ESA: Space for ADS-B

Future downstream and beyond workshop

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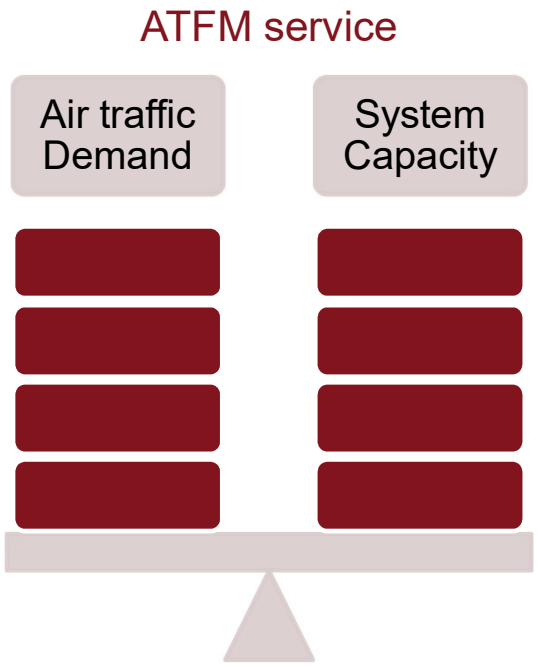
The consortium is composed of five companies located in Italy and in The Netherlands and is currently developing two services: ATFM and INS

Two services using ADS-B data

ATFM — *Air Traffic Flow Management Service*

INS — *Insurance Service*

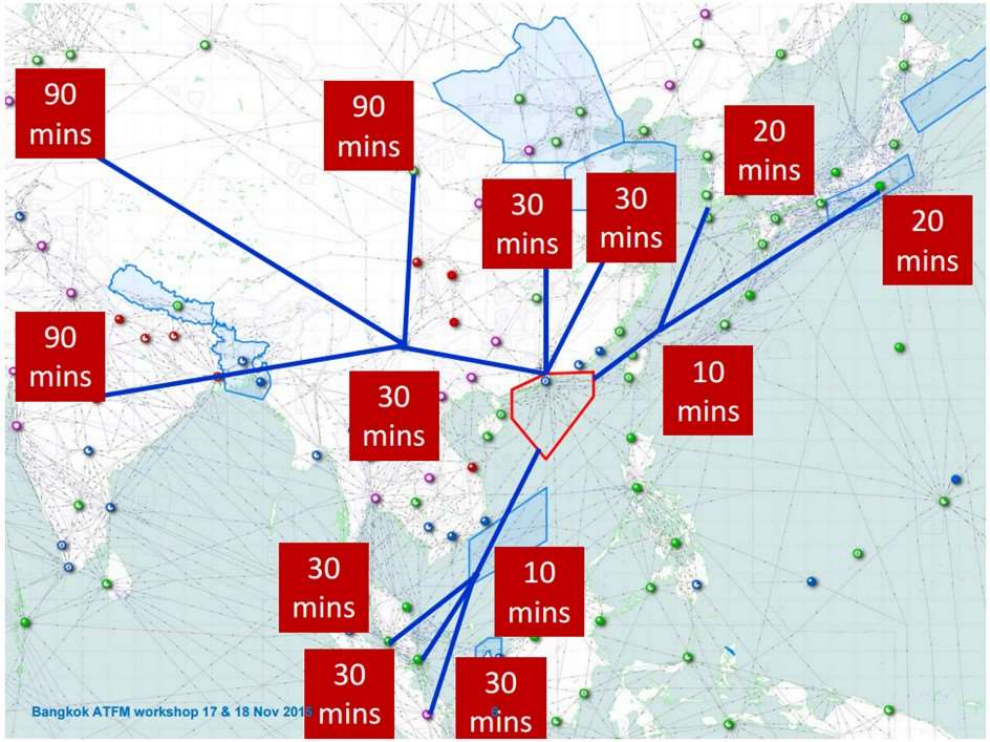
The ATFM service, built by IDS and NAIS, has the goal to tackle Air Traffic Flow Management challenges



- A service established with the objective of contributing to a safe, orderly and expeditious flow of air traffic by ensuring that :
  - ATC capacity is utilized to the maximum extent possible,
  - Traffic volume is compatible with the capacities declared by the appropriate Authority
- A balance between the air traffic demand with the system capacity is required to ensure the efficiency of the National Airspace Systems

Source: Workshop on ATFM Implementation for the CAR and SAM Regions (Panama City, Panama, 25 to 29 May 2015

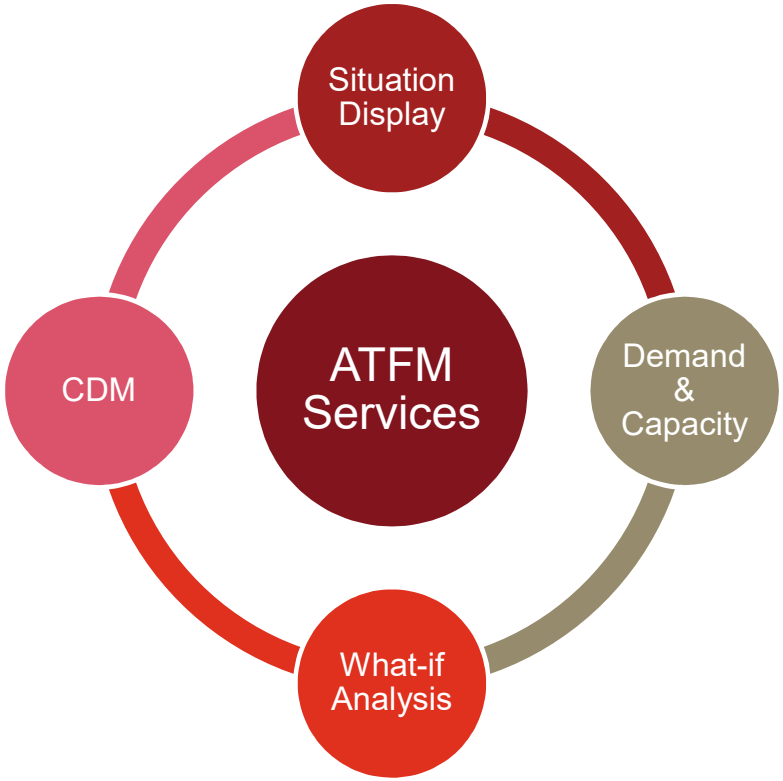
The situational awareness problem is the reason for the creation of the ATFM service: from within the AOR, it's not possible to see all the incoming traffic



- This is an example of ATFM in Asia. This picture exaggerates the problem for illustrative purposes, but the issue repeats itself on every level until the setup and implementation of a global solution
- In the picture, aircraft indicated that they are 30 minutes out from the airport
- But from within the "red" AOR, there is no real position or surveillance information to use for near term planning
- It might be extremely efficient to slow down or speed up some of these aircrafts, but the available information needs to be provided to give these instructions.

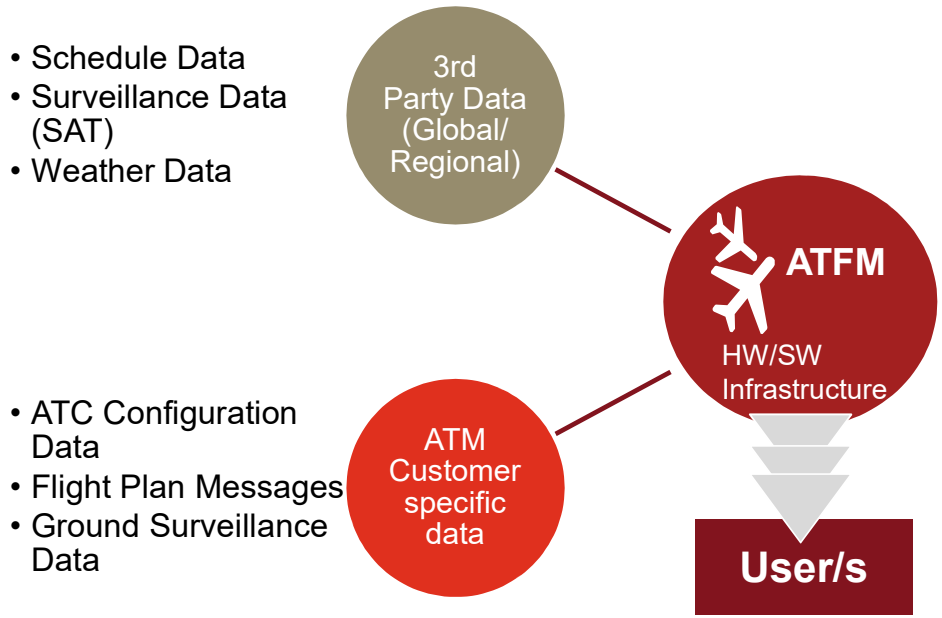
Source) https://www.icao.int/APAC/Meetings/2015%20ATFM%20WSBKK/SP02%20Asia%20Pacific%20Air%20Traffic%20Flow%20Management_IATA.pdf

There are several business and operational needs to address the current limitations



- The proposed service is a solution that can gradually tackle current limitations at the same time delivering first tangible benefits without introducing any paramount change. This incudes the following benefits:
  - **Situation display:** to monitor live traffic over an area wider than the State's surveillance system coverage,
  - Performing **traffic forecast** using information for airborne flights before they enter you AOR,
  - Balancing **Demand & Capacity** managing ATM network capacity,
  - **"What if" analysis** to manage traffic surplus, if needed.

The value proposition of our ATFM service addresses efficiency of operation and interconnection aggregating different sources of space and ground data



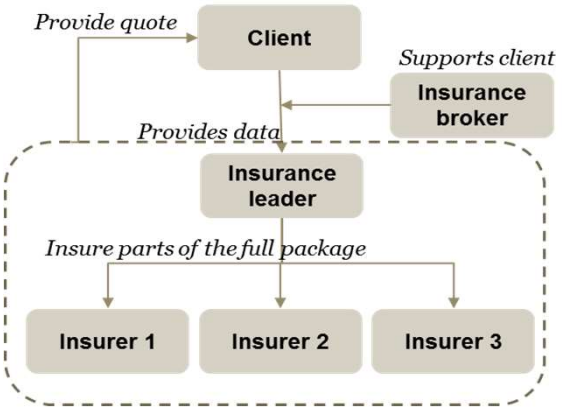
- ANSPs/Airports in States that do not have advanced surveillance coverage with limited ATFM service* would benefit from **extended surveillance (SAT ADS-B) coverage and additional information for an ATFM purposes**
- States with Large Airports (Hubs, e.g some Middle East/Asia Airports) where traffic is mainly International would use it to **overcome geographical limitations/political hurdles in order to improve the availability**
- In both situations, our ATFM solution is far better by providing situational awareness well beyond the Area of Responsibility (AOR)
- Finally, the current set up of the service offers an attractive solution from the cost-benefit perspective

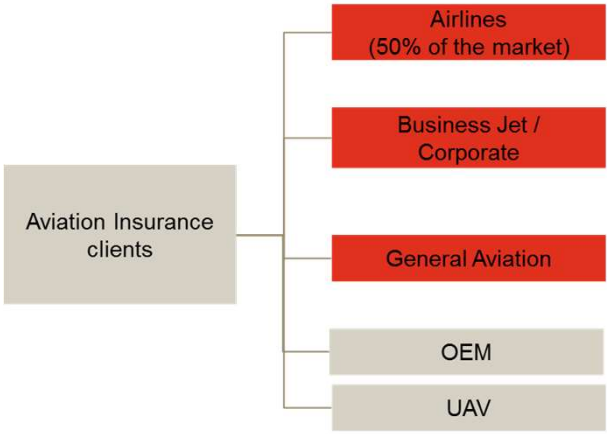
*Note: That is, the cost-benefit for ground installations is prohibitive, or no data sharing agreement in place with neighbouring States, or no ATFM as per Europe/US cases

Numerous benefits are associated with the adoption of the ATFM Service

- Efficient scaling of services and infrastructure
- No upfront infrastructure cost
- Subscription based pricing
- Enabling sharing of information through data standards in order to achieve system to system data exchange
- Reduced complexity of infrastructure provisioning
- Reduction of operational man hours required

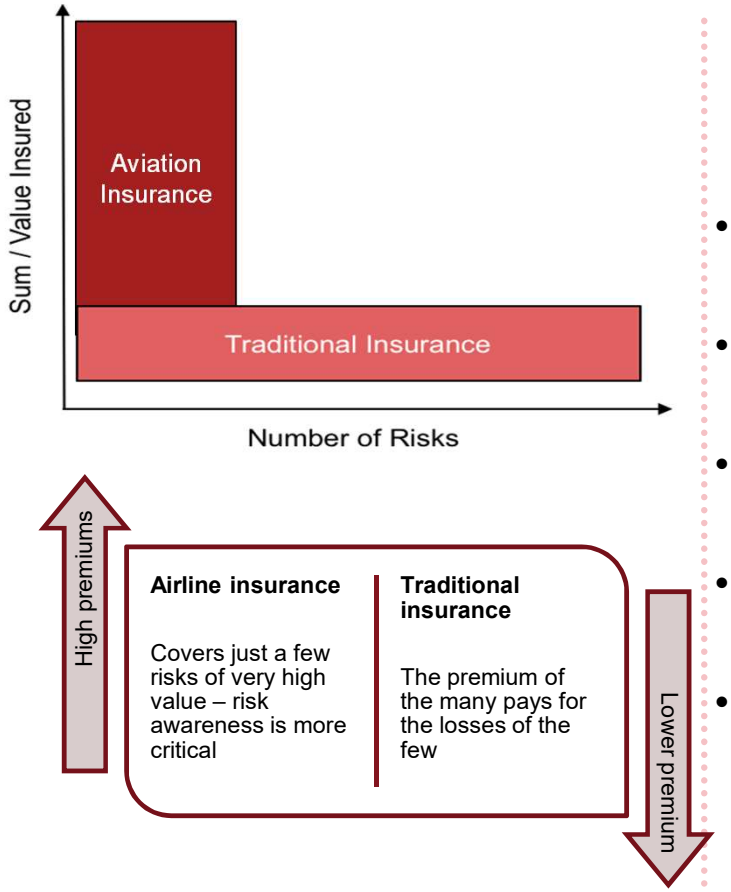
Aviation insurance is a significant market that charges premiums to clients in exchange for coverage





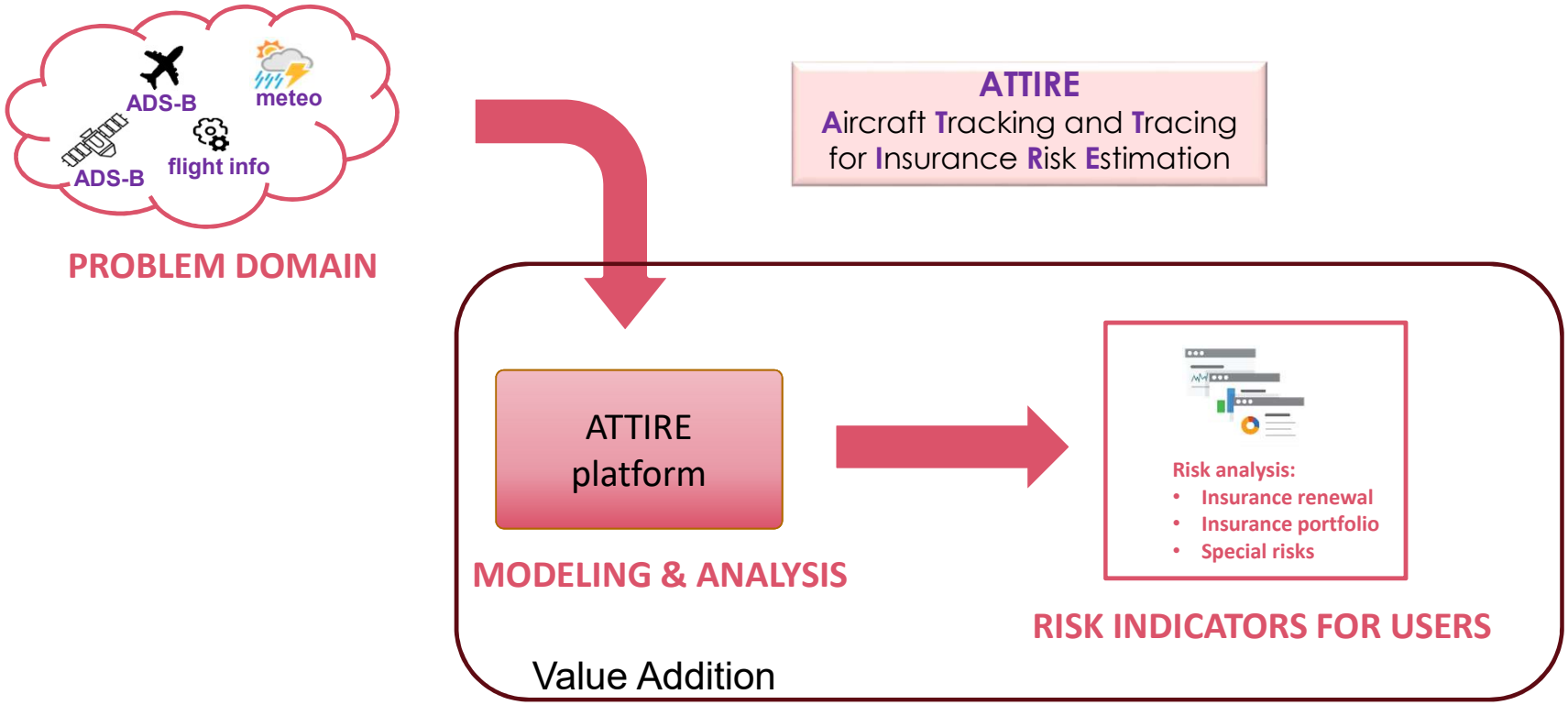
- The aviation insurance market is estimated to have an annual total gross income of about 2,1 Billion EUR (2.6 Billion USD). To calculate premiums insurances base themselves mainly off information provided by the clients and external information collected by underwriters.
- In order to reduce the high risk, insure are organised in multiple layers, with one Insurance leader insuring the client and multiple smaller underwriters re-insuring part of the package. The re-insurers usually don't take more than 10% of the risk associated to the insurance of a client.
- The market breaks down in multiple subsectors where many small coverage placements are made by many different insurers.
- The INS service generate value for the insurance leaders and for the underwriters insuring Airlines (50% of the market), Business/Corporate Jet and General aviation.

Airline insurances deviate from traditional insurance principles: "the premium of many cover the losses of the few"



- Majority of Airline insurance policies are placed on a subscription market basis due to high limits purchased
- Limited information available to characterise the risk profile of the insured airlines
- Few risks are considered and evaluated on the basis of data provided by the airline themselves
- Reduced risk portfolio generate higher premiums with very limited differentiation between airlines
- Limited possibility to optimise risks versus profitability

We've designed and specified a complex data assimilation, modelling and analysis platform that can adaptively support multiple products INS service overview



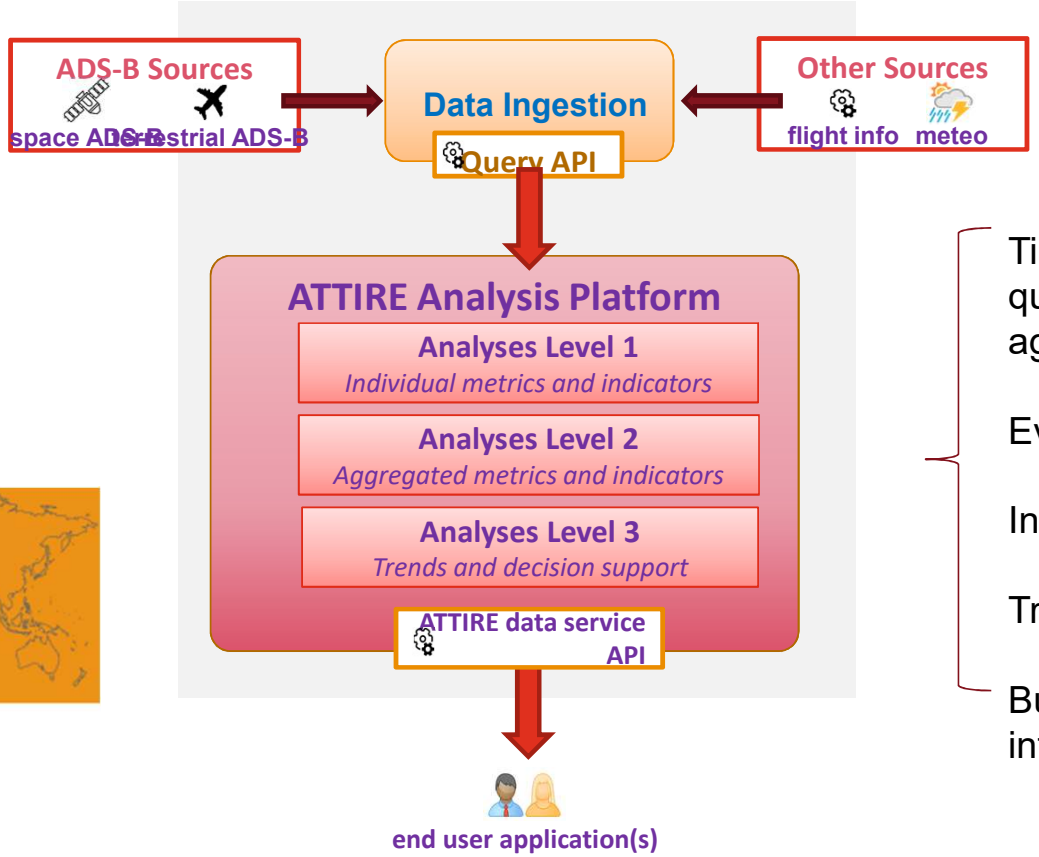
Our system comprises multi-level analyses that inter-relate various metrics to establish 'risk' information that can be delivered and integrated into client risk models

- High level of customisation to client risk modelling
- Global service coverage ensured by access to AIREON provided satellite ADSB data

Estimate current global surveillance coverage

Aireon global coverage

Estimation based on Iridium commissioned independent studies



- Time / space queries and aggregations
- Events analyses
- Intercomparisons
- Trend analyses
- Business intelligence

Numerous benefits are associated with the adoption of the ATTIRE service

- Enhanced portfolio of risks
- Informed Go/no-go decision
- Optimisation of risk versus profitability
- Level of participation
- Increase robustness of risk models

Thank you for your attention.
Questions?