

Slido: #IAM2024



EASA

Innovative Air Mobility
Implementation Forum

In cooperation
with:



Enabling C2 link using mobile network technology



Falk Götten
LBA

Head of UAS specific category



Antonio Marchetto
EASA

Senior Policy Officer UAS



Thomas Neubauer
DIMETOR
CEO



Bobby Healy
MANNA Drone Delivery
CEO

Workshop title:

Enabling C2 link using mobile network technology

Goal:

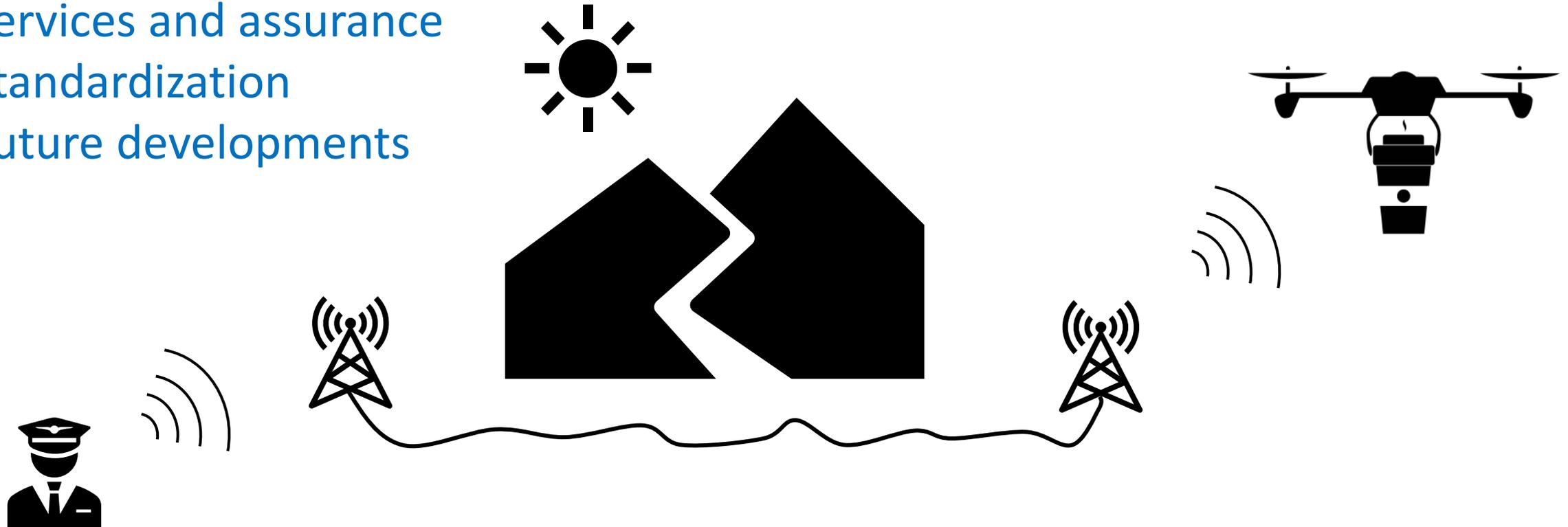
Understand how mobile network technology can be used as UAS C2 link

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Analyze the challenges to ensure safe operations

Mobile network technology for drones

- State-of-the-art use cases
- Services and assurance
- Standardization
- Future developments



Demand and Supply for MNO Services for UAS

SIM cards and Data Service Offerings (SLAs)

MNO services vs Drone Operator needs

Critical communication:

- Throughput 50-100 kb/s
- 150 ms latency
- Reliability 10-5

Non-Critical communication UserData (Video and Image stream)

- Throughput 2-5 Mb/s
- 500 ms latency
- Reliability 10-3

SUPPLY - MNO SERVICES

ADDITIONAL SERVICES

Connectivity/Service Volume (Where is MN service coverage?)

Network Slicing & QoS

Population Density Information

Network-Based Device Location

DEMAND - DRONE OPERATOR NEEDS

	Command & Control (Communication)	Network RID/Traffic	Payload Data	UTM (services)
Critical communication	High Priority, Low Revenue (\$)	High Priority, Low Revenue (\$)	Medium Priority, Medium Revenue (\$\$)	Medium Priority, Medium Revenue (\$\$)
Non-Critical communication UserData (Video and Image stream)			Medium Priority, High Revenue (\$\$\$)	Low Priority, Low Revenue (\$)
Connectivity/Service Volume (Where is MN service coverage?)	High Priority, Low Revenue (\$)	Low Priority, Low Revenue (\$)	Medium Priority, Low Revenue (\$)	High Priority, Low Revenue (\$)
Network Slicing & QoS	High Priority, Low Revenue (\$)	Low Priority, Low Revenue (\$)	Medium Priority, Low Revenue (\$)	Low Priority, Low Revenue (\$)
Population Density Information				High Priority, Low Revenue (\$)
Network-Based Device Location		High Priority, Low Revenue (\$)		Medium Priority, Low Revenue (\$)

LEGEND

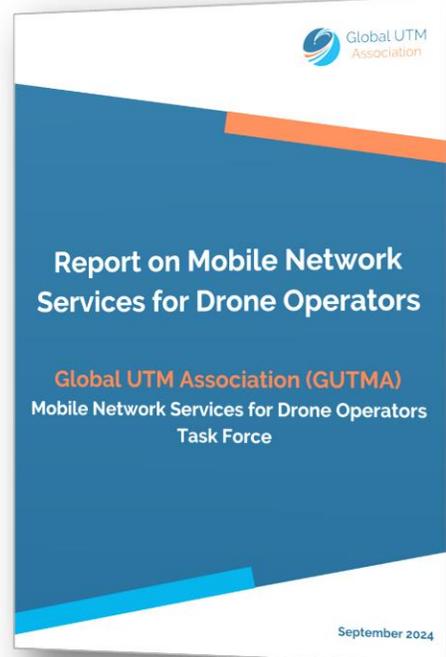
DEMAND PRIORITY LEVEL

High (Large Blue Circle) Medium (Small Blue Circle) Low (Small Light Blue Circle)

SUPPLY REVENUE OPPORTUNITY

Low (\$), Medium (\$\$), High (\$\$\$)

ACJA / CAMARA Interfaces, APIs



LTE adoption: main links with SORA

For the UAS manufacturer

- Safety assessment (OSO#5)
 - In SORA 2.5 its scope is extended to external systems
- C2 Link performances (OSO#6)
 - When supported by LTE
- Qualification for environmental conditions (OSO#24)
 - E.g.: Modems hosting SIMs

For the UAS operator

- External services (OSO#13)
 - Declaration and evidence of compliance when critical for safety of flight
- Definition of and adherence to environmental conditions (OSO#23)
 - Taking into account information provided by the UAS manufacturer