Digital Airspace: Air-Ground-Air for Mission Critical

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Digital Airspace unlocking new business opportunities In the sky

Safe and secure mission critical operations and new enterprise revenue streams

25M
Drones using cellular connectivity by 2030

Source: Analysis Mason

$16B
Drone communication market by 2032

Source: Allied Market Research

$18B
Global eVTOL market projection by 2030

Source: Businesswire

$20B
Global NTN device-to-device market size by 2035.

Source: Statista

Digital Airspace – Use Cases

Public Safety
- MC network add on for helicopter services
- Situational Awareness
- Search and Rescue
- Lifeguard Assistance
- Disaster Zone
- Fire Fighting

Defense
- Jet fighter data exchange corridors
- Reconnaissance

Utilities + Rail
- Powerline inspection
- Rail track, Catenary System inspection
- Risk Monitoring

Security
- Aerial Photography
- Border Control
- Highway Traffic Surveillance
- Rogue drone detection

Transport
- Parcel Delivery
- Food Delivery
- Medical

Air Taxi
- Taxi Services
- Public Transportation
- Cargo
- Aircraft Telemetry

Airlines
- ATG connectivity
- Passenger connectivity
- Air Traffic mgmt

Environment
- Weather Monitoring
- Air Quality
- Wildlife Populations

Agriculture
- Crop Health
- Spray Pesticides & Fertilizers
- Cattle Herding

Infrastructure
- Construction Projects
- Inspect Structures
- Map Terrains

Media
- Cinematography
- Journalism
- Entertainment

Digital Airspace landscape

3GPP non-terrestrial networks (NTN)

>3000m
High altitude (NTN)

Defense communications

Airline passenger broadband

3GPP network for scale, robustness and economies of scale.Also on the device side

<3000m
Medium altitude
(CSP, State or Agency CSP, NTN)

Air taxi services

Reliable emergency services communication

Separate network layer, purpose designed for aerial coverage

<300m (150m rural)
Low altitude (CSP, NTN)

Utility/Rail inspection

Public safety/ situational awareness

Deliveries

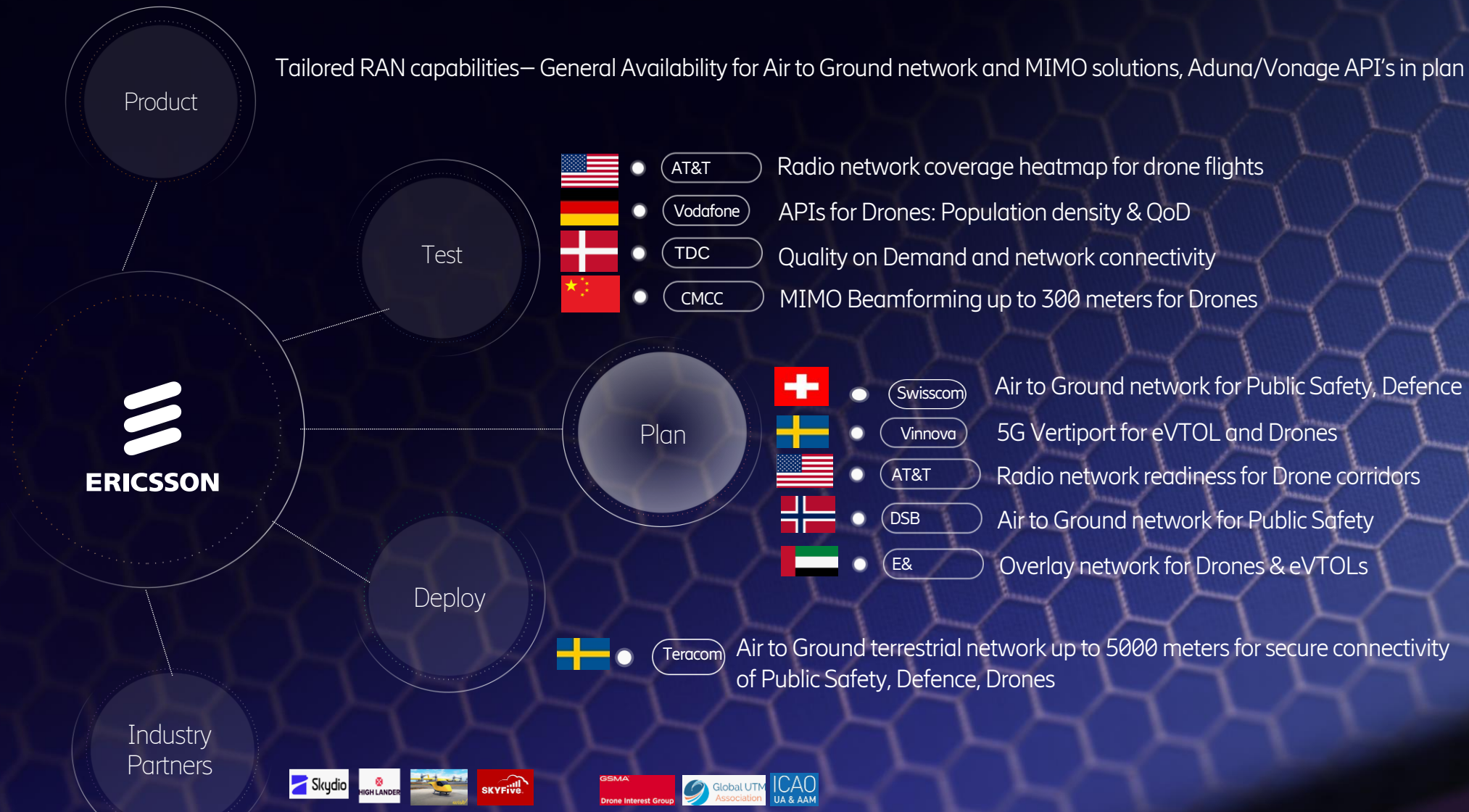
Enhanced Terrestrial 3GPP network

Ground infrastructure

Vertiports

Airports

2025 – Unlocking Airspace digitalization



Tailored RAN capabilities– General Availability for Air to Ground network and MIMO solutions, Aduna/Vonage API's in plan

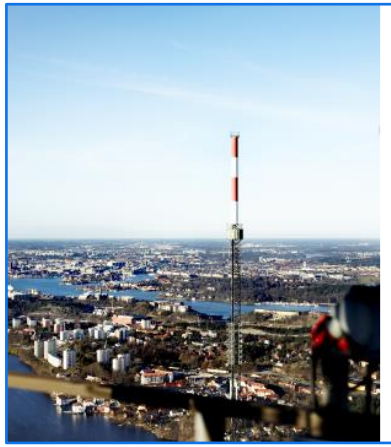
- AT&T — Radio network coverage heatmap for drone flights
- Vodafone — APIs for Drones: Population density & QoD
- TDC — Quality on Demand and network connectivity
- CMCC — MIMO Beamforming up to 300 meters for Drones

- Swisscom — Air to Ground network for Public Safety, Defence
- Vinnova — 5G Vertiport for eVTOL and Drones
- AT&T — Radio network readiness for Drone corridors
- DSB — Air to Ground network for Public Safety
- E& — Overlay network for Drones & eVTOLs

- Teracom — Air to Ground terrestrial network up to 5000 meters for secure connectivity of Public Safety, Defence, Drones

Teracom Network in Sweden - First and only nationwide 5G-ready airspace network deployment

- LTE RAN deployment, 2300 MHz TDD
- 160 sites nationwide, 3-sector sites, 60 MHz spectrum per sector
- Antenna heights 150 m average, maximum antenna height 300 m – TV towers
- Average 40 km cell range. Maximum cell range 90 km.



- Massive MIMO beamforming in LTE RAN – AIR radios
- Zero plane antenna positioning – No mechanical tilts
- Tested data services
- High tower providing radio reach-back to deployable network in remote area

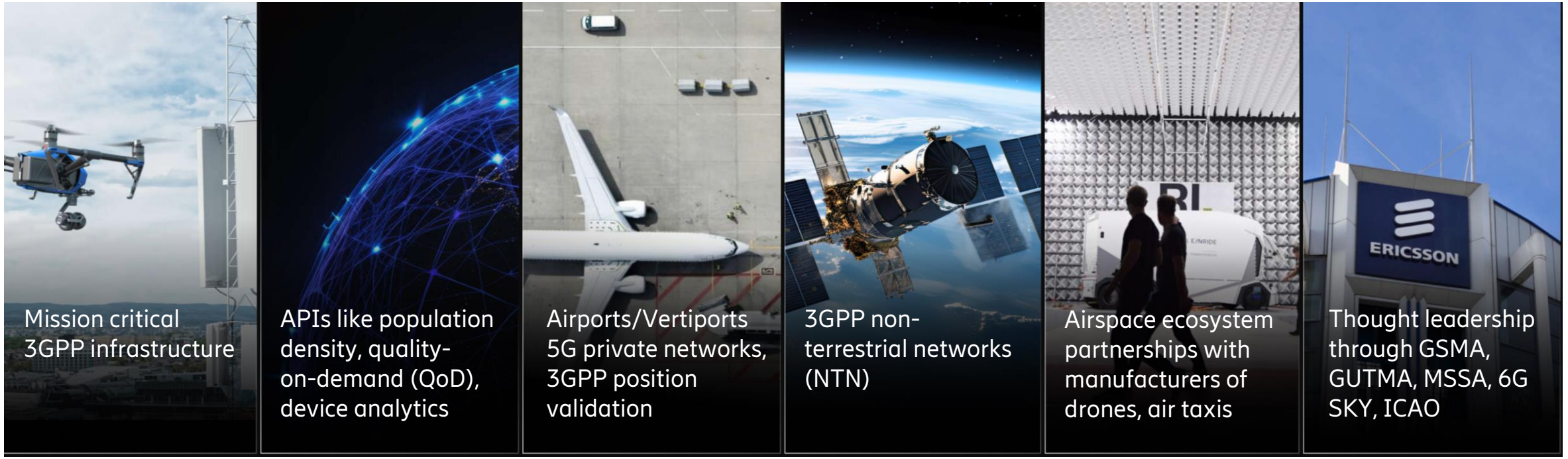
Image source: Teracom

DL and UL data throughput performance measurements in joint trials

Ground Drive Test	Drone Spot Test	Fly Test Medium	Fly Test High	Fly Test Very High
In vehicles	Static Testing at different distances, up to 80 km	Speed: 200 km/h Altitude: 1500 m – 2500 m	Speed: 400 km/h Altitude: 1500 m – 2000 m	Speed: +400 km/h Altitude: 3000 – 6000 m

"The results have surpassed all expectations in the field tests." Roland Svensson, Chief Technology Officer, Teracom

Digitalization of airspace—how can Ericsson support ?



Ericsson's industry leadership in aerial mobility solutions, products, and a vast ecosystem reach and partners

Industry stakeholders

Rule makers & Authorities

Addressing critical pain points for connectivity, and situational awareness

Getting onboard with benefits of 3GPP like 5G to Aviation.

3GPP standards Rel 17 onwards addressing aviation needs.

Aviation & Satellite Industry

Need for Digitalization and automation of Airspace infrastructure

Coverage and economies of scale.

Mergers & acquisition gaining momentum.

Advanced Air Mobility

Enterprise drones and challenger innovators emerging on eVTOL

Cellular connectivity is preferred. 5G will be used where available

3GPP NTN capability shall bring wider coverage

Aviation safety requires high standards of resilience, data integrity, coverage, security and location

Mobile Networks technology is a good match

Accelerating industry collaboration to align “vertical” requirements with “horizontal” capabilities

- Drone and Aviation Industry Players

- Industry Requirements

Global UTM Association GSMA

- Network API Specification

CAMARA THE TELCO GLOBAL API ALLIANCE GSMA Open Gateway

- Mobile Operators / Public Satefy Operators

verizon T-Mobile Deutsche Telekom Telia TELUS swisscom kpn TDC TERACOM SAMHÄLLSNÄT KDDI TELSTRA SoftBank

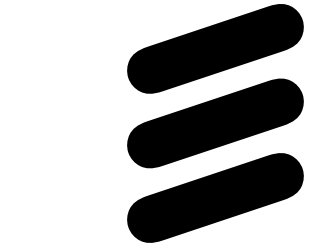
- Aggregator/CPaaS Hyperscale Cloud Provider Developer Platform

ERICSSON VONAGE Microsoft Azure aws

Industry Drivers – Ericsson View

- Aviation is undergoing a massive change
  - Drones and electric propulsion are major contributors of innovation and disruption
  - General digitalization plays a role as well, but its important to note the rigidness of the established means and standards.
  - Journey started around 2010 - will continue to 2040+
    - (ICAO's new Strategic Plan spans to 2050)
- Low altitude drone connectivity needs are creating a demand for mobile network aerial service
  - Lots of activity and actors outside established aerospace industries.
- Mid altitude connectivity needs are driven by eVTOL air taxis and mission critical users alike.
  - Fundamentally new types of aircrafts and operational models.
- High altitude and global coverage services are necessary for the established commercial aviation.

Connectivity needs are growing in all of the above and that is well recognized in aerospace ecosystem.



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