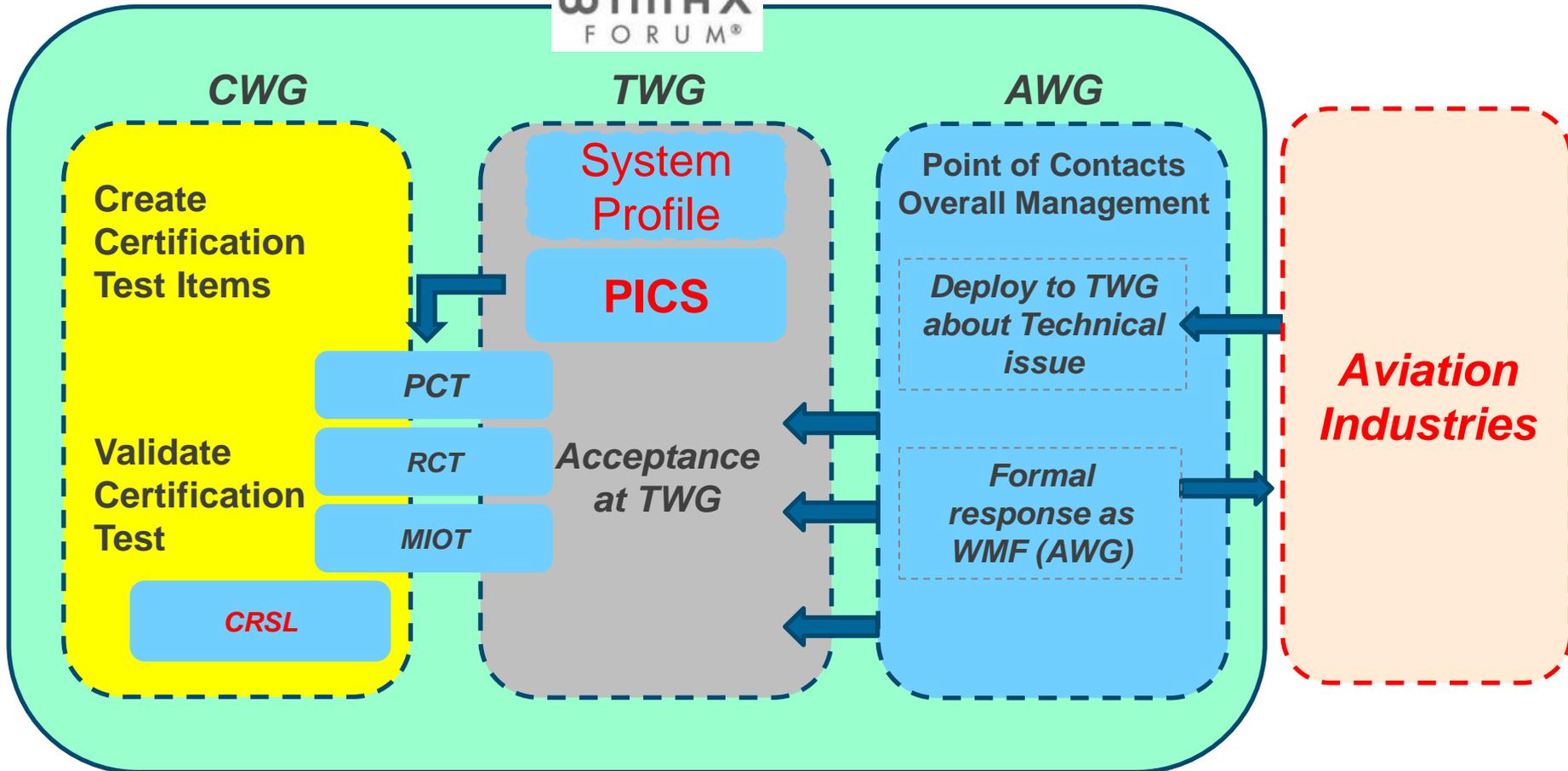
PICS = Protocol Implementation Conformance Statement

SARPS = Standards and Recommended Practices

Stewardship of the Standard within WiMAX Forum



WiMAX
FORUM®



Industry Building Initiative

Traditional WiMAX Industry



AeroMACS Industry

Aviation Industry



Benefits of Industry Collaboration



- Access to Mature Technology – over a decade in development and service
- COTS Hardware (Broad commercial availability)
- Flexible Standard – already adapted for Smart Grid (WiGRID), Backhaul (P802.16r)
- Certifiable Equipment and Devices
- Ability for industry to develop and achieve global harmonization
- Harmonized 5.1 GHz Spectrum already allocated!

Why AeroMACS?



Installation



Turn-up



Network
Management

EASY, FAST AND ECONOMICAL

Technical Values	Business Values	Certification Values
Broadband : 20Mb/s ~ 75 Mb/s at maximum	No management cost for telephone Number.	Certification program in process
Broad NLoS coverage: 1 ~ 3 km range	Low cost for installation & maintenance	Hardware-based PKI credentialing
Data Oriented Architecture – also supports mobility	Simple mobile station ⇒ Easy airworthiness certificate	Multiple Certification Authorities
Always-on connectivity	Easy IOT due to standardized profile	Revocable and replaceable certificates
Low failure rate (QoS)	No legacy systems	Certificate Hierarchies

Current AeroMACS Assessments



Toulouse Airport Network Trial

- **Cleveland Hopkins Airport** / NASA Glenn Research Center joint project
- **Daytona Airport** – Harris Corporation Trial
- **Melbourne Airport** – Harris Corporation Trial
- **Atlantic City Airport** – FAA Flexible Terminal Sensor Network program prototype network
- Airport Surface Surveillance Capability (ASSC) Program
 - Supported by Sensis Corporation
 - Prototype installed and tested at **Syracuse Hancock International Airport**
 - May 2013 – **SFO Installation**
 - **SFO is 1st of 9 sites**
- **Toulouse Airport** – SESAR / Airbus / Indra / EUROCONTROL project

WiMAX Forum Aviation Summit



- **September 10-11 / Hilton Crystal City / Washington, DC**
- Free to Attend
- WiMAX Forum membership not necessary
- Co-located with WiMAX Forum Member Conference
- Open to the entire Aviation community
- 2 Days of program with participation on an open session for Aviation Working Group (AWG)
- www.wimaxforum.org/event/wimax-aviation-2013



WiMAX Aviation 2013

- **Topics of Discussion**

- Vision & Strategy for Airport Systems in 21st Century
- AeroMACS Trial Deployment Roundtable
- Availability and Readiness of Devices & Silicon for Aviation Solutions
- Spectrum Availability
- Core Networking and Security Requirements for AeroMACS
- Certification for AeroMACS Equipment and Devices
- And more...

WiMAX Aviation 2013

- **Keynote Speakers**

- EUROCONTROL
- ENRI
- FAA
- Hitachi
- Honeywell
- ICAO
- NASA
- SESAR

- **Supported by:**



- **Sponsored by:**





THANK YOU!

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