GREATER ZURICH AREA

GGBa Invest Western Switzerland

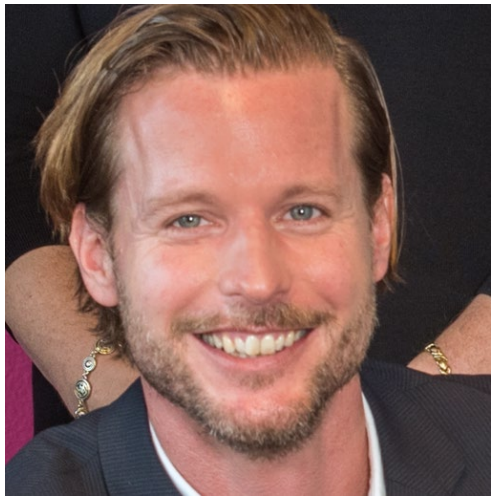
LIVE STREAMING EVENT

Virtual Swiss Drone Industry Tour

Partner and Deploy

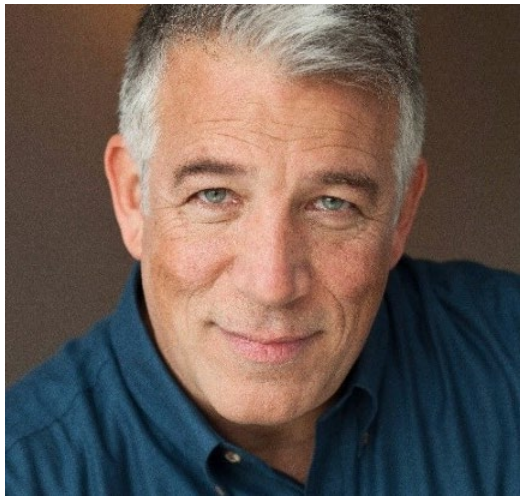
14 Monday December 2020

Your hosts



Lukas Sieber
Executive Director North America
Greater Zurich Area Ltd (GZA)

lukas.sieber@greaterzuricharea.com



Matt Julian
Director US
Greater Geneva Bern area (GGBa)

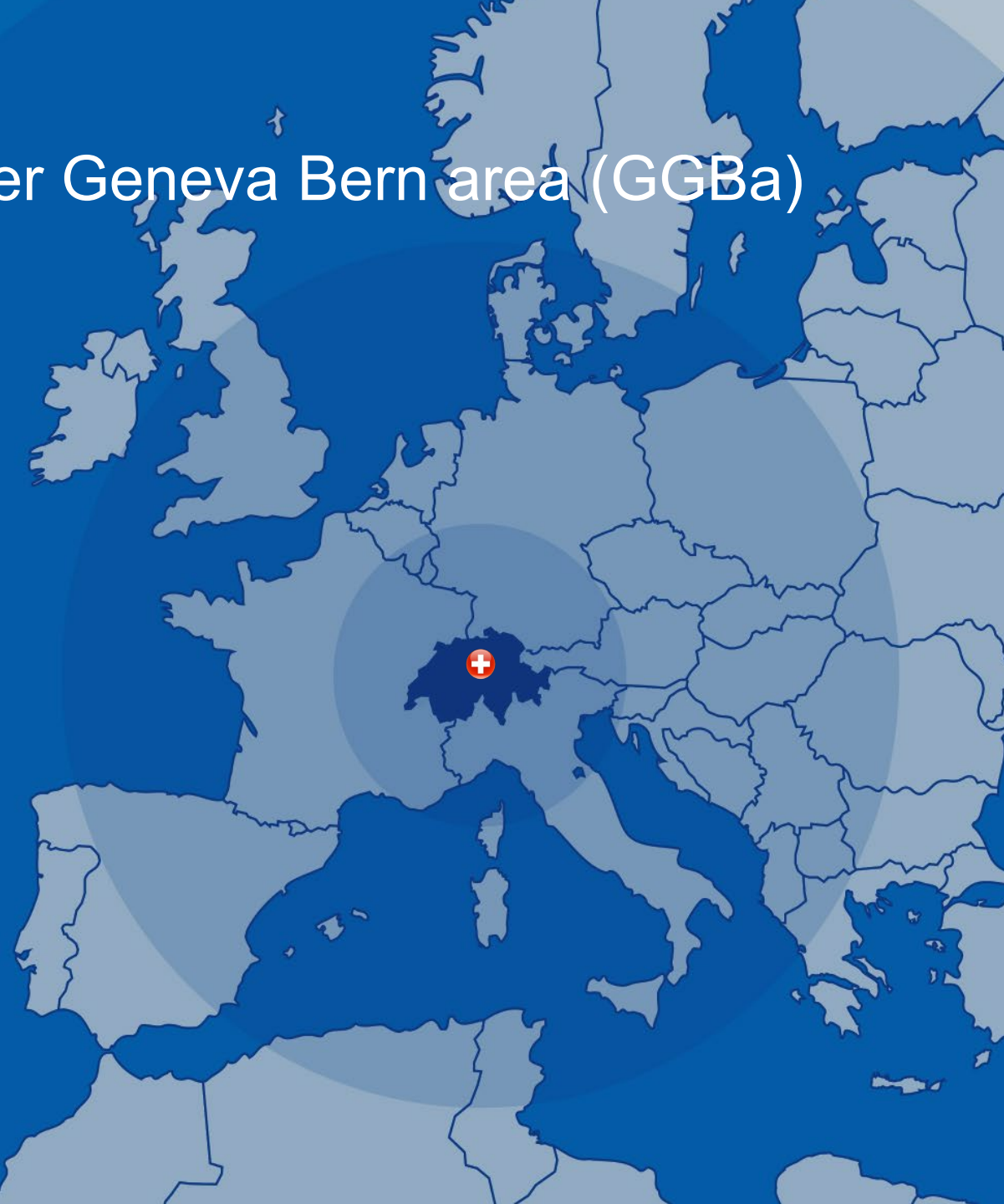
m.julian@ggba-switzerland.ch

Greater Zurich Area (GZA) & Greater Geneva Bern area (GGBa)
Your Swiss business concierges

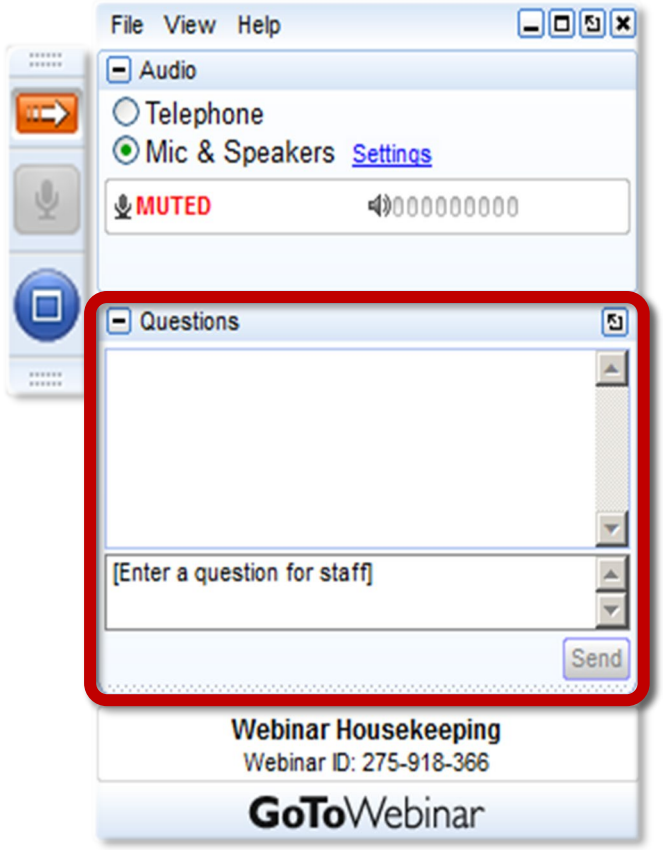
Site selection & site visits

Connect & integrate

Advice & support



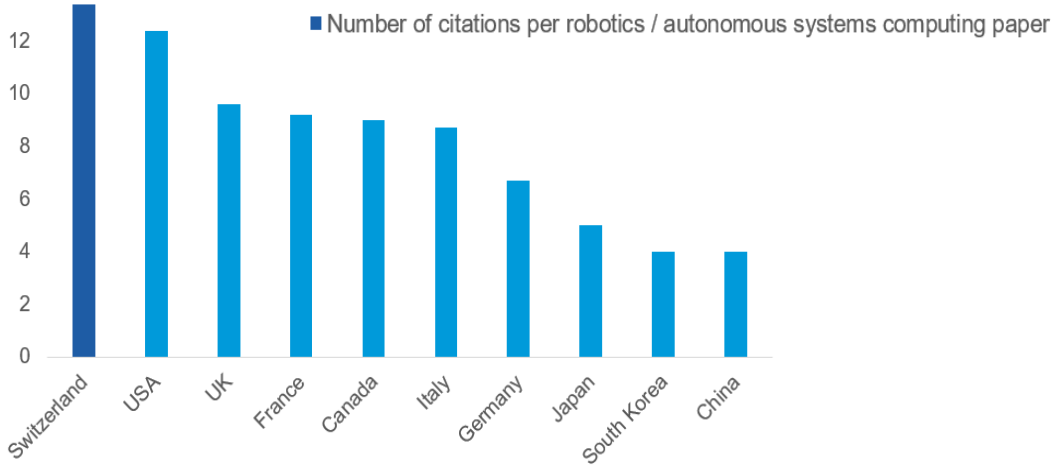
Webinar Housekeeping



All webinar recordings available on: greaterzuricharea.com/webinars
ggba-switzerland.ch/en/webinars

“The Silicon Valley of Robotics & Autonomous Systems”

Global #: influential research and development



…world leading institutes & initiatives

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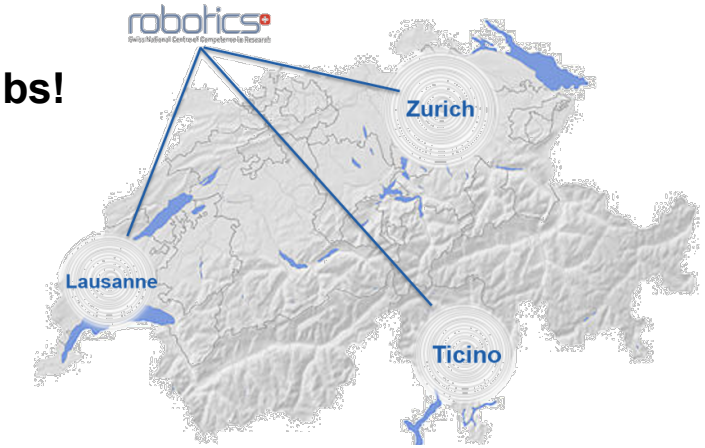
EPFL
University of Zurich[UZH]
SWITZERLAND INNOVATION
Wyss Zurich Translating Science into Life
IRIS
USI/SUPSI IDSIA
#Swiss AutonomousValley
Autonomous Systems Lab
zh aw School of Engineering
swiss aeropole
DIAS Drone Industry Association Switzerland

Disruptive Companies

MATTERNET
AIRMAP
INVOLI
3DR
VOLIRO
Auterion
VERITY studios
senseFly
TINAMU
Inspection Robotics
WindShape
BAEDALEAN APPLIED INTELLIGENCE
sevensense robotics AG
FLYABILITY
WINGS FOR AID
wingtra
AEROTAIN

Biggest Swiss Hubs!



Sources: Web of Science Thomson Reuters, 2018; CB Insights; Gottlieb Duttweiler Institute, GDI, investiere.ch ranking 2018, EIGE 2018

Andrea Marrazzo

Head of Autonomous Delivery & IoT & Blockchain at Swiss Post

B.Sc. in Business Informatics at HF Business Informatics Switzerland

andrea.marrazzo@post.ch

SWISS POST

VIRTUAL SWISS DRONE INDUSTRY TOUR
14.12.2020
ANDREA MARRAZZO

DIE POST

TODAY OPERATIONS

OUR DELIVERY DRONES JOURNEY

FROM «PLAYING AROUND» TO «REAL APPLICATION» IN 5 YEARS

July 2015:
First Proof-of-Concept

Q1/2017:
First commercial pilot (Lugano)

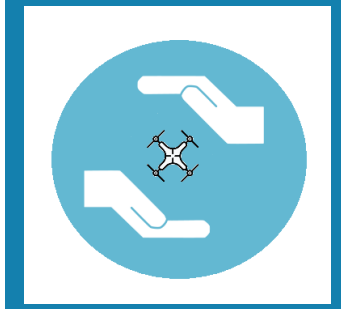
Q3/2017:
Investment in Matternet

MATTERNET

Q4/2017:
Start regular operations in Lugano

in 2018:
Testing of drone networks all over Switzerland

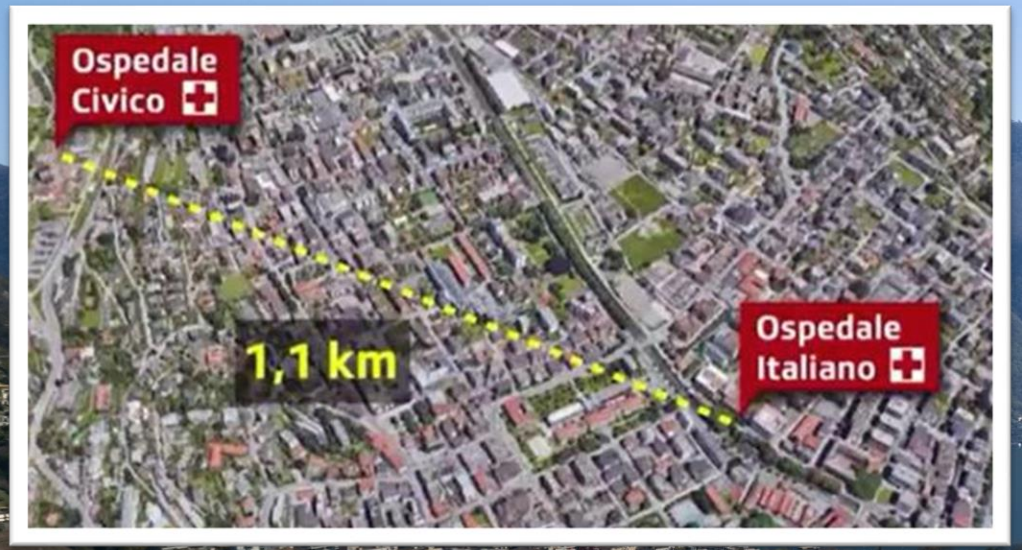
in 2019:
Initiate Safety Board for Swiss Operations



in 2020:
Restart regular operation in Switzerland

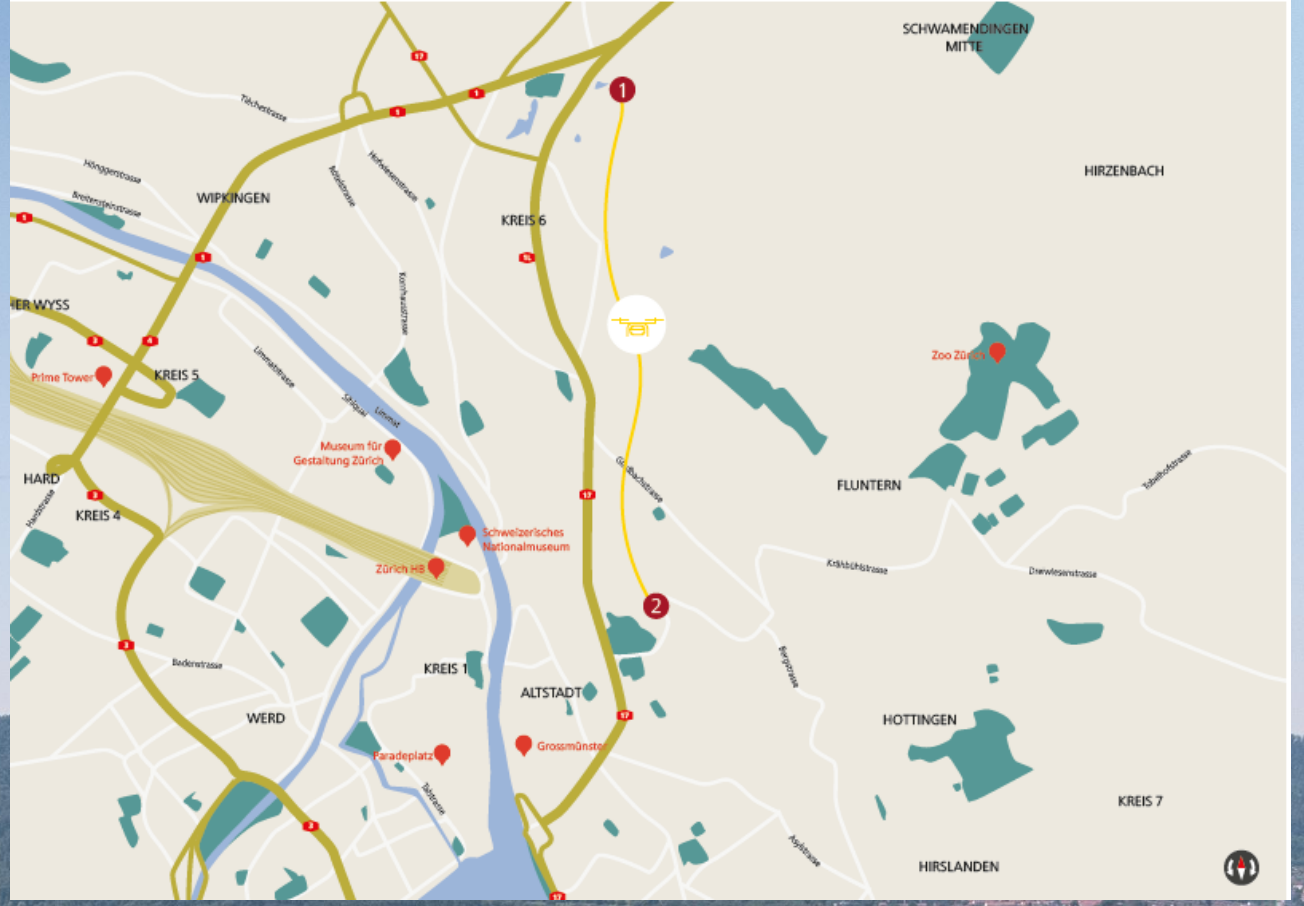
WORLD PREMIERE IN LUGANO

FIRST COMMERCIAL APPLICATION IN URBAN ENVIRONMENT



- First commercial drone delivery service in an urban environment
- More than 3.400 successful flights have been operated
- Flight time 3-4 minutes (instead of 30-45 minutes)

DRONES IN ZURICH
JANUARY 2019



- Daily five to ten, on demand, transports between university hospital and university laboratory
- Operating hours between 07.45 to 16.45
- approx. 4-5 minutes for the 3 km long route
- faster, more flexibel and more sustainable
- One-year-trials to gather long-term experience

TOMORROW

DIE POST

OPERATOR ROLE EVOLUTION

	Nowadays	Mid-Term (> 2021)	Long-Term (> 202?)
Prerequisites	On-going	Logistic station in use Fully autonomous drone solution (no technicians on spot)	Drone service is established; High trust Customer willing to centralize GDP-approved transportation process Flexible routing
Value Proposition	Selective transports with time savings and flexibility, but no SLA (7h/day,Mo-Fr,48 weeks/year) B2B (fixed location)	Autonomous transportation service with time saving, flexibility, SLA (24x7x365) B2B (fixed location)	Fully integrated transportation solutions, fexible routing, SLA (24x7x365) B2B / B2C (fixed and dynamic location)
Back up logistics	Alternative transport method is organized ad-hoc according to situation on each route	Alternative transport method is standardized. Transport are dispatched manually over a system	Interface to different logistic provider is realized. Transports are dispatched automatically via a system
Key Activities	BusDev, Lobbying	Service Provider	Full Service Provider, Integrator, Outsourcer
Air space approval process	Static, manual approval process (3-12 months per route)	Static, automatic approval process following a framework (1-60 days per route)	Dynamic approval process (1-10 minutes per route)

QUESTIONS?

DELIVERED.

DIE POST

Tom Rehwinkel

Head of Regulatory Affairs Europe, Matternet

Graduate of the Royal Military Academy, Breda, NL;
Study of Law, Leiden University

tom.rehwinkel@matternet.us

MATTERNET

Urban Health Care Logistics

Tom Rehwinkel, Head of Regulatory Affairs Europe

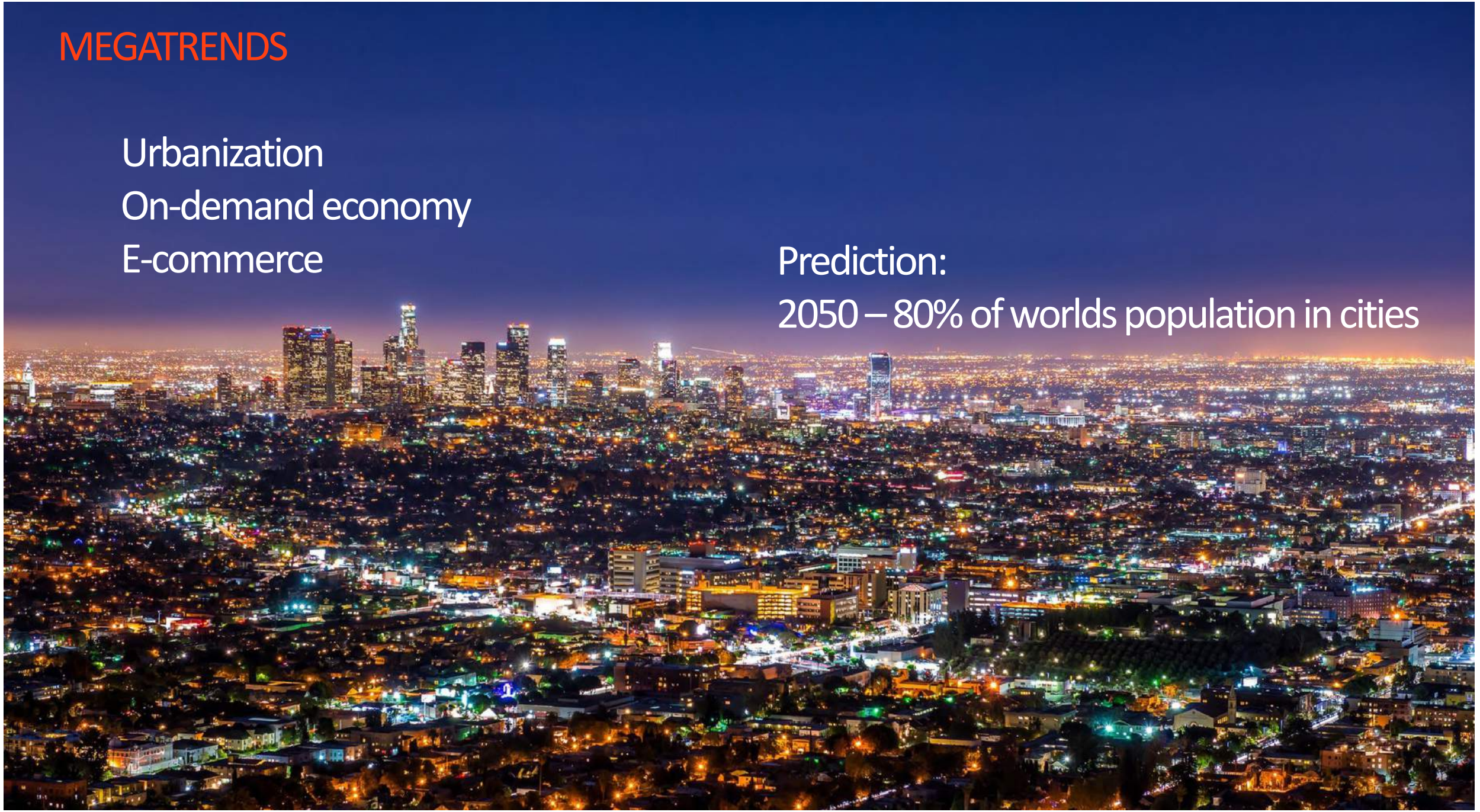
Tom.rehwinkel@matternet.us

Zurich, 14 December 2020

MEGATRENDS

Urbanization
On-demand economy
E-commerce

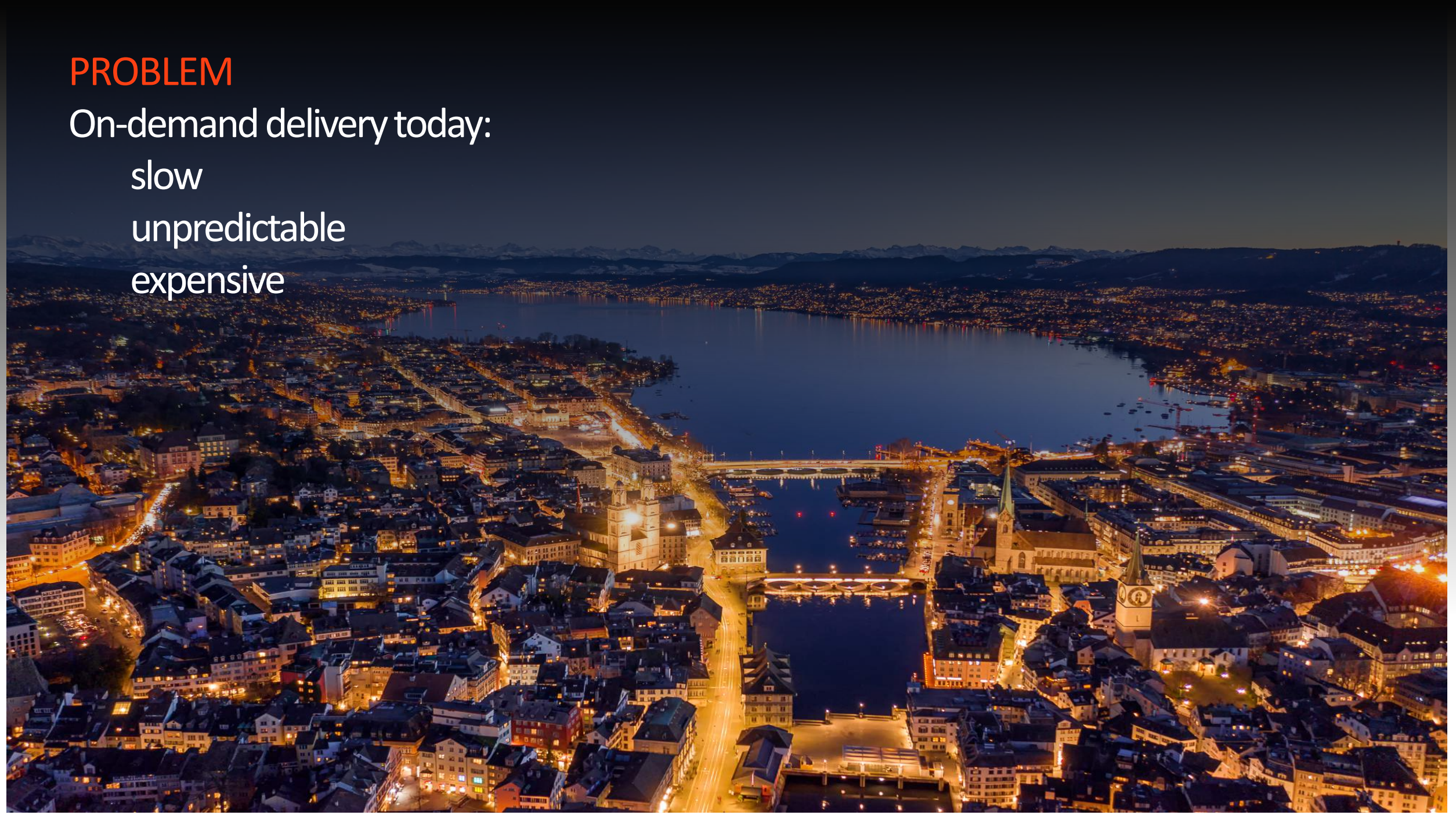
Prediction:
2050 – 80% of worlds population in cities



PROBLEM

On-demand delivery today:

- slow
- unpredictable
- expensive



OUR SOLUTION

On-demand drone delivery:

- fast
- predictable
- inexpensive

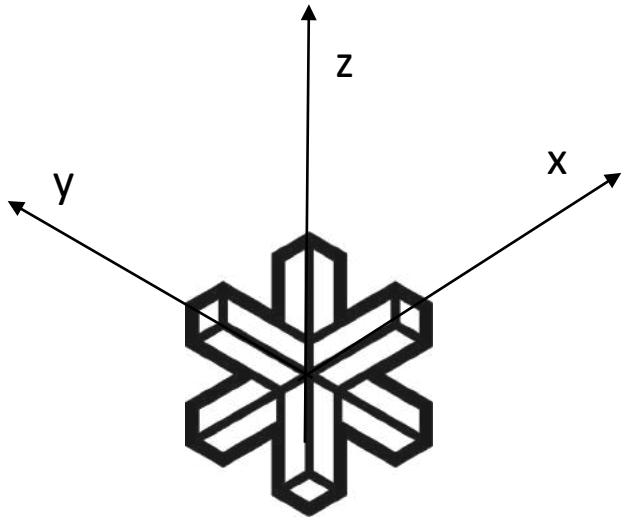
MATTERNET

Noun

ˈmatəˌnɛt

MATTERNET Noun

ˈmatəˌnɛt



MATTER + NET

NETWORK OF MATTER

“An internet of airborne things”
(The Economist)

Key Investors and Partner

Sony Innovation Fund

Boeing HorizonX

Mercedes-Benz

McKesson Ventures

ups

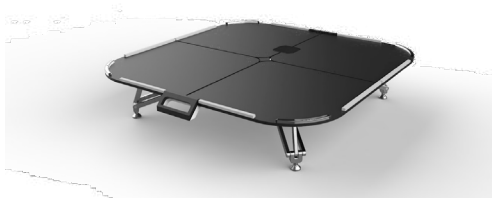
SWISS POST

Labor Berlin

ARCHITECTURE

Platform

Vehicle



Landing Pad

Mission Control

ARCHITECTURE

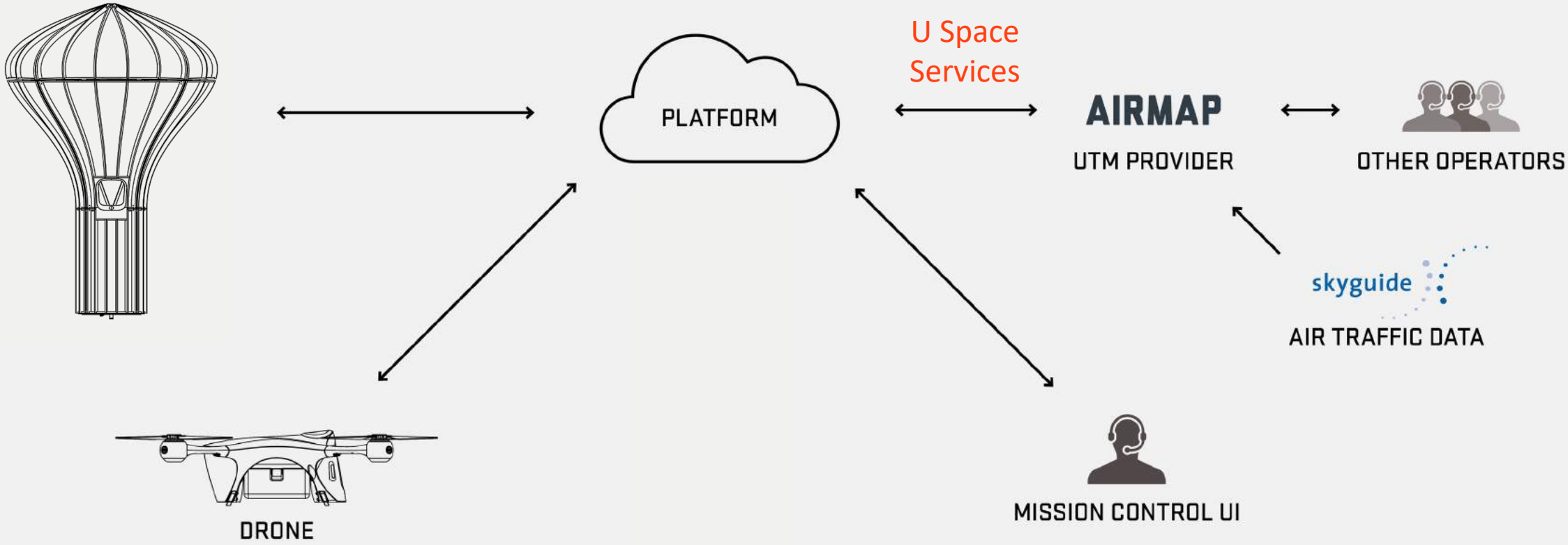
Platform

Vehicle

Station

Mission Control

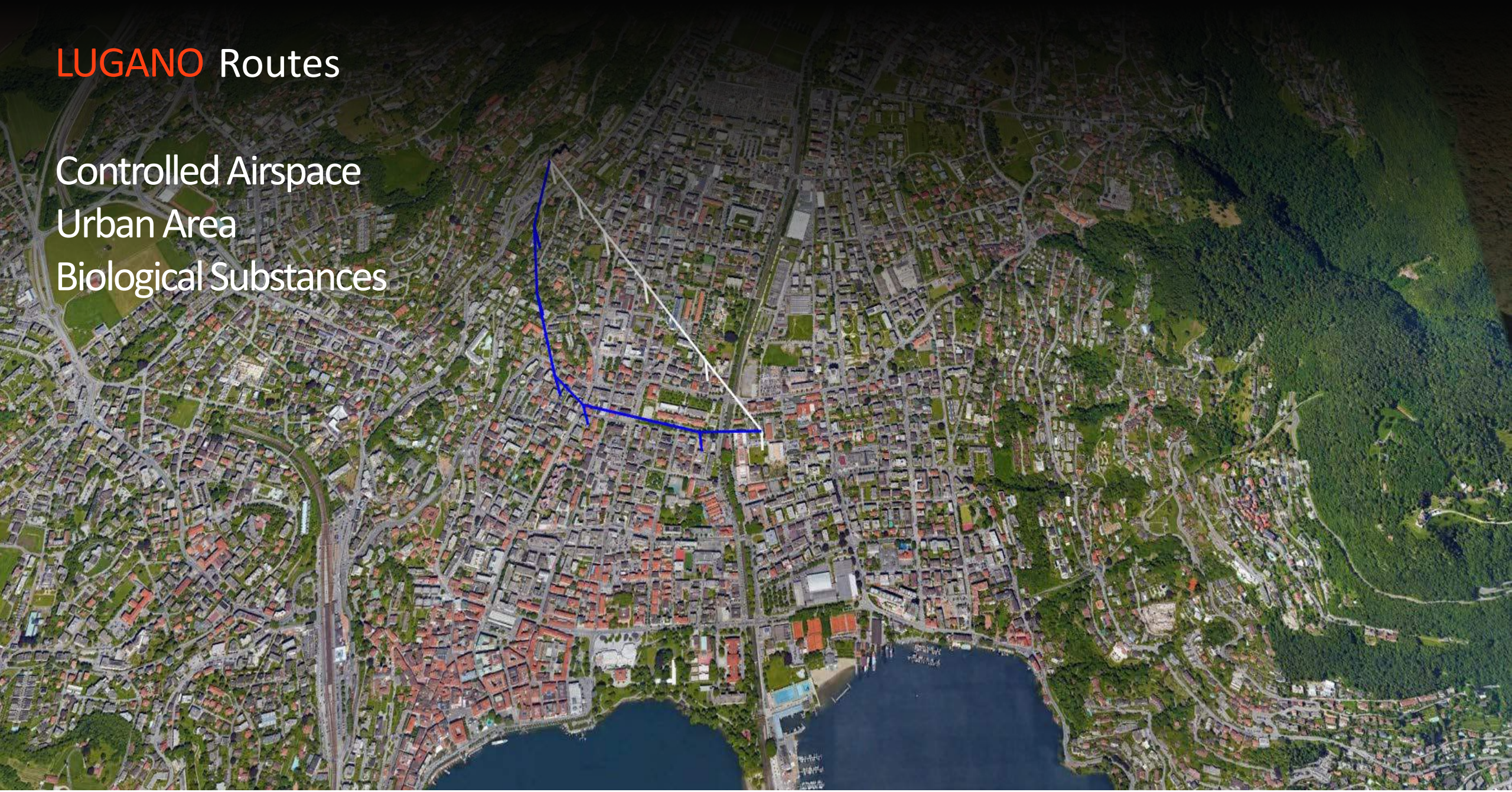
ARCHITECTURE



Operations Switzerland

LUGANO Routes

Controlled Airspace
Urban Area
Biological Substances



LUGANO Facts

Operations started: Oct 1, 2017

Hours of operation 0830-1700

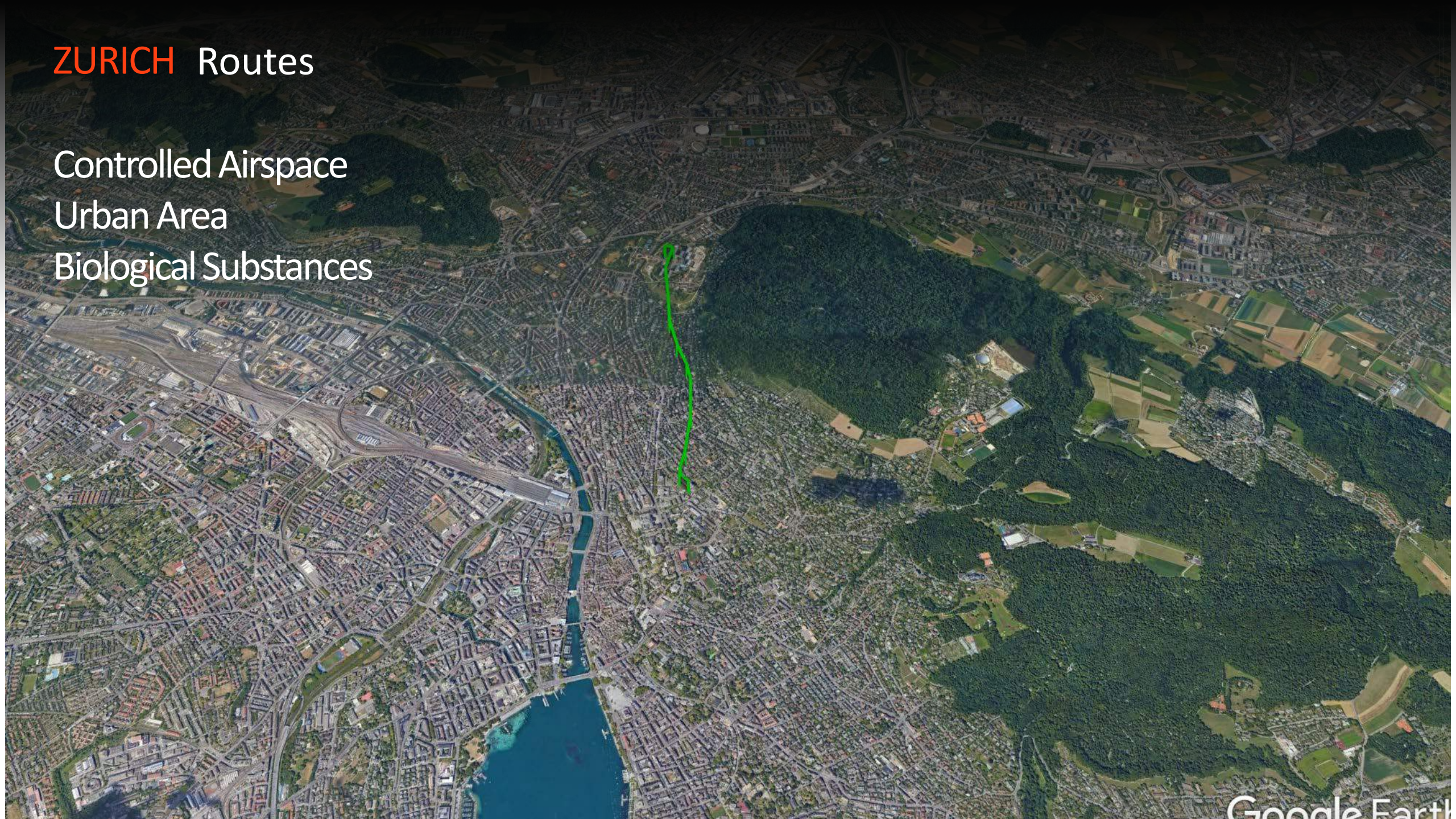
5-15 deliveries per day

Over 2,300 successful deliveries (4.758 flight legs)

World's First Hospital Network

ZURICH Routes

Controlled Airspace
Urban Area
Biological Substances



ZURICH Facts

Operations started: Dec 11, 2018

Hours of operation 08:30-15:30

5-15 deliveries per day

Over 500 successful deliveries (1,146 flight legs)

ROUTE PLANNING

- SORA approach
- Approved Routes
- Geofencing

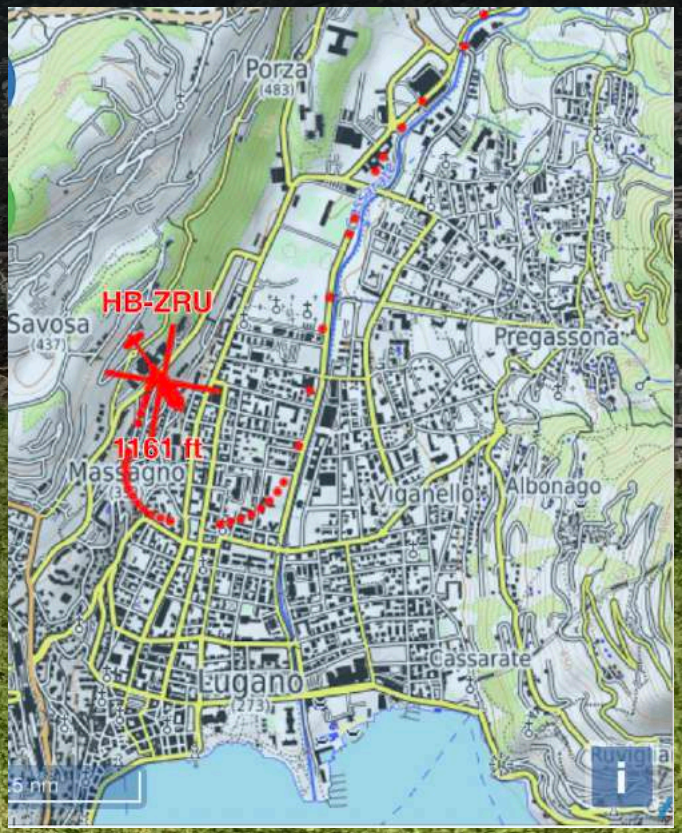
Mission Control

- Multi-Drone Operation
- Controlling of Drones

- Overview of Air Traffic
- Weather Information
- Situational Awareness
- Deconfliction

INTEGRATION INTO AIRSPACE Now

- Mission Control
- Flights in CTR
- Direct Contact to Hospital
- Flarm/ADSB Broadcast of HEMS
- FLARM Broadcast Drone
- Contact to ATC
- NOTAMs
- Operators on ground/ Visual Deconfliction



INTEGRATION INTO AIRSPACE Next Steps

- Better Integration of Manned Aircraft Into VLL-Airspace
  - Actively sharing flight data
  - Sharing of flight plan
- Interface with ATC
- Dynamic Geofencing

- Improving Infrastructure
  - Low Level Airspace Surveillance
  - Cellular Connectivity Improvements

Why Switzerland?

SWITZERLAND
INNOVATION

Why Switzerland?

ETH

SWISS POST

Zurich University of Applied Sciences

zh aw School of Engineering

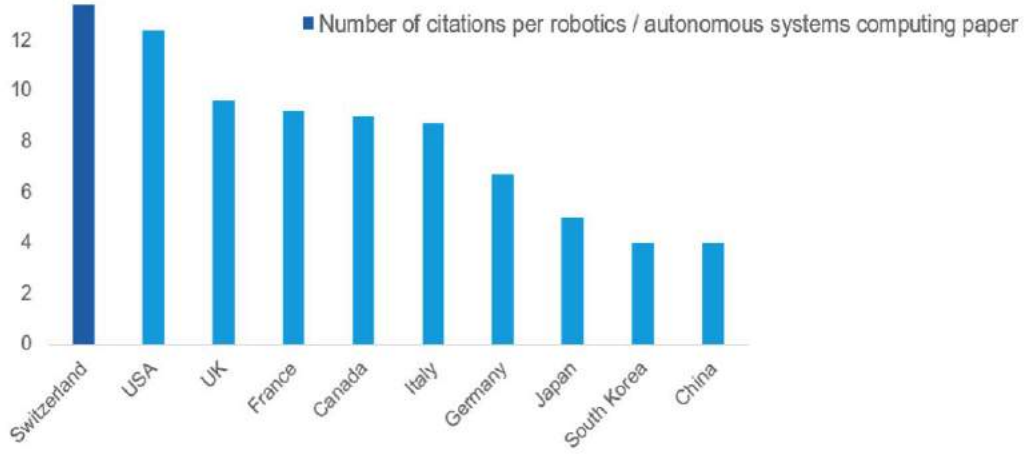
ZAV Centre for Aviation

Schweizerische Eidgenossenschaft
Confédération suisse
Confederazione Svizzera
Confederaziun svizra

BAZL Bundesamt für Zivilluftfahrt
OFAC Office fédéral de l'aviation civile
UFAC Ufficio federale dell'aviazione civile

Why Switzerland?

Global #: influential research and development



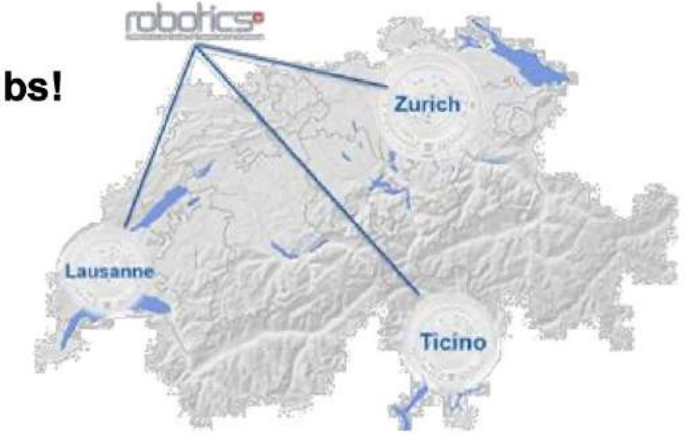
Disruptive Companies

MATTERNET AIRMAP INVOLI 3DR
VOLIRO Auterion VERITY studios senseFly
TINAMU GE Inspection Robotics WindShape
DAEDALEAN FLYABILITY WINGS FOR AID wingtra AEROTAIN

...world leading institutes & initiatives

ETH zürich EPFL University of Zurich SWITZERLAND INNOVATION
Wyss Zurich Translating Science into Life IRIS USI/SUPSI IDSIA #Swiss AutonomousValley
Autonomous Systems Lab zhaw School of Engineering swiss aeropole DIAS Drone Industry Association Switzerland

Biggest Swiss Hubs!



MATTERNET

Andreea Perca

Airspace Engineer, Innovation & Risk Management at FOCA

M.Sc. in Aviation Management, Technical University Wildau; B.Sc. in Aerospace Engineering and Air Navigation, University Politehnica of Bucharest

andreea.perca@bazl.admin.ch

Federal Department of the Environment, Transport, Energy and Communication DETEC
Federal Office of Civil Aviation
Innovation and Digitalization

Andreea Perca
Airspace Engineer

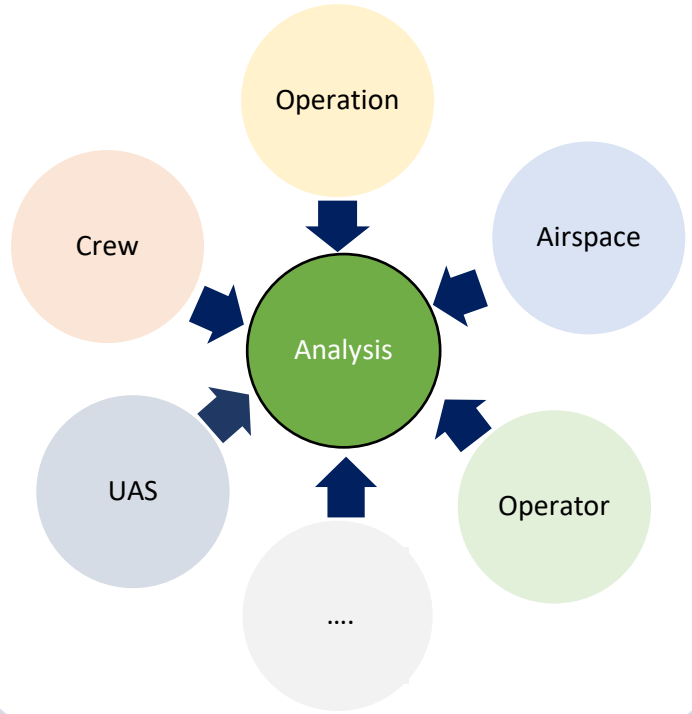
Innovation and Digitalization
FOCA

UAV operations within Swiss Federal Office of Civil Aviation

FOCA's role in enabling innovation

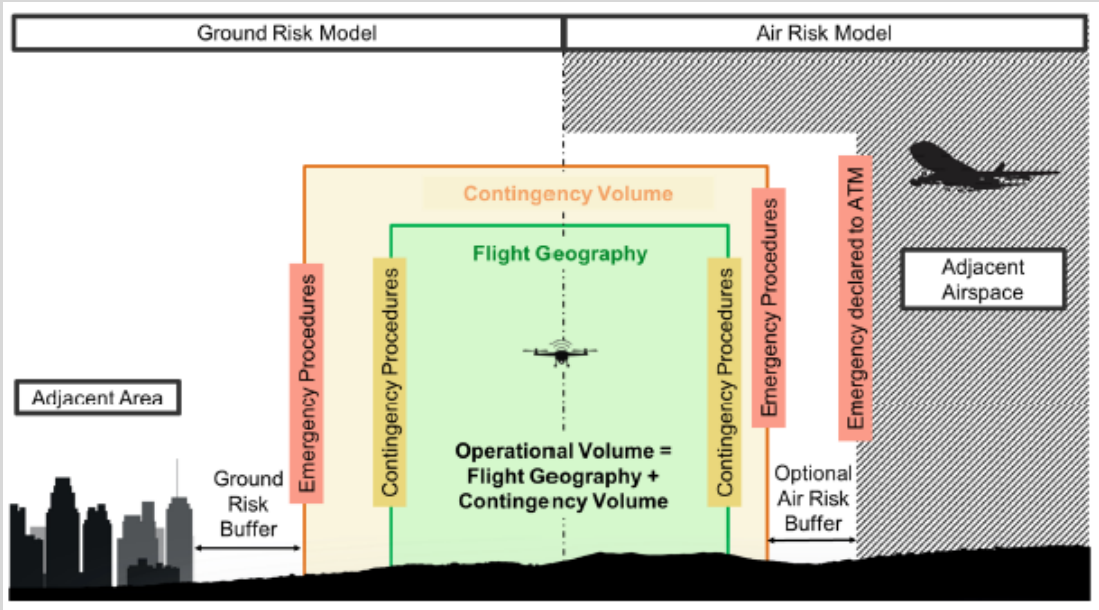
How do we approach operations

- The operation is seen holistically
- Specific Operations Risk Assessment



Specific Operations Risk Assessment

- SORA
- Non-prescriptive
- Risk based
- Applicant / industry can propose safety case
- In the process of becoming a global standard

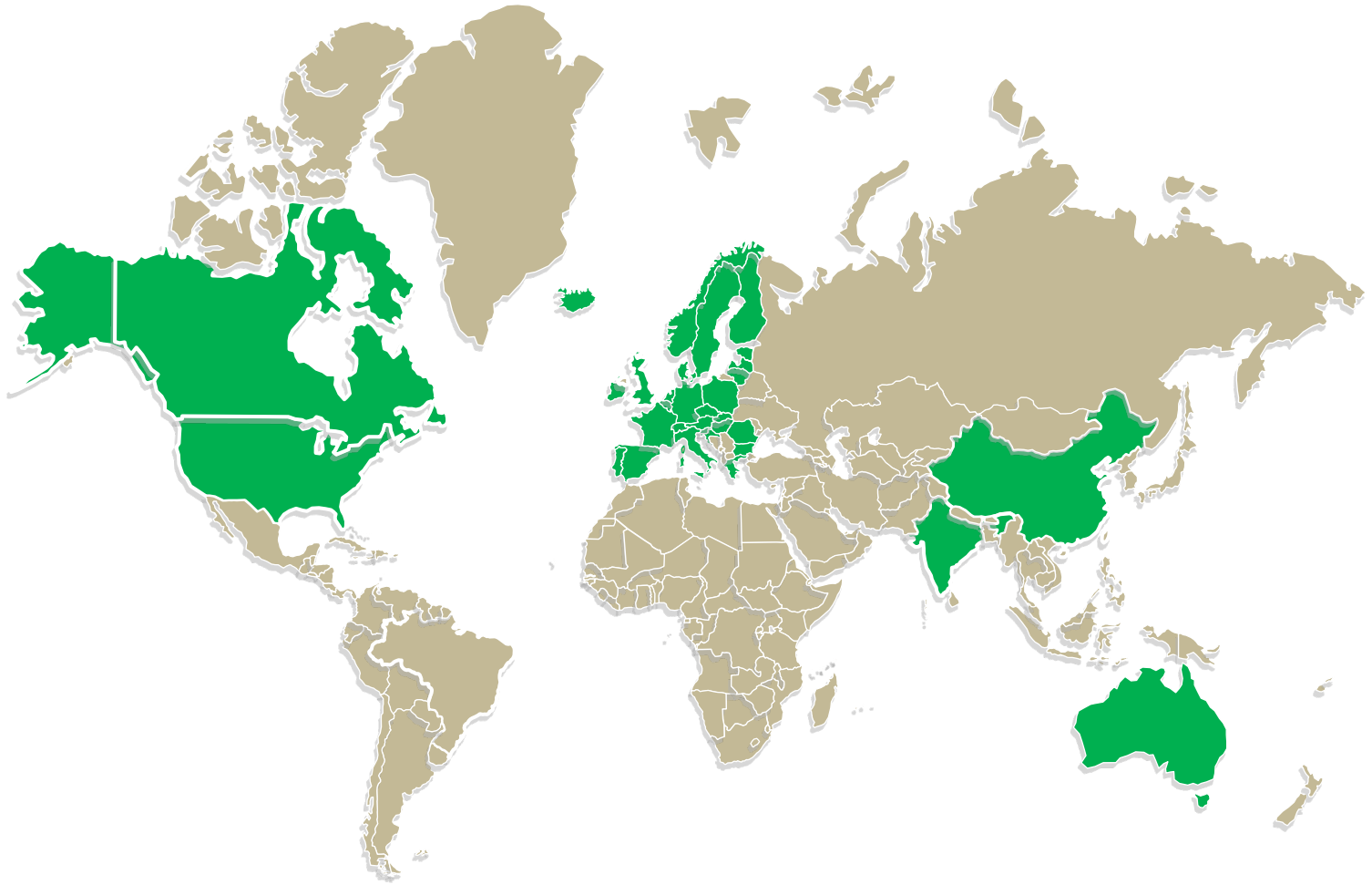


The process

- An iterative loop
- The safety case develops based on feedback
- Know-how of the methodology is key

SORA

An emerging global standard for drone regulation



Committed to cooperate

ICAO

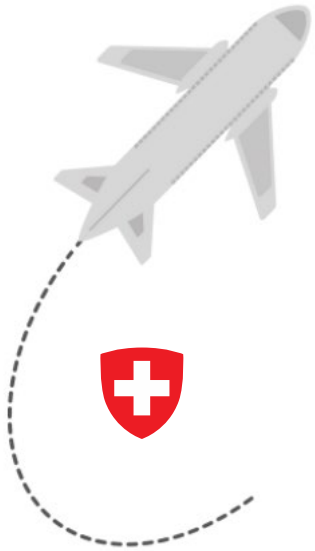
EASA
European Union Aviation Safety Agency

SUSI
SWISS U-SPACE IMPLEMENTATION

Global UTM Association

JARUS
Joint Authorities for Rulemaking on Unmanned Systems

ASTM



Excellent exchange with universities and institutes

FOCA is involved with all drone associations in Switzerland (DIAS; IG Drohnen;…)

Declaration of Intent with the FAA

Thank you

Andreas Lamprecht

CTO of Airmap
Director at Dronecode

PhD in Automotive Engineering, Technical University of Chemnitz

andreas@airmap.com

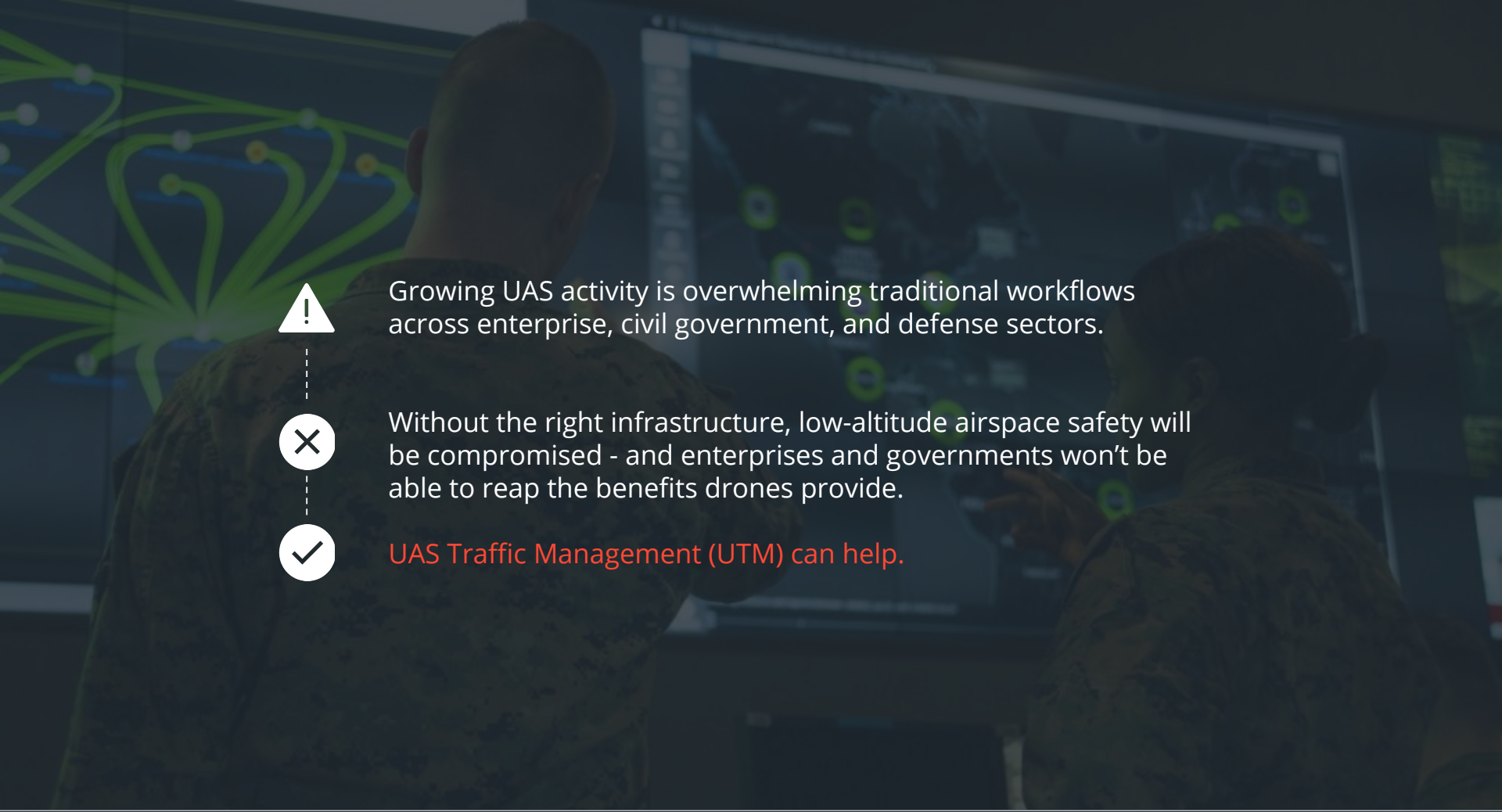
Virtual Swiss Drone Industry Tour

AIRMAP

AirMap: Airspace Intelligence to Power the Drone Economy

Dr.-Ing. Andreas Lamprecht, CTO AirMap

Dec 14th 2020



Growing UAS activity is overwhelming traditional workflows across enterprise, civil government, and defense sectors.

Without the right infrastructure, low-altitude airspace safety will be compromised - and enterprises and governments won't be able to reap the benefits drones provide.

UAS Traffic Management (UTM) can help.

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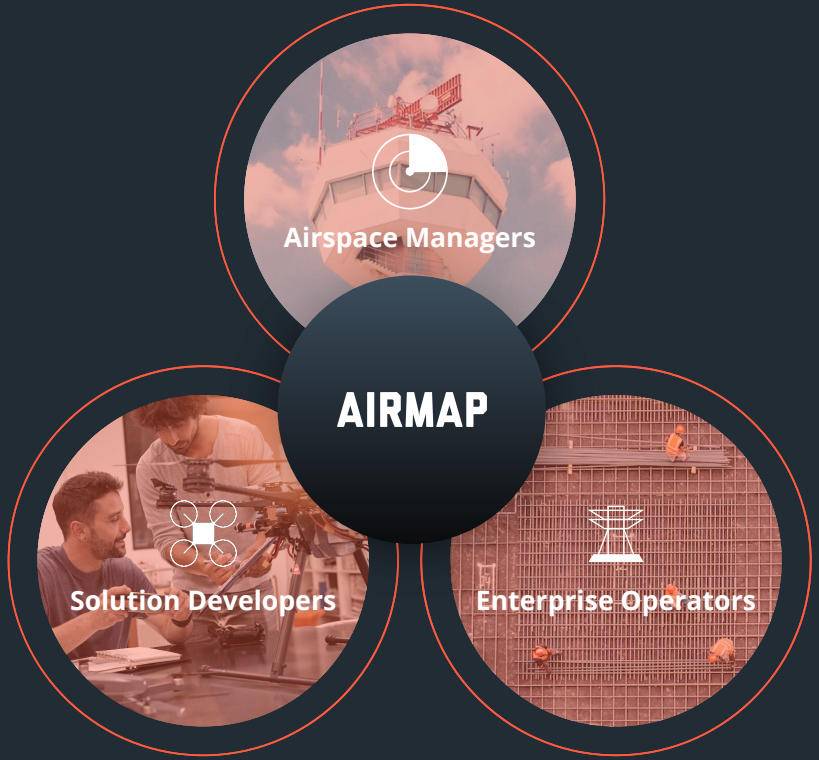
AirMap automates airspace and dataflows services enabling Airspace Managers, Enterprise Operators, and Solution Developers to scale drones operation safely and efficiently.



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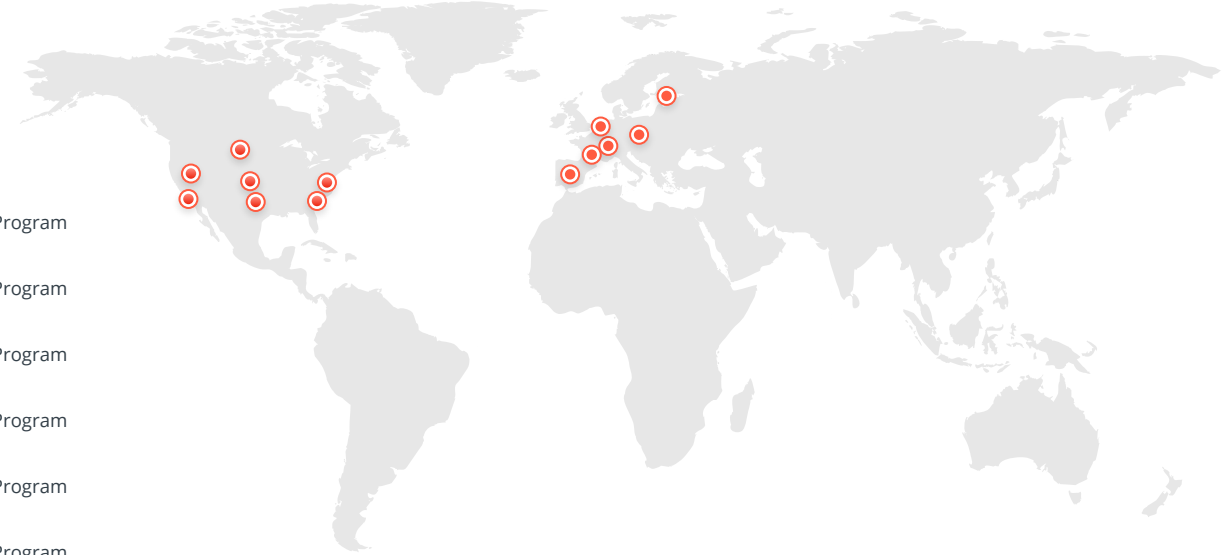
AIRMAP

We are active in UTM deployments across the U.S. & Europe



AMERICAS

United States
LAANC USS

City of San Diego
UAS Integration Pilot Program

City of Reno
UAS Integration Pilot Program

North Dakota
UAS Integration Pilot Program

Kansas
UAS Integration Pilot Program

Choctaw Nation
UAS Integration Pilot Program

North Carolina
UAS Integration Pilot Program

New York
NUAIR Alliance

EMEA

Switzerland
Swiss U-space

Czech Republic
U-space

Spain
DOMUS - SESAR JU

France
DSNA U-space together
GEOSAFE - SESAR JU

Netherlands
VUTURA - SESAR JU

Gulf of Finland
GOF U-SPACE - SESAR JU

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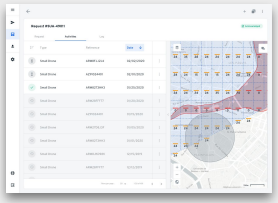
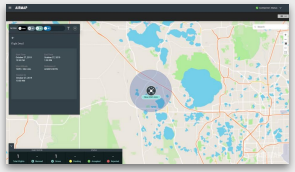
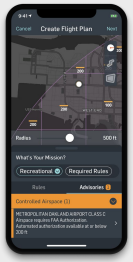
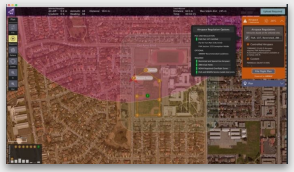
Product Suite

Screenshots & Descriptions

				
UTM Center	**AirBoss**	**UAS Traffic Viewer PRO**	**AirMap for Drones**	**Developer Platform**
A software application that enables authorized airspace managers to register, coordinate, manage, and monitor sUAS air traffic within a defined airspace boundary. Can be private or public.	A software application for Group 1 sUAS operations that equips tactical units with mission planning, 2D/3D mapping, and analytics tools for improved organic ISR.	A software application that enables sUAS program managers at corporate enterprises to coordinate, manage, and monitor commercial operations.	A software application (iOS, Android, and web) that enables sUAS operators to view airspace information, request authorization, and maintain in-flight situational awareness.	A set of APIs, SDKs, Documentation, Quickstart Guides, and Support that enables organizations to integrate AirMap UTM services directly into their own applications.

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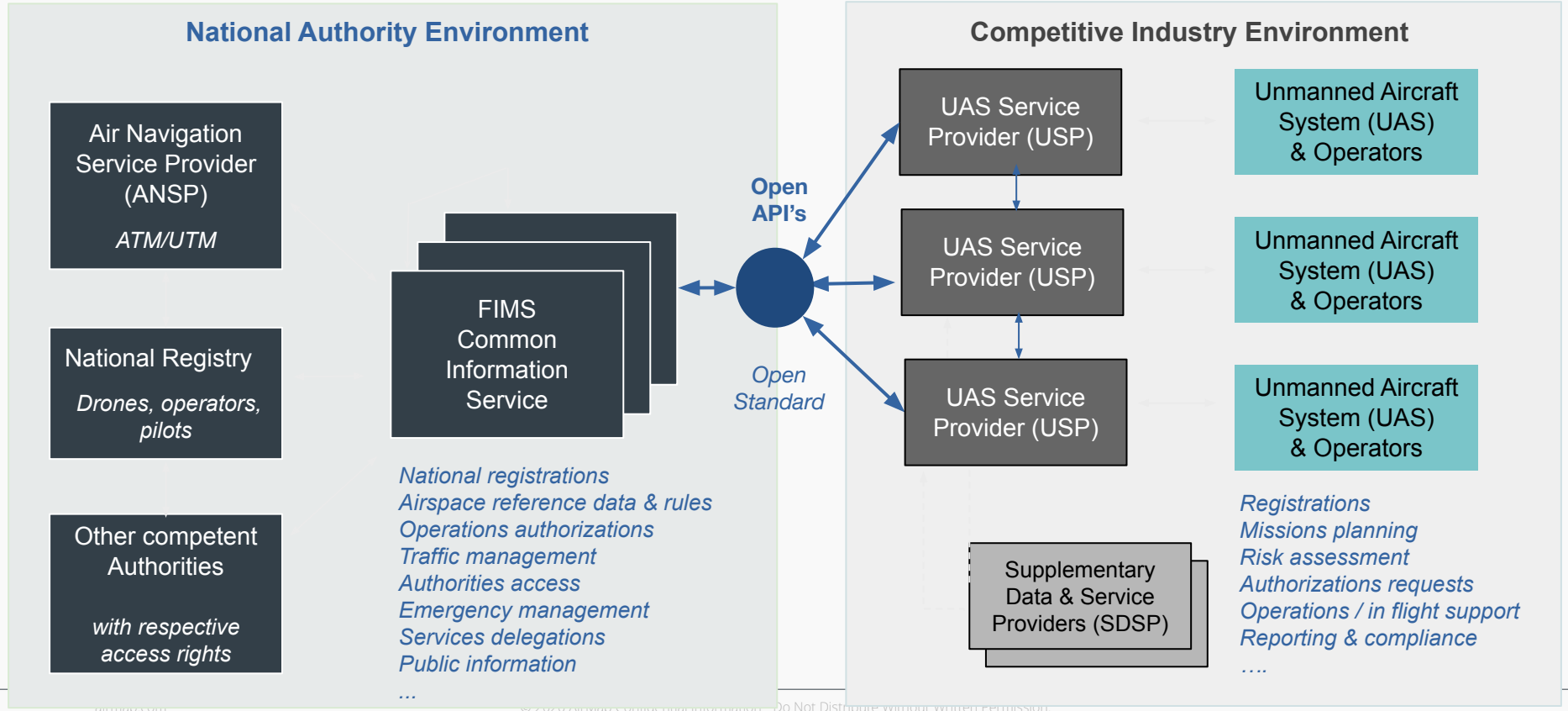
U-space Europe Notional Architecture

AIRMAP



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Case Study

Faster Authorization for UAS & Other Special Flights

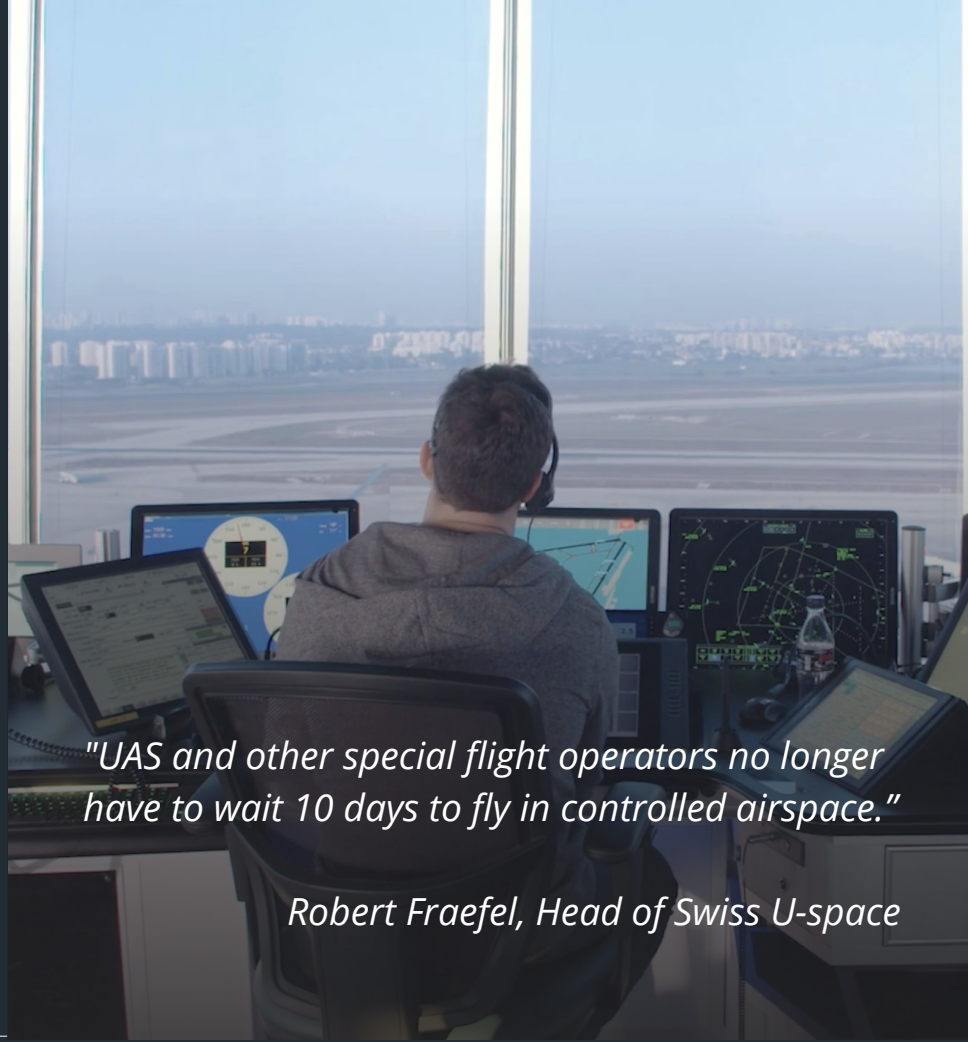
SWISS U-SPACE ROLLOUT →

In Switzerland, flights by UAS and other non-commercial aircraft in CTRs are subject to approval from the airspace authority.

With the AirMap UTM Center, airspace authorities can administer one-click, multi-step, and fully automated authorizations for special flights in controlled airspace.

The new authorization service will go live in 2021 as part of skyguide's greater Swiss U-space initiative.

skyguide



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skyguide AIRMAP

AirMap to provide RID solution with partner skyguide

Activities in Switzerland

Switzerland U-space Implementation program as a Remote-ID working group with 10 service providers.

The aim is to implement a fully standard-compliant network Remote-ID system on a purely voluntary basis.

Produced Artifacts include:

- Master Agreement governing data-sharing and SLA between Service Providers
- Test Plan and Approval Conditions
- Performance Criteria and Recommendations on Policy
- Lots of system-maturity

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Q&A

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Contact Greater Zurich Area
United States: +1 646 586 5507
Switzerland: +41 44 254 59 59
info@greaterzuricharea.com

Contact Greater Geneva Bern area
United States: +1 512 301 3337
Switzerland: +41 21 644 00 90
info@ggba-switzerland.ch