



**Enhancing Aviation Safety with Surveillance
Application Technology (ADS-B prediction Tool)**

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Content

INTRODUCTION

Technology Impact &
Safety

ADS-B

ADS-B Prediction Tool

CONCLUSION



Introduction



The Air Transportation System and several key subsystems including the Aircraft, Airline, and Air Traffic Management are modeled as interacting control loops.





Introduction



- **The impact of Technologies on each of these subsystems is evaluated through the performance of these control loops.**
- **At a greater scale, loops are interacting with each others.**



Technology & Safety



Technologies are seen to have a significant impact on the safety, efficiency, capability, capacity, environmental impact And financial performance of the Air Transportation System.





Technology & Safety



Procedural Based Control:

Control on Where We Think the Aircraft Is

History



Landmark Navigation
Radio Beacons
Position Reports



Surveillance Based Control:

Control on Where We Know the Aircraft Is

Today



VOR/DME
RADAR



Technology & Safety



Trajectory Based Control:

Control on Where We Know the Aircraft Will Be

Future



PBN
ADS-B
DataComm



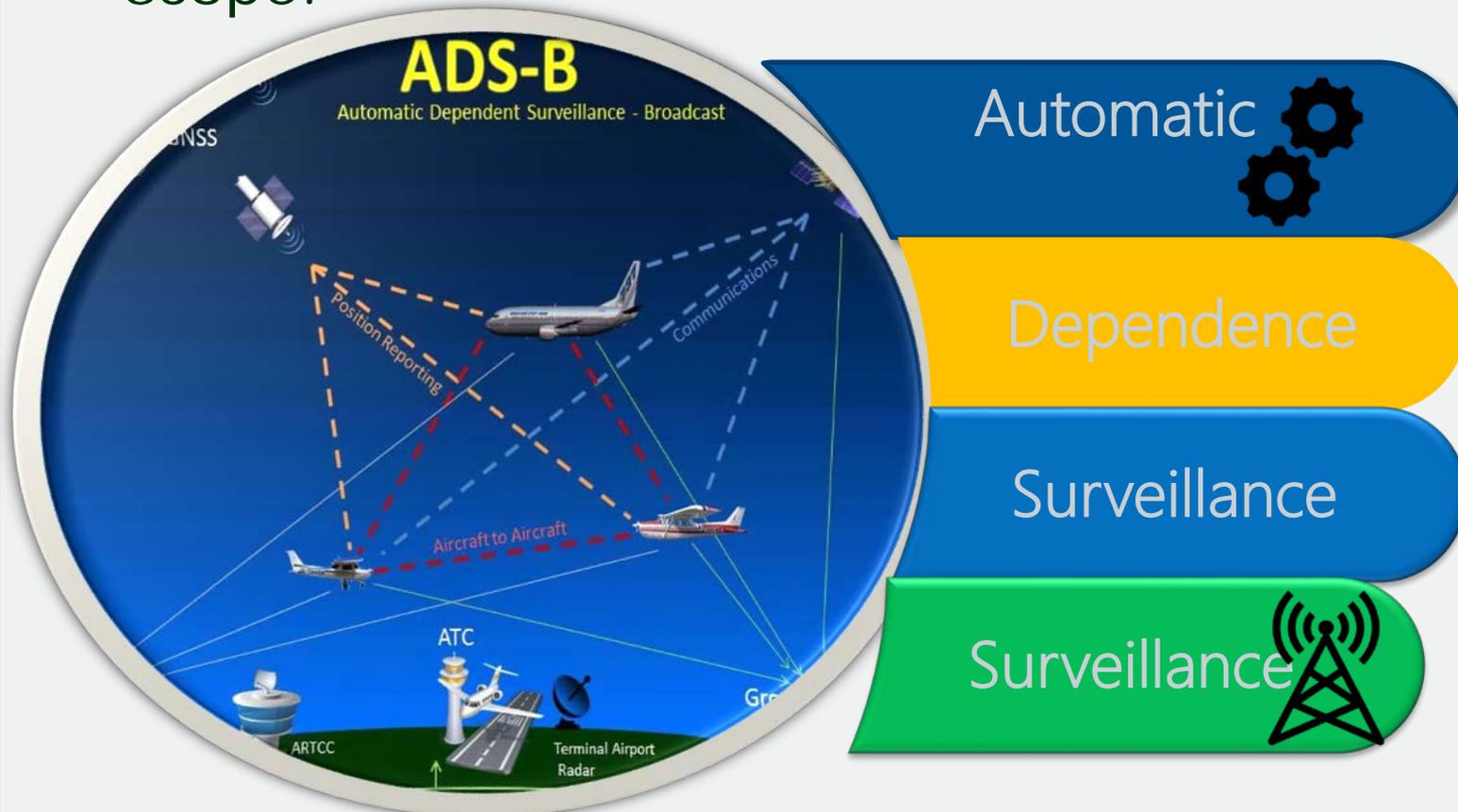
Safety First

Main priority for Civil Aviation



- it demands that an aircraft's whereabouts and flight phases should always be known with respect to different aircrafts.
- This is done to increase surveillance and protect aircrafts from collisions.

➤ The Automatic Dependent Surveillance Broadcast (ADS-B) is an example of a surveillance mean put in place to meet the Safety scope.





ADS-B



- ADS-B relies on onboard sensors mainly GNSS sensors to know the aircraft's position.
- From the broadcasted ADS-B information (NIC and NACp values), one can know the level of accuracy and the level of thrust we can have in the received GNSS signals.
- These sensors receive signals from satellites, and satellites being manufactured products, can break down at any time and this may degrade the NIC and NACp values or even render them unavailable for use.



ADS-B



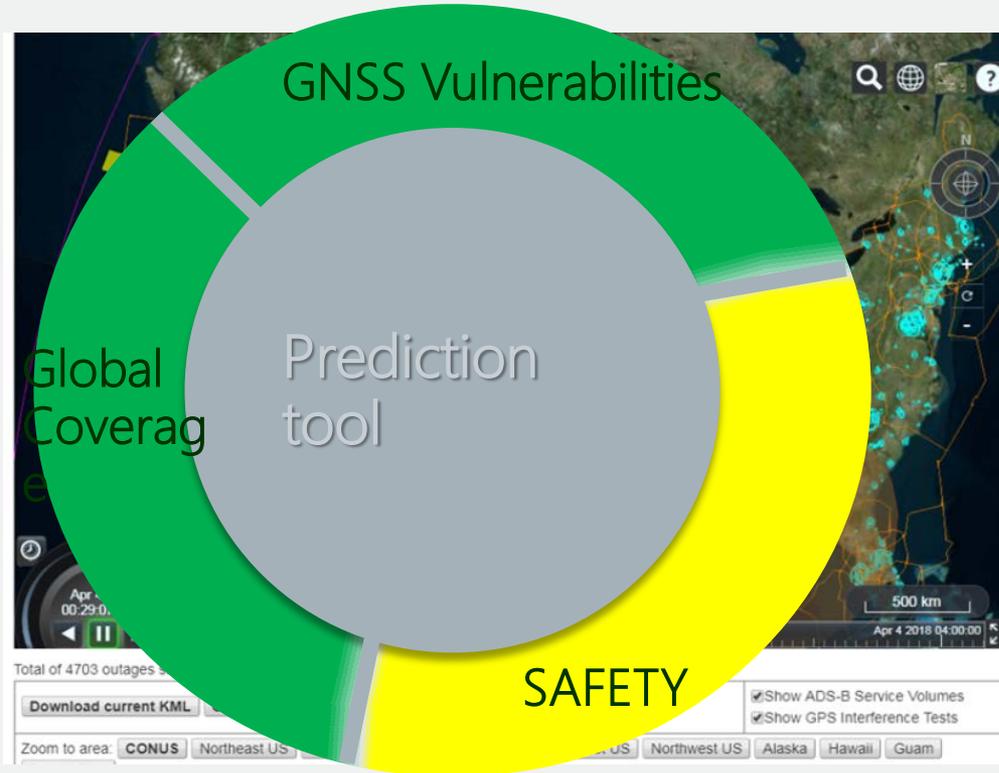
- In such situations, the ADS-B service cannot be used and an aircraft relying on ADS-B for navigation which runs into such a situation becomes a potential source of danger for both the passengers and those on the ground.
- Thus, the ability to predict the availability of the ADS-B service, prior to using it in-flight is therefore very important as it reasonably enhances safety, by allowing proactive decision making on backup means in the surveillance service where possible or route modifications and even flight rescheduling otherwise.
- To avoid such situations, it is important to predict if an ADS-B service will be available on any flight path



ADS-B Prediction Tool



- Example : FAA ADS-B Service Availability Prediction Tool
- Available Prediction Tools*



FAA ADS-B prediction availability map
[www.sapt.faa.gov]



Conclusion



Let's make the sky a safer place



Conclusion



Good Bye for now

THANKS FOR YOUR ATTENTION

Questions?

