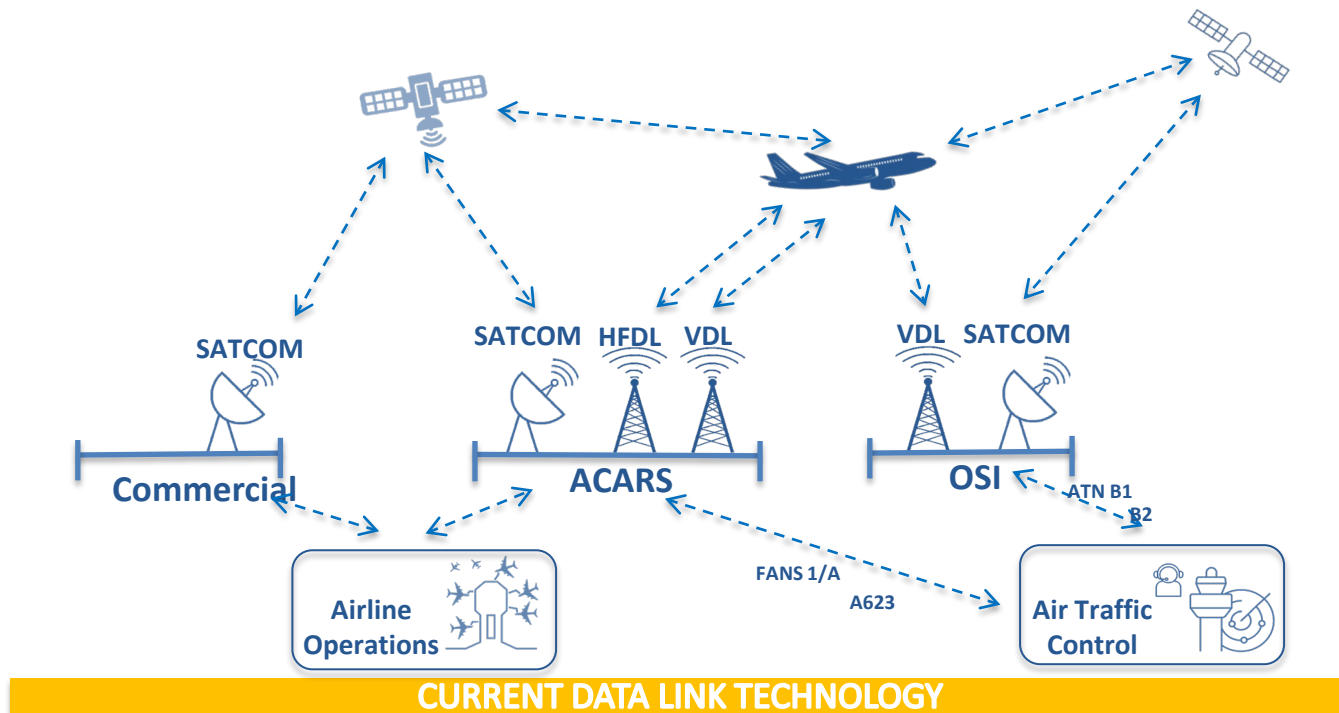


Future Connectivity for Aviation – FCAV

Presented by: Rachel Daeschler
EASA Certification Director

Current landscape



AIRBUS



Current issues

General

- Current communications reaching their limits, both in terms of capacity & performance

ATM

- Maximum safety link capacity not sufficient
- Technologies are not fully interoperable

Airline operations

- Increasing operational reliance and increasing volume of communications for operators
- Mostly using same link as ATM

Expected evolutions

ATM

- More demanding future ATM concepts
- Increased data volume (EPP, B2)

Airline Operations

- More demanding enhanced airline operations concepts
- Increase of data volume
- Utilisation of aviation-protected spectrum could be optimised
- Increasing connectivity offer with non-safety (“public”) links

Autonomy

- Autonomy concepts need connectivity for Pilot assistance or C2 link

Scope of Task Force

Type of communications

- ATM, operational, aeronautical information, and 'command and control'
- Air/ground connectivity
- Excluding passenger connectivity & RPAS payload connectivity

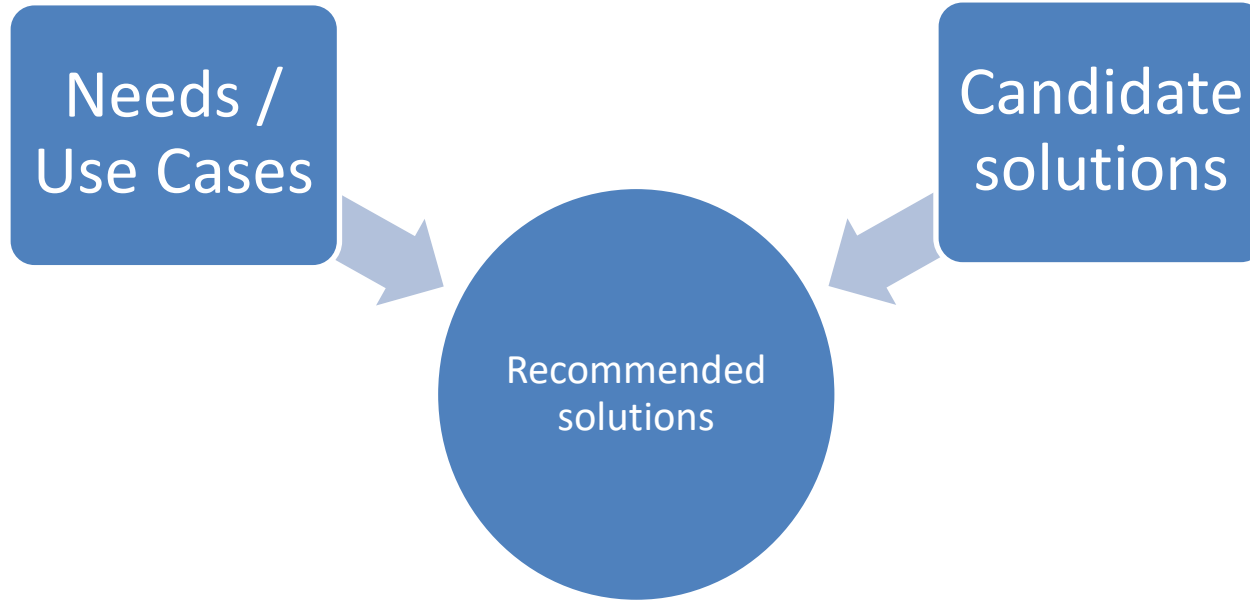
Geographical areas

- US domestic airspace
- EU domestic airspace
- Oceanic/continental remote airspace

Type of airborne vehicles

- Piloted large aircraft
- RPAS in IFR airspace + more autonomous large aircraft
- Excluding smaller UAS operating at low level altitude or in U-space

Methodology



Key objectives for the target connectivity landscape

1. Adequate Capacity, Performance, Safety and Security
2. “State of the art” and “future-proof” technologies
3. Economic efficiency, at the **global industry scale**
4. Efficient usage of the available aviation protected spectrum
5. **Global interoperability**, with a single aircraft avionics capability

Target connectivity solutions

For use cases subject to required demonstrated performance¹

		Applications / Services	Network / Protocols	Links Preferred Option	Links Fallback Option
Preliminary	ATM	B2	IPS	VDL2 SATCOM	SATCOM Performance Class B Commercial links as complement (Hyperconnected ATM ²)
	AIS urgent	Standard applications			
	Autonomy (assistance)	Proprietary applications			SATCOM Performance Class B+ LDACS
	Autonomy (C2)			C-band (SATCOM and/or ground-based)	Commercial link (FSS)

¹ Solutions (applications) for which performance requirements are established and standardized.

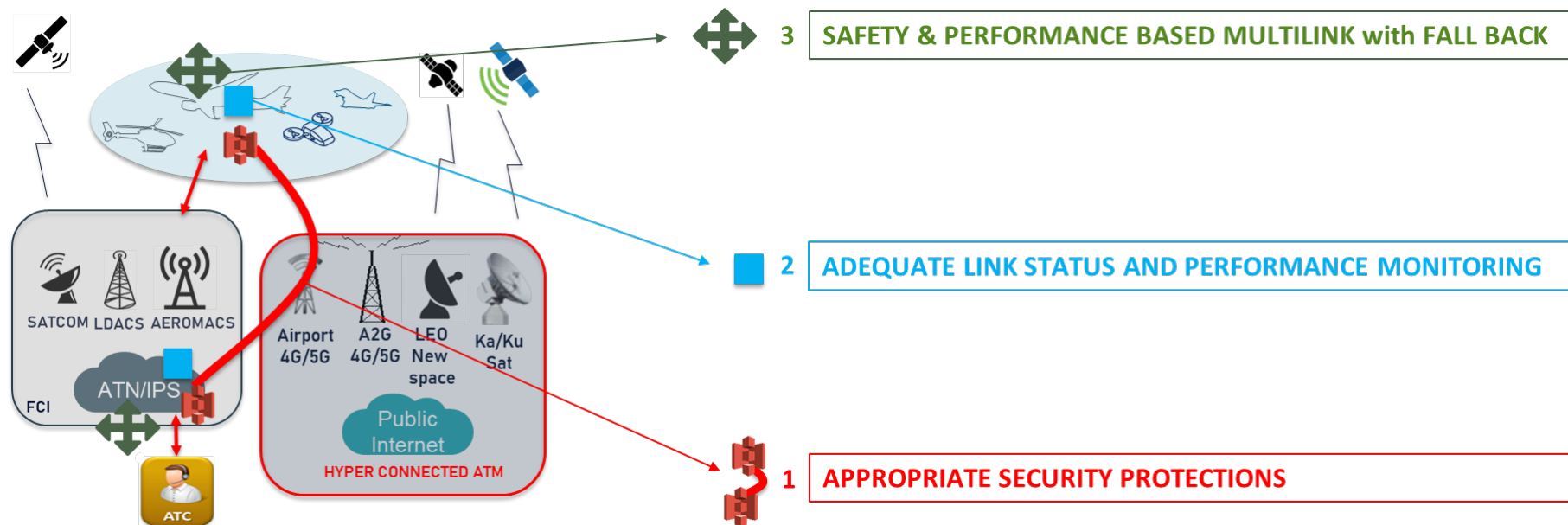
² Use of non safety links to complement safety links with timely backup mechanism for required performance demonstration.

Target connectivity solutions

For use cases not subject to required demonstrated performance

	Applications / Services	Network / Protocols	Links Preferred Option	Links Fallback Option
ATFM negotiation	Standard / Custom applications	IP	Non-safety links	N/A
Airline Operations				
AIS not urgent				

Hyperconnected ATM overview



Key takeaways

1. **No new terrestrial communication infrastructure** on protected spectrum necessary
2. Agreed **aircraft equipage goals (B2, IPS)**. Ground required to **support different aircraft configurations** (OSI, IPS, ACARS), during transition phases
3. ‘Hyperconnected’ ATM technology = needs to be **further developed**
4. Communications not subject to RDP (a priori all AOC) → **offloaded from the** safety links when feasible
5. **Necessary regulatory clarity**: usage of protected spectrum
6. **C-Band solution to be further assessed and developed** to support C2 link for some autonomy applications

Thank You