

U-space, User needs e servizi previsti



AEROPOLIS.IT
Seminario: La Nuova
Generazione Dei Droni
18 Maggio 2019



Topview, chi siamo

U-space , una panoramica

DREAMS

Gli User Needs

Users e User needs

Catalogo servizi e implementazione

Le nuove regole

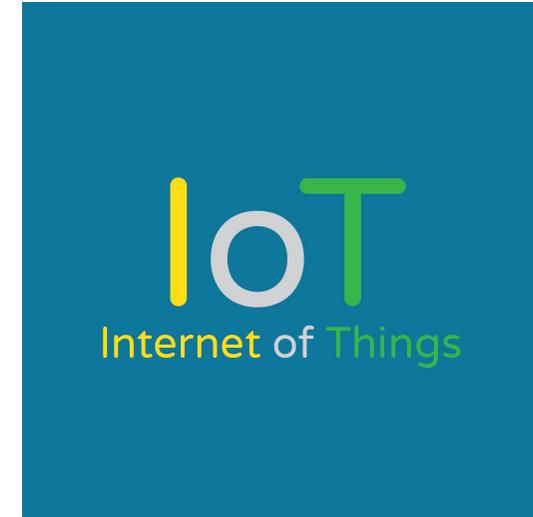
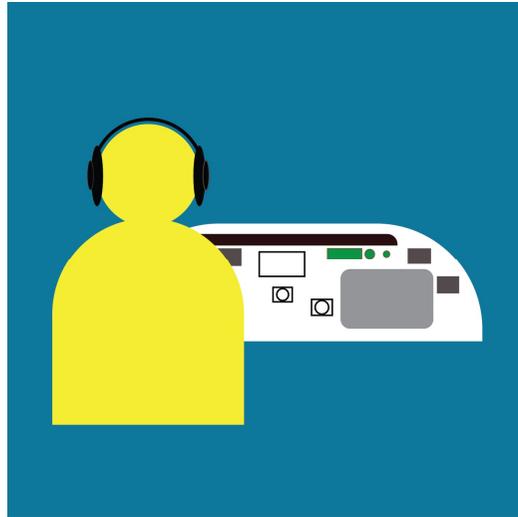
DoDo



TOPVIEW[®]
LOOKING OVER

Chi siamo

«Siamo innovatori, siamo appassionati»



U-Space, una panoramica

Insieme di nuovi servizi e procedure

Grandi quantità di droni nello spazio aereo

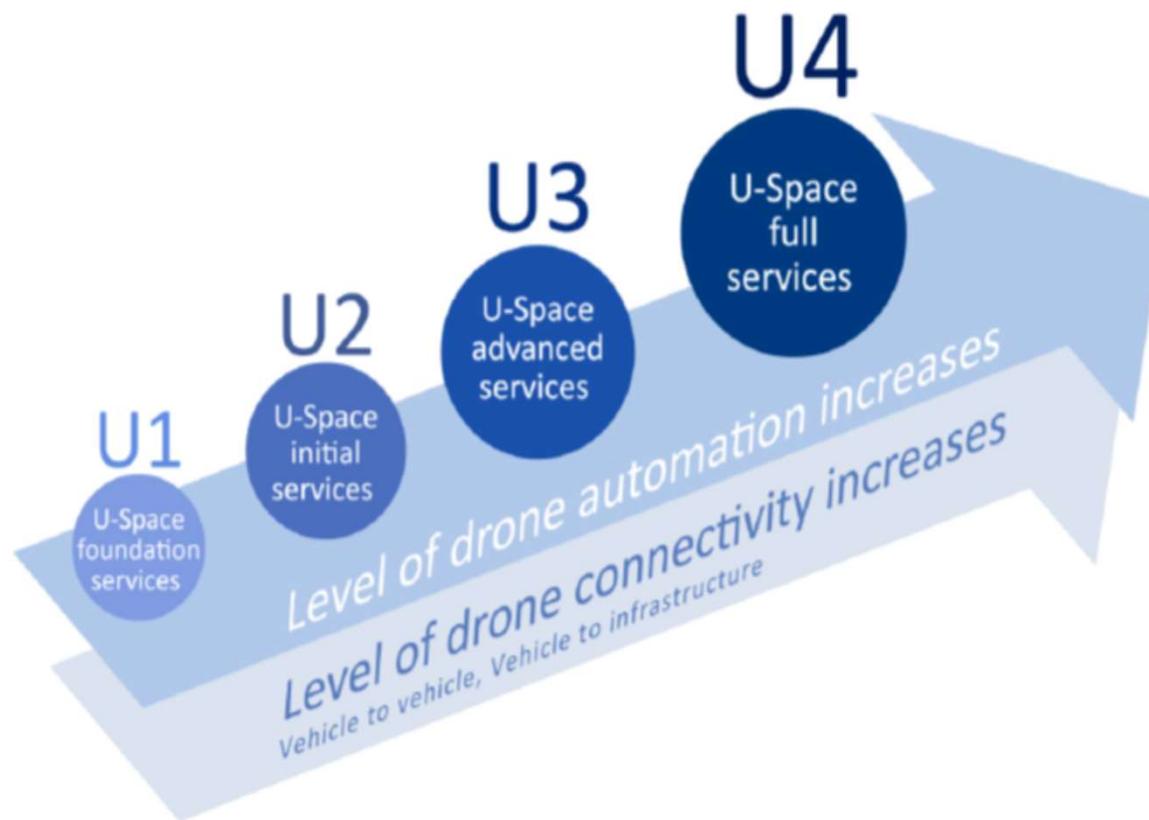
Sicurezza ed efficienza

Digitalizzazione e Automazione

Service providers

U-space

Roll Out



I servizi U-Space

U1	U2	U3	U4
E-registration	Tactical geofencing	Dynamic Geofencing	
E-identification	Tracking	Collaborative interface with ATC	
Pre-tactical geofencing	Flight planning management	Tactical deconfliction	
	Strategic deconfliction	Dynamic capacity management	
	Weather information		
	Drone aeronautical information management		
	Procedural interface with ATC		
	Emergency management		
	Monitoring		
	Traffic information		

Use case – Fase 1

Preparation of the drone mission

- *e-Registration*
- *Flight planning assistance*
- *Aeronautical information*
- *Meteorological information*
- *Specific drone information*



Use case – Fase 2

Submission of a flight request and reception of an acknowledgement

- *Flight approval*
- *Capacity management*
- *Airspace management*



Use case – Fase 3

Execution of the flight

- *E-Identification*
- *Tracking*
- *Dynamic geofencing*
- *Interface with Air Traffic Control*



Use case – Fase 4

Mission completed

The drone arrives safely at its destination and delivers the parcel. It is now ready to be prepared for its next mission: a roof survey of a building 500 metres away



... vediamolo



Benefici per gli stakeholders

Users/Operatori

- Accesso allo spazio aereo equo, flessibile e libero
- Apertura del mercato dei servizi

Citizens

- Servizi nuovi e innovativi
- Operazioni di volo «Safe & Secure»
- Salvaguardia della privacy e dell'ambiente

Regulatory authorities

- Mantenere il controllo dello spazio aereo
- Assicurare privacy, safety, security e protezione ambientale
- Potenziare registrazione e identificazione dei droni

Imprese

- Nuovi modelli di business
- Stimolare la crescita di posti di lavoro e del mercato
- Supporto ad automazione e digitalizzazione

Il progetto DREAMS nello U-Space

- **SESAR-JU**
Single European Sky Atm Research Joint Undertaking
- [U-space](#)
Lo spazio aereo Europeo per i droni
- **DREAMS**
Drones European Aim Study Project
TopView è una delle 4 aziende italiane (con Leonardo, ENAV, IDS) coinvolte nel programma europeo SESAR-JU, per la definizione delle nuove normative europee che regoleranno l'integrazione dei sistemi aeromobili civili (Unmanned) nello spazio aereo (U-space).



Sibling Projects

- CORUS – Conops for european UTM systems
- CLASS – Ground based technologies for a real time UTM system
- DIODE – D-Flight Internet of Drones environment
- DROC2OM – Drone critical communications
- PODIUM – Proving operations of drones with initial UTM
- ... lista completa su <https://www.sesarju.eu/U-Space>



DREAMS

DRone European AiM Study

2017-2019

Analisi dei bisogni presenti e futuri
relativi ad **Informazioni aeronautiche**

Per supportare la crescita dell'**aviazione
unmanned,**

assicurando la **safety** delle operazioni.

Co-funded by **Sesar JU**
DREAMS - H2020 - SESAR - 2016-1 -
ref.763671



Dreams, gli obiettivi

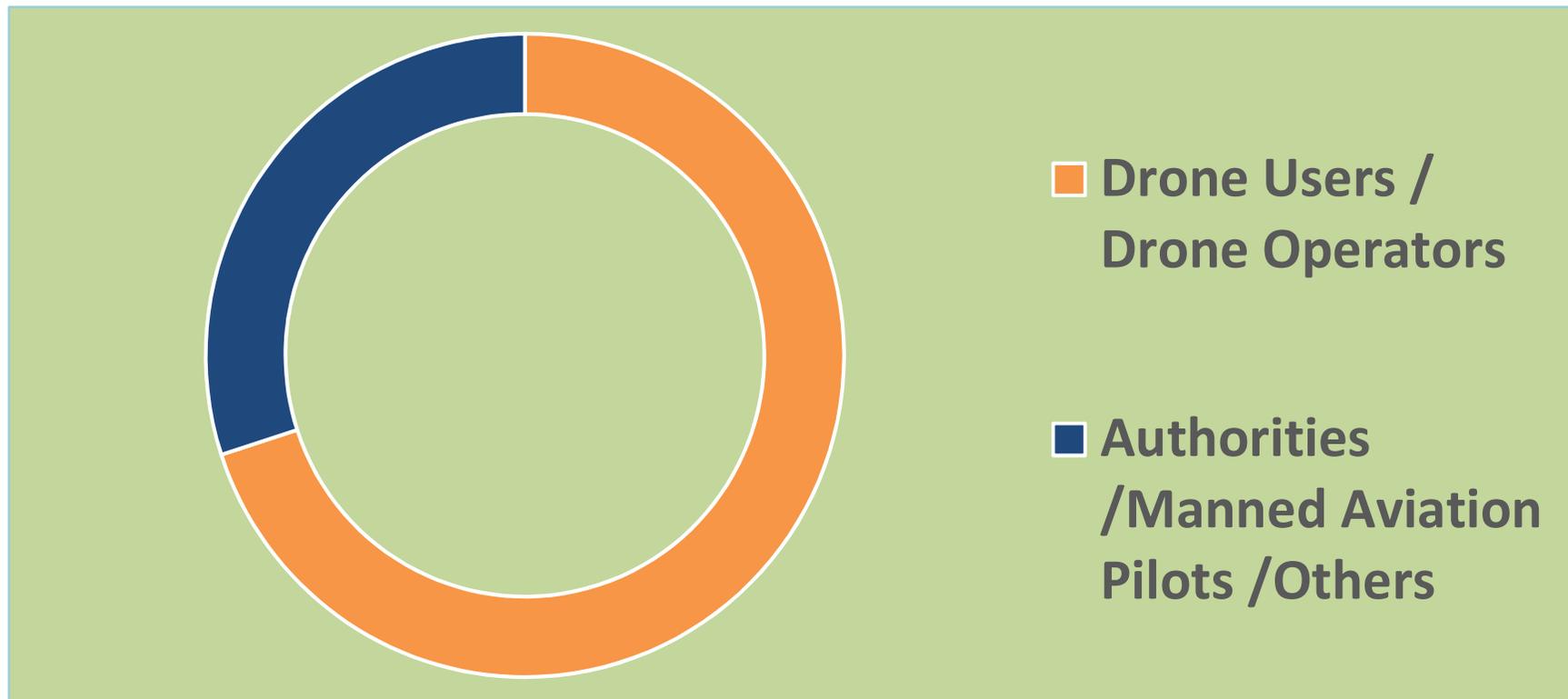
Colmare il gap fra le attuali informazioni utilizzate dall'aviazione tradizionale ed i bisogni della nuova aviazione unmanned

Analizzare e simulare applicazioni nel mondo reale, sia attuali che future, così da assicurare la scalabilità del sistema the system can be scaled as the market for drones grows and the number of applications increases

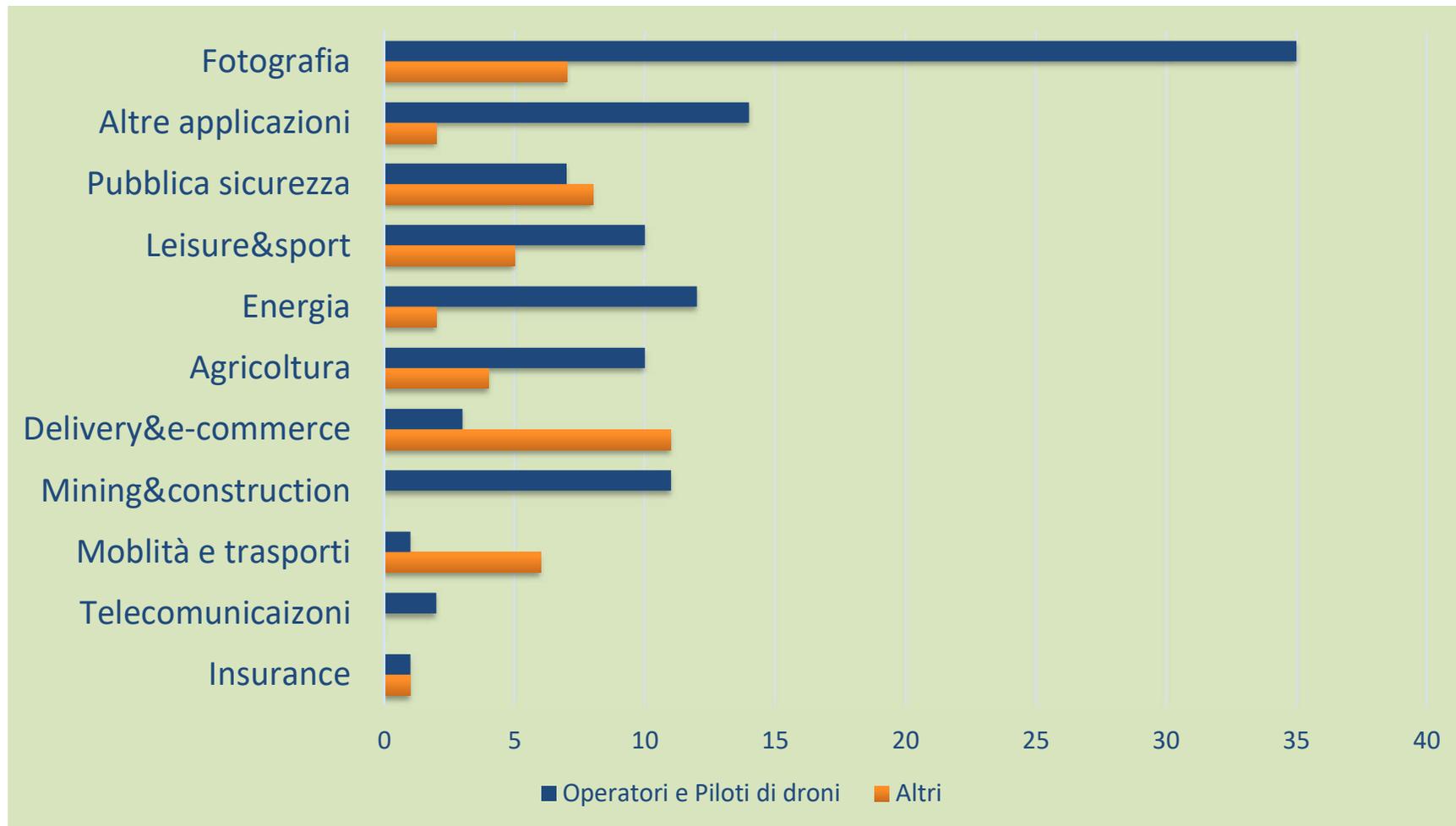
Analizzare e validare le tecnologie legate allo scambio di informazioni che consentiranno di implementare il futuro U-space

Gli User Needs

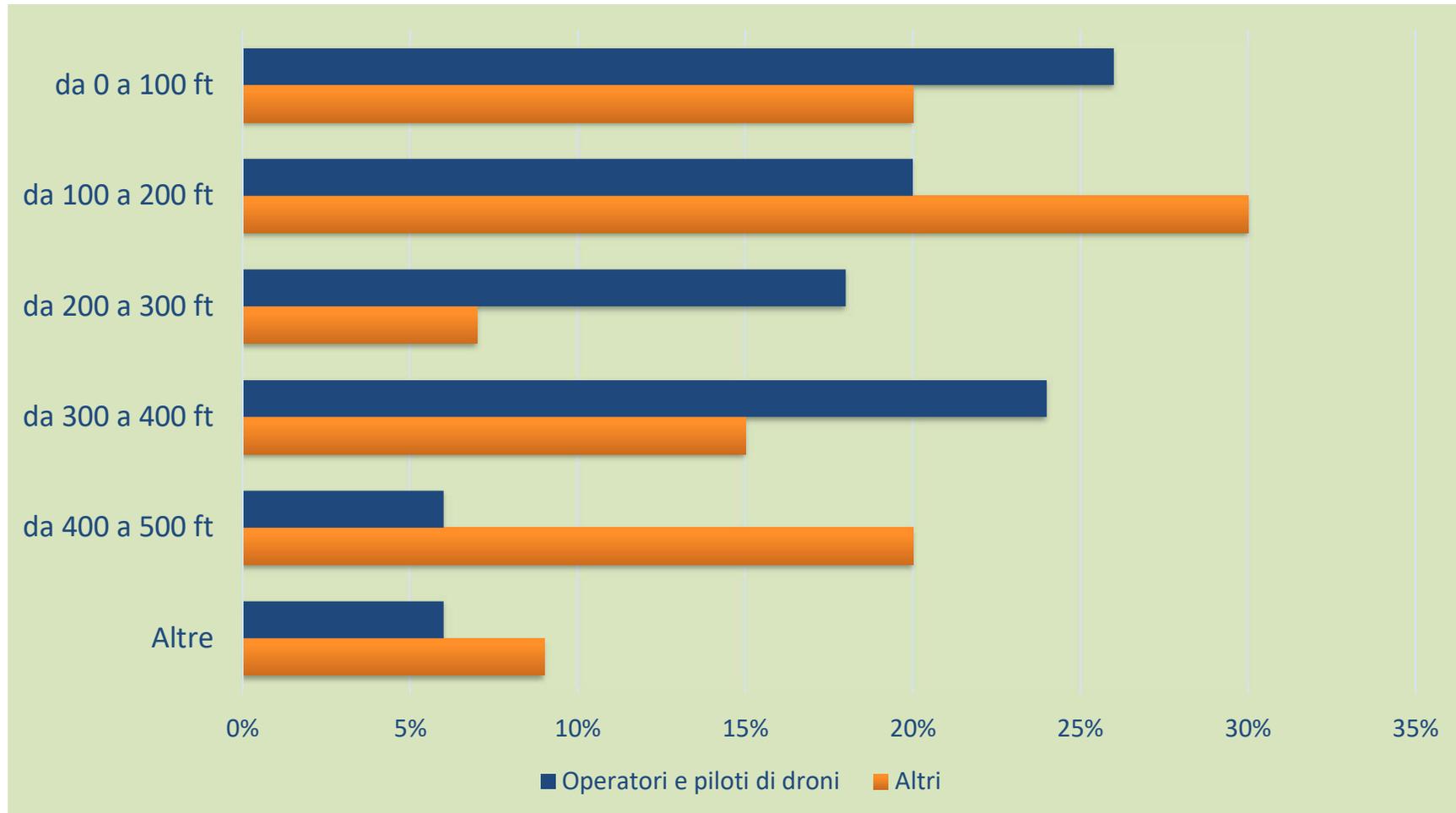
Web survey (febbraio-aprile 2018):



Settori privilegiati

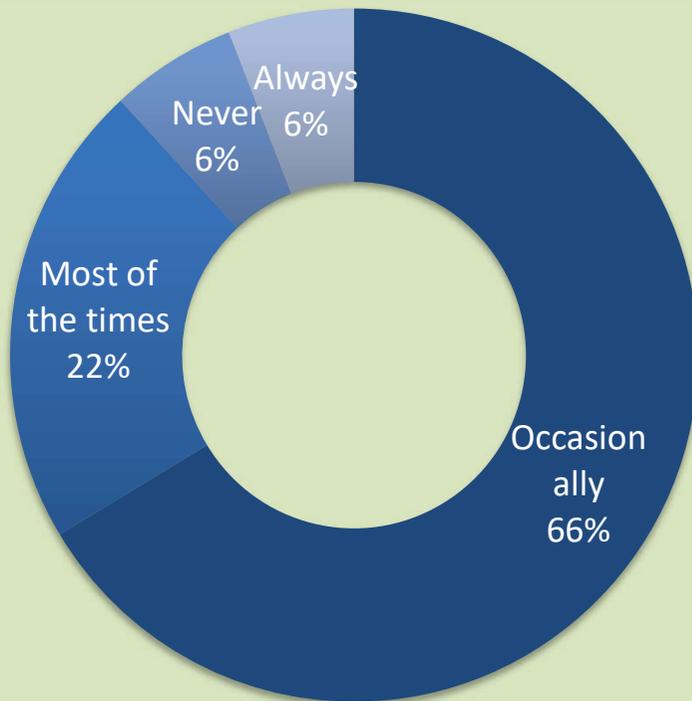


Altitudine delle operazioni

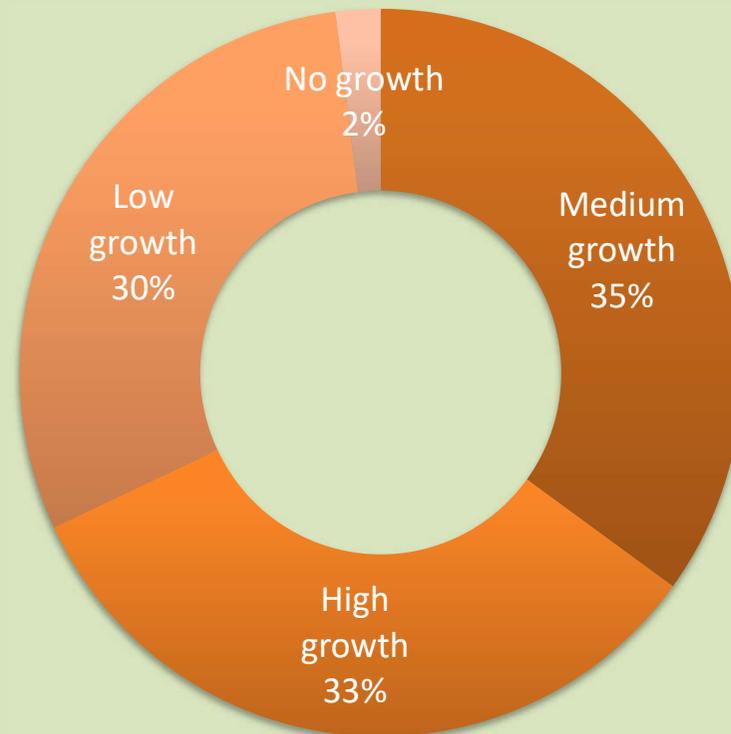


Voli in ambiente Urbano

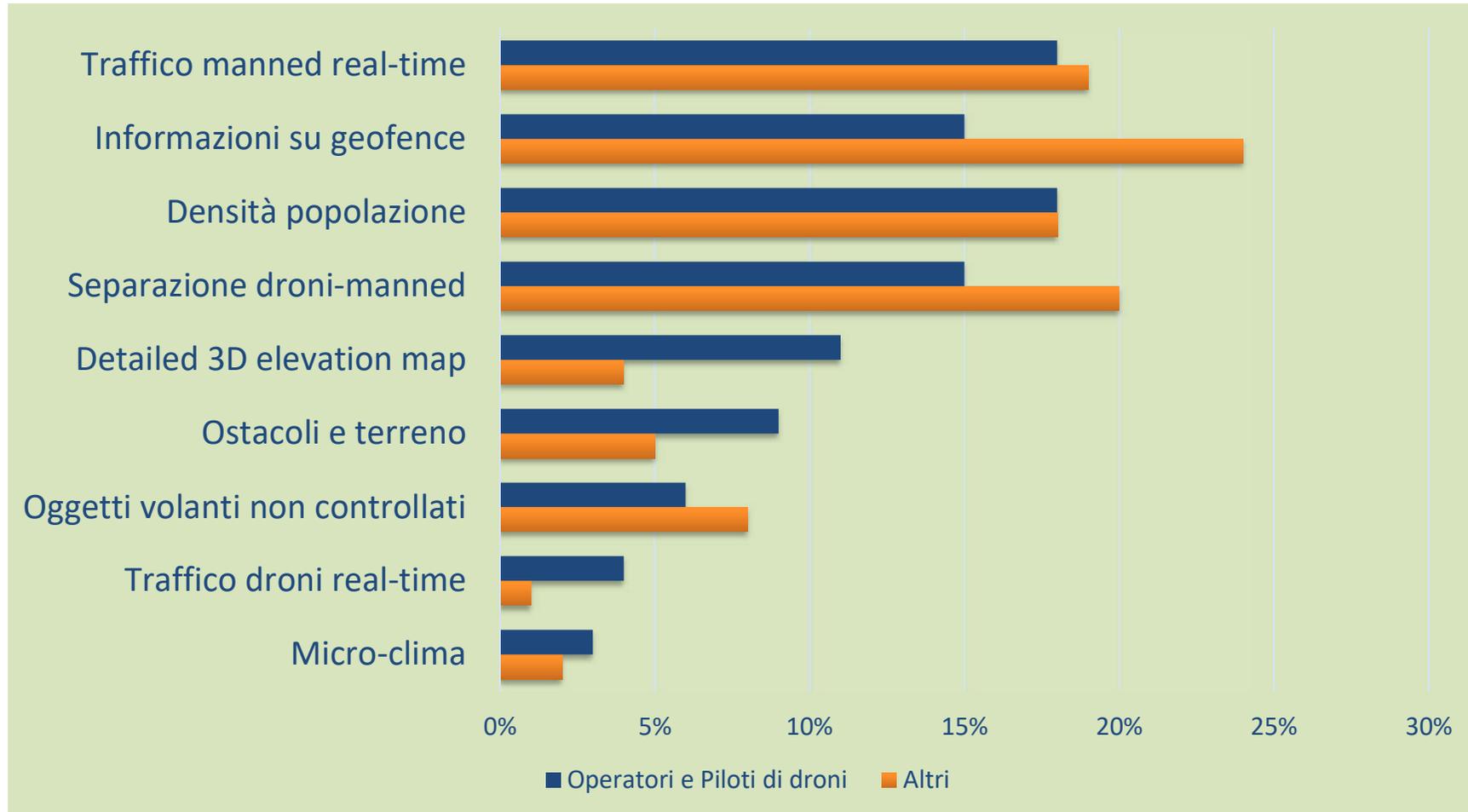
Operatori e piloti di droni



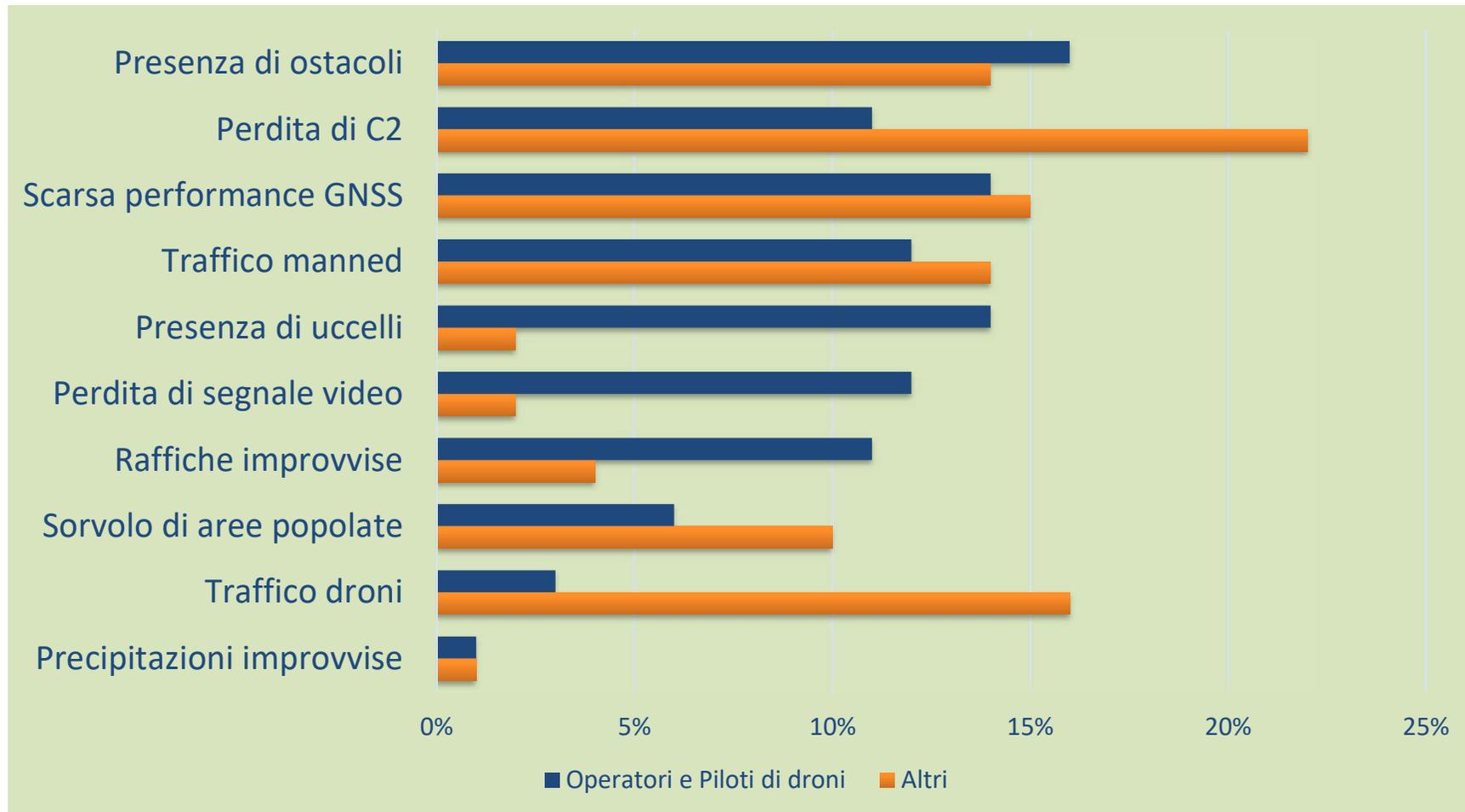
Altri



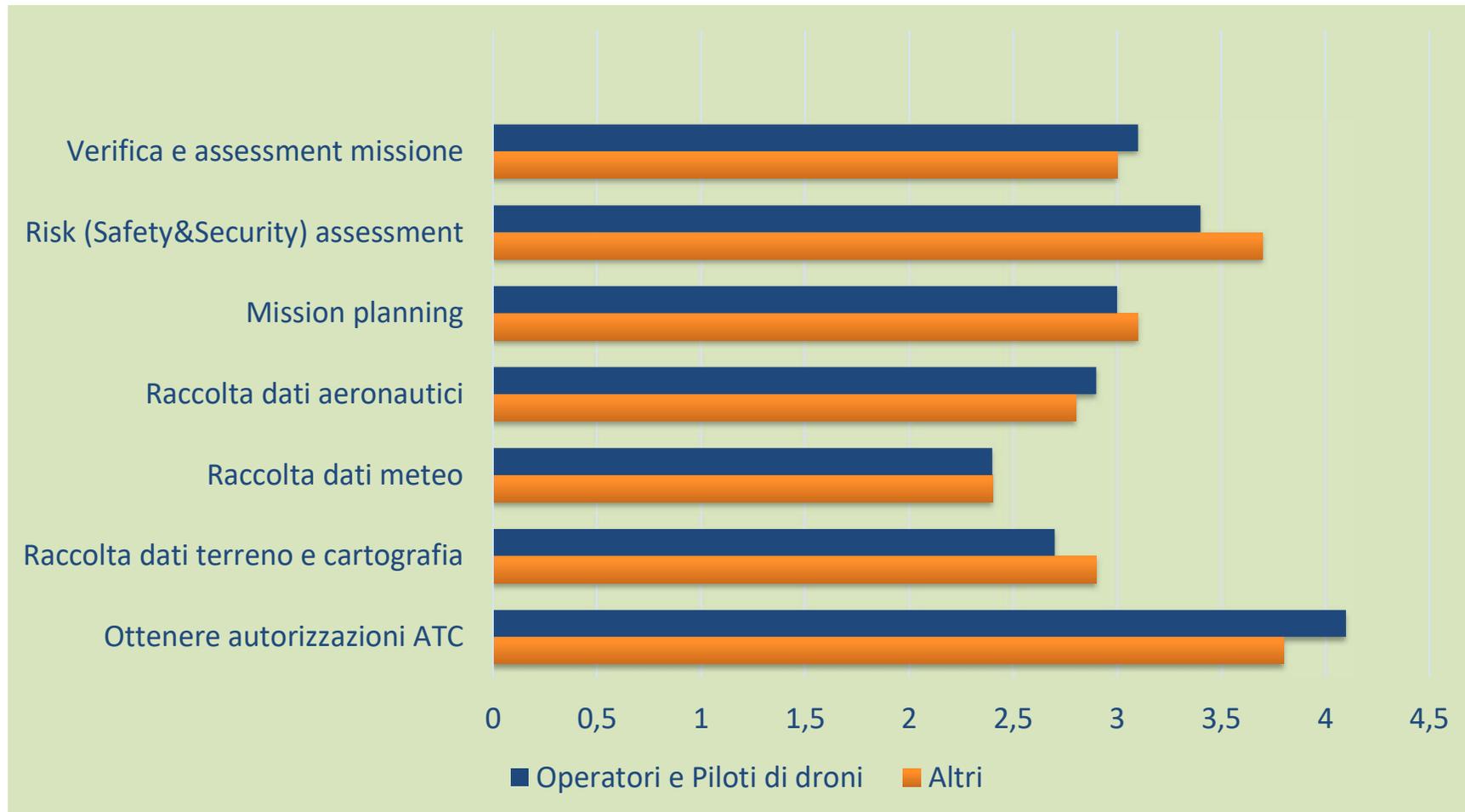
Informazioni in volo



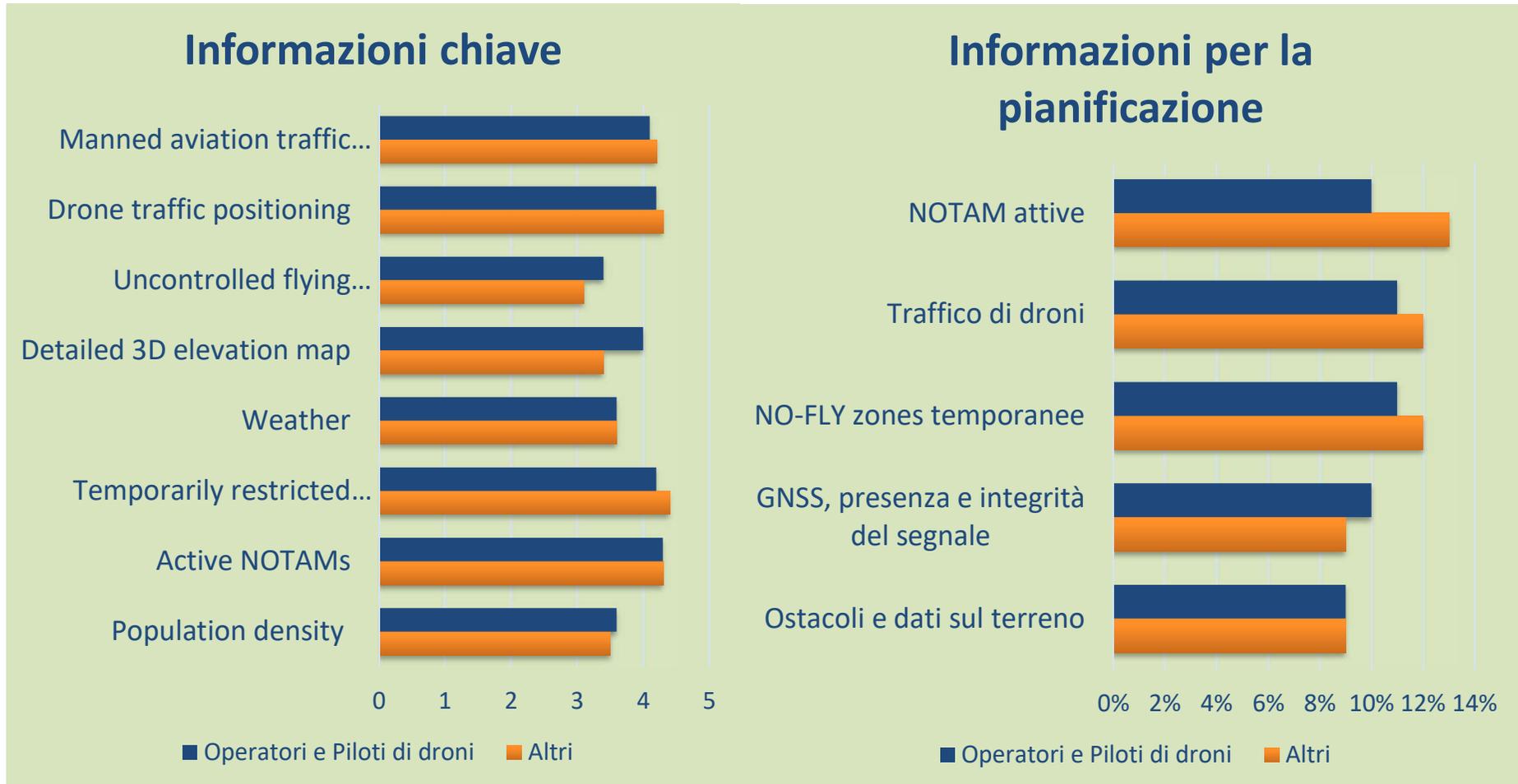
Rischi percepiti



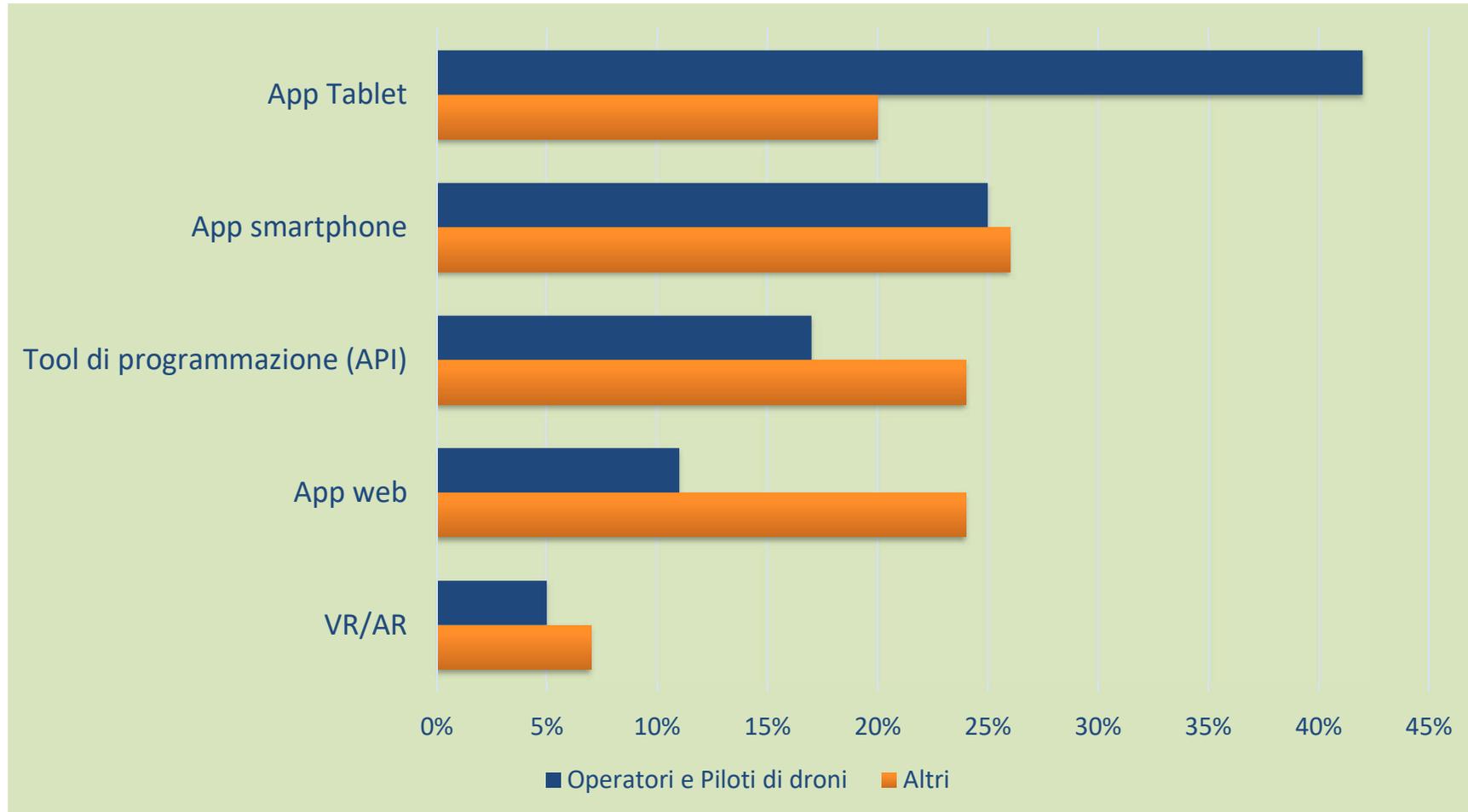
Attività «Time-consuming»



BVLOS operations



Interfaccia utente



Profilo Utente

Operatore di droni	Fotografia	200 FT AGL Urbano (a volte)
Traffico «manned» real-time	Presenza di Ostacoli	Autorizzazioni ATS
No-Fly zone temporanee	Ridurre conflitti con altri droni	APP tablet

Le informazioni richieste

Category	Application	Information demand
Aeronautical	Operational altitude	<ul style="list-style-type: none"> • Provide supervision on selecting the optimal altitude for operations
Aeronautical	Urban operations	<ul style="list-style-type: none"> • Manage and control urban airspace capacity • Provide situational awareness on geofenced spaces • Provide situational awareness of “non-collaborative” traffic e.g. flock of birds • Provide situational awareness of population density of overflowed areas • Provide situational awareness of unmanned and manned traffic in vicinity of flight operations • Provide awareness about potential risk • Provide assistance in mission planning
Meteorological	Urban operations	<ul style="list-style-type: none"> • Provide hyperlocal weather information • Provide advisories on sudden atmospheric disturbances e.g. sudden rainfall/wind gusts

Category	Application	Information demand
Terrain and obstacles	Urban operations	<ul style="list-style-type: none"> • Provide situational awareness of obstacle and terrain information • Provide detailed 3D elevation maps
Surveillance	Urban operations	<ul style="list-style-type: none"> • Provide situational awareness of noncollaborative traffic e.g. flock of birds • Provide situational awareness of unmanned and manned traffic in vicinity of flight operations • Provide situational awareness on active NOTAMs
Communication	Urban operations	<ul style="list-style-type: none"> • Ensure uninterrupted communication signal during flight • Ensure video link signal is uninterrupted • Provide GNSS coverage map

Scenari identificati

SCENARIOS		U-space	Flight Phase
1	Electronic Registration	U1	1
2	Concurrent Operations	U1 U2	2 3
3	Territory Control	U1	3
4	Cooperative Geo-tagging	U1 U2	1 2 3
5	CTR Crossing	U2	1
6	Long Range Operations	U2	1 3
7	Deconfliction Management	U2	3
8	Emergency Management	U2 U3	3
9	Capacity Management	U2 U3	1 2 3
10	Intelligence Service	U2	4
11	Personal Mobility	U2 U3	1 2



Service providers



PROVIDERS

- AirMap
- Unifly
- Skyward
- Altitude Angel
- Droneradar.eu
- Map2Fly
- Kittyhawk

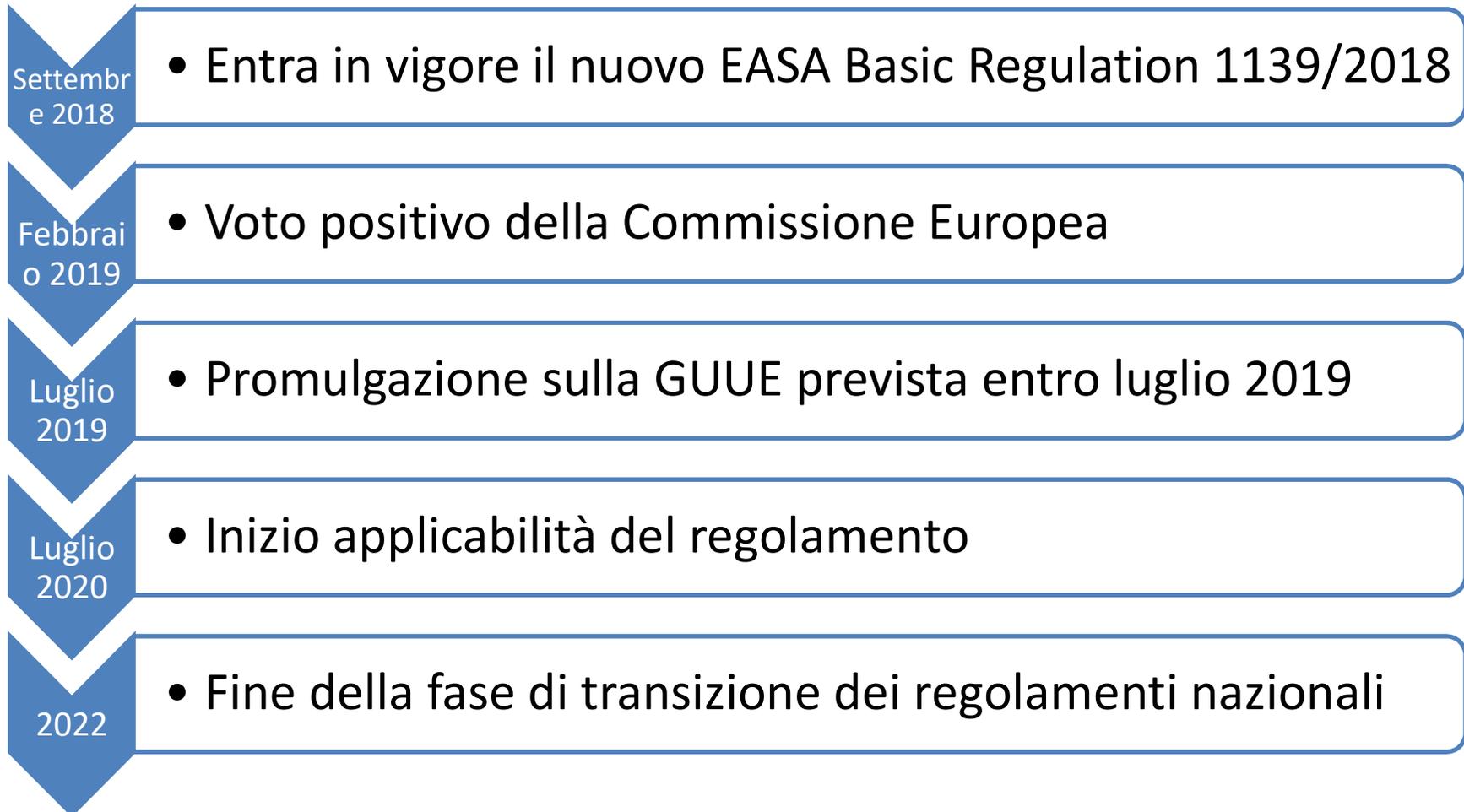
Necessità di includere ulteriori servizi per U-space, fra i quali:

- Pre-tactical geofencing
- Tactical geo-vectoring
- Strategic geo-vectoring
- Strategic urban network planning (VLL ops)
- GNSS availability tool

Standard U-Space services

U1	U2	U3	U4
E-registration	Tactical geofencing	Dynamic Geofencing	
E-identification	Real-time Tracking	Collaborative interface with ATC	
Pre-tactical geofencing	Flight planning management	Tactical deconfliction	
Payment	Strategic deconfliction	Dynamic capacity management	
Insurance	Weather information, Hyperlocal weather data		
European drone registry	Drone aeronautical information management		
Workflow management	Procedural interface with ATC		
	Emergency management		
	Monitoring		
	Traffic information		
	Flight planning assistance		

La nuova regolamentazione



Le tre categorie

Open

Basso grado di rischio, non sono richieste autorizzazioni, non sono richieste dichiarazioni dell'Operatore

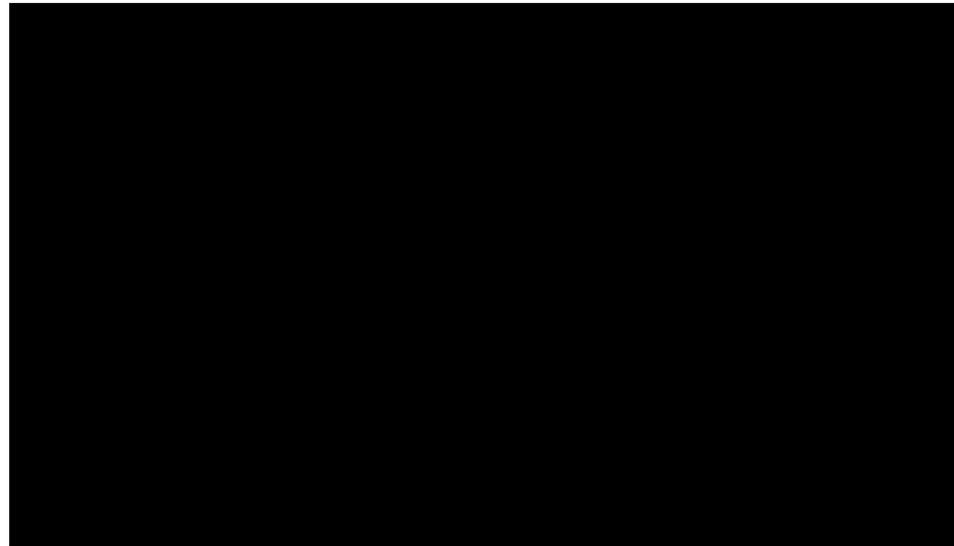
Specific

Maggiore rischio;
Autorizzazione dall'Autorità,
(eccetto per Scenari Standard, per i quali basta una dichiarazione dell'operatore (che detenga il- LUC)

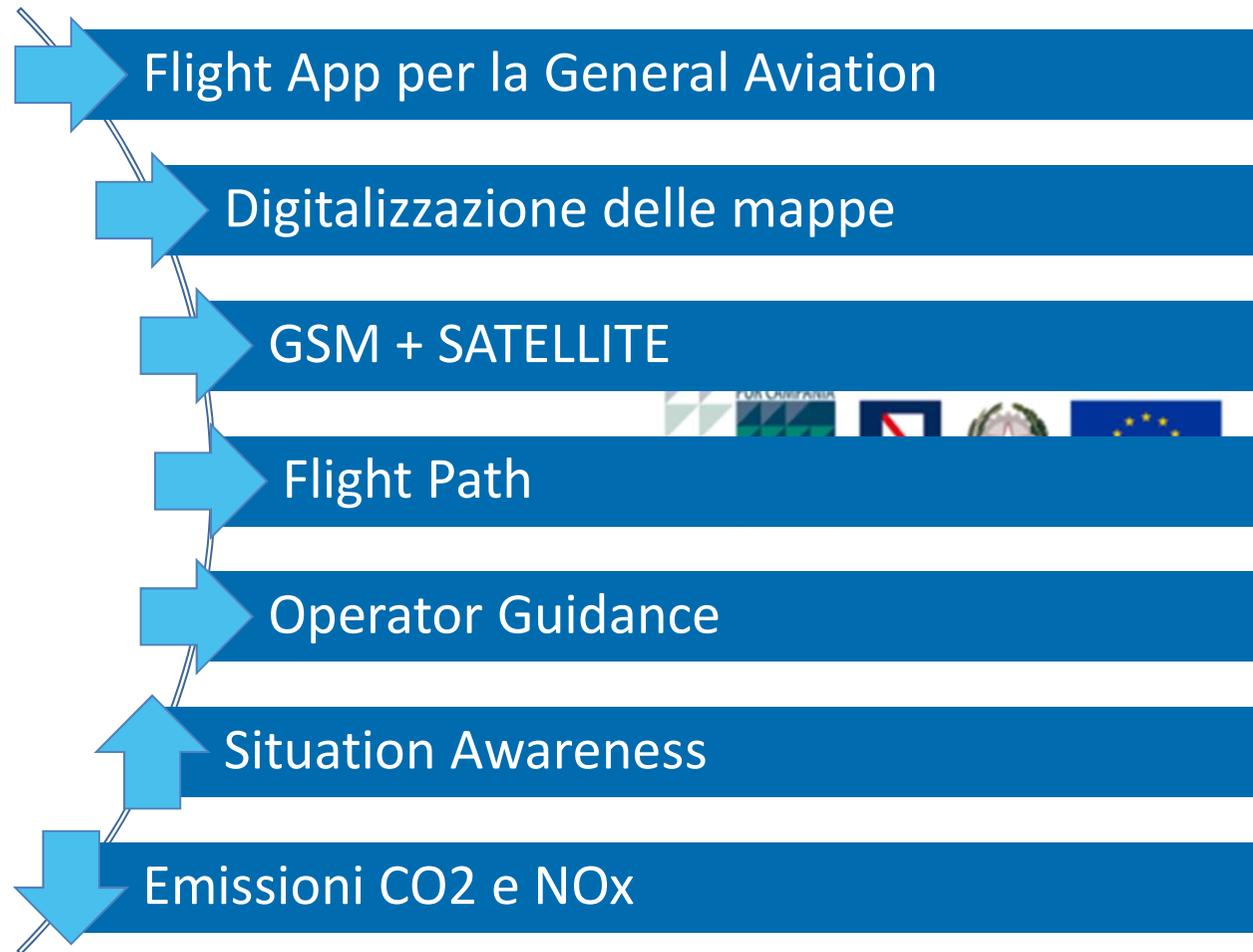
Certified

Alto grado di rischio;
UAS certificato,
Licensed Remote Pilot,
Operatore approvato dall'Autorità.

EasyFlight[®] per il Progetto DoDo



Url Video: <https://youtu.be/6CU57ZFsfEw>



Partners



Centro Italiano Ricerche Aerospaziali



NAIS

Nextant Applications and Innovative Solutions

Co-Funded

Grazie per l'attenzione!



Find us:

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37