EU-South Asia Aviation Partnership Project (EU-SA APP)

Strengthening the partnership in aviation between the EU and South Asia

This project is funded by the European Union and implemented by the European Union Aviation Safety Agency

EU-SOUTH ASIA AVIATION PARTNERSHIP PROJECT

UAS Regulatory Framework and Airspace Integration Workshop

General Overview

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Delhi (India), 07-08 November 2019

EU-SOUTH ASIA APP

Your safety is our mission.

GOF USPACE –
International consortium with 19 members

U-SPACE INFRASTRUCTURE MEMBERS (8)

- ANSP
  - **EANS** *(Coordinator)*
  - **ANS Finland**
- UTM vendors
  - **AirMap**
  - **Altitude Angel**
  - **Unifly**
- FIMS coordination and implementation
  - **Frequentis**
- Dense urban fleet management & drone operator
  - **Fleetonomy**
- Use case coordination
  - **Robots Expert**

OPERATOR/OTHER MEMBERS (11)

- Drone Mfrs/Operators (7)
  - **Avartek (FIN)**
  - **BVdrone (FIN)**
  - **Hepta Airborne (EST)**
  - **Police of Helsinki (FIN)**
  - **Police and Border Guard (EST)**
  - **Threod Systems (EST)**
  - **VideoDrone (FIN)**

- General Aviation Operators (1)
  - **The Finnish Air Rescue Society**

- Drone Taxi Operator (1)
  - **Volocopter (Urban Air Mobility)**

- Other (2)
  - **CAFA Tech (EST)**
  - **The Transport and Communications Agency**

EU-SOUTH ASIA APP

The GOF USPACE project at a glance

Flight Information Management System (FIMS), supports also cross-border drone operations

⇨ Integration of UTM and ATM systems

⇨ Cross-agency / country drone (UAV) information management system

⇨ Accessibility of a Common operational picture

⇨ Enable Joint Operations / authority collaboration

Large scale demonstration

MEMBER OF
SESAR
JOINT UNDERTAKING

U-space

Gulf of Finland

Finland
Vyborg
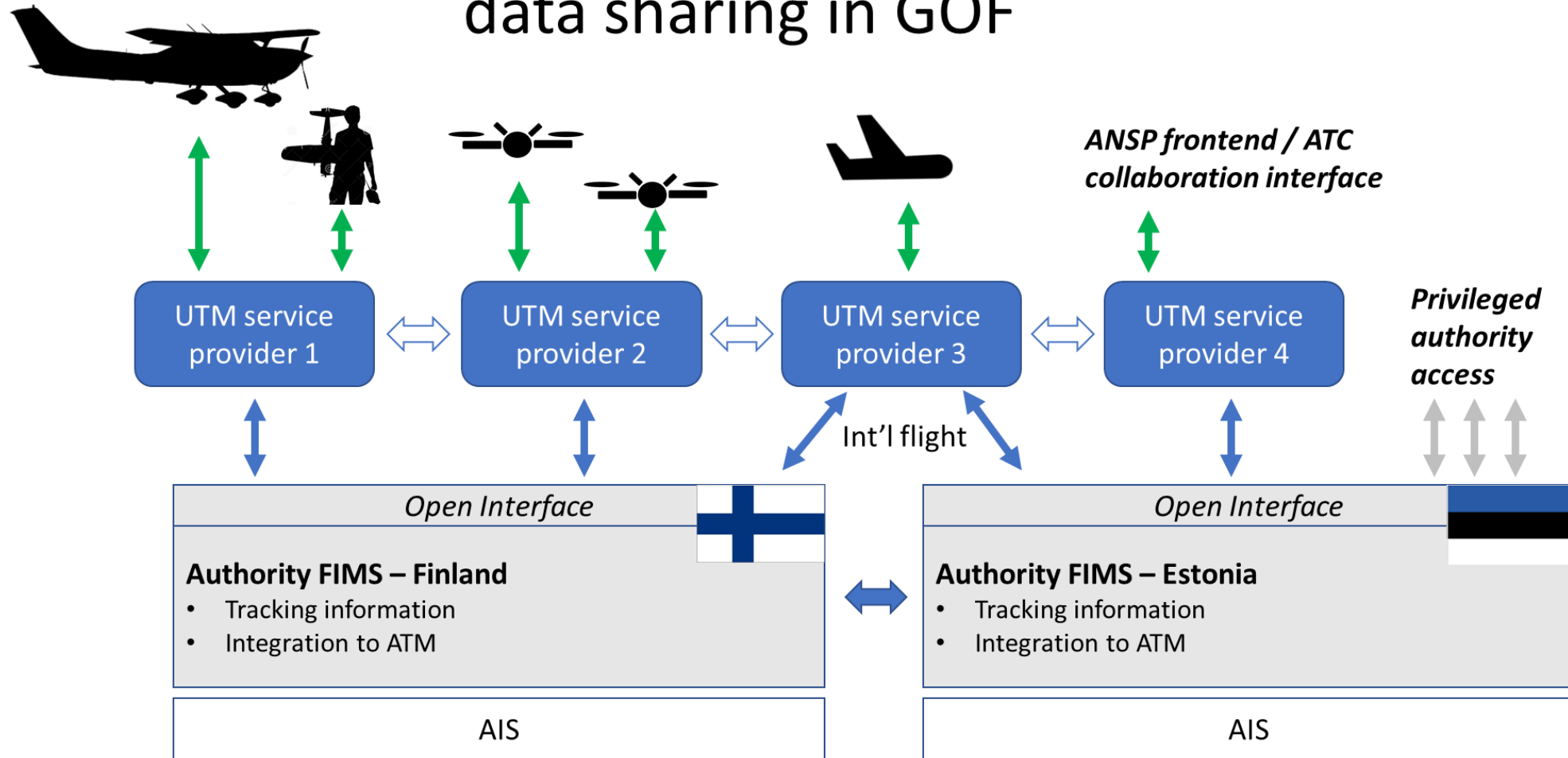Helsinki
Kotka
St. Petersburg
Tallinn
Estonia
Russia

Use-cases demonstrate integrating manned and unmanned aviation

| Urban drone fleet ops in Helsinki with Police intervention | Model flyers, general aviation and drones sharing same airspace | Maritime traffic surveillance combined with SAR exercise in Gulf of Finland | International parcel delivery between Helsinki and Tallinn | Urban drone fleet ops in Tallinn in controlled airspace | 100km+ inspection flights in forestry and utility inspection | Urban Air Mobility flight from Helsinki-Vantaa airport to downtown Helsinki |

All use cases demonstrate actual operational needs

FREQUENTIS

GOF U-SPACE

Top-level architecture and data sharing in GOF

ANSP frontend / ATC collaboration interface

Privileged authority access

| UTM service provider 1 | UTM service provider 2 | UTM service provider 3 | UTM service provider 4 |

Int'l flight

Open Interface

Authority FIMS – Finland
- Tracking information
- Integration to ATM

AIS

Open Interface

Authority FIMS – Estonia
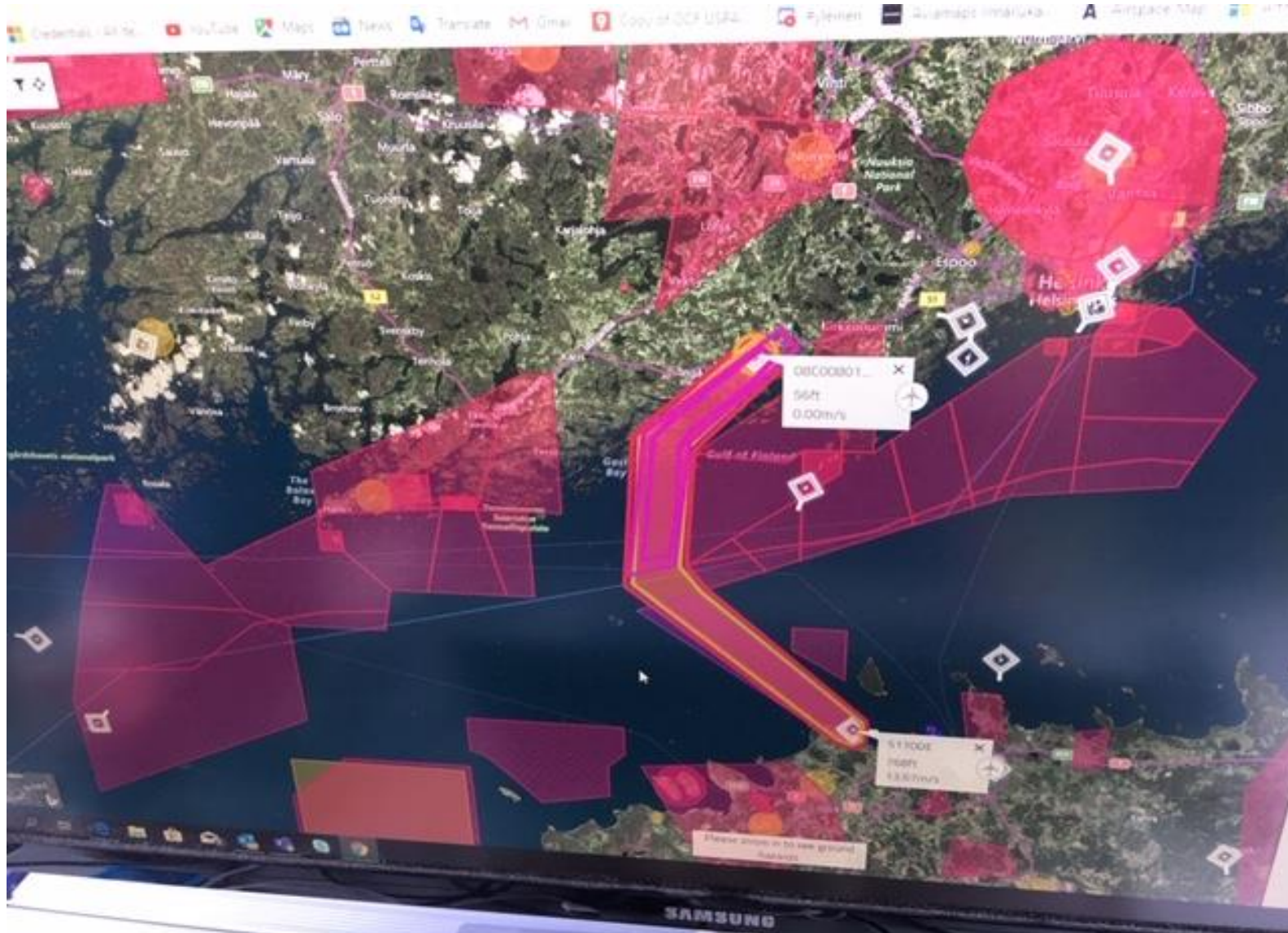- Tracking information
- Integration to ATM

AIS

GOF design: Authority FIMS at the core of interoperability

Create architecture for and implement pre-operational authority Flight Information Management System (FIMS), operated as an ANS covering the FIR

- Serves and integrates UTM Service Providers (USP) – creates a liberal market regime
- Supports adding commercial off the shelf UTM components, e.g. precision weather, 3D mobile coverage charts, dynamic charts on aggregation of people, …
- Provides real-time situational awareness to all airspace users – supports privileged access
- Supports FIMS to FIMS connections enabling cross-border and FIR to FIR operations
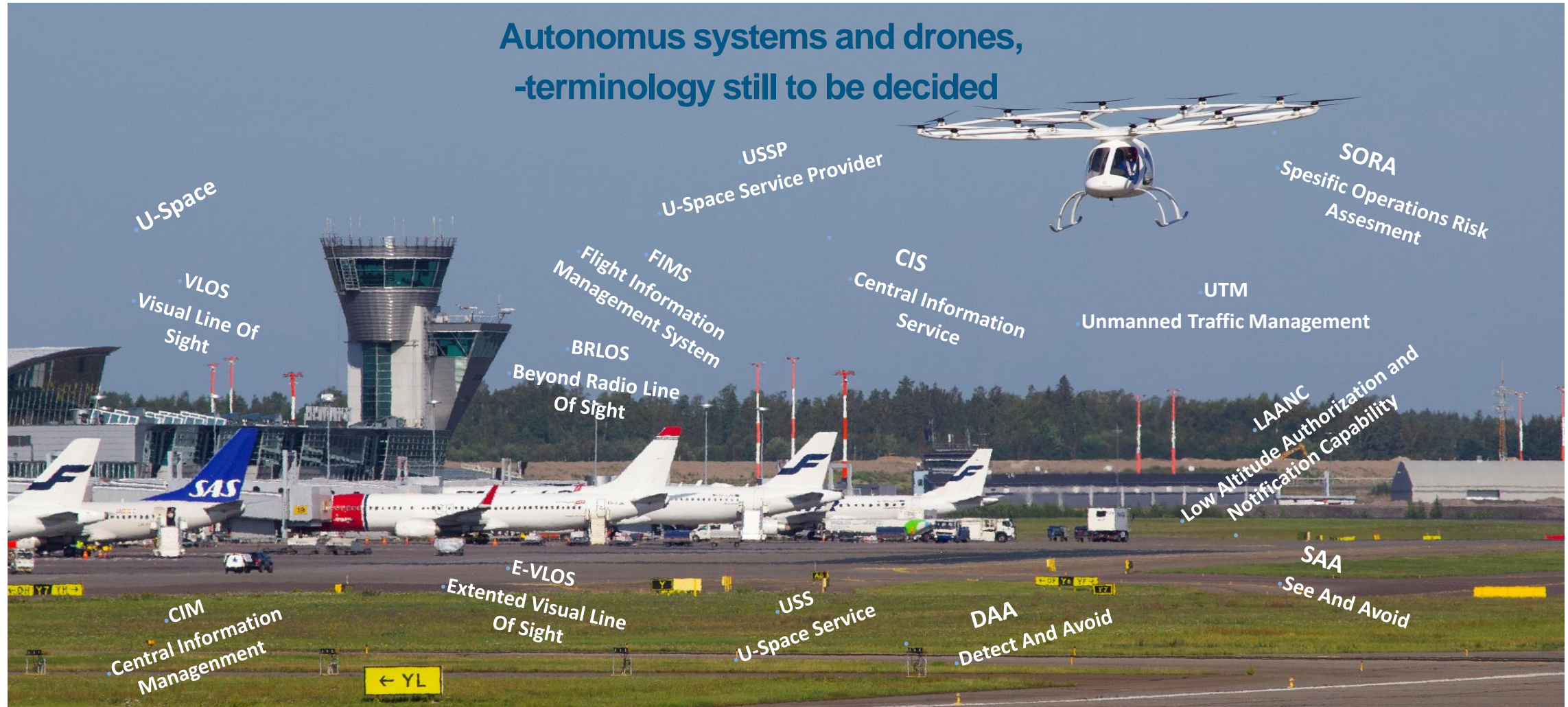
Unmanned Traffic Management - system

Flight mission functionalities

- Flight plan
- Approval
- Mission control
- Mission cancellation
- Dynamic geofencing
- Data sharing
- Position tracking

U-Space terminology

Autonomus systems and drones,
-terminology still to be decided

USSP
U-Space Service Provider

U-Space

SORA
Spesific Operations Risk
Assesment

VLOS
Visual Line Of
Sight

FIMS
Flight Information
Management System

CIS
Central Information
Service

UTM
Unmanned Traffic Management

BRLOS
Beyond Radio Line
Of Sight

LAANC
Low Altitude Authorization and
Notification Capability

E-VLOS
Extented Visual Line
Of Sight

USS
U-Space Service

DAA
Detect And Avoid

SAA
See And Avoid
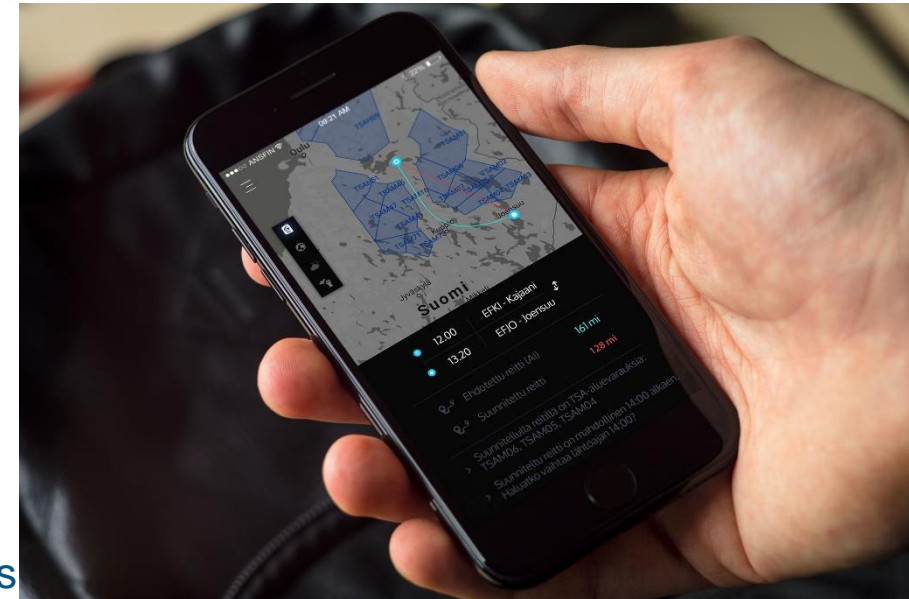
CIM
Central Information
Managenment

Summary: GOF lessons learned

- Need for European interoperability standards and stress test environments

- A dataflow has many services, most likely one of them a more central one – a single source of truth for a region

- Aim to have basic U-space services tracking, flight planning and flight conformance monitoring integrated in Ground Control Stations

- Tracking solutions need significant additional work

- U-space services must be resilient to poor mobile network coverage

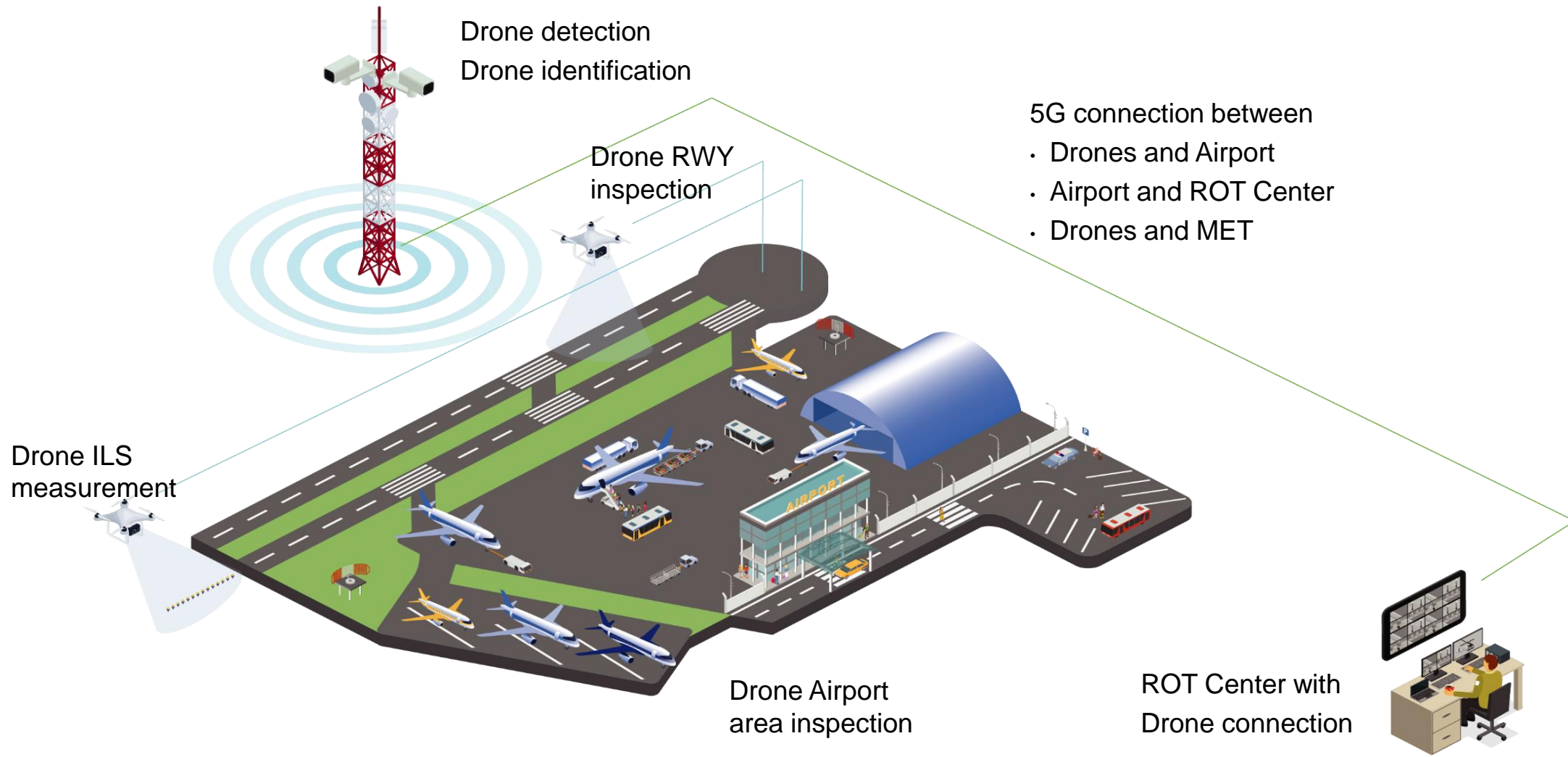- Stakeholder involvement is key – it's people behind safety, systems help

ANS FINLAND VISION IN UTM

- Need for one national UTM service provider as an "umbrella organization"
  - All other UTM service providers can join via open API`s
    - Shared information on drones and their intensions
    - Same data for all (air space model, air space reservations, airport OPS hours, other traffic)
    - Traffic information on all traffic
    - Static data, Dynamic data, Dynamic Dynamic data (real time air space reservations)

- ANSP has all the information needed
  - Capability to act as national UTM service provider
  - Not as a monopoly, but enabler
    - Real time data for all, same level service = equal service
  - Via digital solution open interface for business use and for authority and officials
    - Digital platform, cloud services, micro services
  - Flight Information Service, Aeronautical Information Service
    - ANSP`s task in ATM, very strong link also in UTM

VISION ON REMOTELY OPERATED AIRPORT

Drone detection
Drone identification

Drone RWY inspection

5G connection between
- Drones and Airport
- Airport and ROT Center
- Drones and MET

Drone ILS measurement

Drone Airport area inspection

ROT Center with Drone connection