UAS in the ATM environment

How can the new technologies reduce the impact of the UAS in non-segregated areas

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Contents

State regulator

Assumptions

- UAS will be a legitimate user of the airspace
- The ATM should be able to interact with UAS operations
- The integration of activities should include, both civil and military operations
- The regulations doesn´t follow the UAS development
- The UAS operations should be regulated in order to assure the safety when integrated with ATM users

UAS in the ATM environment

Although the pilot of a UAS operated outside a militarily hostile environment must maintain R/T contact with the relevant ATC units and obtain appropriate clearances to operate

The present Regulatory Requirements for UAS are exactly the same "Rules of the Air" as manned aircraft

This includes a requirement to 'see and avoid' other air users which cannot currently be satisfied by any unmanned aircraft

UAS and civil applications

- Aerial photography, Film, video, still, etc.
- Agriculture Crop monitoring and spraying.
- Coastguard Search and rescue, coastline and sea-lane monitoring.
- Conservation, Pollution and land monitoring.
- Electricity companies, Power, line inspection.
- Fire Services and Forestry Fire detection, incident control.

UAS in the ATM environment

Can an UAS operate in controlled airspace?

Introducing UAS into the civilian airspace

- **Technological**
- **Regulatory**
- **Safety**

UAS in the ATM environment

What´s the solution?

Can new technologies act as a partner?

UAS features to operate in ATM environment

Modern aircrafts, equipped with state-of-the-art onboard systems, are fully integrated in the ATM environment

The new actor of the airspace, the UAS, will surely impact the ATM operations in the years ahead

We need a convergence of technical and operational capabilities for both actors, UAS and normal aircrafts

Existing Technologies to reduce the impact

ACAS / TCAS

ADS-B

ASAS

Why do we need onboard technologies?

- **Will the UAS operate in combined civil and military airports?**
- **Most of airports in SAM Region share the same airport infrastructure**
- **In that case, the UAS will follow the ATS routes and execute approach procedures?**

Existing Technologies to reduce the impact

- Which technologies can be used to reduce the impact?

- An UAS can be equipped with a TCAS?

- **The RA would be sent to the remote pilot in order to execute the requested maneuver or to other flights as done currently.**

Existing Technologies to reduce the impact

- ADS-B can be another solution?

In order to improve the airworthiness, the UAS could broadcast its position to the other aircrafts and to the ATC.

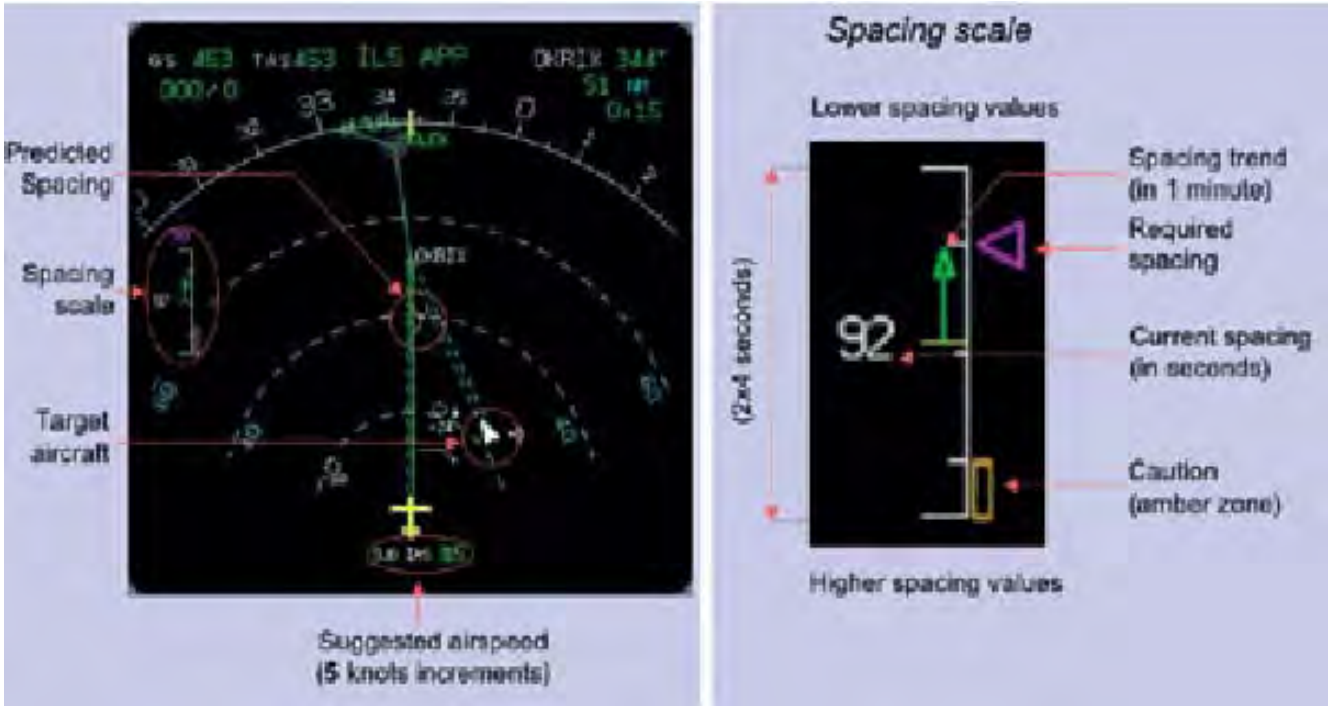
Why do we need onboard technologies?

Airborne Separation Assistance System (ASAS)

Airborne Surveillance (AS) applications will bring situation awareness to air operators as well as to ground operators

- **An UAS based on airborne surveillance that provides assistance to the remote pilot supporting the separation of their UAS from other aircraft, monitoring and controlling aircraft separation.**
- **ASAS provides information to the cockpit (or RP) about the position of surrounding traffic.**
- **In the future this may enable the UAS remote pilot to take over some of the separation tasks of air traffic controllers.**

Airborne Separation Assistance System (ASAS)



ASAS pages on MCDU for data input

Conclusion

UAS (unmanned aircraft system) **is a reality and the introduction of this *"Uninhabited air vehicle"* in the ATM world will depend of its complete adaptation to this new environment**

In the other hand, the ATM should be prepared for its arrival !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