ITC 2015 / ICTS session

Gilles FREAUD - AIRBUS

C Band status and wireless needs at Airbus

28 Oct 2015

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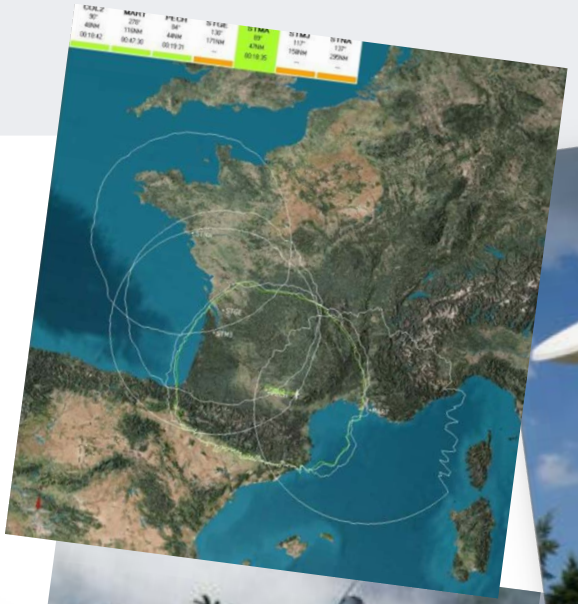
- C Band status at Airbus
- Wireless needs



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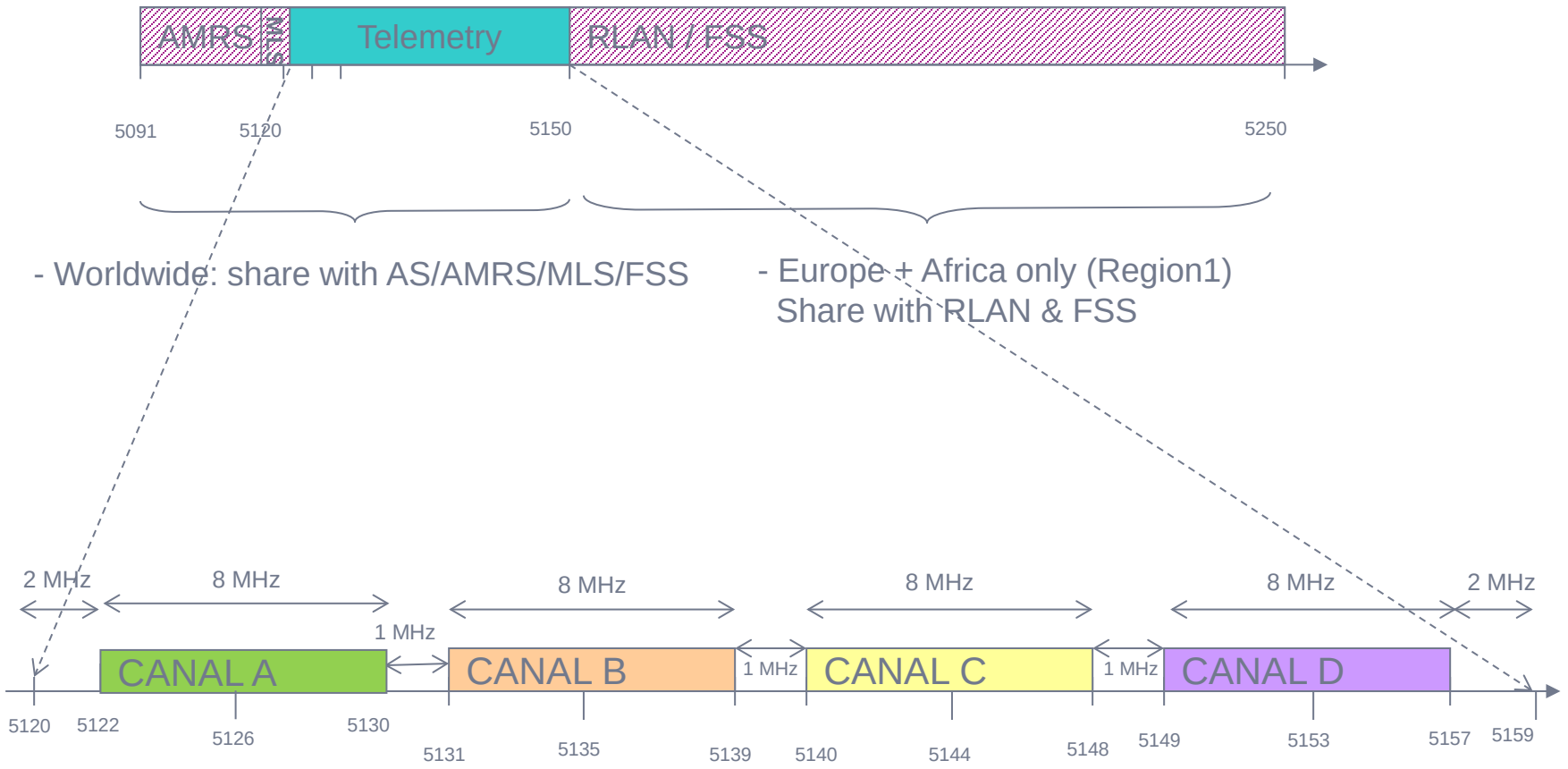
C-Band channels for AIRBUS Telemetry



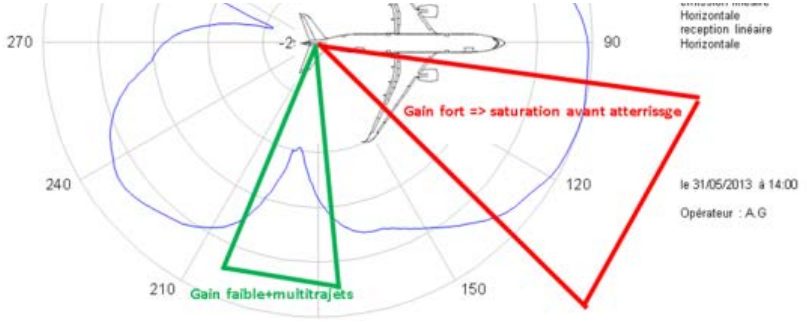
C Band status

- Status (end of sept 2015) :
  - 1187 tests done in C Band since january 2014
  - 5100H
  - 14 different aircrafts (all Airbus programs)

Operational Reliability : **98,5 %**
Same OR as previous S-Band Telemetry

Remaining topic : very few losses on “long haul aircraft” compatible with aircraft operations

- No transmission losses on aircraft like A320 but very few losses on bigger aircraft A350, A380,… during some landing and take off. We want to solve it.
- Modelling antenna on A/C in progress
- Objective : Tune the best location and polarisation for antenna

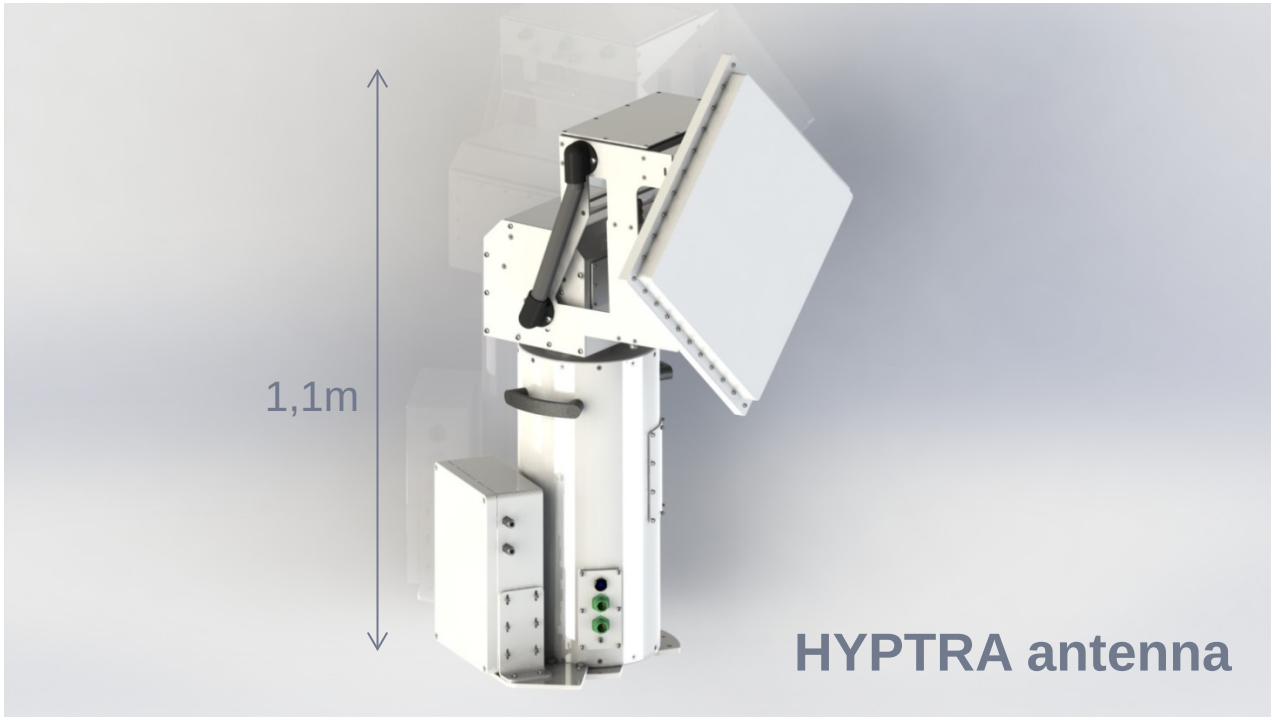


Radiation pattern

We confirm that the location of antenna is more sensitive than for S Band

C Band status

- To increase the coverage we bought 2 small mobile antennas.
- Frequency Band : 5090-5250 MHz
- Range : 150km at 20000ft
- Gain : 24 dB
- 2 axis



Message to potential future C Band users

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Message to ICTS

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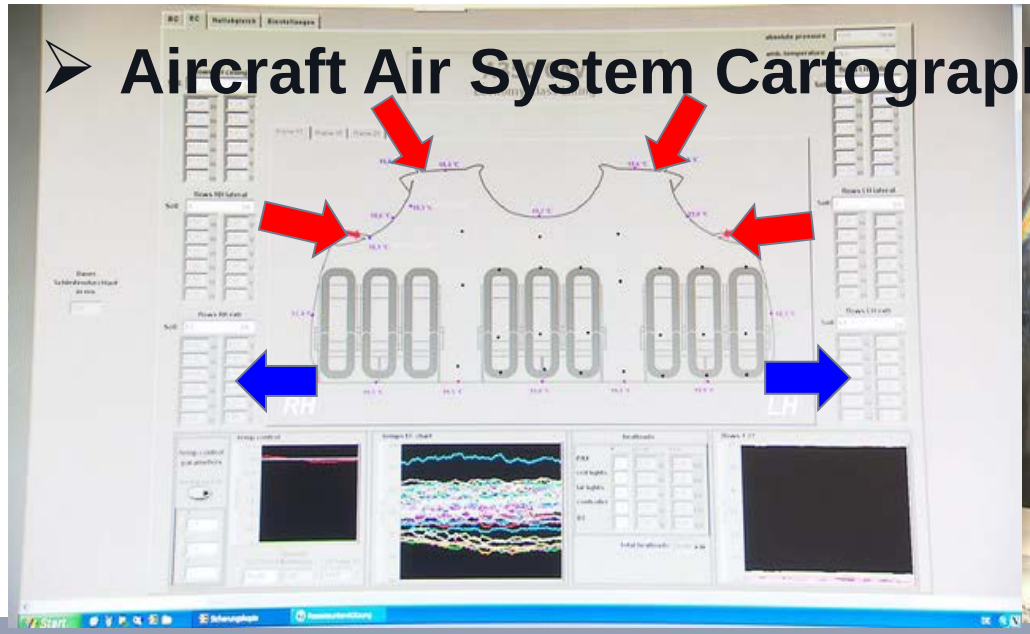
Wireless example : Cabin comfort flights test on A350

- **Passengers Wellness as a priority**
  - **Not too hot and not too cold...**
  - **Not too windy...**

- **Aircraft Air System Cartography**



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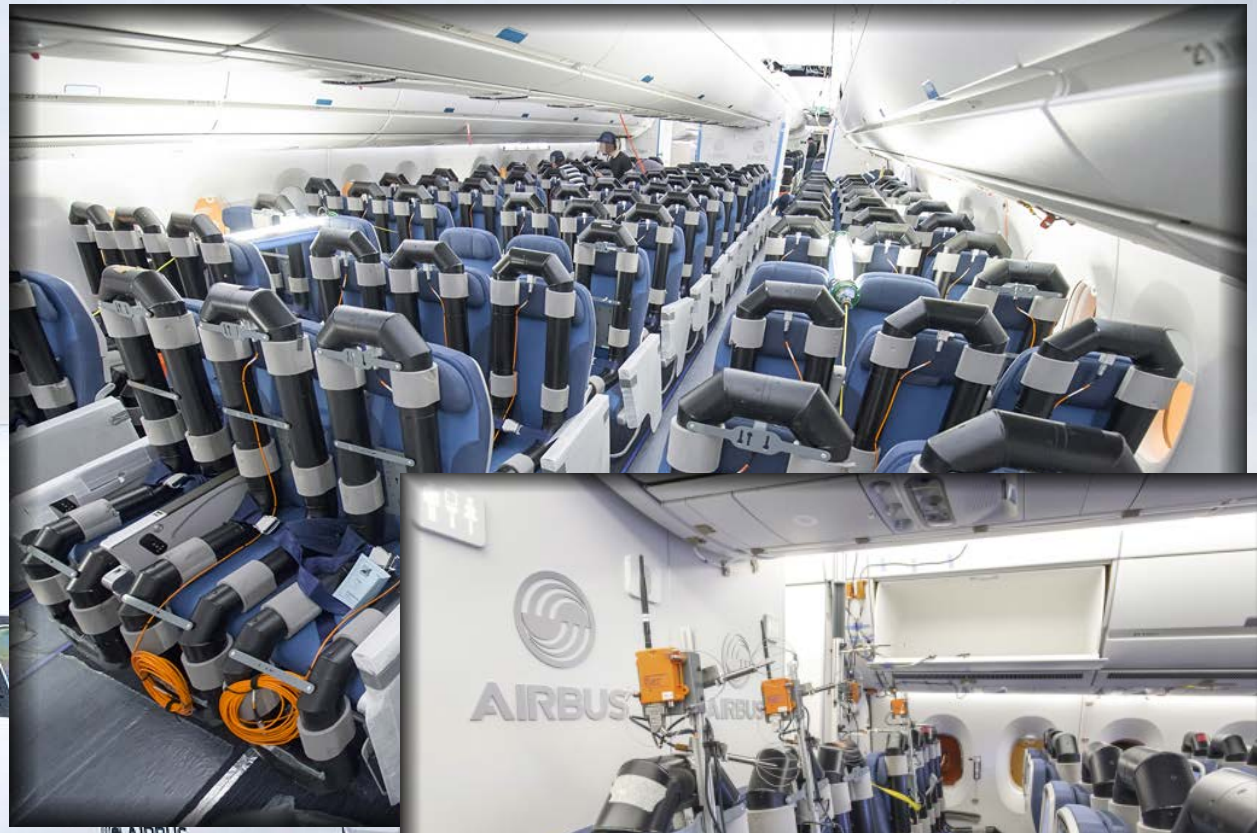
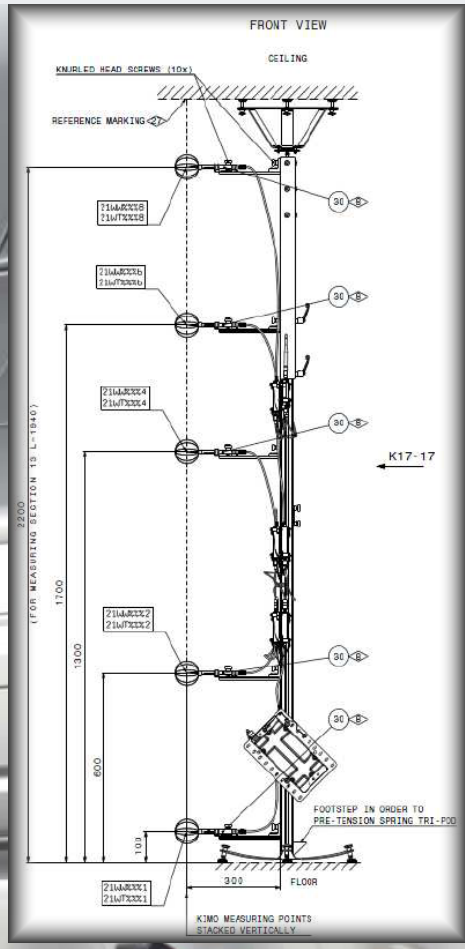
Wireless today at Airbus : Luigi story

➢ Luigi ?

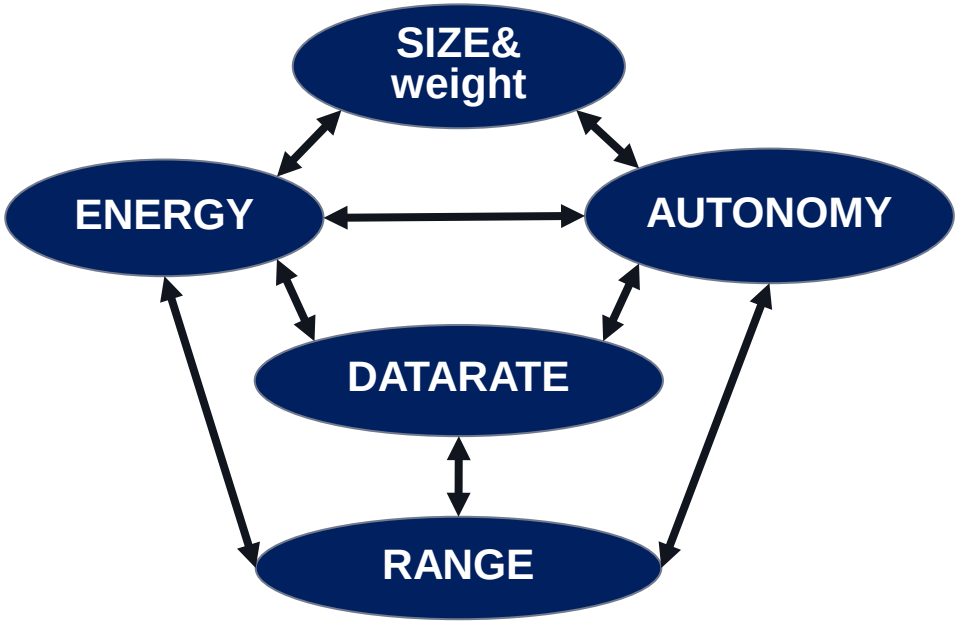


Wireless today

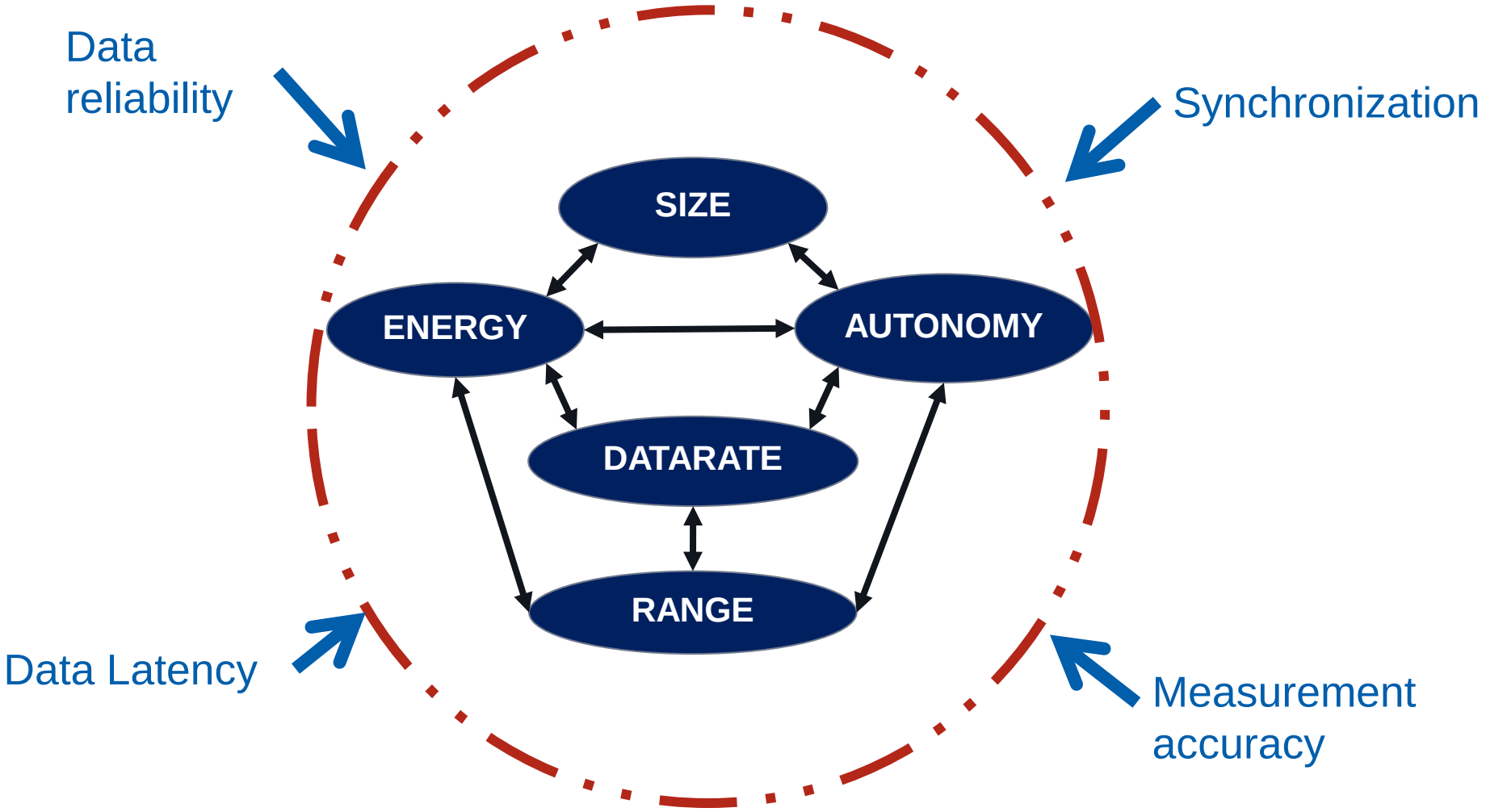
- **Luigi ?**



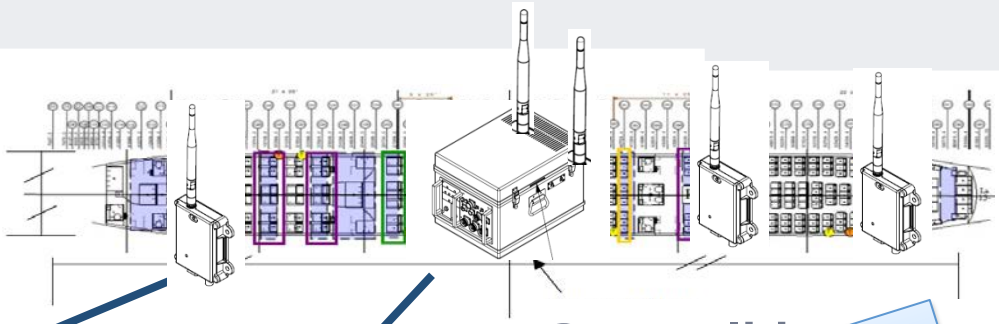
Wireless instrumentation : a technical trade off



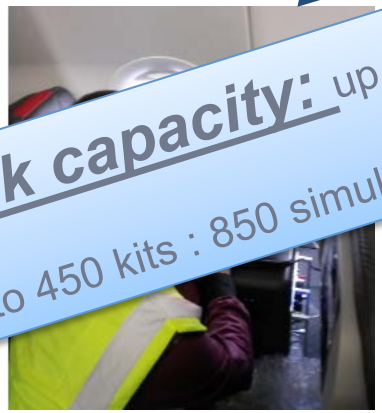
Wireless instrumentation : a technical trade off



Technical choices



Multi-Func
acquisition
transceiver Unit



Receiving station
« Gateway to wired
FTI »

Network capacity: up to 225 emitters / 2 simultaneous network
→ up to 450 kits : 850 simultaneous measurement

Generalitie
- ISM band
- MA protocol;
- anced energy management;
- Optional external batteries;

Performance:
- Antena duality
- Protocol support communication retries

Coexistence:
- Advanced RF filtering

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Wireless tomorrow

Aircraft manufacturer industry needs wireless system for instrumentation / test.

Wireless from everywhere in the aircraft

Wireless sensor

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WIRELESS

• Aircraft manufacturer industry needs wireless system for instrumentation / test.

- WHY :
  - Remove the cables (400km on A380 !!! for flight test installation)
    - Cables design process too long
    - Aircraft modifications needed to route the cables
    - Expensive to manufacture (connectors,…)
    - Too long to install
    - Cables become a blocker for our test business
  - Reduce the time to troubleshoot an aircraft
  - Reduce the cost

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WIRELESS

- **Aircraft manufacturer industry needs wireless system for instrumentation / test.**

- HOW :
  - **Today we face 2 difficulties :**

    - Energy *but*
      - Batteries are improving their technology/capacity every year
      - Combination of energy harvesting and ultra low consumption sensors

    - Frequency
      - Today we ask local derogation for a band to perform wireless instrumentation
      - We use for test already overloaded network 2.4 GHz / 5GHz
      - WAIC will be for “Aircraft Normal Installation” not for test installation

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WIRELESS

- **Aircraft manufacturer industry needs wireless system for instrumentation / test.**

Wireless Instrumentation has specific needs :

* Data Synchronisation / time stamping
* Real time constraints (Latency time)
* Transmission from everywhere in the aircraft
*…

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WIRELESS

- **Aircraft manufacturer industry needs wireless system for instrumentation / test.**

The question is :

Do we ask for a

“Band for Wireless Aeronautical Test ” ?

of course it’s for the future but WRC 15 is now !!!

Is the test community interested to launch a working group on this topic?

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Q / A