IPSky

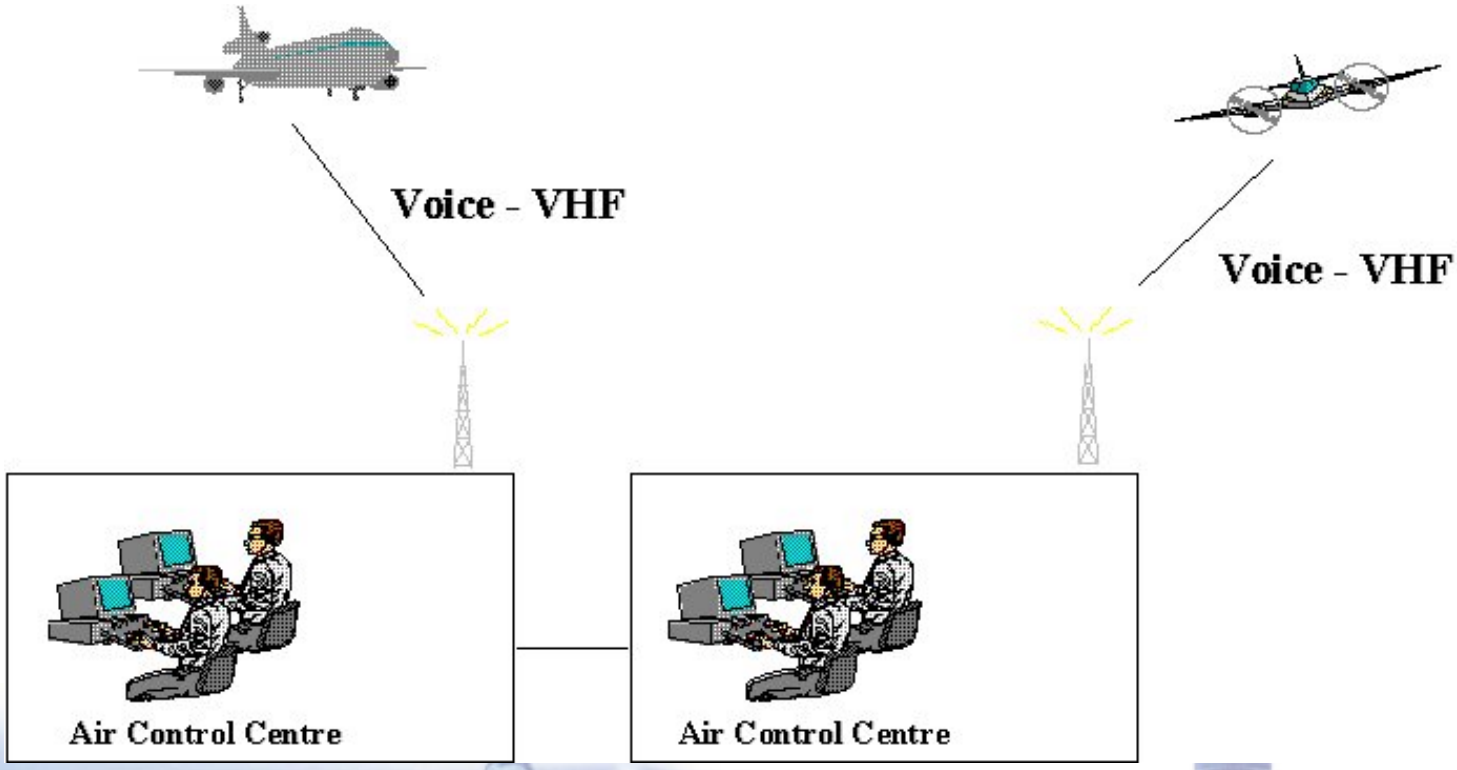
Internet in the Sky

Introduction

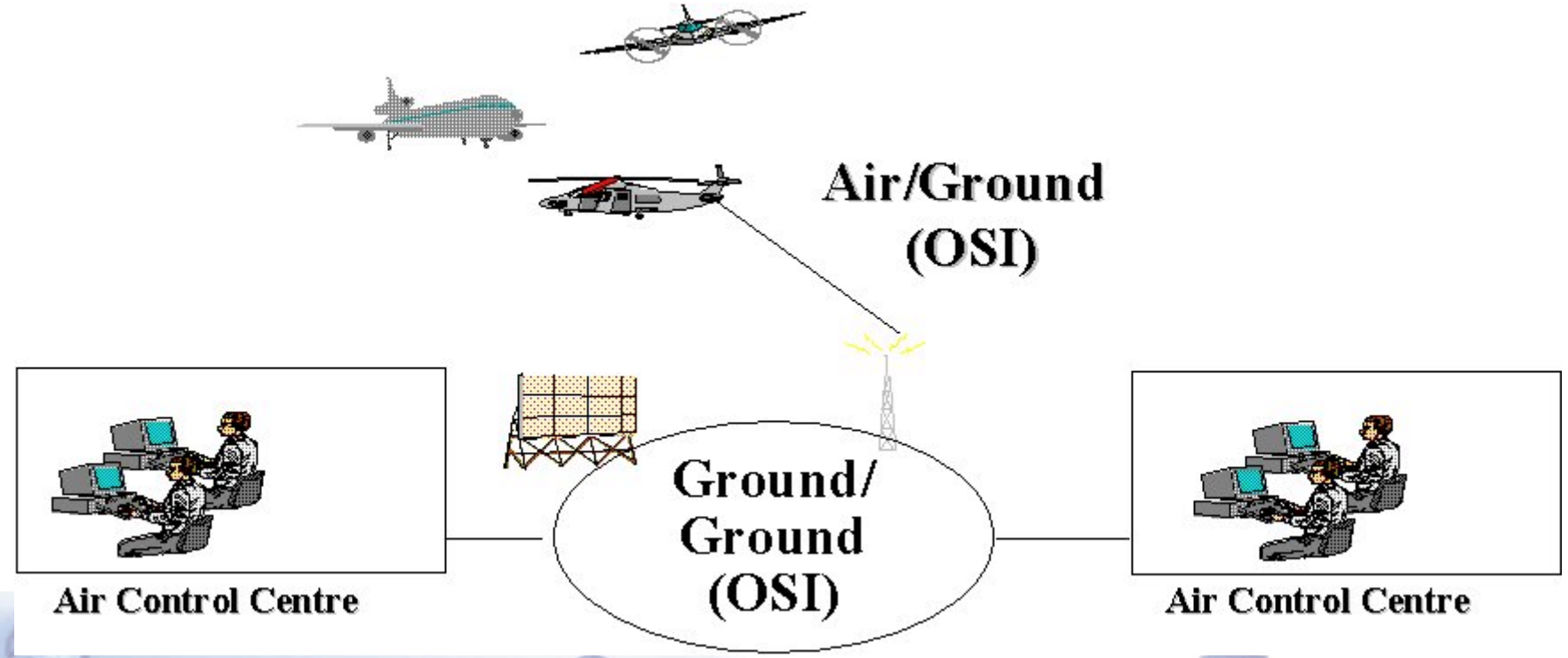
- *ATM* and Communications
- IPSky Projects and Work
- Future Work
- Evolution of ATM Communications

Air Traffic Management (*ATM*) and Communications

ATM and Communications



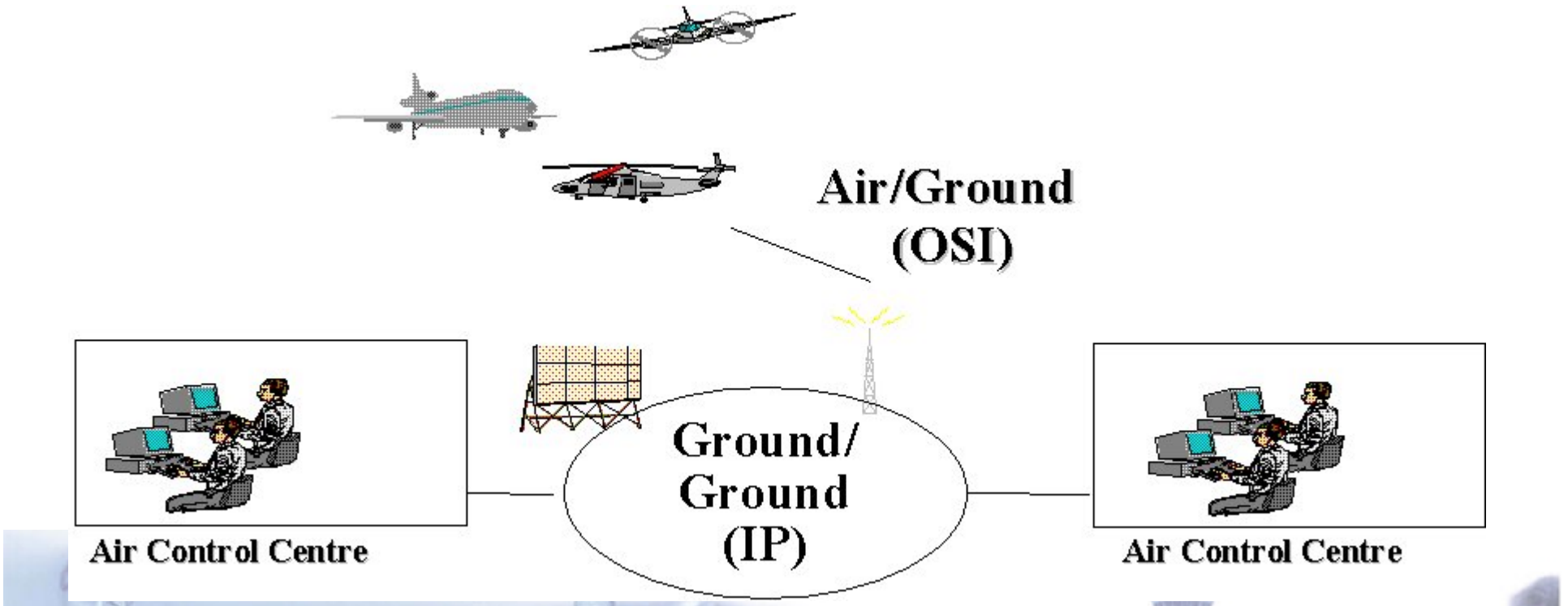
Aeronautical Telecommunications Network



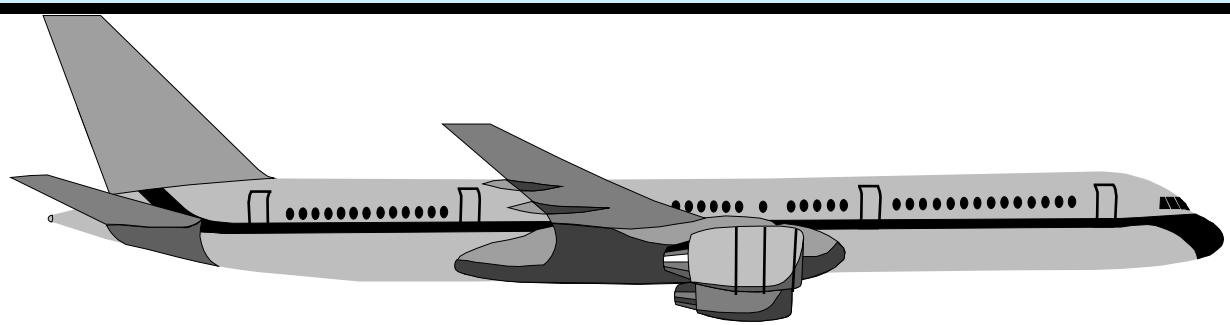
Why no ATN now?

- OSI
- ATN Specification Process
- Limited Industrial Investment (No COTS)
- No Security (Being Specified)
- Alternative G/G Communication (IP)

ATN is Updated



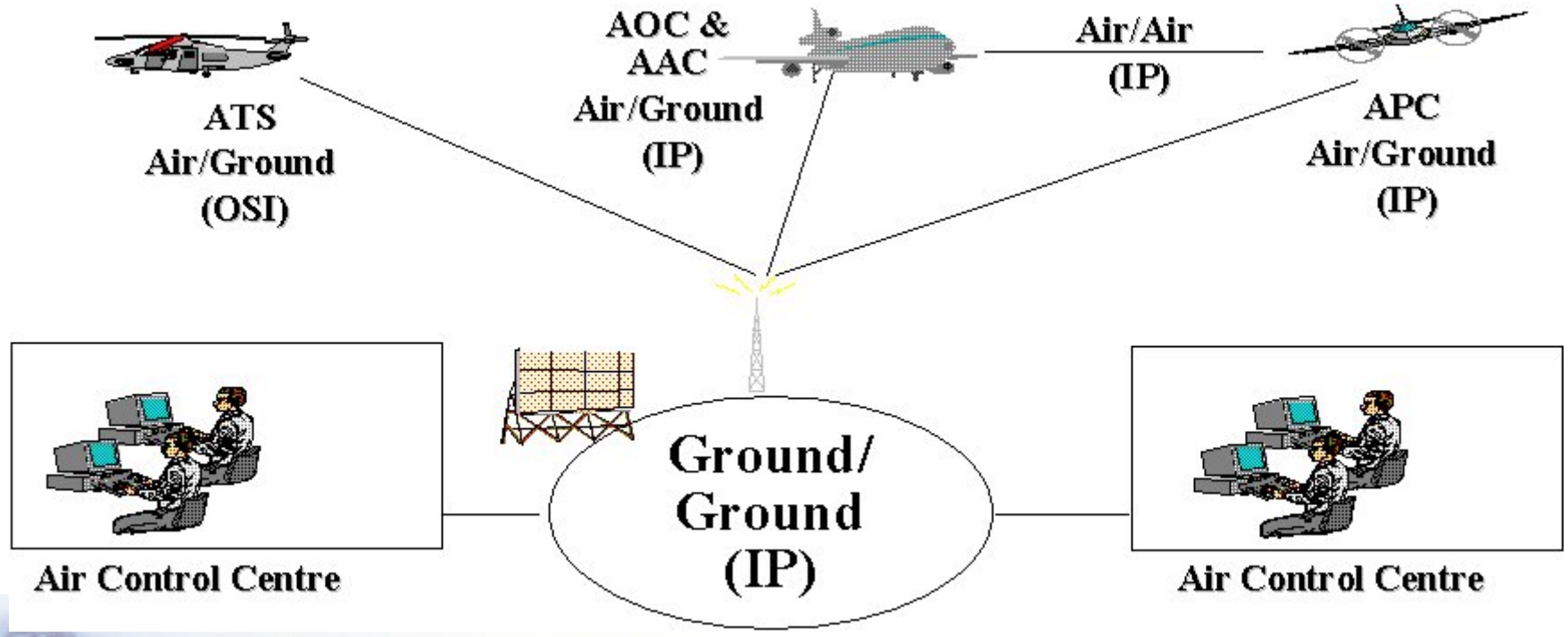
Aeronautical Communications



Aeronautical Passenger Communications (APC)	Airline Administrative Communications (AAC)	Airlines Operational Communications AOC	Air Traffic Services (ATS)

Higher Safety Critical

Latest Prediction for ATN Implementation



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IPv6 Internet for Aeronautical Communications

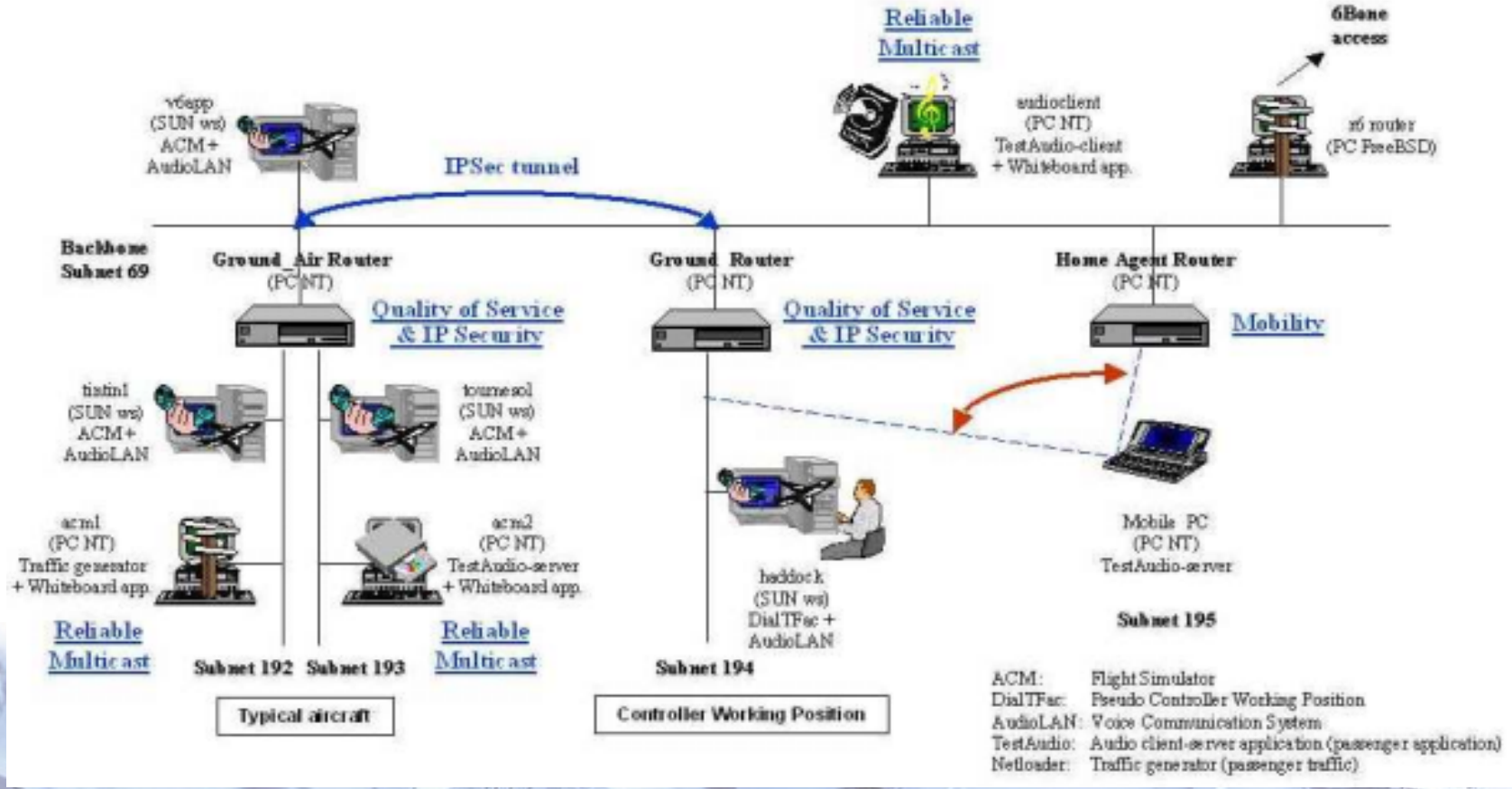
Operational Requirements

- End-to-End QoS
- Security (Authentication/Encryption)
- Router Mobility (Network) & End-system Mobility (End User)
- Reliable Multicast
- High Bandwidth

ATN Objectives

- Use of existing infrastructure
- Hierarchical Addressing
- High Availability
- Mobile Communications
- Prioritised end-to-end resource management
- Scalability
- Policy based routing
- Use of COTS Products.

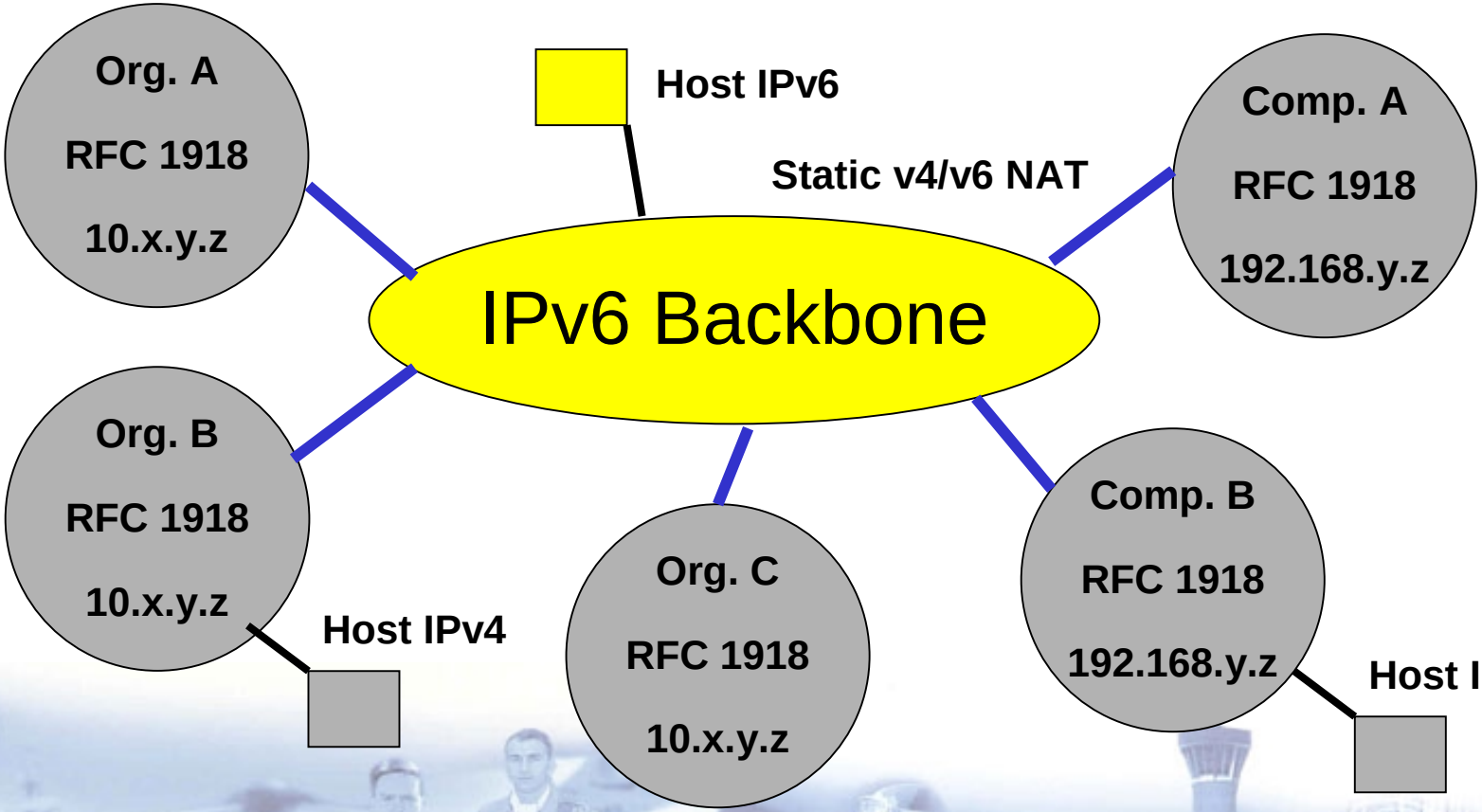
IPSky Platform



IPSky Projects

- PRIMA
  (Projet Réseau Internet Mobile Ad hoc)
- GCAP
  (Global Communication Architecture and Protocols)
- EAN (European ATSOs Network)
  IPv4/v6 NAT Validation

EAN NAT Validation



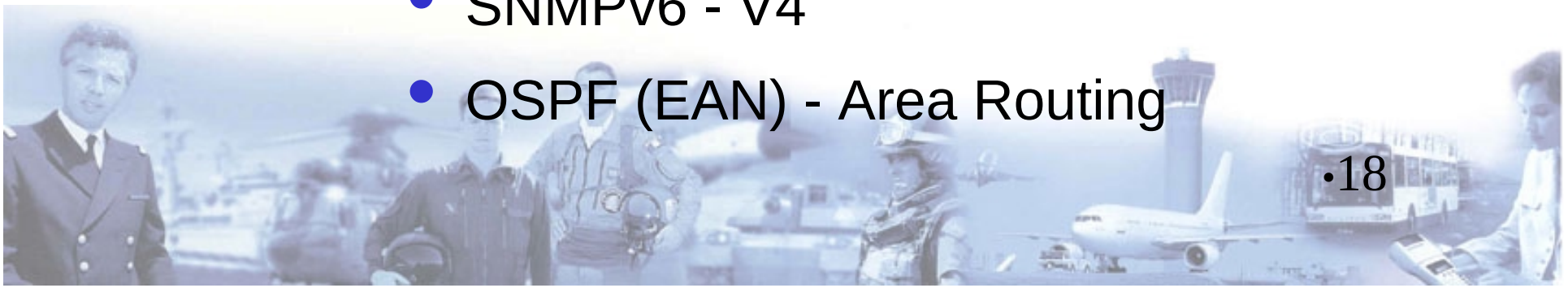
EAN - So Far

- Results
  - Fulfils Minimum (based on freeware)
- Outstanding Issues
  - FTP & DNS (ALG)
  - SNMP (no version 6)
  - Zebra OSPF (no OSPF multi-are routing)
  - >2 applications with same address
  - scalability (translator load & config mgt.)

IPSky Future Work

IPv6

- Mobility
- QoS
- Security (IKE, End-to-End)
- Reliable Multicast (air-air)
- ALG (EAN) - FTP, DNS
- SNMPv6 - V4
- OSPF (EAN) - Area Routing



High Bandwidth Datalink

- UMTS Related
- SATCOM
- Other?

Future of *ATM* Communications

A Prediction

Evolution

- Ground Infrastructure (IP ->IPv6 B/Bone)
  - 2001 - 2005
- Aircraft (Airborne) Network (IP)
  - 2001 - 2007
- Aircraft link to Ground at airports (Mixed)
- Minimal Air-Ground (Mixed)
  - 2005 - 2010
- High Bandwidth Air-Ground (IPv6)
  - 20010 - 2015 ->