Agnet over SatCom

TC Connect VIP day
13 November 2023

AIRBUS

Use-cases for the public safety customers

When mission critical customers are moving towards the broadband technology, their main concern is the reliability and coverage on the commercial MNO networks

Typical use-cases for the public safety:

- Satellite connectivity to extend the network coverage
- Satellite as a backup connectivity
- Deployable systems with satellite backhaul

Connect the digital world to one device. Securely.
With Agnet over Satellite Comm.

Critical comm. and connectivity needs are growing

MORE

From Kbps to Tbps
High throughput will be key

FASTER

Real-time communication
without any delay

BETTER

Connectivity anywhere,
anytime and highly secured

Steps to improve the situation awareness in critical situations

Destruction / Disaster Relief

of the terrestrial communication infrastructure due to natural disasters, aggression etc.

Overload

of the terrestrial communication infrastructure due to events (concerts, demonstrations, etc.)

Extra capacity

to enable wideband communication between different actions incl. on-the-move applications (cars, helicopters etc.)

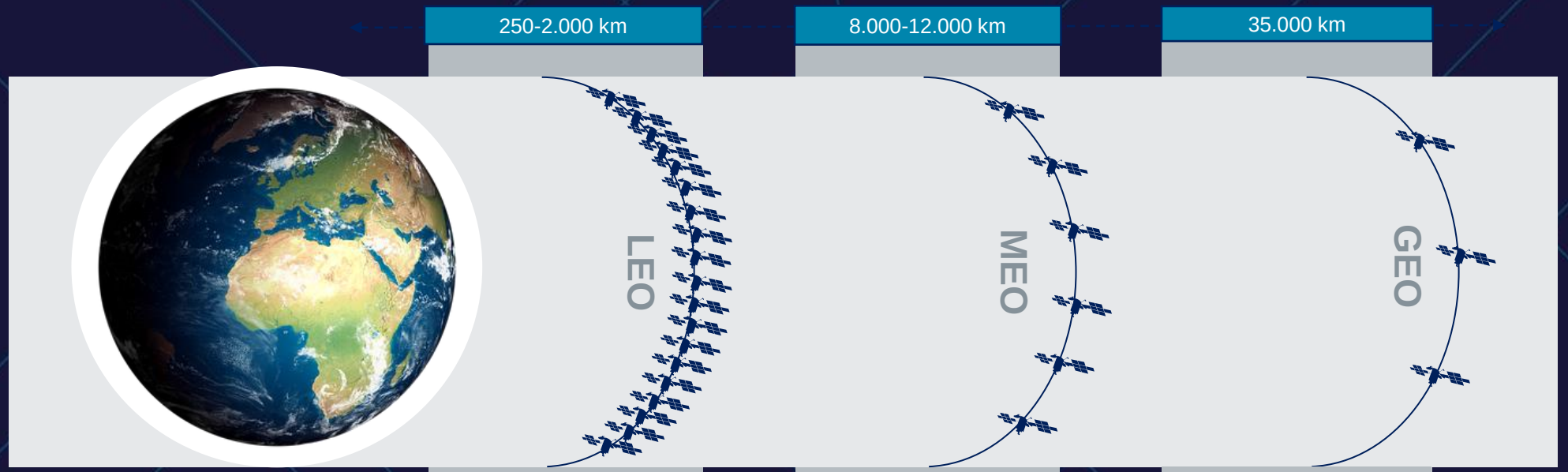
Remoteness

of some emergency services (e.g. in the mountains) with limited terrestrial infrastructure can be compensated

on-the-spot

permanent

LEO-MEO-GEO in comparison



Low Earth Orbit

- 250-2.000 km orbit
- Low latency
- 1000+ satellites
- Examples: Starlink, OneWeb, Amazon Kuiper…

Medium Earth Orbit

- 8.000-12.000 km orbit
- Medium latency
- 6-8 satellites
- Examples: GPS, Galileo, O3B…

Geostationary Orbit

- 35.786 km orbit
- High latency
- 3 satellites (at minimum)
- Examples: Inmarsat, Iridium, Eutelsat, Intelsat, SES…

Advantages of Satcom

Very low latency

A latency of as low as 70ms to the customer hand-off point enables near-real-time communication for emergency services anywhere and anytime

Strong performance

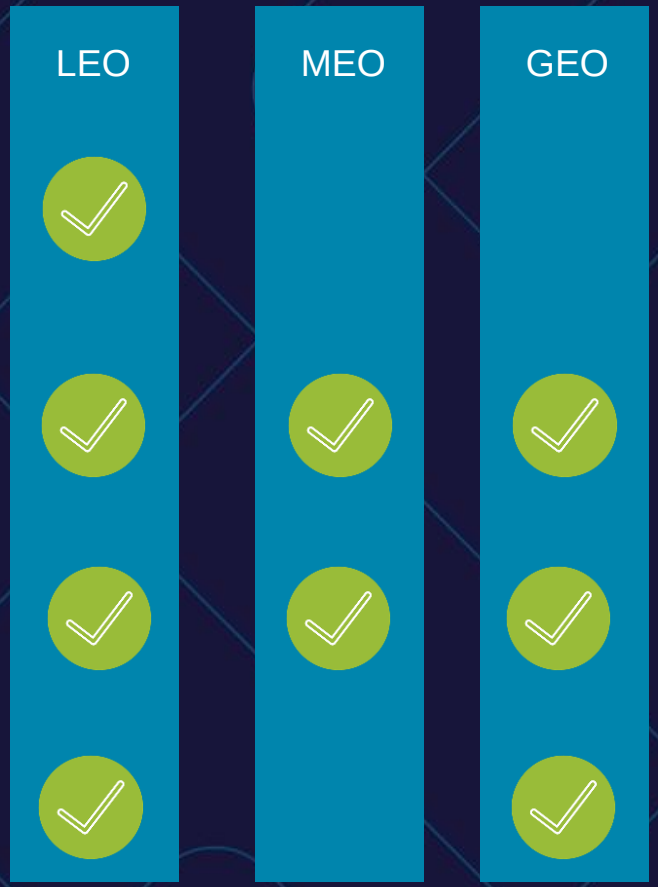
With a data rate of up to 195Mbit/s, LEO constellations are meeting the high throughput operational data transfer requirements

High Availability

With an availability of >99% and a strong Quality of Service, you can trust that the connectivity will be there when you need it most

Worldwide coverage

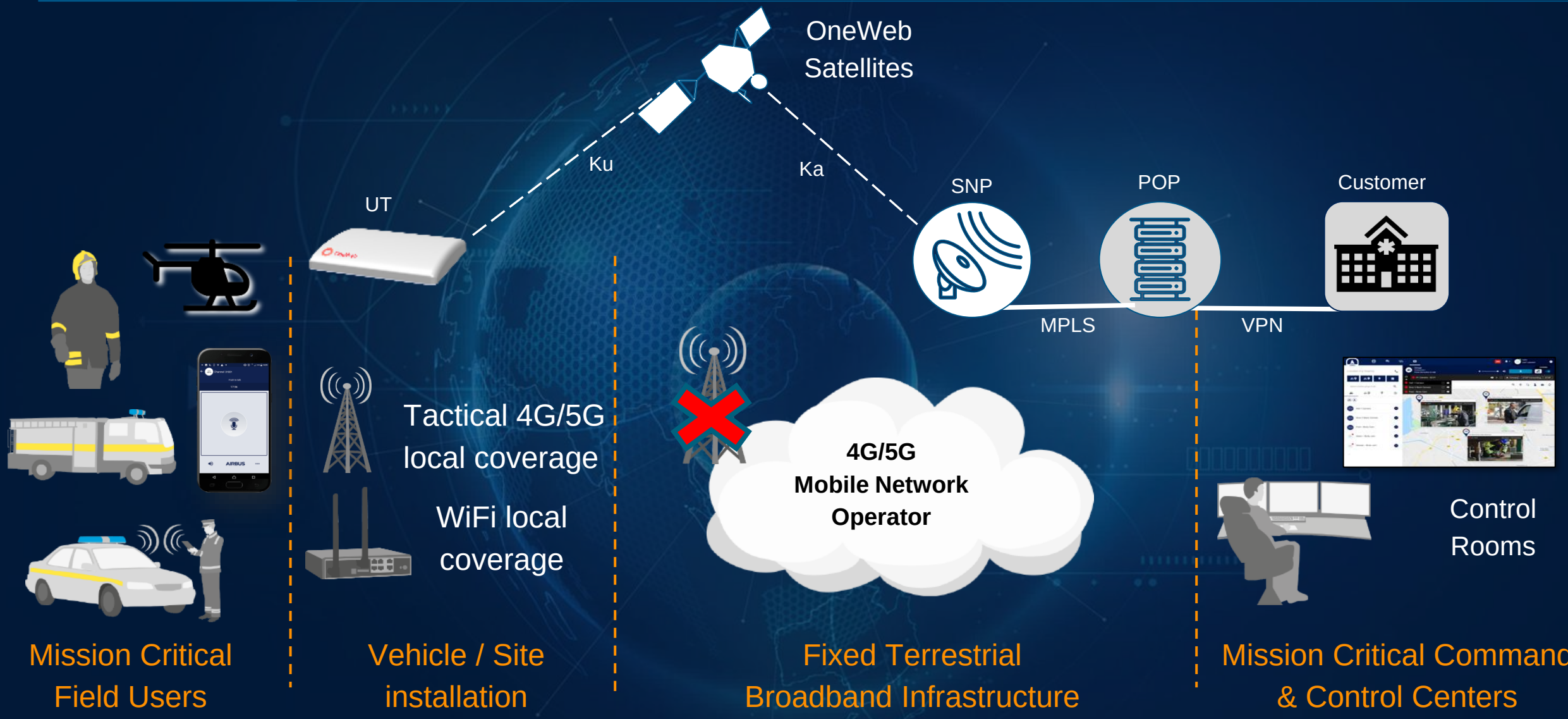
Thanks to the large number of satellites covering the world incl. arctic region, you can operate in any mission location, no matter how remote



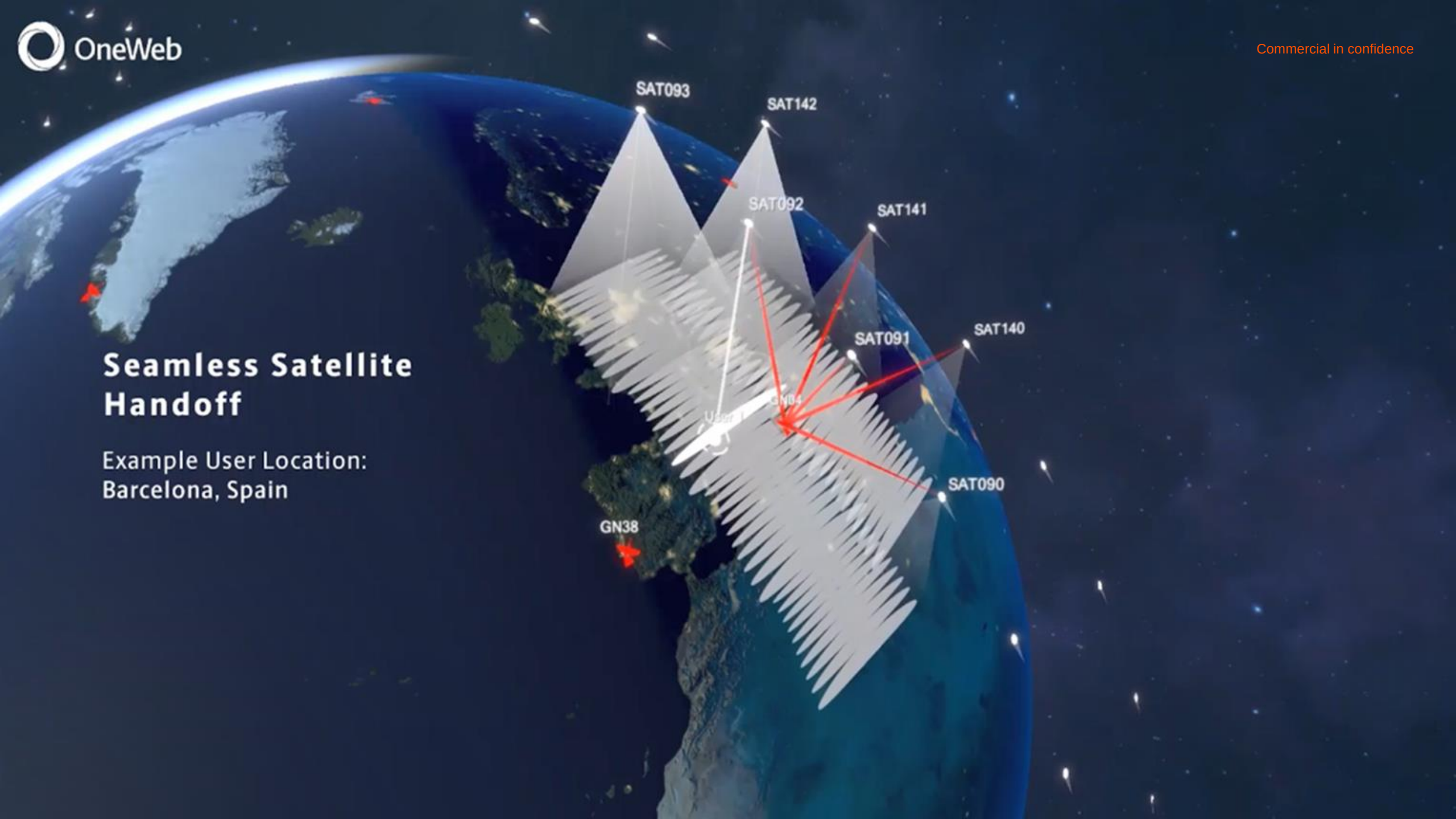
OneWeb

- Ka band is used between the satellites and the ground stations
- Ku band is used between the satellites and the terminals
- QoS over the network with Assured Forwarding, Expedited Forwarding and CIR

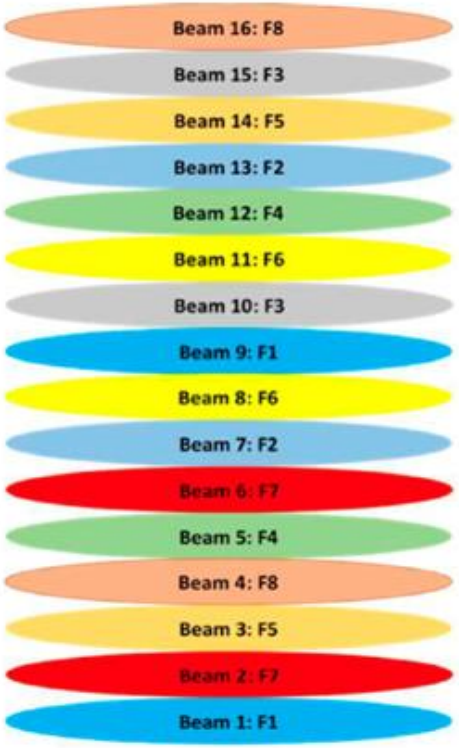
Agnet over SatCom - *Overall Architecture*



AIRBUS

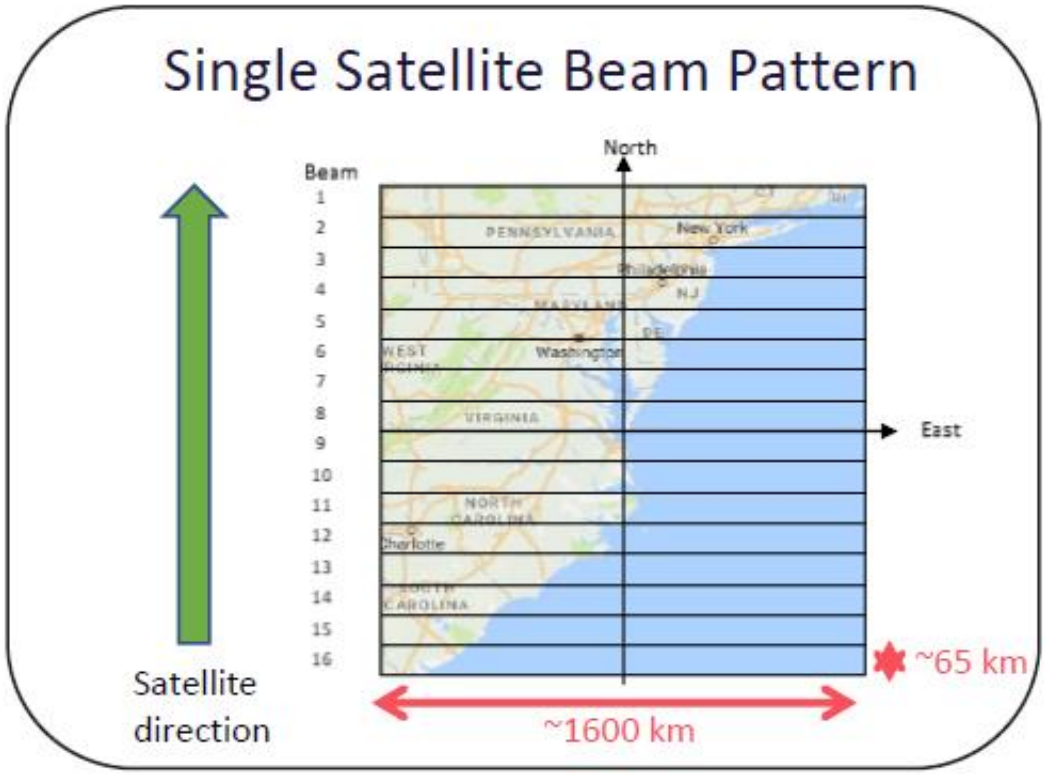


Beam Pattern



Each satellite has 16 user beams, arranged in a “venetian blind” pattern.
The “footprint” of each satellite overlaps slightly with adjacent satellite footprints to create gapless coverage

Beam changes every 11 seconds, satellites every 2.5mins. Bent Pipe Operation (Cross strapped User Beams to Gateway beams limits interception)



Agnet over LEO Satellite (OneWeb) PoCs’

Successful internal PoC in Ottobrunn on June 2022 with SC

- Users and group members in Satellite connection and in LTE connection
- Voice calls (individual, PTT talkgroups, audio conference, emergency)
- Multimedia messaging with attached file up to 10 MB,
- Video (streaming to 8 users, video calls)
- Tracking/AVL

Successful OneWeb PoC with Agnet as one application with Finnish customer and VTT in Kajaani September 2022

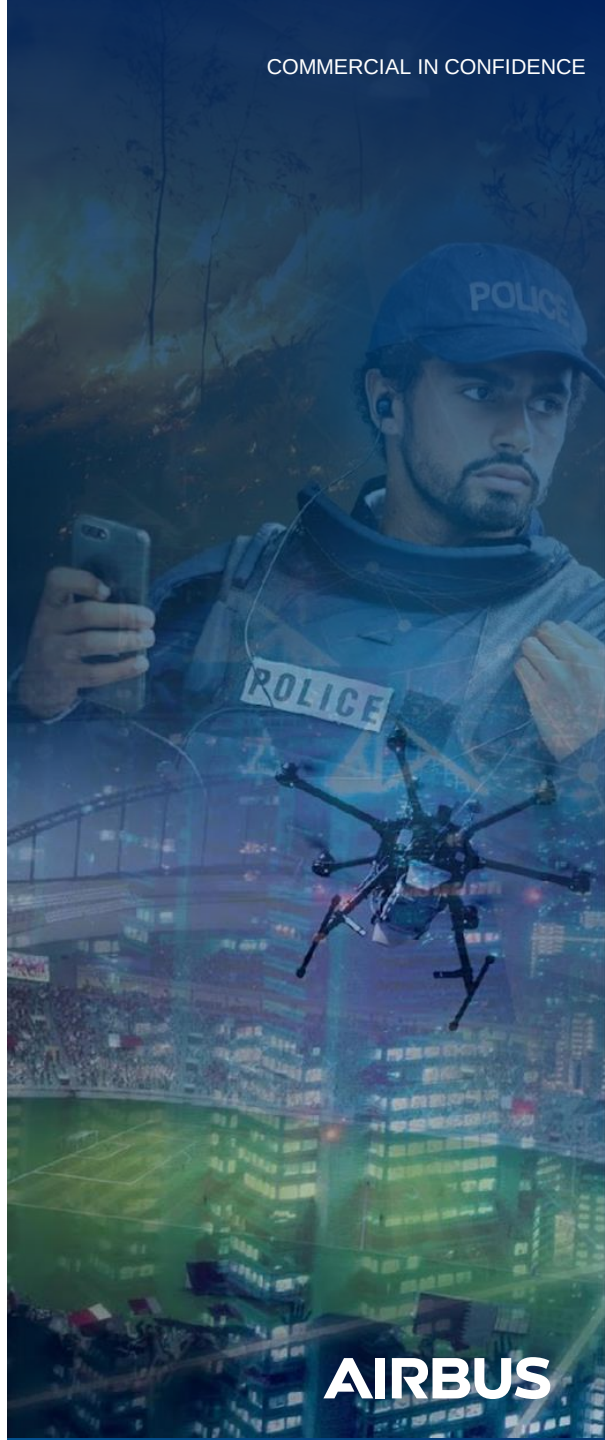
Successful OneWeb PoC with Belgium military customers in Brussels in July 2022

Focus on Kymeta Hawk

AIRBUS

Focus on Kymeta Hawk

TERMINAL TYPE	OneWeb	OneWeb-LTE
Antenna type	Full duplex, single aperture, Ku-band flat-panel antenna, electronically steered holographic beamforming array	
Scan angles	Azimuth: 360°, Elevation: +15° to +90°	
Polarization	Circular, software-defined	
Receive (RX) band	10.70 GHz to 12.75 GHz	
RX throughput	< 195 Mbps	
Transmit (TX) band	14.00 GHz to 14.50 GHz	
	< 30 Mbps	
	Embedded OneWeb	
	N/A	600 Mbps (LTE-A Pro) (Global or North America and public safety configurations)
	Ethernet	Ethernet & Wi-Fi (802.11b/g/n)
	.5 cm × W 89.5 cm × H 14 cm / L 35.2 in. × W 35.2 in. × H 5.5 in.	
	.7 kg / 65.5 lb.	30.5 kg / 67.2 lb.
	12 VDC to 36 VDC or 90 VAC to 305 VAC via an accessory	
	95 W	125 W
	-40 °C to +55 °C	
	-40 °C to +85 °C	
	IP66	
	CE, FCC, Nemko, WEEE, RoHS	



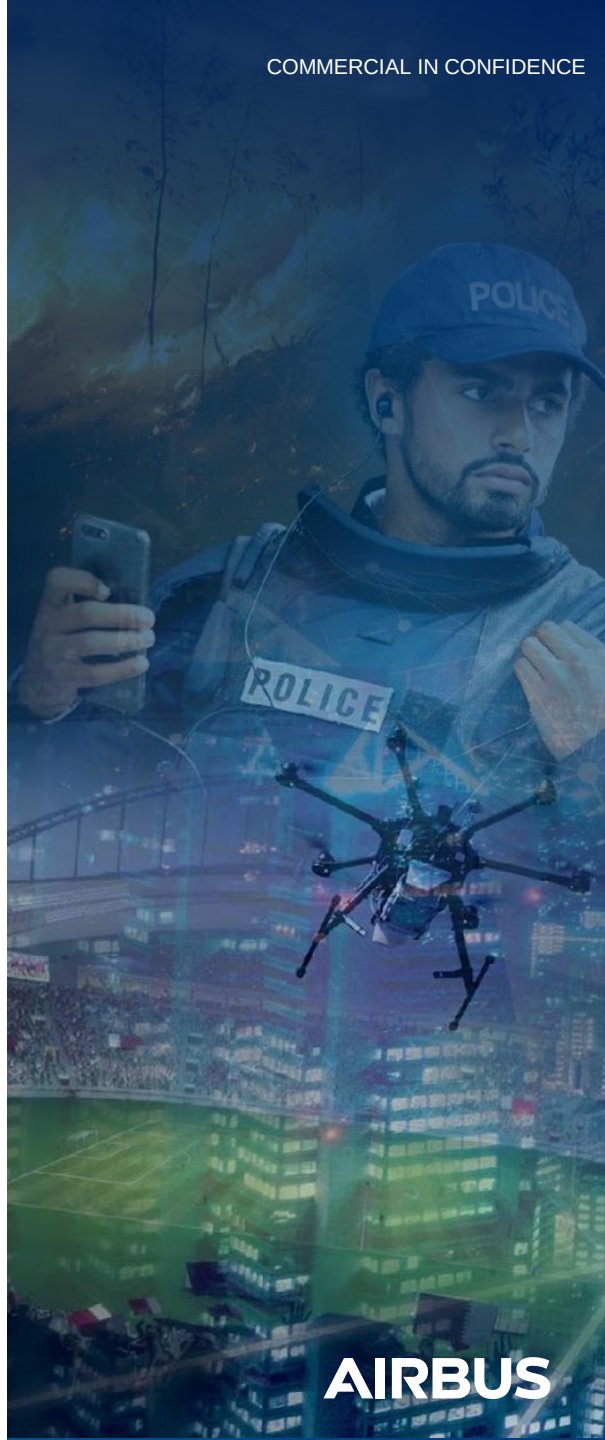
AIRBUS

Focus on Kymeta Hawk

ALL TERMINAL VERSIONS ARE ALSO AVAILABLE IN GO CONFIGURATIONS.

AVAILABLE ACCESSORIES

- AC-to-DC power kit
- Vehicle power kit
- Fixed mount
- Vehicle mount
- GO system:
  - Rugged transport case with built-in tie-down points and drainage for rapid water egress
  - Tilt mechanism for COTP deployments
  - AC-to-DC universal power kit included
  - Vehicle mount included



Thank you!

AIRBUS