



Airborne Broadband Antennas



Antenna Design Portfolio - November 2008

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QEST Product Range: Ku Band Antennas

=> **Specific designs for different purposes and applications**

▪ **Differentiation by functionality**

- Receive only
- Receive + Transmit
- Receive + Transmit with extended bandwidth

=> **Purpose**

- => DBS TV
- => Bi-directional data services (including voice)
- => Simultaneous DBS-TV and data services

▪ **Differentiation by geometry**

- Fuselage mount
 - Single panel
 - Dual/Multi panel
- Tail mount

- => Larger (commercial) A/C
- => Optimum in higher latitudes
- => Equatorial flight routes
- => Smaller (business) A/C

QUEST Product Range: Combined Ku Band and L Band Antennas

- **Simultaneous operations**

- Receive in Ku Band + Transmit in L Band
(Receive in L Band as fallback solution)

=> Mixed service providing scheme required

- **Alternate operations**

- Receive and Transmit in Ku Band

or

- Receive and Transmit in L band

=> Service providing schemes independent from each other

Example: Fuselage Mount Configuration



Example: Tail Mount Configuration



Antenna Selection Criteria

- What are the PAX target applications ? For how many PAX ?
- What is the satellite service providing scheme?
(regional coverage, signal strength & processing, data rates...)

=> Define basic antenna design and bandwidth requirements

- How much construction space available/affordable?
- Which flight routes ?

=> Influence on antenna geometry and concept

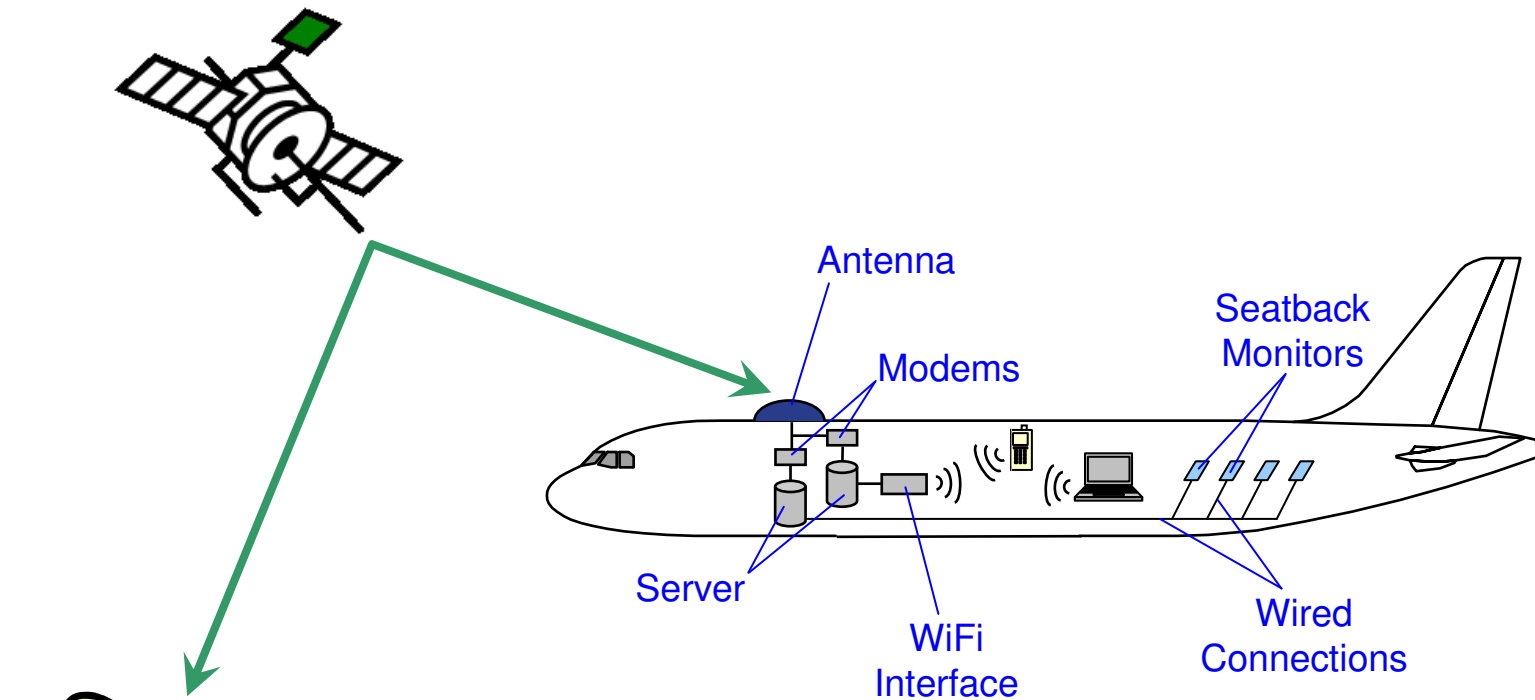
- **What's the cost ?**

initial
(antenna hardware)



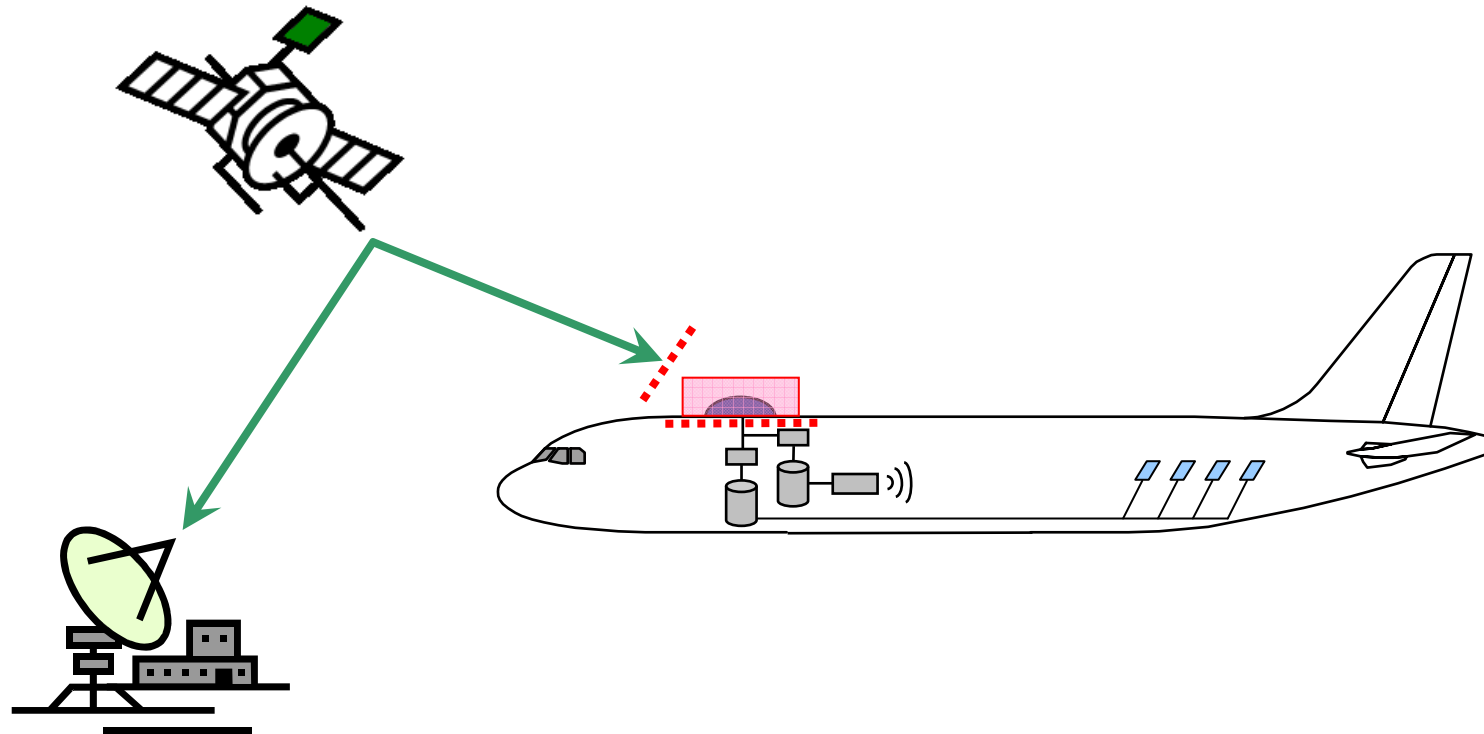
operating
(satellite & aircraft ops.)

Connectivity System Overview



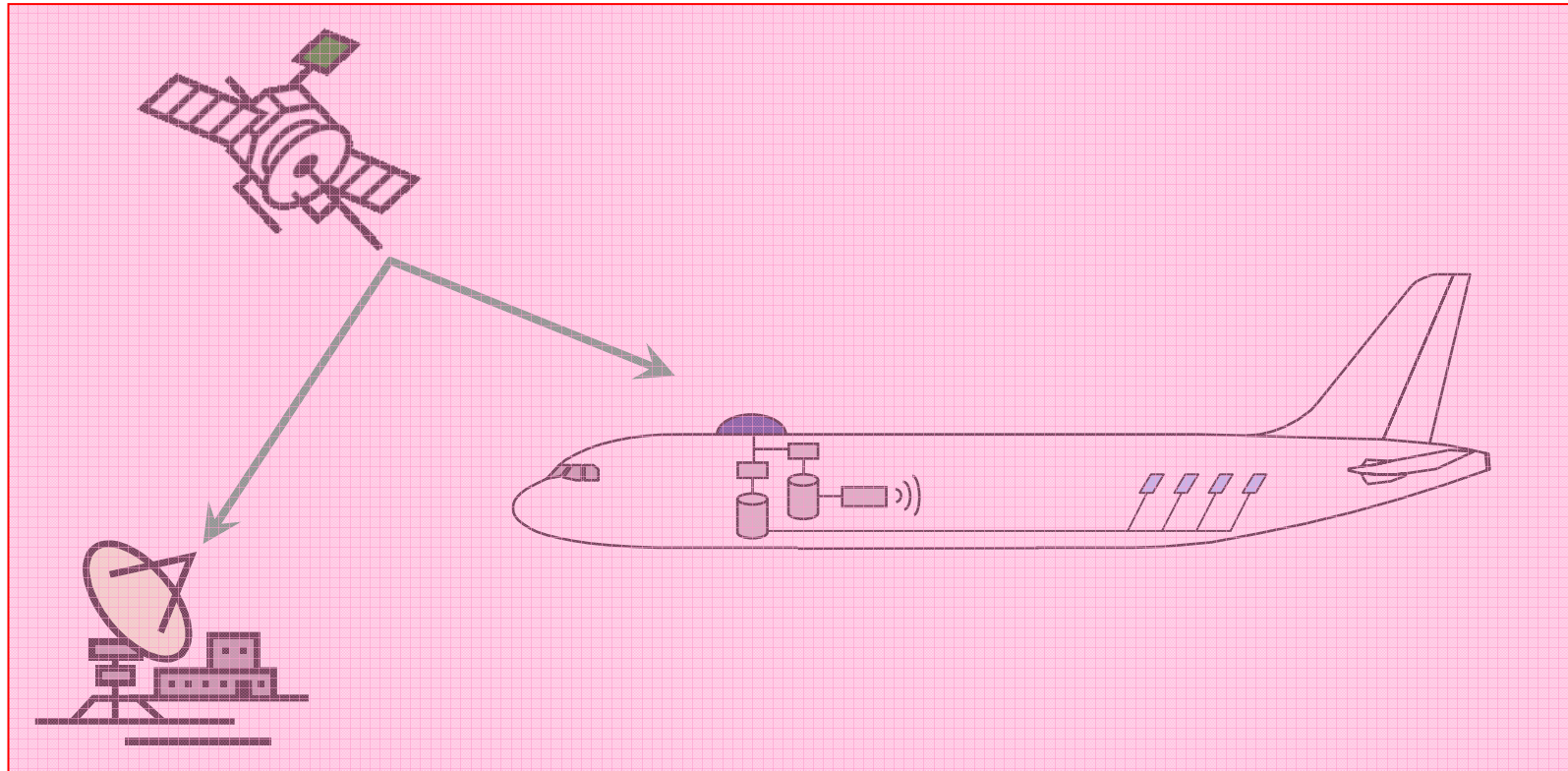
The antenna acts as interface between the Satellite System and the IFE&C System aboard the aircraft

Antenna Design Approach: Classical



**Antenna design as result of independent interfaces to different system specifications (Satellite and IFE&C)
=> Not an overall system solution, full optimization potential not deployed**

Antenna Design Approach: Interactive



**Antenna design as integral component of the overall system
=> optimized overall performance and cost**

Conclusion

- **QEST is your partner for any kind of Airborne Broadband Antenna concept and design**
 - Small and lightweight
 - Superior performance
 - Compliant to all regulatory standards

- **QEST is able to discuss on a higher system level**
 - Potential for optimizing overall system costs

Latest News

- QEST has joined forces with US-based antenna manufacturer **TECOM Industries, Inc.**



- **Objective:** To deliver antenna products that are technologically superior within shortest time-to-market.
- **Serial deliveries of the first combined product (a bi-directional Ku Band Broadband Airborne Satellite Antenna) are scheduled for mid of 2009.**

- **QEST has been awarded by the market research company Frost & Sullivan with the “2008 European Airborne Broadband Antennas Technology Innovation of the Year Award”**



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