

ICAO DRONEENABLE/3

AIRMAP

UTM Service Suppliers

How should they be approved, and dare we say “certified”?

Andreas Lamprecht
CTO at AirMap



Agenda

- Archetypes of purposes USSs
- Considerations and examples for those archetypes
- Conclusion



USS today: who are they providing services to?



Airspace Authorities

Awareness Apps

- Airspace Authority Branded Web & Mobile Apps

Registry

- Drones, Operators, Pilots

Flight Information Management System (FIMS)

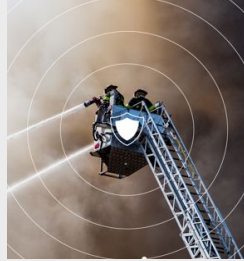
- Core Profile
- Extended Profile

UTM Center

- Authorization Engine
- UTM Dashboards

Remote ID

- Discovery & Synchronization Service
- Display Service & Apps



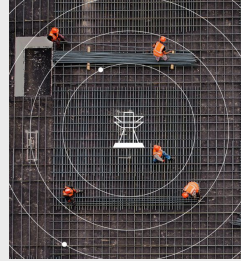
Other Authorities

UTM Center

- Access Rights
- Airspace Restrictions

Remote ID

- Access Rights
- Authority Application



Enterprises

Drone Operation Center

- Registrations
- Facility Maps
- Rules Sets & Workflow
- Operations Planning
- Reporting & Archiving
- UTM Dashboards

Drone Automation Workflow

- Automated Flight Plans
- Scheduling & Dispatch
- Flight Execution
- Asset Capture & Storage
- Data Processing & Analytics



Drone Solution Providers

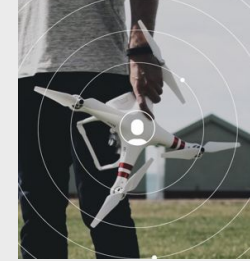
AirMap SDKs

- iOS, Android,

AirMap APIs

- Discover
- Plan
- Fly

Developer Portal



Operators (Pilots)

AirMap Pilot App

AirMap for Drones

Partner Pilot Apps

QGroundControl

Categories of purposes of a USS (non exhaustive)

→ Enabling safe and equitable use of the entire airspace

The airspace systems needs to be able to accommodate large volumes of UAS operations, equitable between all airspace-users, and safe for all involved.

USS are entities providing traffic management services, and effectively become “collaborative authorities” in managing the skies.

→ Supporting Operators with Safety-Services

UAS already provide many benefits to society and are developed at rapid pace.

UTM services can enable complex use cases, and service needs to be able to adapt with ongoing changes in technology at a similar pace, including the respective business models.



European Union Aviation Safety Agency

Draft Opinion

in accordance with Art. 16 (Accelerated procedure) of MB Decision
No 18-2015

High-level regulatory framework for the U-space



NextGEN

UTM
Concept of
Operations



Joint Authorities for Rulemaking of Unmanned Systems

**JARUS guidelines on
Specific Operations Risk
Assessment
(SORA)**

USSs as collaborative authorities

How do USS and ANSPs compare?

ANSP

Operational responsibilities **focus on controlled airspace.**

Trained air-traffic-controllers talking to trained pilots over proven technologies like radio.

Services and **procedures are standardized** and harmonized based on history of incremental safety-enhancements and operational optimizations

Manned aviation is likely not changing a lot in terms of equipment and behaviour in the next years.

USS

Operational responsibilities needed for **potentially 100% of the airspace at lower altitudes.**

Roles of humans-in-the-loop are gradually reduced. **Digitization** is huge factor for improving efficiency.

Services are getting created rapidly, **standardization follows prototyping.** Velocity is different.

USSs are not even attempting to provide any service to manned aviation, but need to interface to it.

USSs are to provide largely new types of services.
Tasks are ultimately similar, and approval process is a stepwise approach for potential eventual certification.

FAA LAANC



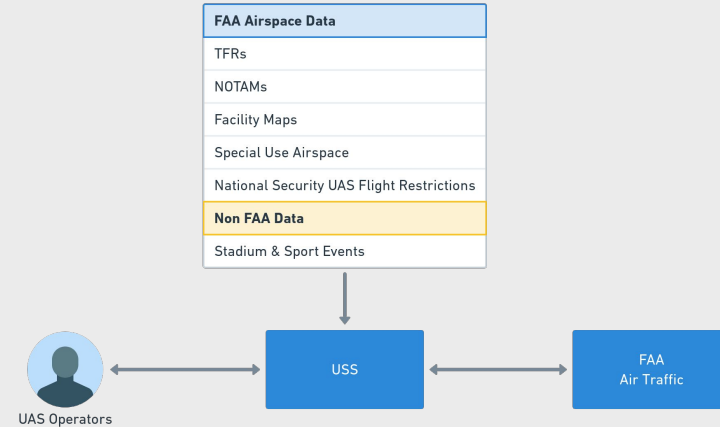
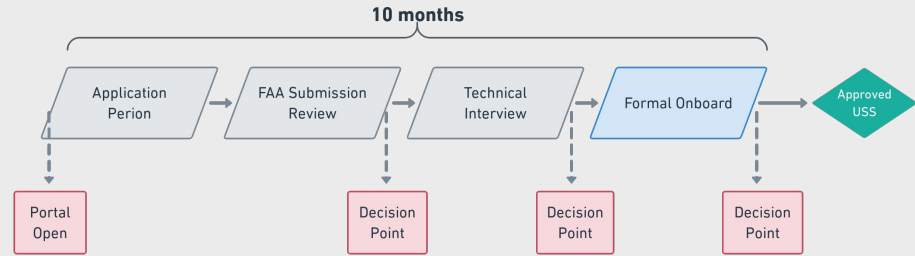
Example of an established approval process for USSs

Areas covered by Operating Rules:

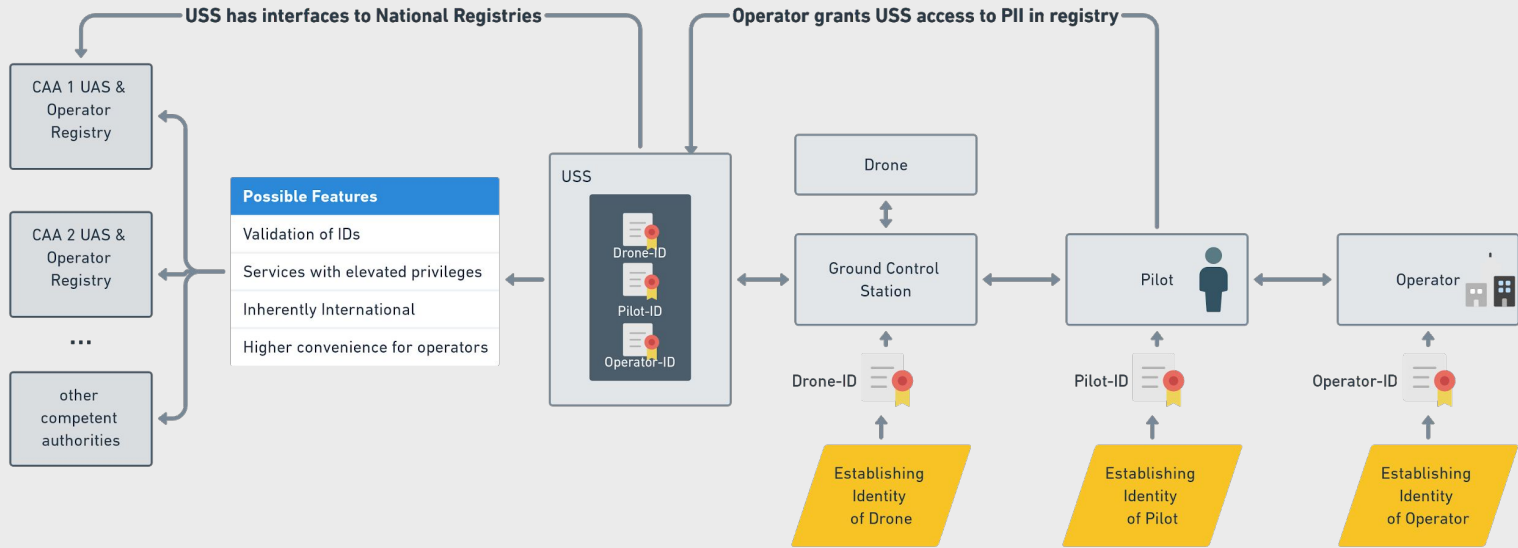
- Operator interface
 - Display of correct aeronautical data from multiple authoritative sources
 - Display of correct legal disclaimers
 - Display of correct system state
 - Performance of compliance check
- System behaviour
 - Operator Login to USS
 - Submission of operations to FAA
 - Automated authorization
 - Manual authorization (Further Coordination)
 - Workflow of authorization-request
- Reporting and Auditing Mechanisms

Legal Documents involved:

- LAANC Concept of Operations
- USS Operating Rules
- Memorandum of Agreement
- USS Checkout Procedure



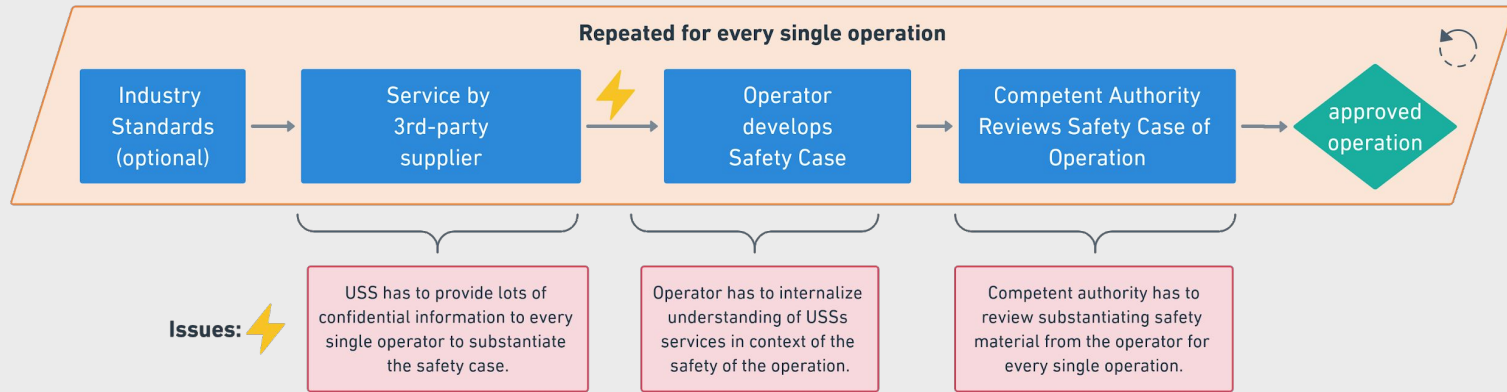
UAS & Operator Registry



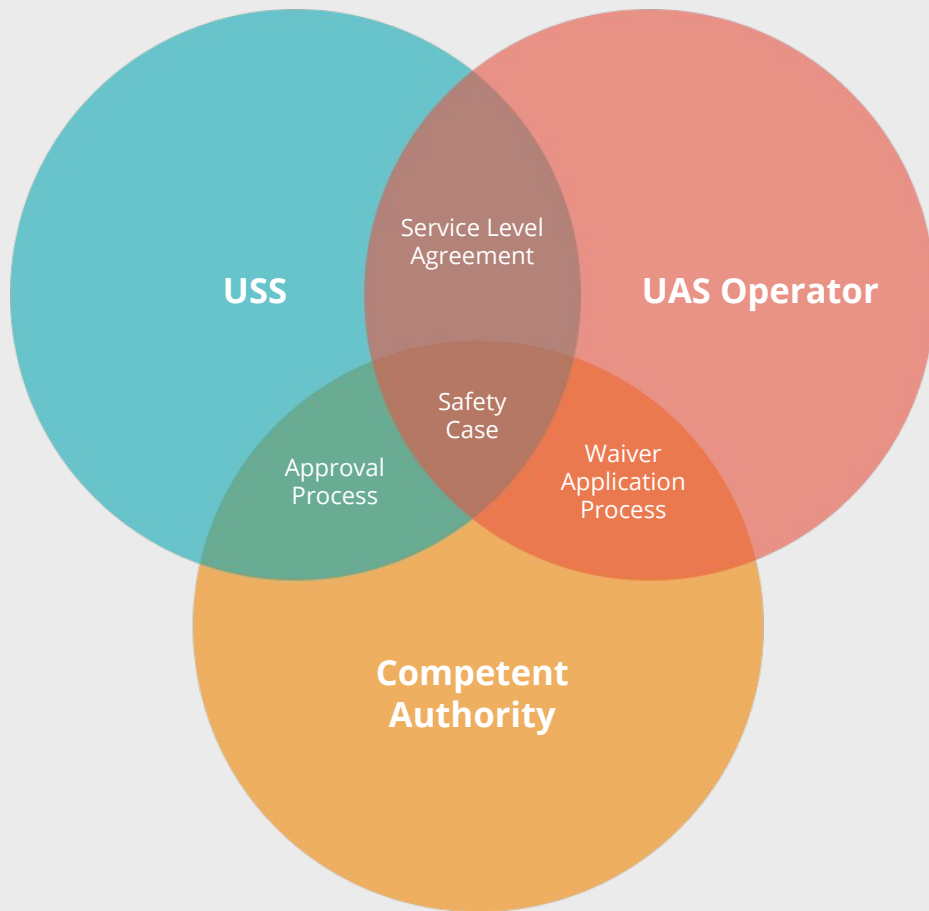
USSs providing safety-supporting services to UAS operators

Example: Role USS in Specific Operations

In case of non-approved USS

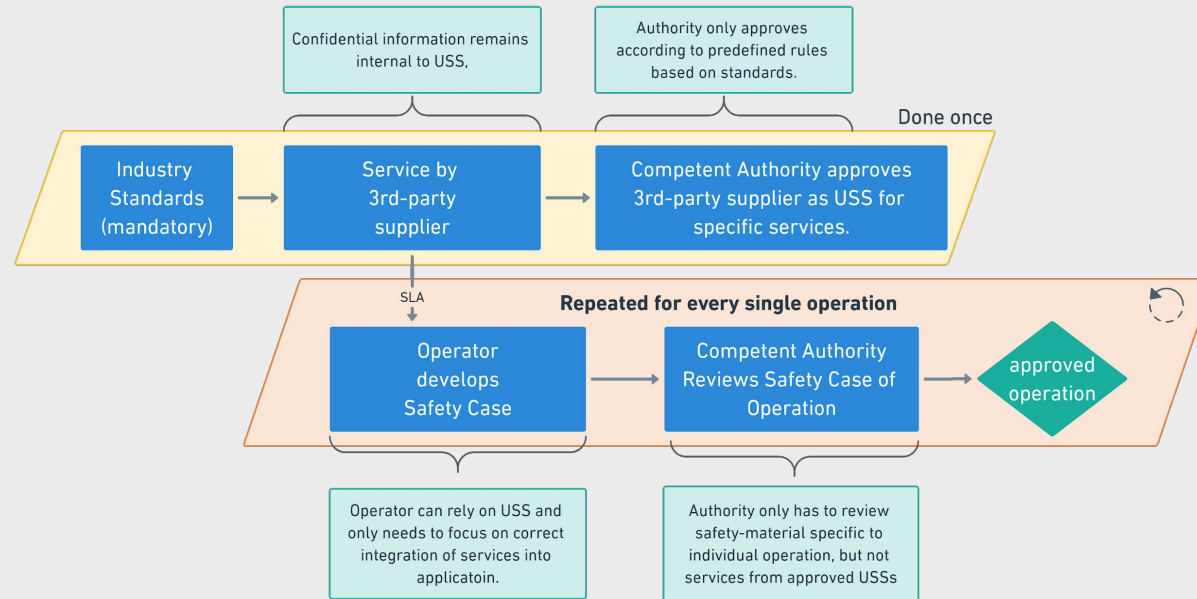


USS in context of specific operations



Example: Role USS in Specific Operations

In case of approved USS



Conclusion



USS approval

USS need approval processes for both supporting authority- and operator-tasks. Those work hand-in-hand, but they need a holistic concept of operation.



LAANC

LAANC is ready to be implemented worldwide. Remote ID is likely next.



Registries

Registries should be designed to have interfaces for USS to connect to.



Onwards

Industry and regulators to collaborate in standardizing next sets of USS services

CONTACT

support@airmap.com

www.airmap.com

AIRMAP