

Satellite-Based Navigation and Surveillance

Technologies

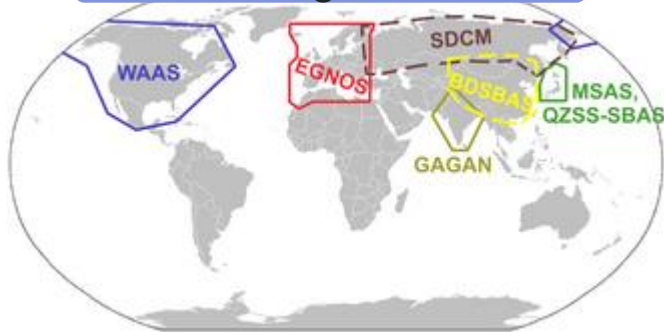
GPS / GNSS



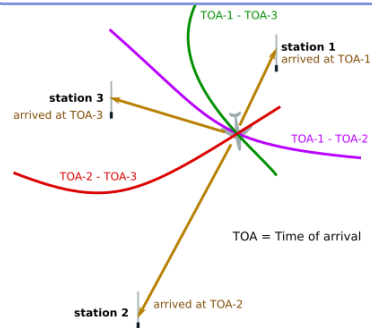
Space-Based ADS-B



SBAS Augmentation

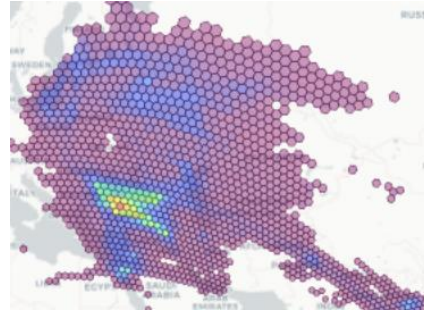


Multi-lateration

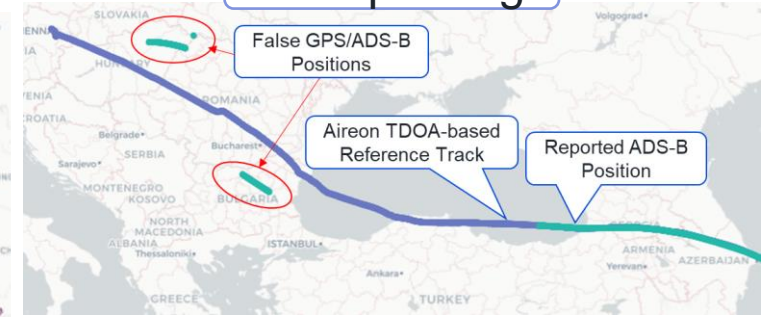


Challenges

RF Jamming



RF Spoofing



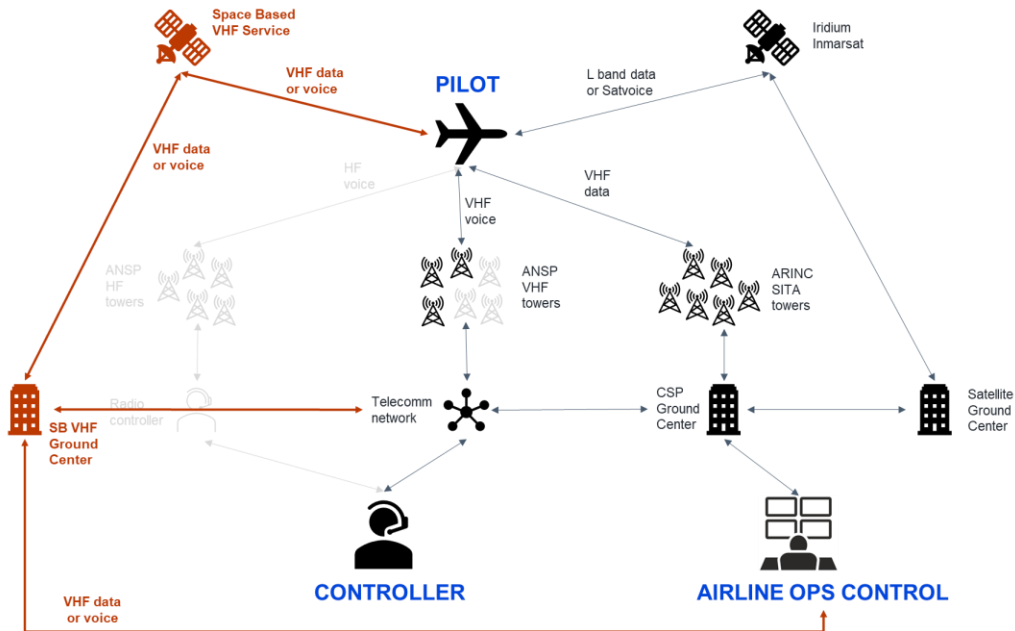
Opportunities

- Space-Based Services can significantly augment ground-based coverage for Nav and Surveillance
- Newer navigation systems offer the opportunity for multi-mode GNSS receivers
- Space-Based Multilateration and Reference Tracks allow for continuity of aircraft surveillance
- Standards should be updated, market should encourage industry to innovate through adoption



Satellite-Based Communication

Technologies



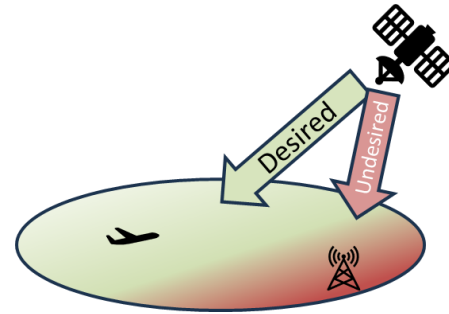
Space-Based VHF

SatVoice Digital Comm Services

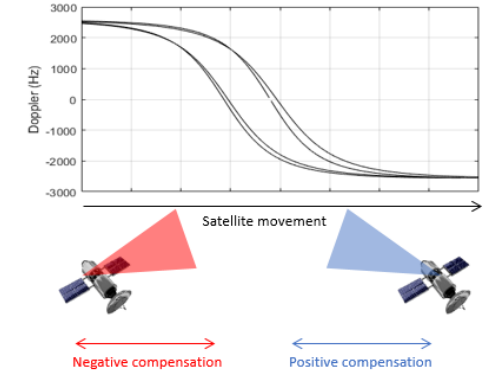
Oceanic/Remote and Polar	
Enhanced Security	
FANS ACARS	
Dual Voice	ACARS
SIP Voice	Cockpit IP
PBCS Monitor	Position Reports

Challenges

Channel Planning



Doppler Shift



Opportunities

- Space-Based services can significantly augment ground-based coverage for communication
- SB-VHF leverages existing hardware
- Satellite services enable more scalable growth of aircraft comm with adoption
- ICAO SARPS are being updated, market should encourage industry to innovate through adoption

