



# EASA | U-space Stakeholders regulatory workshop

11 October 2019 - Köln

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DIODE: d-flight Internet of Drones Environment  
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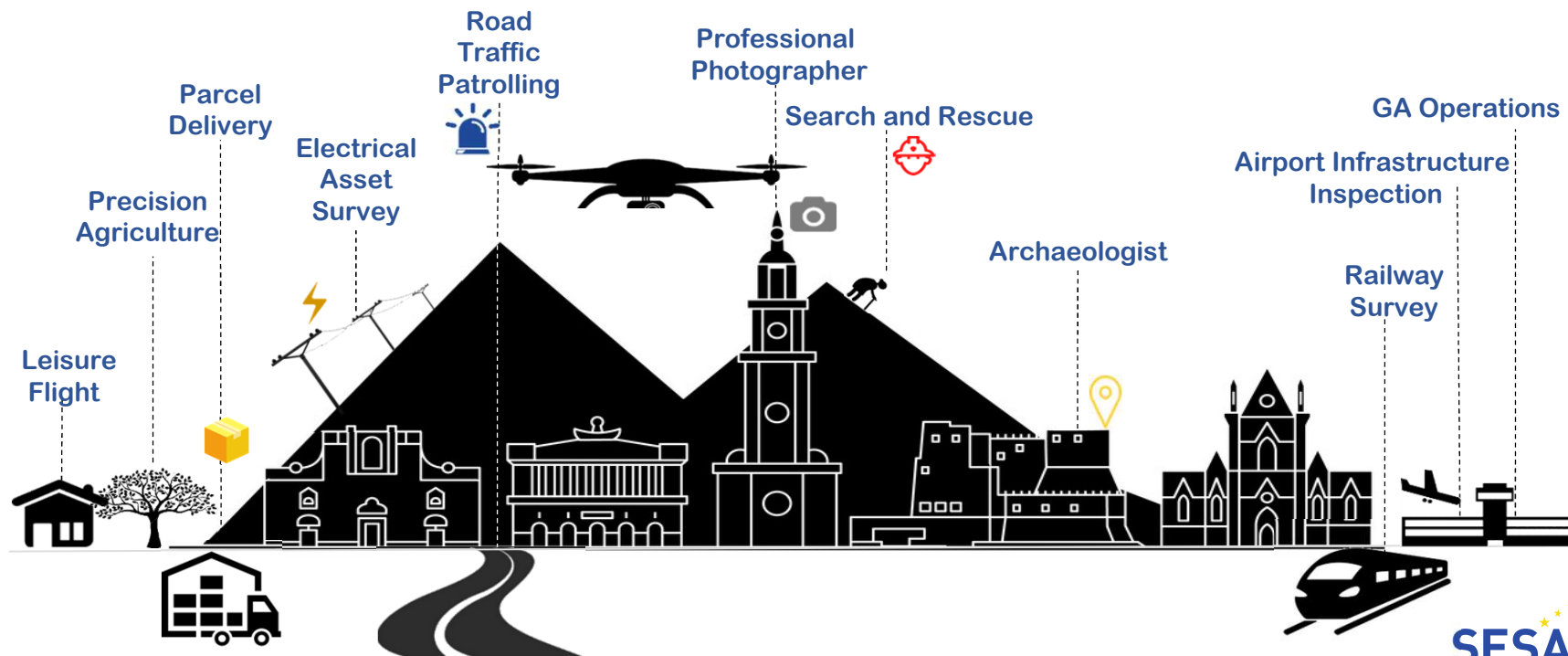


 U-space



# **D-flight Internet Of Drones Environment.**

The **Demonstration of U-space Services** with **6 contemporary missions** with “unmanned” and “manned” flights in several geographical situations including urban area and close to a small airport.



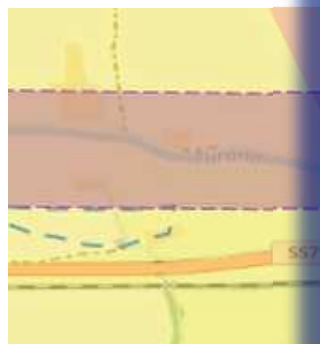
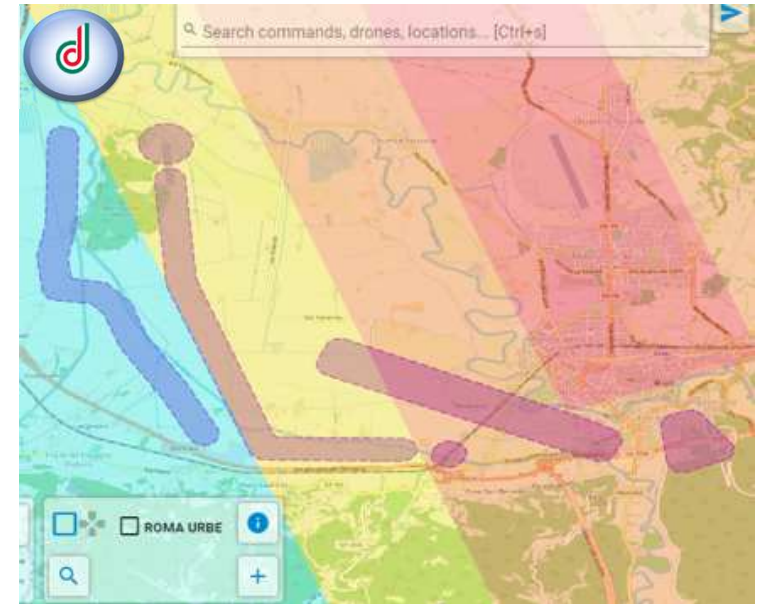
Demonstration has been executed in Rieti **Airport Traffic Zone** the 24-25/09

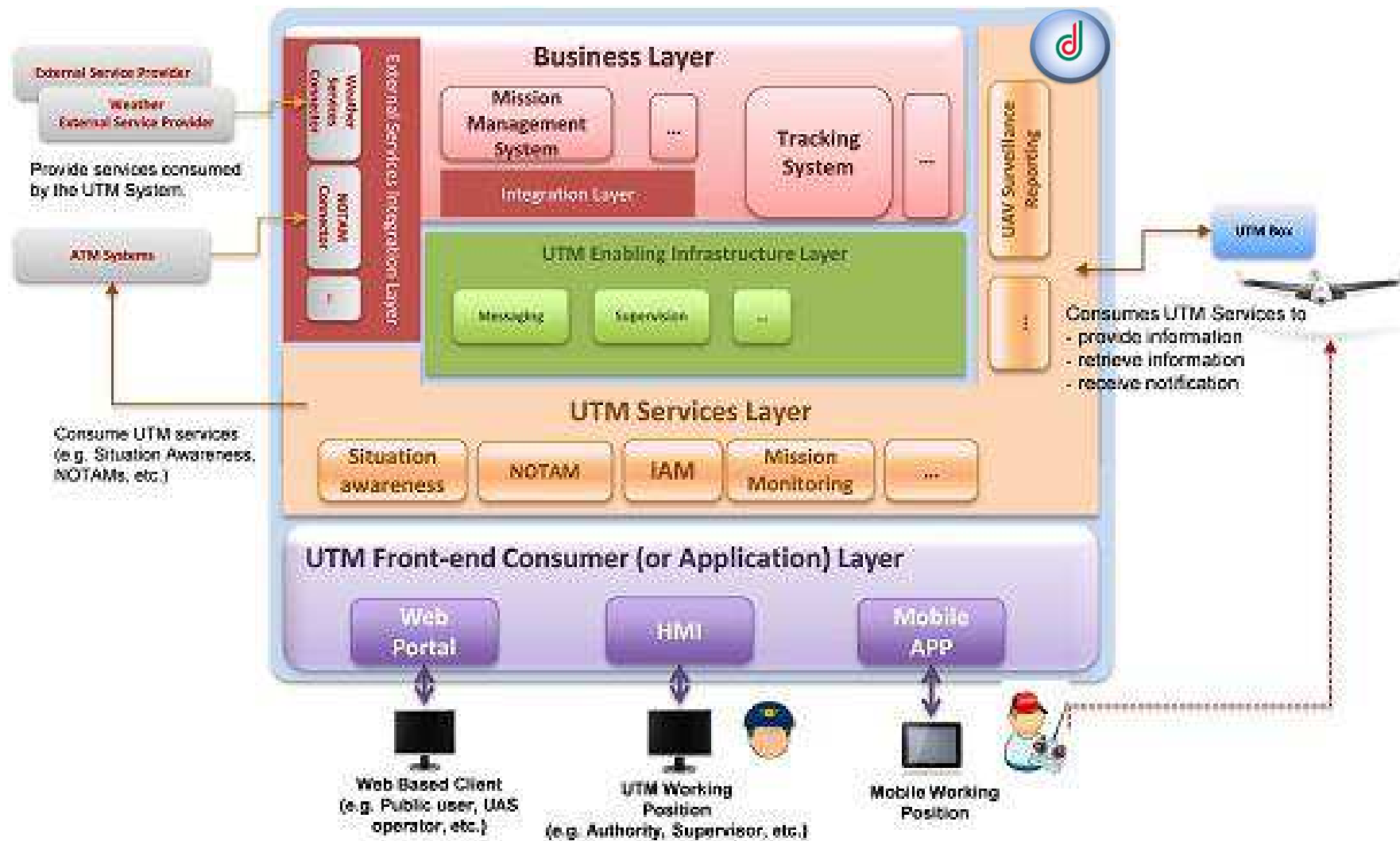


# Objectives

- to demonstrate that **U-Space** enables multiple BVLOS operations in a complex scenario
- to demonstrate that **U-Space services** contribute in maintaining/improving the level of **human performance**
- to demonstrate that **U-space services** contribute in maintaining an acceptable level of **safety** during the operations
- to demonstrate the feasibility of managing the **interaction** with ATM (**manned flight, ATSU**) through **U-space services**

U-space





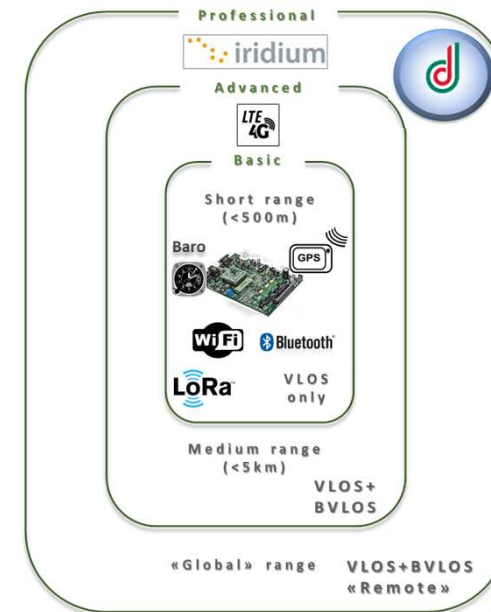
## DIODE Technical solution – e/Identification, Position reporting and Tracking



Hook on device (UTM Box)

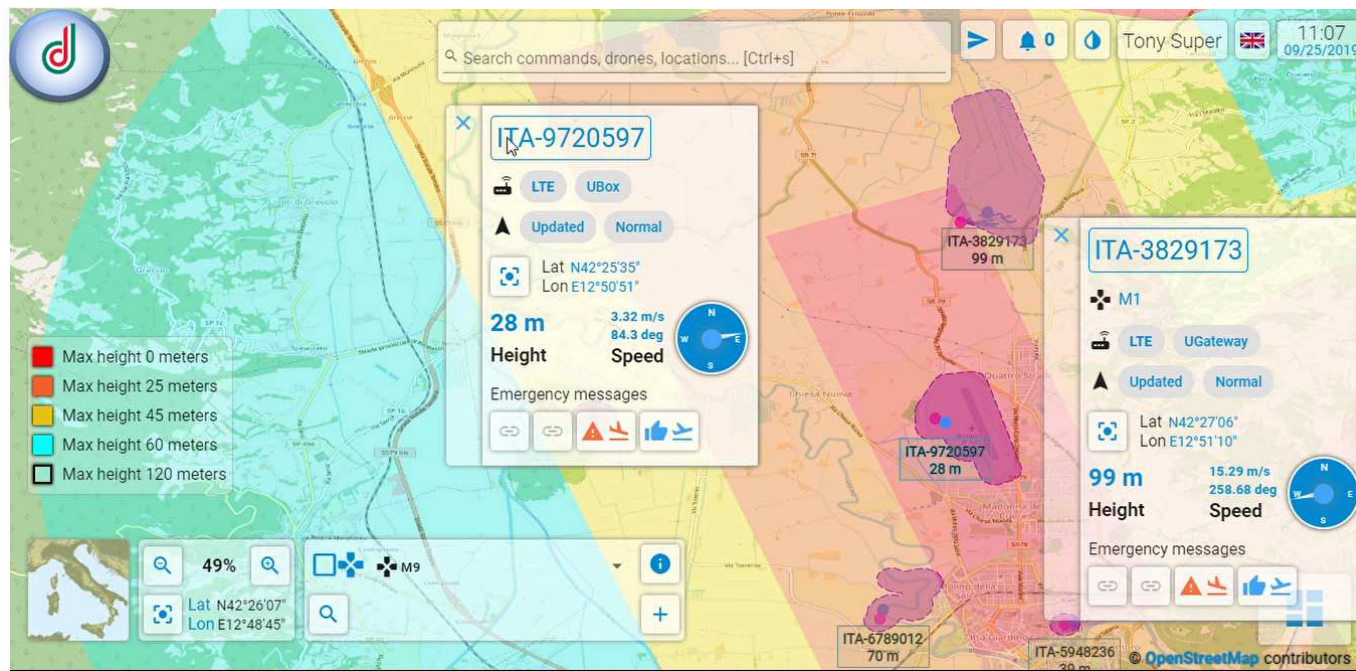
Virtual Box - (GCS plug-in)

U-space-enabled Drone





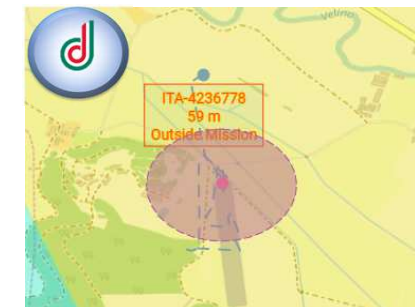
## DIODE Technical solution – Front-end



Tracking / Traffic information



Monitoring

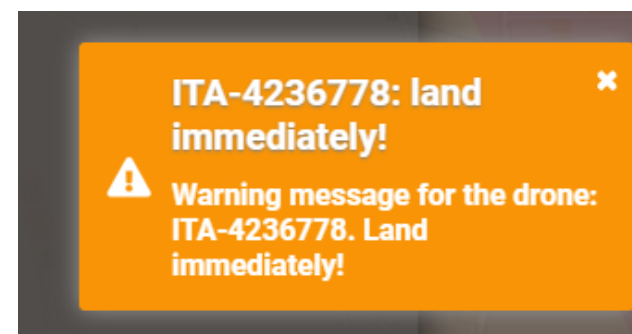


**Mission List**

Refresh Status Edit Send Change Status Delete Start Pause Stop

Mission Code	Drone ID	Pilot ID	Operator ID	Mission Status	Mission Type	Flight Cond
p_1569243980359	ITA-2260075	aviewgroup	aviewgroup	RUNNING	RECREATIONAL	VLOS
p_1569244473754	ITA-4236778	aviewgroup	aviewgroup	RUNNING	RECREATIONAL	VLOS
9243680585	ITA-5876561	adpm	adpm	RUNNING	CRITICAL	BVLOS
p_1569242633559	ITA-2164914	aviewgroup	aviewgroup	DONE	CRITICAL	BVLOS
p_1569243035917	ITA-7774091	aviewgroup	aviewgroup	RUNNING	CRITICAL	BVLOS
pe_1569243234103	ITA-2124441	rlaudato_ope	rlaudato_ope	RUNNING	RECREATIONAL	BVLOS

Drone operation planning



Emergency mngt

# Let's talk about

enabling autonomous flight



- **d-flight** is an ENAV initiative, started in 2016 upon agreement between ENAV and ENAC (the Italian CAA) and a positive Business Plan
- **d-flight S.p.A.** was constituted in 2018 as an ENAV spin-off. In February 2019, an industrial partner (Leonardo and Telespazio) selected through an open tender procedure, which lasted almost 2 years, entered the company with 40% of shares
- **d-flight** mission is to enable BVLOS and autonomous operations in the Italian airspace, through providing the U-space foundations
- **d-flight** services are already available nation wide. Basic geo-awareness, based on ENAC rules, is provided at no cost for public. It includes Zones management for Authorities ([www.d-flight.it](http://www.d-flight.it))
- Registration, e-identification, traffic information, including mission declaration/authorization, tracking and conformance monitoring (as for DIODE) will be fully operational by summer 2020



# What can be unique and what multiple in U-space

What are the elements to consider when selecting a deployment option for service provision?

- Safety first,
- Security,
- Privacy,
- Technical Performance,
- Economical sustainability -> Competition

Supplemental Data Services
Weather information
Geospatial information service
• Terrain map
• Buildings Obstacles
Population density Information
Electromagnetic information

Infrastructure Services
Navigation Coverage information
Navigation Infrastructure Monitoring
Communication Coverage information
Communication Infrastructure Monitoring
Surveillance Data

U-space Service
Registration (Drone Registration, Drone Pilot Registration, Drone Owner Registration, Drone Operator Registration)
e-Identification
Tracking
Drone Aeronautical Information Publication
Geo-Awareness
Geo-Fencing provision
Drone operational plan processing
Strategic Conflict Management
Tactical Conflict Management
Monitoring
Traffic Information
Interface with ATC
Emergency Management
Legal Recording
Dynamic Capacity Management
Registration Assistance
Drone operational plan preparation assistance
Risk analysis assistance
Accident / Incident reporting
Citizen reporting
Digital Logbook

Is the priority/approach to follow the same whatever is the service?

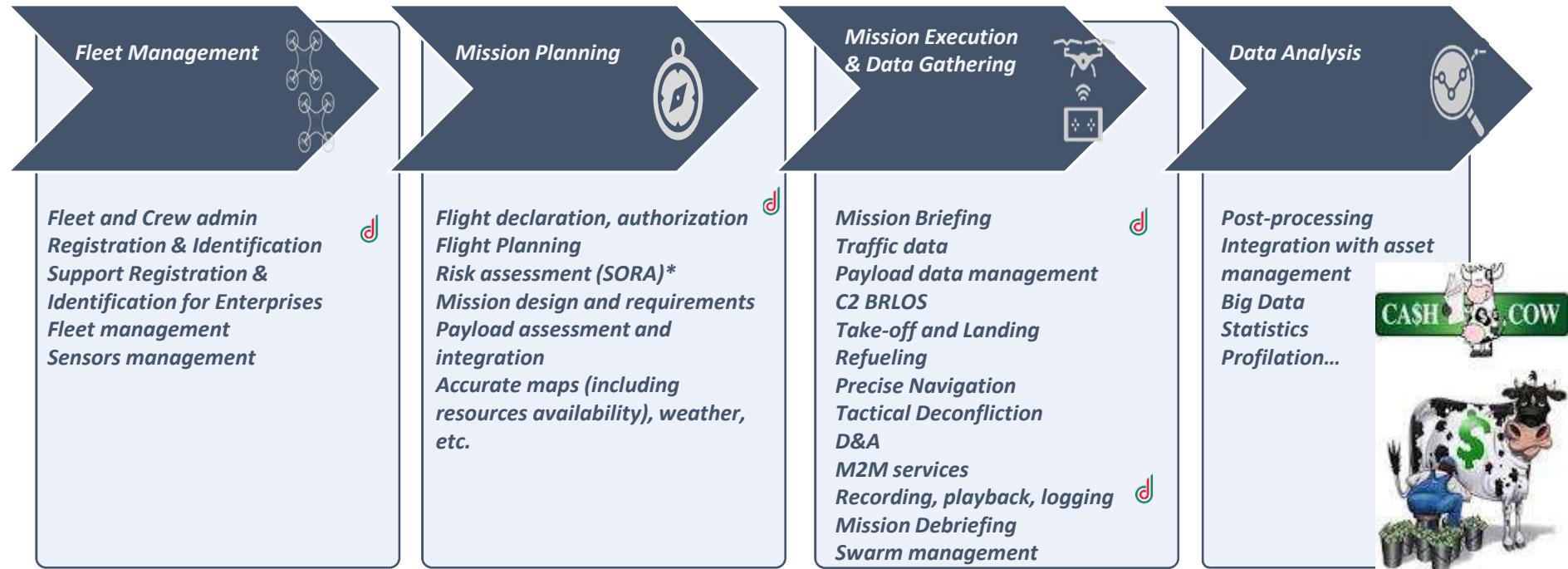
-> Likely it isn't. It is important to make an analysis **service by service**.



# Centralised Vs Distributed

- In our view centralization should apply to foundation services, as it:
  - Reduces the technical/legal complexity in the implementation
  - Speeds-up the deployment and time to market
  - Reduces the costs in implementation and to the end-user
  - Service already required to be provided to authorities (economies of scale)
  - Grants for qualified, accountable and liable “situational awareness” which is accessible by all interested users (Operators, Service providers, Authorities....)
- A distributed model implies (among others):
  - IOP between several SPs, CIF, authorities -> high level of complexity
  - Standards to be developed upfront -> time and effort
  - R&D to be performed (*scalability?*)
  - Several technical systems to be developed/tested/delivered
  - Not removes the escalation to a Principal e.g. for arbitration
  - Uncertainty of its sustainability
  - Availability of services based on private investment decisions

# Enterprise services (e.g. inspection management)



U-space services are just a small (but enabling) portion of a much wider value chain!

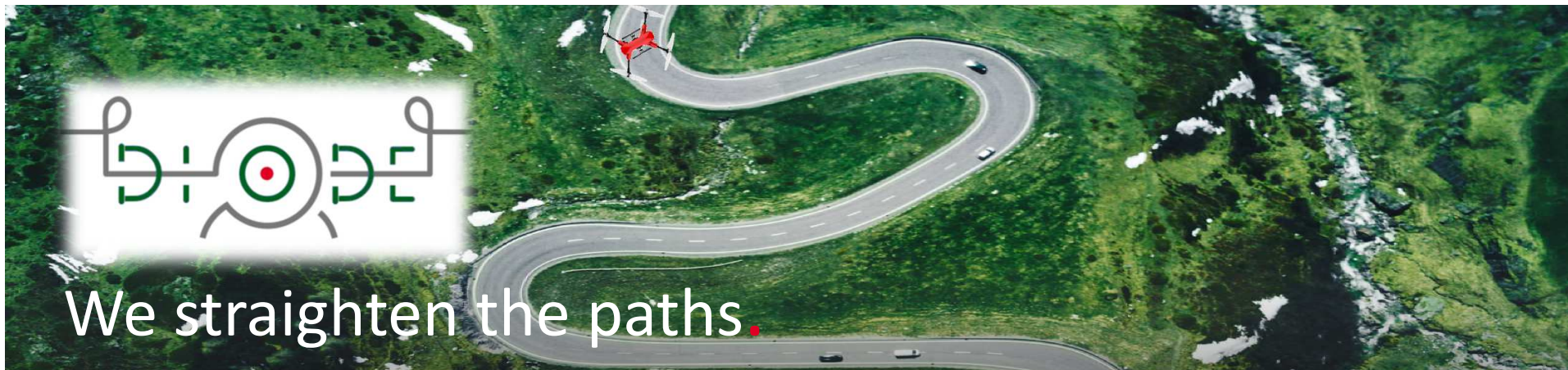
Original UTM Solution providers are investing toward Enterprise service provision.... Is that because UTM market alone is not so appealing???

The owner of the “InterUSSP” will hold the only real future Cash Cow!

# Conclusions

- **Our institutions** believes in a centric approach for basic U-space services so to grant equal and fair access to U-space for all users in the whole country, despite any market really exists or commercial considerations
- **d-flight delivers U-space foundation services:**
  - Natively embeds CIF and data flow Vs authorities (CAA, ANSPs, AirForce, Civil Protection, Law Enforcement, Ministries, neighboring countries)
  - Assures universal access for UAS operators to basic U-space services in all portions of airspace
  - Enables open and competitive market for vertical solutions through public APIs and ICDs
- **d-flight** is an aggregator for several different U-space (or close to U-space) Service Providers which will be able to ease and improve complex UAS operations and its integration with other manned operations, with no compromise with safety, security and privacy. It is not a barrier for market entrees in U-space business, on the contrary:

**d-flight is a catalyst for the market of any service related to UAS operations!**



We straighten the paths.

Thank you for your attention



U-space

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JOINT UNDERTAKING