DTA as platform for UAS cargo service industry growth.

The case of Grottaglie Test Bed and Bari Open Innovation Hub

Unmanned Cargo Aircraft Conference, November 2-2021

@ Ing. Michele Giannuzzi - Distretto Tecnologico Aerospaziale SCarl

Distretto Tecnologico Aerospaziale (DTA)

Who we are

DTA S.C.a r.l. is a non-profit consortium company located in the **Apulia Region** - joined by the **aerospace** leading companies, three universities, two public and two private research organizations - providing:

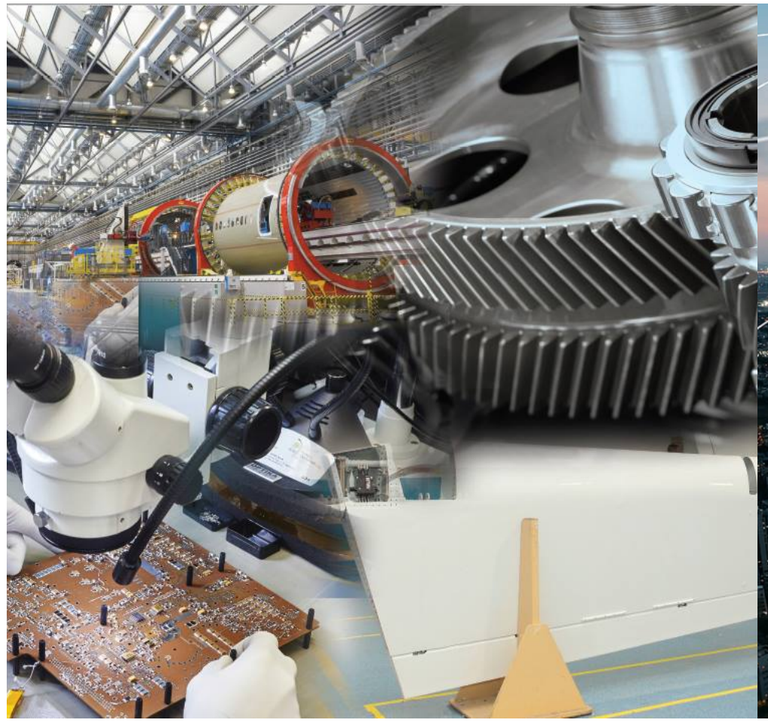
— engineering services to its members and market *(since 2016)*,
— ideate and lead research and innovation projects, and
— building relationships.

✅ **DTA aims to increase the value of the regional and Italian aerospace sectors.**

Indicator	Topic
3+M€	💸 revenues
30+	👨‍💼 direct employees
36	🧪 R&D projects
150+M€	💶 Budget of research projects
500+	🥼 Involved researchers
46	🏭 Enterprises in research projects
40+	🌍 International cooperation (PRJ)

Competences

Industry



Advance Air Mobility

Soft Skills

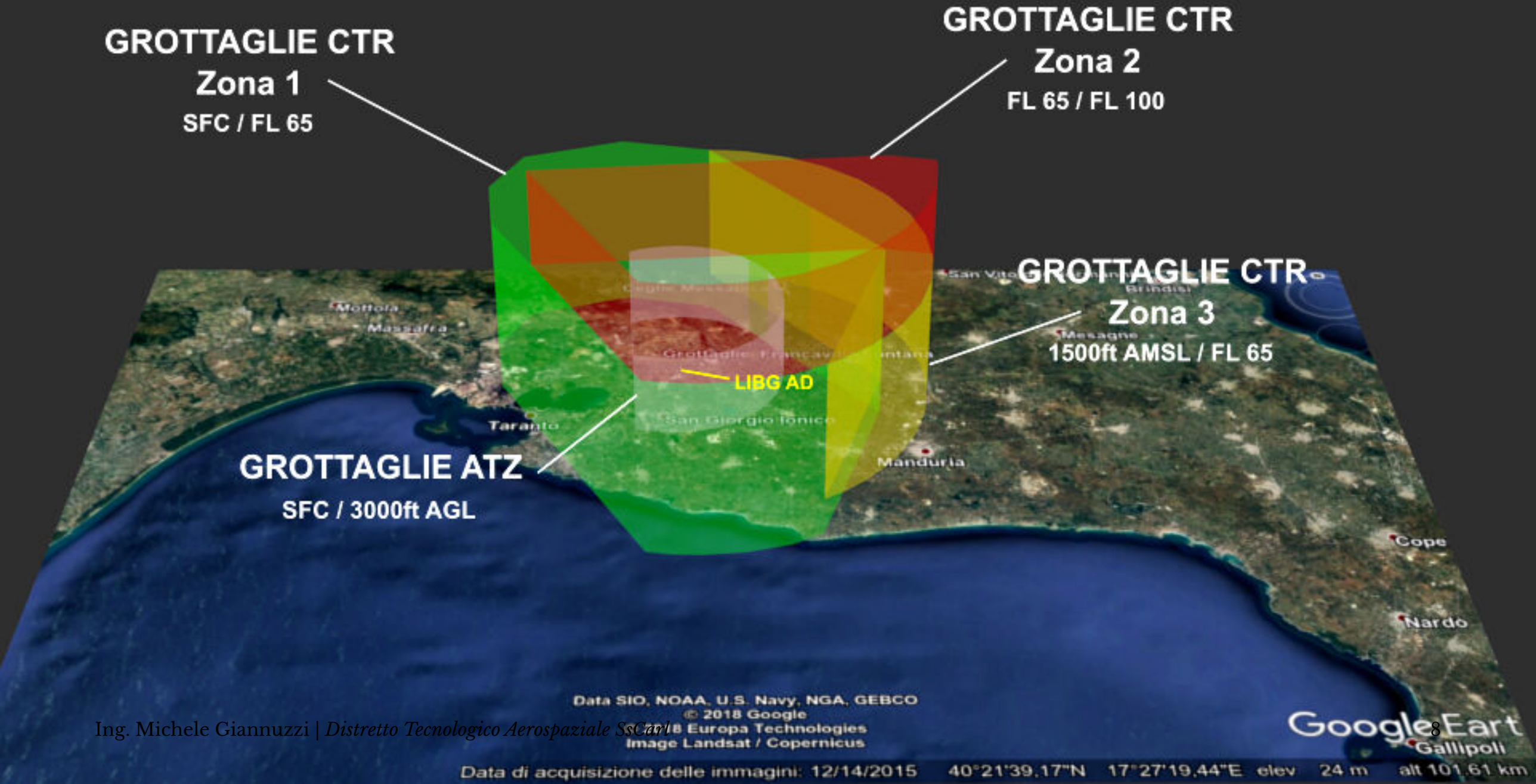
Cities are experiencing a dynamic and rapid transformation towards **decarbonised** and **sustainable** urban systems.

👉Future transformations will shape the Urban Mobility System

Urban Air Mobility will introduce **a third layer** to the city's mobility network. DTA will contribute to the UAM's economic growth through:

— Grottaglie Airport Test Bed
— Bari Open Innovation Hub

Grottaglie Airport Test Bed (GATB)


GROTTAGLIE CTR
Zona 1
SFC / FL 65
GROTTAGLIE CTR
Zona 2
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Zona 3
1500ft AMSL / FL 65
LIBG AD
GROTTAGLIE ATZ
SFC / 3000ft AGL
Motta
Massafra
Taranto
San Giorgio Ionico
Manduria
Mesagne
Brindisi
Cope
Nardo
Gallipoli
Data SIO, NOAA, U.S. Navy, NGA, GEBCO
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Image Landsat / Copernicus
Data di acquisizione delle immagini: 12/14/2015
40°21'39.17"N 17°27'19.44"E elev 24 m alt 101.61 km

— Fully equipped, low traffic airport
— Large runway (45 x 3200 m)
— Large air space (~370 Km^2; on land, cost, sea)
— Sparsely populated area

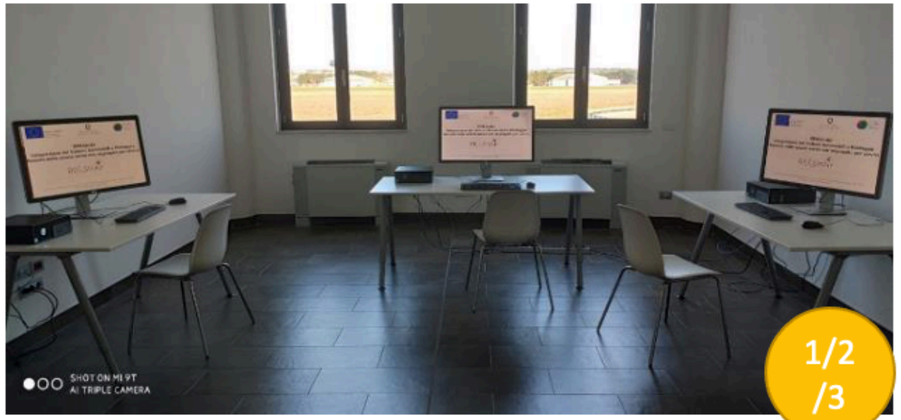
DTA is leading **Grottaglie Airport Test Bed** (GATB). It is a large unrestricted test arena where VLOS, BVLOS and BRLOS missions can be enabled in a **favorable year-round climatic conditions**

— test engineering and risk assessment,
— flight test authorization procedures,
— simulation and emulation, live flight tests,
— provision of logistic services,
— airport coordination, access and exploitation of air spaces

!! GATB allows testing of early 🛩️ UAS' innovation processes, and prototypes under realistic conditions.

Infrastructure available

1. UAS operations in ATM: simulation / emulation infrastructure
2. SATCOM in the loop
3. Cyber vulnerability, assessment facility
4. GNSS interference monitoring services
5. Office rooms, workshop
6. Airport facility & services



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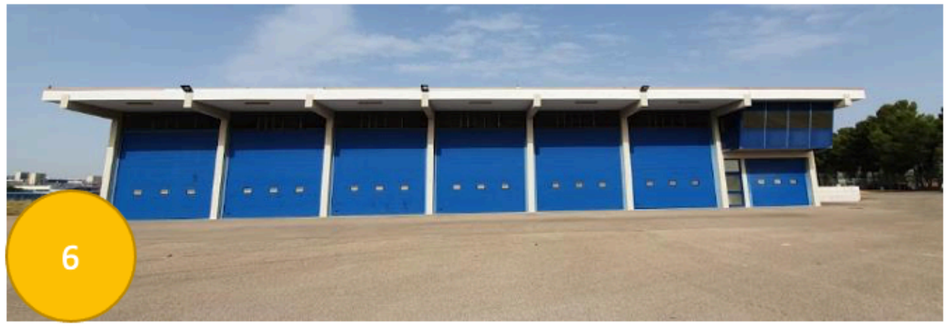
DTA, Leonardo, Telespazio, Vitrociset, Planetek, Aeroporti di Puglia, others

Deployment started, to be completed



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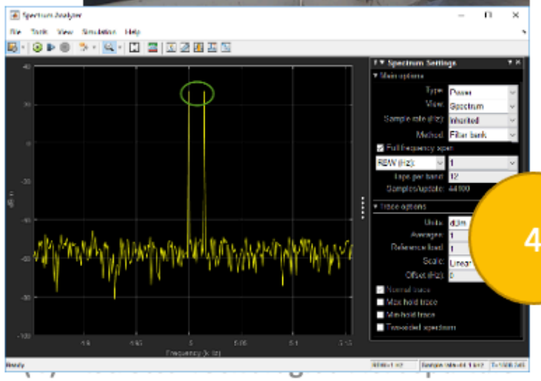

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SW4-SOLO flight simulator (LEONARDO)

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Collaborative networking

ENAC
Ente Nazionale per l'Aviazione Civile

enav

TELESPAZIO
a LEONARDO and THALES company

ASI
Agenzia Spaziale Italiana

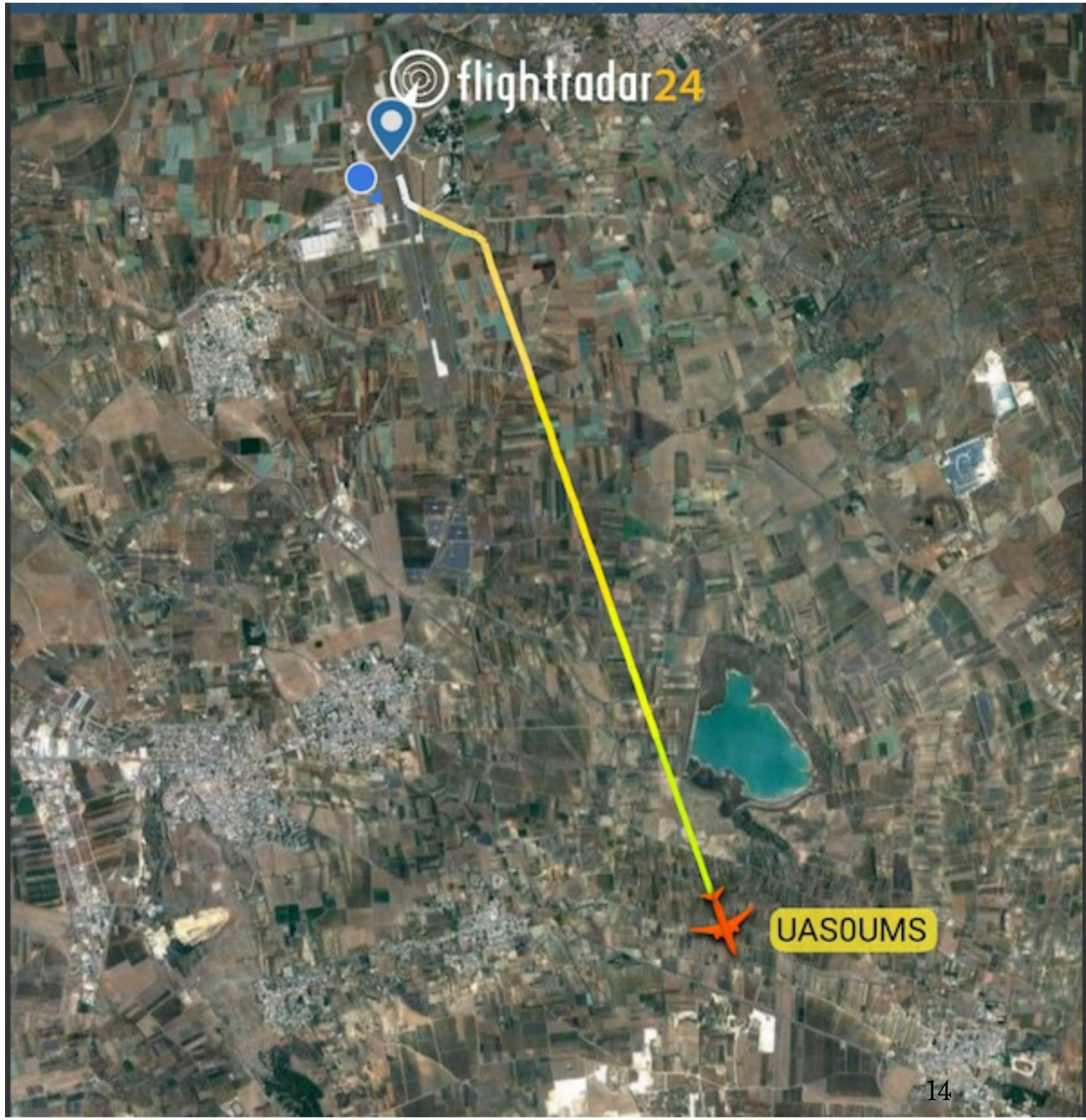
esa

CIRA
Centro Italiano Ricerche Aerospaziali

AEROPORTI DI PUGLIA
BARI BRINDISI FOGGIA TARANTO

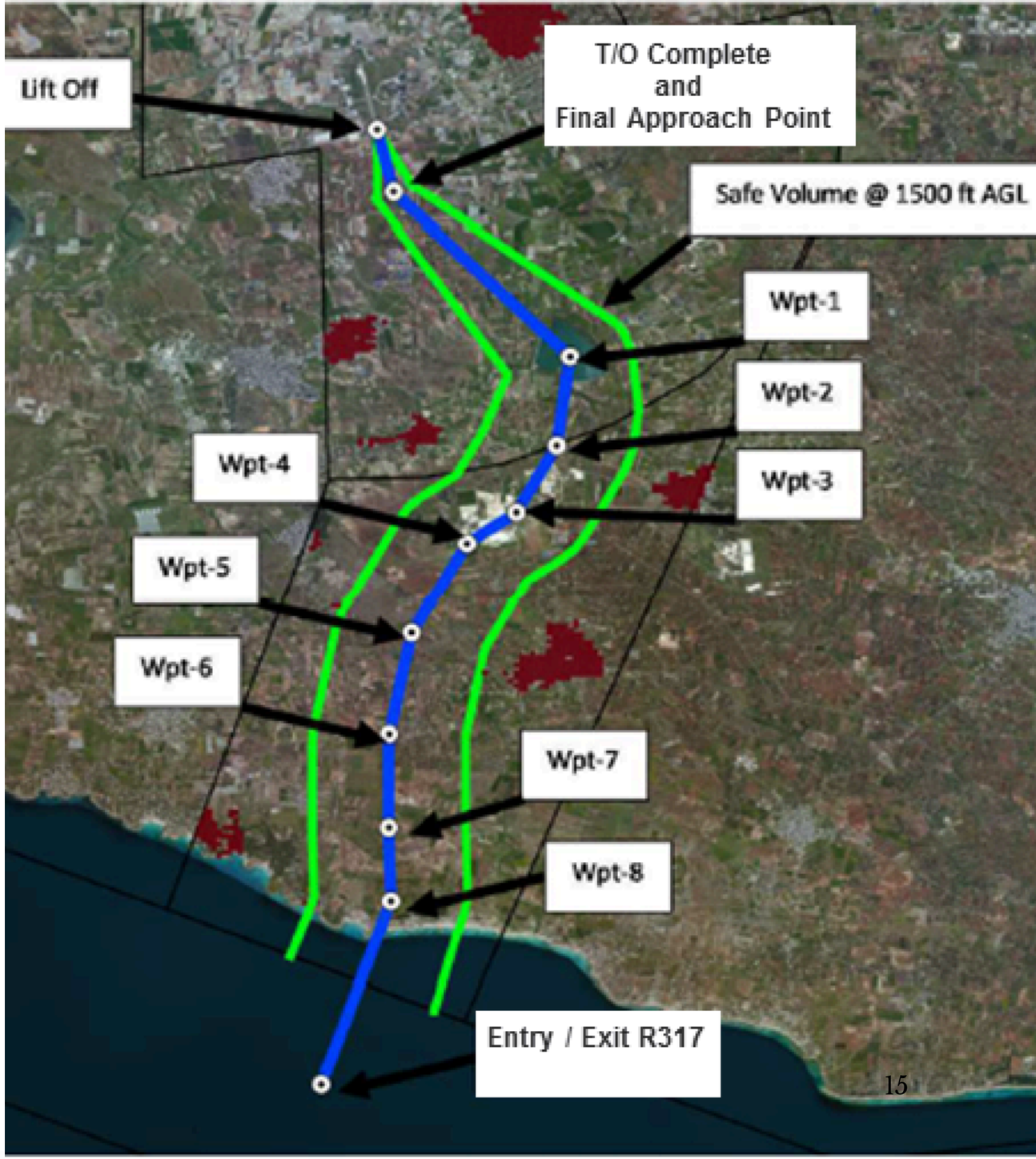
ECARO - EGNOS Civil Aviation Roadmap

GNSS-based navigation, leading to IFR operations



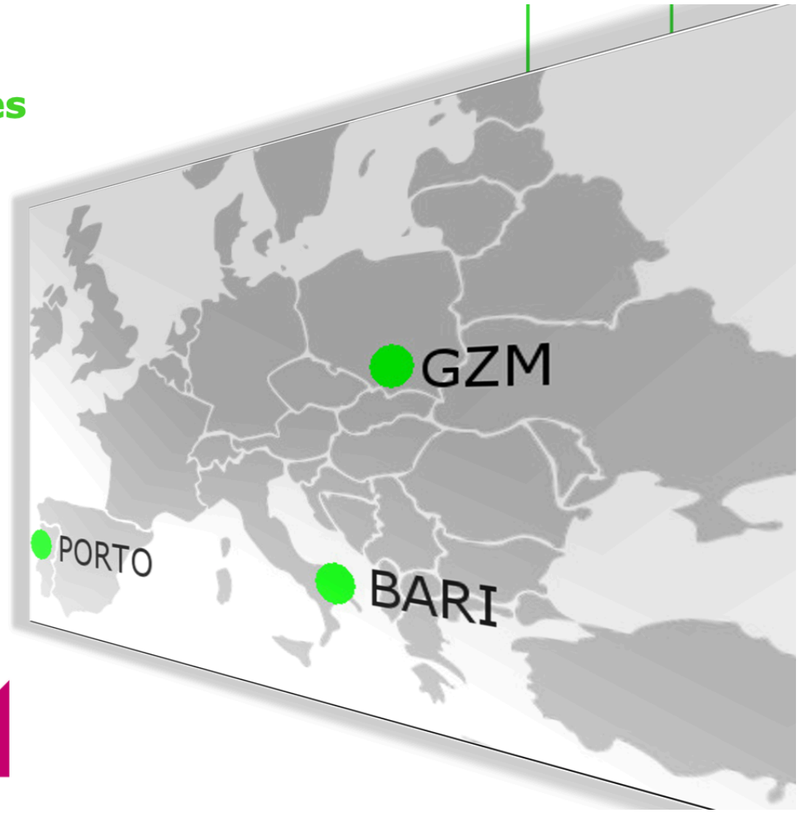
RPASinAir project

Experimental flights in BRLOS under SATCOM supervision



Acceptance, Safety and Sustainability Recommendations for Efficient Deployment of UAM (ASSURED-UAM)

Partners and cities



The ASSURED-UAM project will provide support and technical assistance for the implementation of **vertical transport** in three overpopulated cities:

— Górnoslasko-Zaglebiowska Metropolis (GZM) (*Upper-Silesian region in Poland*),

— **Bari (Italy)** and

— Porto (Portugal)

The project will provide cities with knowledge concerning:

— deployment of UAM services *(cargo and mobility)* and
— definition of necessary standards and recommendations

assuring common *acceptability*, *safety* and *sustainability* within **integrated metropolitan transport system**.

The objectives of ASSURED-UAM project

To identify trends in key areas to accommodate and propagate aviation best practices, standard, recommendations and organizational solutions into city administrative and legislative structures.

To assure broad and comprehensive organisational and policy definition support for authorities, policy makers and urban industry organizations

To become the first and most powerful contributor for climate neutral urban transport in 2050, providing recommendations for integration of surface modes under the U-Space Air Traffic Management System.

ASSURED-UAM will be:

— looking at scenarios with **use cases** within 5, 10 and 15-year timeframes,
— making **knowledge and policy recommendations**, and
— creating **standards** for products and processes as well as tools for exchange and learning of urban air mobility

The following UAM deployment strategy has been defined:

— **2025**: opening public locations for vertiports, allowing for and launching urban flights to perform small-scale quasi-last mile delivery in logistics chains
— **2030**: launching AI systems for urban flight supervision (*emerging U-Space services*)
— **2035**: upgrading the AI system for urban flight supervision including the lesson learned

The ASSURED-UAM project will investigate the future of UAM, defining the most probable use cases and how to implement them. For all selected time horizons, the UAS configuration is the VTOL (Vertical TakeOff and Landing).

— **[UC1-2025] Straightforward last-mile delivery for goods**.
Direct, single delivery of small parcels from a distribution point to predefined, prepaid, and registered locations.

— **[UC2-2025] Point-to-point public services for goods**.
High priority public services like med.-transport -delivery of medical goods (e.g. blood, samples, tools, equipment, etc.).

— **[UC3-2030] Advanced last mile delivery for goods**
Last-mile delivery with more than one destination per mission with an optimised route

[UC4-2030] Point-to-everywhere public services for goods.
High priority public services like medical rescue transport (delivery of medical equipment and AED, from predefined location to accident site)

[UC5-2035] Medical transportof people (passengers service).
New generations of HEMS (e.g. UAEMS - unmanned aerial emergency medical service) which are dedicated initially to less demanding operations.

[UC6-2035] Personal aerial transportation for goods
Personal transportation allowed for flying into urban areas (only in automatic mode): manned ultralight up to two-seat aircraft allowed for flying into U-SPACE.

Bari Open Innovation Hub (BOIH)

BARI
SMART
CITY

Bari is one of the five italian cities chosen:

— by ENAC (italian CAA) for the **Urban Air Mobility** experimentation and

— by Italian Ministery of Economic Development for the **5G experimentation**.

In November '20, DTA, Municipality of Bari and ENAC signed a cooperation agreement to develop and promote UAM services in Bari within the **Smart City programme**.

— **DTA** will be in charge of promoting R&I projects and engaging technology stakeholders
— **BARI** will assess its urban problems and needs and declare its innovation challenges
— **ENAC** will help in developing urban drone range, regulation, and technology maturity

BOIH - a four-year program - will develop innovative urban services enabled by **5G technology** and **artificial intelligence** - i.e., autonomous vehicles and drones to transport *people* and *goods*.

🟢 **Innovative aerial urban services will allow the design of new governance policies and business models oriented towards economic, environmental and human sustainability.**

The urban test range chosen is the "**Fiera del Levante**" -- a city district dedicated to business, culture, and technology.

NUOVA FIERA DEL LEVANTE

CONCESSIONARIA

Ing. Michele Giannuzzi | *Distretto Tecnologico Aerospaziale SsCarl*

Conclusion

Grottaglie Airport Test Bed is an infrastructure supporting UAS/UAM experimentation and demonstration in real life scenarios.

Bari Open Innovation Hub is a realistic urban scenario for innovative urban aerial services

🟢 **Could the DTA boost the value creation of your cargo processes?** 🟢

Thank you!