



SATCOM-on-the-Move: Vision and Challenges

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C O N F I D E N T I A L

VITES Company Profile

- VITES is a Technology driven organisation focussed on the development of products & solutions for **Professional Wireless Broadband** applications
- VITES is a **Subsidiary of German technical scientific high-tech service provider IABG**
- **VITES Technical Legacy & System Level Experience**
 - Development of Phased-Array Technology & Software Defined Radio for ~ 10 years
 - SATCOM
 - Terrestrial broadband data links, IP-Mesh
 - 4G-/5G-System Integrator
 - Established supplier of broadband wireless solutions to Governmental organisations
- **Main development area: User Terminals for SATCOM-on-the-Move (SOTM)**
 - Ku- & Ka-Band Terminals in development
 - Market introduction of Gen2 SOTM User Terminals in 2025
- **Work force**
 - Highly skilled work force focussed on RF- / Digital Signal Processing and High-Tech Hardware & Software Design
 - 90% are engineers
 - > 10 % are Ph.Ds
 - Equal opportunity employer with 20% female colleagues (high percentage for engineering company)
 - Lean administration
 - Management with decades of experience at telco network equipment suppliers (Alcatel, Ericsson, Nokia)

The New Space Gold-Rush: Connectivity and Mobility



- **4G-/5G-/6G-Mobile-Coverage: Status and potential**

- Roughly one-third of global population is unconnected
- The current mobile coverage in Germany and in the EU is not adequate outside metropolitan regions and main highways
- Available 5G/6G-networks are cell-limited which prohibits a seamless connectivity
- Mobile users, railways and security (BOS) organizations need to be connected gapless and in broadband in areas where 5G/6G cellular networks fails
- → Solution: SATCOM with LEO-constellation

- **Public security and defence: Broadband and high resilience**

- German and EU organizations need a seamless connectivity; anywhere, anytime and on-the-move.
- The changed geopolitical situations demands more robust and ubiquitous for mission-critical communications.
- In Germany: Authorities broadband terrestrial networks will not be realized in the foreseeable future due to high cost and lack of frequency allocations.
- → SA terrestrial infrastructure cannot meet the exponentially rapid connectivity requirements

- **EU-LEO constellation ensures Europe's NTN independence**

- Starlink currently represents the technical and commercial benchmark with no competitors
 - OneWeb had, so far, competitive disadvantages compared to Starlink (number of satellites approx. 20% with higher service fees)
- The dependence of the EU Governmental organisations and operators of critical infrastructure on a US private company is not a preferred option.
- Hence, the realization of a EU-owned NGSO-(LEO)-constellation is politically extremely important



SATCOM with EU-LEO-Constellations: Vision & Challenges

- **Vision for SATCOM with EU-LEO-constellation**

- Increasing communication resilience for defense and public security
- D2C opportunity which significantly increase the size and reach of the satellite services.
- Supporting and augmenting of cellular networks in areas with poor or overloaded connectivity NSA 5G/6G.
- Emerging of new business areas in the automotive and satellite industry.

- **Technical challenges: User-terminals are complex systems**

- High integration density, high development effort, complex tracking algorithms must be implemented.
- High performance, low cost, and energy efficiency trade-off.
- → VITES provides disruptive solutions for SATCOM-on-the-Move

- **Strategic challenges:**

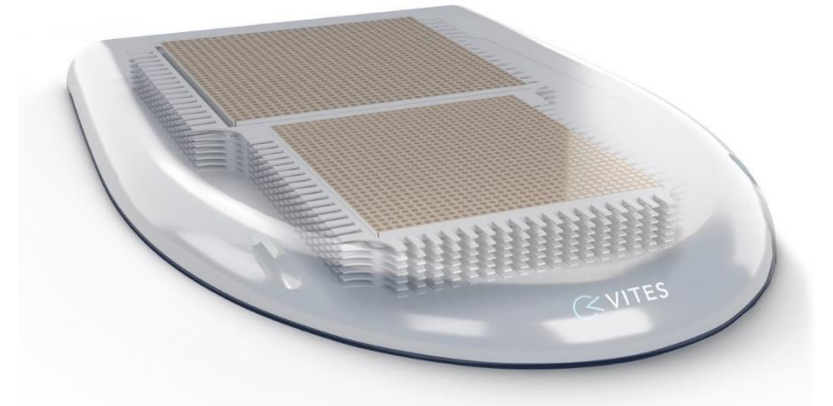
- EU-LEO-Constellation is in it's early phase of birth**

- IRIS²: Contract not yet awarded, plan says end of 2024
- IRIS², Rivada: Technical specs for SATCOM are still being defined (e.g. handover procedure).
- EUTELSAT-OneWeb: the timetable for Gen 2 has not yet been communicated yet.
- The IEEE standard 5G Release 18 is on frozen state and deployment are expected to follow in 2025, so 5G NTN modems will not be available until the end of 2026.
- Starlink wins market share as long as no price-competitive EU constellation is available.



VITES User-Terminals for SOTM - USPs

- **Best-in-Class G/T and EIRP**
 - Achieved through latest RF-semiconductor technology
 - Enabling smaller apertures
- **Low power**
 - Very power efficient through innovative architecture using ASICs
 - Smaller apertures enable lower power consumption
- **Price efficiency**
 - Price to performance ratio is very good
 - Enabled by smaller apertures
- **Scalable and modular platforms**
 - Ku- & Ka-Band User Terminals
 - Apertures scalable from 144 to 4096 elements
 - Can be adapted to any constellation and vehicle
 - Multi-orbit capability
- **Development in Germany, EU dominated supply chain**
- **Roadmap to Automotive variant**
 - Further optimized price & power & size



Thank You

Questions?

 VITES

