



DIGITAL TRANSFORMATION OPPORTUNITIES WITHIN THE OIL & GAS SECTOR



WHO IS MTC



MTC is the largest mobile telecommunications operator in Namibia, with over 2.5 million active customers. For 26 years, MTC has grown revenue and retained customers by providing connectivity services and solutions to post-paid and pre-paid individual and business subscribers through its extensive telecommunications transmission and distribution network.

LEADER IN INNOVATION

MTC has smart partnerships with industry leaders to keep up with technology and bring new concepts and services to Namibia. MTC's position at the forefront of innovation is demonstrated by its track record as the first to:

- Establish a 24-hour contact centre in Namibia
- Take to market a prepaid subscription service that bundles voice, SMS and data with its seven-day Aweh offerings
- Commercially launch LTE in Africa
- Successfully trial 4.5G technology in Africa
- Launch commercial use of LTE-A and 4.5G LTE in Africa
- Foster a collaborative innovation drive with Industry, Academia, and the Startup & SME ecosystem
- Launch Mobile Money through its Fintech subsidiary MTC Maris



DIVERSE AND BROAD MARKET BASE



MOBILE



**PUBLIC
UTILITIES**



**PUBLIC
SAFETY**



FINANCIAL



**GOVERNMENT/
OTHER**

CROSS-SECTOR COOPERATION IN DIGITAL TRANSFORMATION

To secure the future of energy, no single company can act alone. The digital transformation requires collaborative partnerships that leverage diverse expertise and technologies.

Holistic Solutions

Digital transformation touches every part of an organization, from field operations to cybersecurity. Collaborating with specialists in different fields, such as technology providers, startups, and academic institutions, allows for the creation of more comprehensive and effective solutions.

Accelerated Innovation

Partnerships with industry leaders enable a faster adoption of cutting-edge technologies. This prevents companies from reinventing the wheel and allows them to benefit from existing expertise. MTC's partnerships with industry leaders and its collaborative innovation drive with tertiary institutions are a testament to this strategy.

Risk Mitigation

The complexities of digital systems, especially in areas like cybersecurity, can be overwhelming. By working with partners who specialize in these domains, energy companies can share the burden of risk and ensure their operations are protected by the best available expertise.

MTC's history of fostering collaborative innovation and smart partnerships positions it as an ideal partner for the oil and gas industry. MTC acts as a bridge, bringing together the right technologies and expertise to deliver integrated digital solutions. This model of cross-sector cooperation ensures that energy companies in Namibia can achieve their digital transformation goals efficiently and securely.



DIGITIZATION FOR ENERGY COMPANIES

Opportunities



Enhanced Efficiency

Digital tools and automation optimize processes, leading to higher output and lower operational costs.



Improved Safety

The use of remote monitoring, autonomous systems, and real-time data analysis reduces human exposure to hazardous environments.



Data-Driven Decision Making

Access to real-time data from IoT devices and sensors allows for better resource management informed strategic planning.



Sustainability and Compliance

Digital technologies can optimize energy consumption, reduce waste, and provide better monitoring.

Challenges



Cybersecurity

As operations become more connected, the risk of cyberattacks increases. Protecting sensitive data from threats is a major challenge.



Integration of Legacy Systems

Many energy companies operate with older, analog systems. Integrating new digital technologies can be complex and costly.



Data Management and Analytics

The sheer volume of data generated by digital systems can be overwhelming. This "big data" requires specialized skills and infrastructure.



Lack of Skilled Personnel

The transition to a digital model requires a workforce with new skills in areas like data science, AI, and cybersecurity.

THE SHIFT TO DIGITAL MINING/OIL/GAS

- The mining industry is undergoing a significant shift towards digital transformation.
- Adoption of digital technologies is crucial for enhancing operational efficiency, safety, and sustainability in mining operations.
- Leveraging advanced technologies like **IoT**, **AI**, and **5G**, mining companies in Namibia can achieve substantial improvements in various aspects of their operations.

Wireless Connectivity

A cornerstone for digital oil/gas, wireless connectivity facilitates seamless communication and data transfer between devices and systems.

Streamlined Operations

Integrated digital solutions ensure smooth coordination between different components of mining operations, minimizing downtime and improving overall performance.



Optimized Processes

Digital technologies enable automation and optimization of mining processes, leading to increased productivity and reduced operational costs.

Data-Driven Decisions

Real-time data collection and analysis provide valuable insights for making informed decisions, enhancing resource management and operational efficiency.

MTC-AVIAT WIRELESS ACCESS APPLICATIONS

TELECOM

- Digital Divide
- Rural Connectivity
- B2B Access Services
- Backhaul



GOVERNMENT

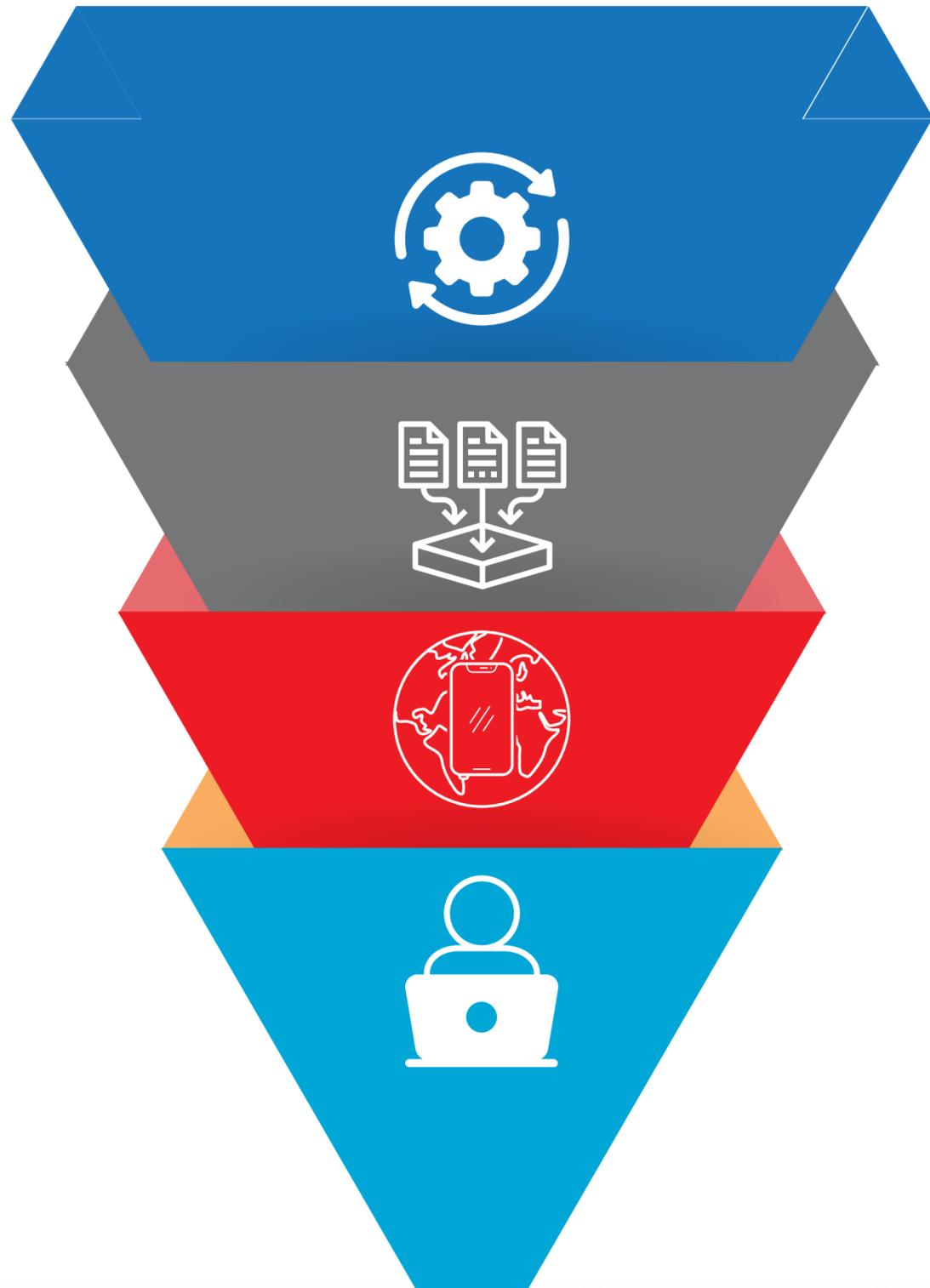
- Smart Cities
- Defense
- Surveillance
- Intelligent Transportation Systems



ENERGY- MINING

- Digital Oilfield
- Digital Mine
- Digital Grid
- Autonomous
- IoT & Industry 4.0 enablement

THE CORE OF DIGITAL OIL/GAS WIRELESS CONNECTIVITY



AUTONOMOUS OPERATIONS

- Wireless solutions enable the remote control and automation of mining equipment.
- This leads to increased efficiency and reduced human intervention in hazardous areas, enhancing worker safety.

REAL-TIME DATA ANALYSIS

- Continuous monitoring of equipment and environmental conditions.
- Real-time data collection and analysis improve decision-making, boost safety, and optimize resource management.

INTEGRATION OF FIXED & MOBILE OPERATIONS

- Seamless communication between stationary infrastructure and mobile assets.
- Ensures smooth coordination and enhanced operational efficiency across the mining site.

REMOTE WORKER SUPPORT

- Connected worker solutions enhance safety and productivity for personnel.
- Real-time communication and monitoring ensure compliance with safety regulations and provide immediate support in case of emergencies.

SECURING THE FUTURE OF ENERGY : CLOUD AND CYBERSECURITY INNOVATIONS FOR DIGITAL TRANSFORMATION

The digital transformation of the energy sector is powered by cloud and cybersecurity innovations, which are essential for creating a resilient and secure infrastructure. **MTC** offers solutions that directly address these needs.

Topic	The Role of Cloud in Digital Transformation	Cybersecurity as a Core Enabler
Key Function	Provides the agility and scalability needed to manage modern energy operations.	A foundational component for a successful digital transformation, not just an add-on.
How it Enables Digitization	Enables companies to collect, store, and analyze massive amounts of data from IoT devices and sensors to drive insights.	With the convergence of IT and OT, it protects the expanded attack surface and prevents catastrophic breaches.
Key Security Elements	The integrity and security of the cloud infrastructure itself are paramount.	Advanced cryptography, real-time monitoring, threat detection, and secure remote access are essential.
MTC's Solutions	Offers the secure network infrastructure required to connect to and leverage cloud services effectively.	Provides military-level security, comprehensive threat protection, and secure remote access for remote workers and systems.



ENHANCING DATA SCIENCE, AI & AUTOMATION IN THE NAMIBIAN ENERGY SECTOR

The application of data science, AI, and automation is critical for modernizing the oil and gas industry. These technologies drive new levels of efficiency, safety, and strategic decision-making.

Technology	Impact on the Industry	MTC's Role
Data Science & AI	<ul style="list-style-type: none"> - Predictive Maintenance: Forecasts equipment failures to reduce downtime. - Operational Optimization: Analyzes data to streamline and improve processes. - Enhanced Exploration: Improves accuracy and reduces costs in finding new reserves. 	<p>MTC provides the secure and reliable network infrastructure to collect, transfer, and analyze the massive amounts of data required for these applications.</p>
Automation	<ul style="list-style-type: none"> - Autonomous Operations: Uses drones and robotics to perform hazardous tasks, enhancing worker safety. - Remote Control: Enables the command center to manage equipment from a safe distance. - Real-Time Monitoring: Provides continuous visibility of all assets for operational control and security. 	<p>MTC's private LTE solutions offer the robust and secure connectivity backbone that makes autonomous operations and remote control possible, especially in remote Namibian locations.</p>



THE UNBREAKABLE LINK : DATA & CYBERSECURITY

In the digital age, data is our most valuable asset, and cybersecurity is how we protect it. For the energy sector in Namibia, the integrity of your data and the security of the networks that transport it are absolutely non-negotiable.

Real-Time Data: The Gold of Modern Operations

Digital transformation generates a constant, live stream of data from every part of your operation—from sensors on a drilling rig to remote monitoring stations. This data is used to:

- **Drive Real-Time Decisions:** Make immediate adjustments to operational processes, maximizing efficiency and safety.
- **Enable High-Resolution Surveillance:** Provide detailed visual data for security, inspection, and incident response.
- **Power Analytics at the Edge:** Process data locally to make rapid, intelligent decisions without delay.



Cybersecurity: The Guardrail for Your Data

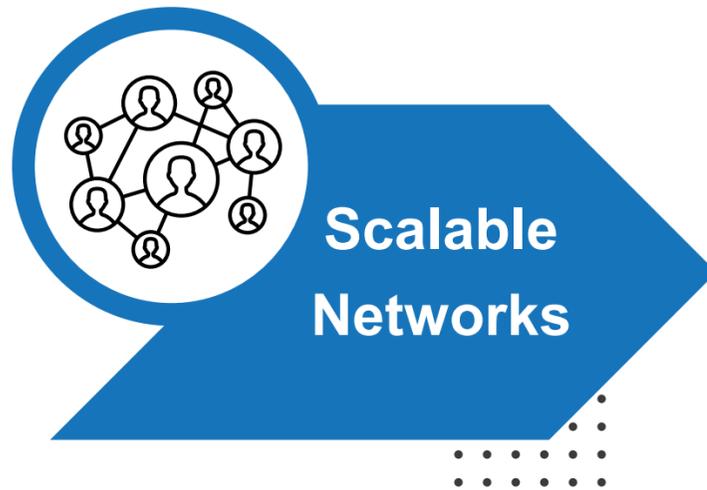
A robust cybersecurity framework is essential to protect this flow of data and the systems it controls. Our solutions at MTC are designed to address the key cybersecurity concerns of the energy sector:

- **Military-Grade Protection:** We implement advanced security protocols to safeguard against unauthorized access and data breaches.
- **Unified Security Architecture:** We provide a single, secure infrastructure that unifies all communication—from your fixed assets to your mobile devices—simplifying management and strengthening your defenses.
- **Integrated Digital Security:** We ensure that security is not an afterthought, but an integral part of your digital architecture, from the network core to the very edge of the field.

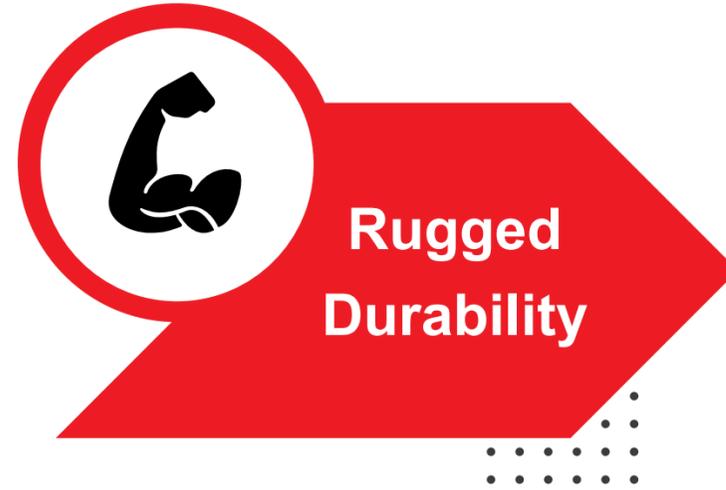
make the connection

MTC

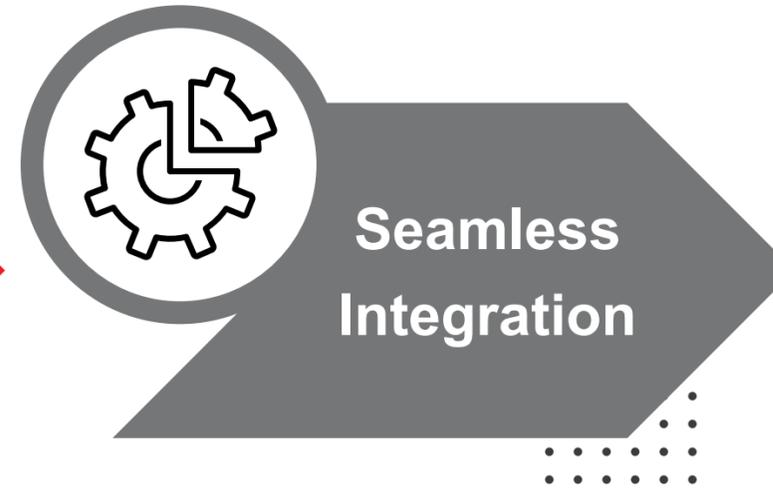
OVERCOMING CONNECTIVITY CHALLENGES IN MINING/OIL/GAS



- Ability to expand the network as the digital mine grows without losing performance or reliability.
- Flexible infrastructure that adapts to the evolving needs of mining operations.



- Solutions designed to withstand harsh mining conditions such as extreme temperatures, dust, and moisture.
- Ensures consistent and reliable performance in challenging environments.



- Ensures smooth transitions to digital operations, integrating with existing systems and infrastructure.
- Compatibility with legacy systems to avoid disruptions during the digital transformation process.



- Robust protocols to protect sensitive data and operations from cyber threats.
- Comprehensive security measures to safeguard against unauthorized access and data breaches.

AVIAT – THE WORLD’S MOST TRUSTED MICROWAVE COMPANY

Who

WE ARE

The Leading Global Microwave Specialist
Industry leading Wireless Access Solutions
70 years of industry experience
200+ Technology Patents
NASDAQ: AVNW

Where

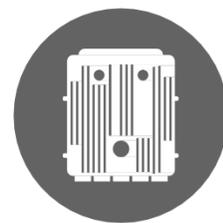
WE ARE

Headquarters in Texas, USA
R&D in Slovenia, NZ, Canada, and USA
Production in USA, Thailand, Taiwan
Presence in >30 countries
>5,000 customers worldwide
Deployed in >350 mobile networks
2 million systems deployed

What

WE DO

5G Wireless Backhaul
Enterprise LTE / 5G Wireless Access
Public Safety Networks
Utility Transport Networks
Long-Haul Backbone
Network-wide Operations
Global turnkey services



Wireless Transport



Access



Routers



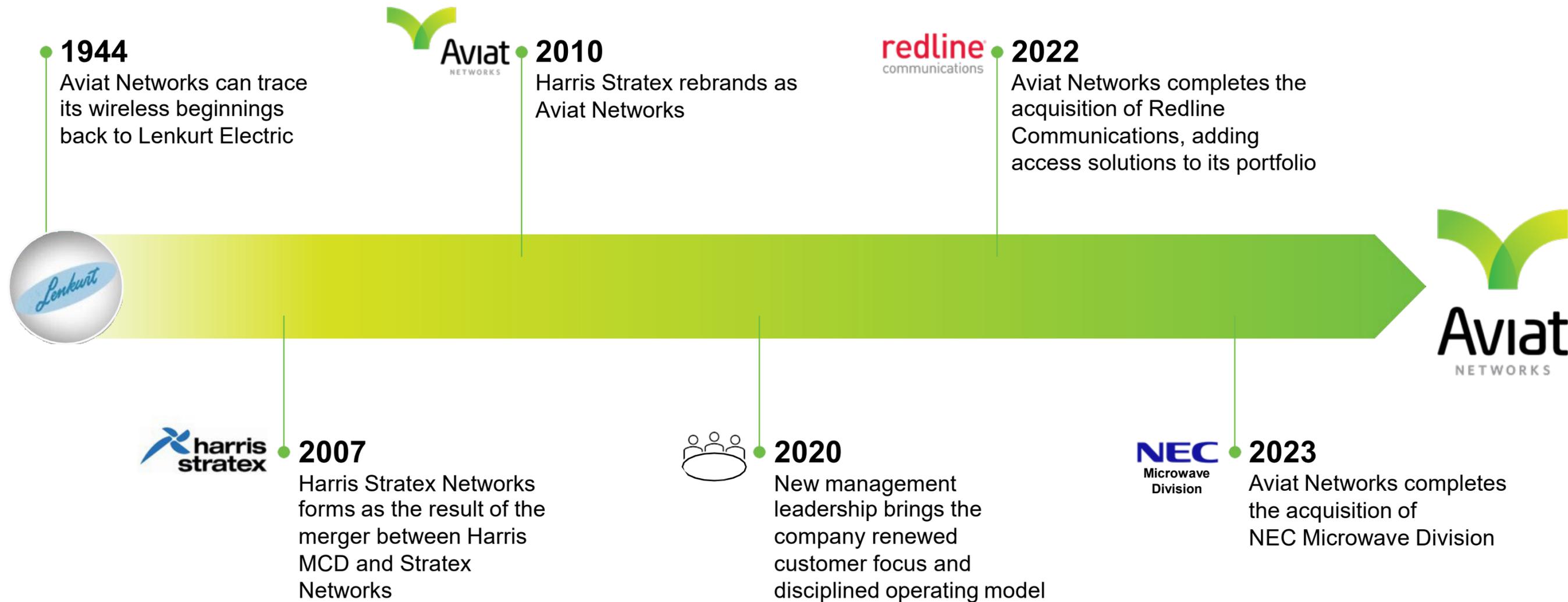
Software



Services



OVER 75 YEARS OF EXPERTISE



A Long History of Wireless Leadership



AVIAT NETWORKS WIRELESS ACCESS SOLUTIONS

POWERFUL



VERSATILE



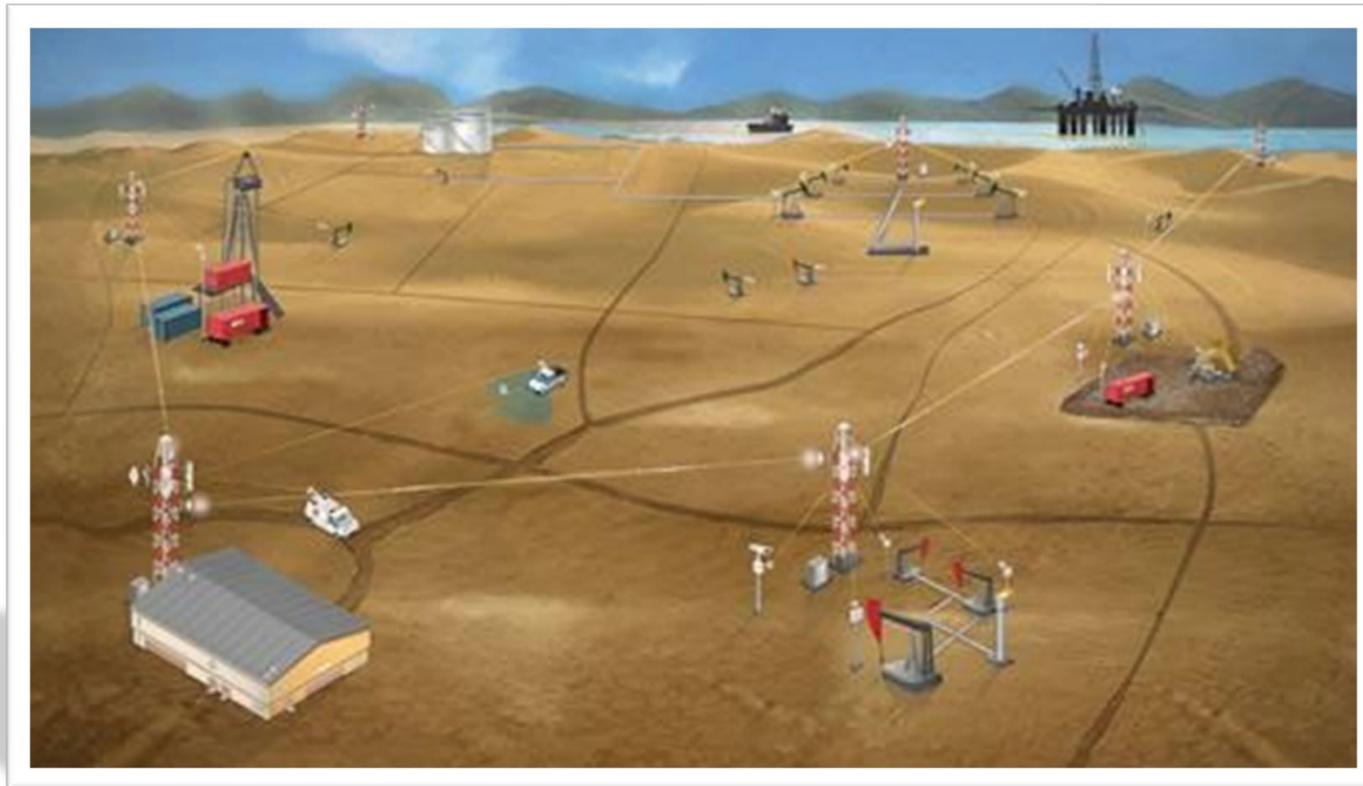
RELIABLE



- Aviat provides the most powerful, rugged and reliable wireless networks using leading-edge technology to deliver the lowest total cost of ownership to organizations building private wide-area networks.

ENABLING DIGITAL OILFIELD TRANSFORMATION

Digital Oilfield



- Onshore & Offshore specific solutions
- Single, secure infrastructure for IT & OT
- Increased productivity via connected people & machines
- Remote Drilling, Operations, Inspection
- Real time process optimization and asset reliability
- Lower CAPEX/OPEX VS Legacy systems
- Simplified network operations & Connections

MTC-AVIAT'S VALUE PROPOSITION

- Absolute Reliability
- Military-Level Security
- High Capacity and Scalability
- Versatile and Flexible Connectivity
- Remote Management and Ease of Use
- Cost-Effective Solution (TCO)
- Enhanced Operational Efficiency
- Integrated Digital Architecture
- Advanced Management System



TELECOM – WISPs

Best Performing PMP System
Highest Revenue per MHz
Reliable in unlicensed spectrum



GOVERNMENT/DEFENSE

Large Area Coverage
Complete LTE Network
Handhelds, Vehicles & PTT



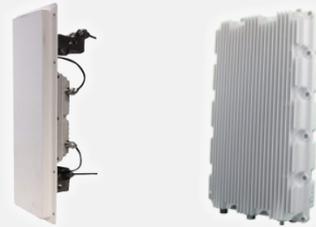
ENERGY - MINING

Low-cost roll-out – low OPEX
Stable & Reliable
Large Capacity for M2M & IoT

Aviat Wireless Access Product Portfolio

Industrial

Base Stations



Fixed Wireless Access



Nomadic



Mobile



Commercial

Base Stations



Fixed Wireless Access



Accessories



Antennas



Cables



AVIAT NETWORKS
Mounting Kits

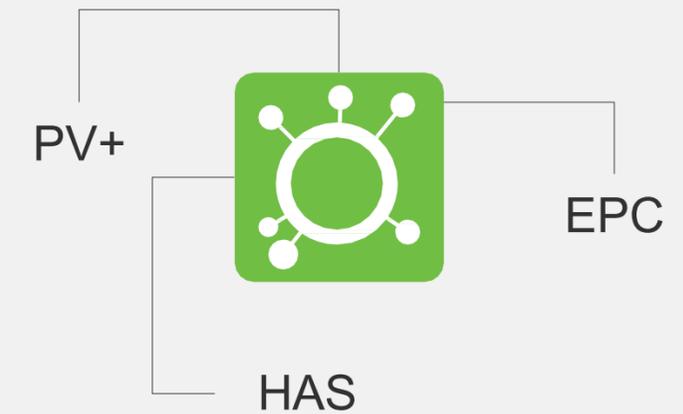


PoEs



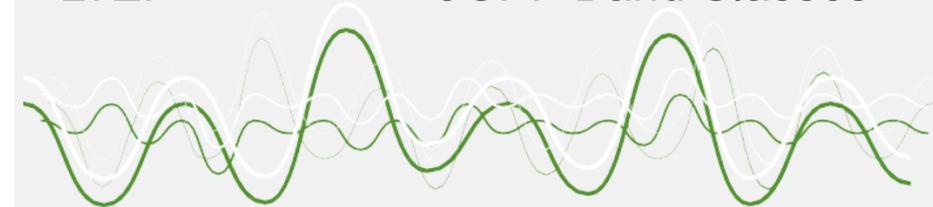
Surge Protectors

Software



Frequencies

Virtual Fiber™: 470 to 5875 MHz
LTE: 3GPP Band Classes



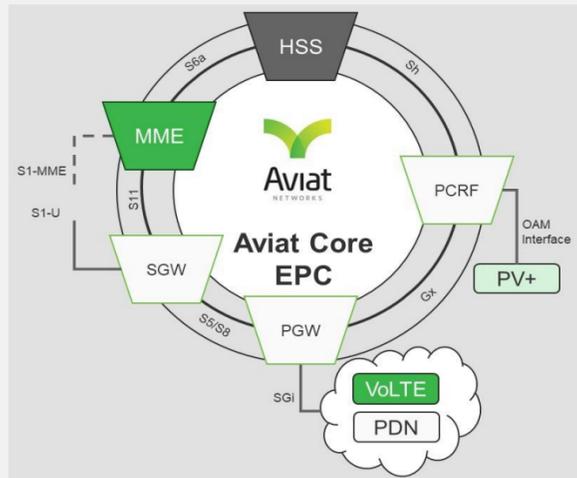
Mobile, Fixed and Nomadic Wireless Access Solutions

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LTE – 3GPP COMPLETE PRIVATE MOBILE SOLUTION

Core Network



Transport Network



Mobile Network



User Devices



Aviat Core EPC/VoLTE

- LTE/5G Evolved Packet Core (EPC)
- A complete stand-alone system
- Centralized, Distributed, Synced HSS, Cloud, Imbedded

Aviat Licensed Backhaul

- Point to point or multipoint
- Nomadic backhaul
- Industrial – deploy anywhere

Cell Site Radios

- LTE eNB Cell Sites
- Tx power options
- Long Range
- Compact
- Low power consumption
- Industrial – deploy anywhere

Mobile Devices

- Standard LTE units focused on s customer market segments



RAS Extend Marine

- Designed for use with marine vessels
- Geo-tracking
 - Use with Network Topology Awareness from sectors
 - Includes geofencing
- Resistant to harsh marine environments (i.e. salt, fog, etc.)
- Integrated dual GPS receiver/antenna
 - Provides bearing even when stationary
- Support for all frequency bands
 - 2.1/2.5/3.5/5GHz with 2' (60cm) parabolic
 - 600MHz with 18" (46cm) panel



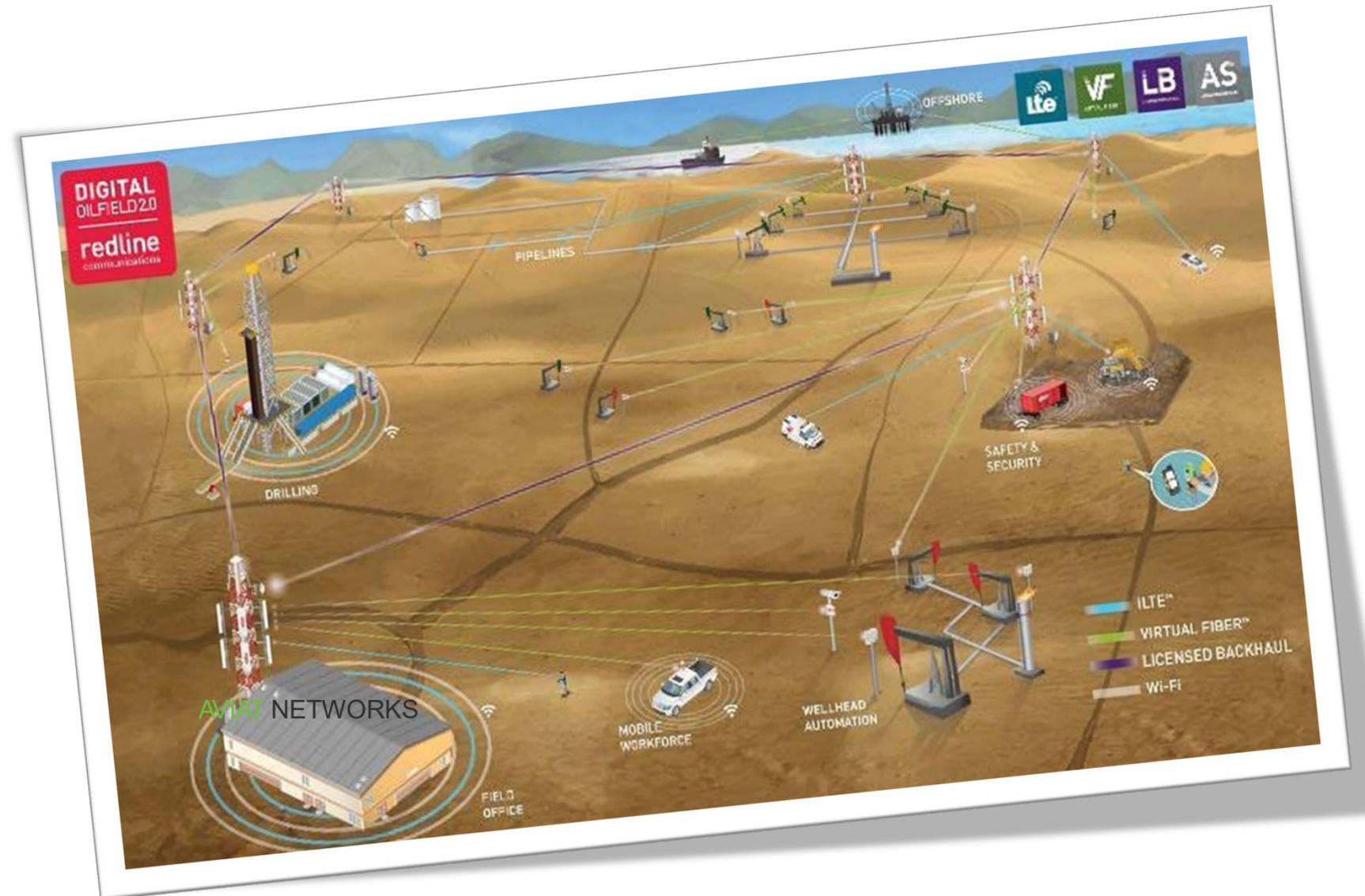
THE INTELLIGENT ENERGY OPERATIONS

THE PROBLEM

To meet the increasing and challenging demands of collaboration, visibility, safety, and enhanced oil recovery, Oil & Gas companies require a reliable and versatile network infrastructure that offers high performance and security and supports multiple end devices which are often moved to different locations around the field. simultaneously.

WHY AVIAT

Aviat's purpose-built mobile, fixed and nomadic industrial wireless network solutions have been designed for reliable operations in the most challenging locations, with user experience at the heart of everything we do. All of this coupled with our detailed operational knowledge.



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OFFSHORE

PIPELINES

DRILLING

SAFETY & SECURITY

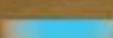
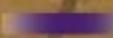
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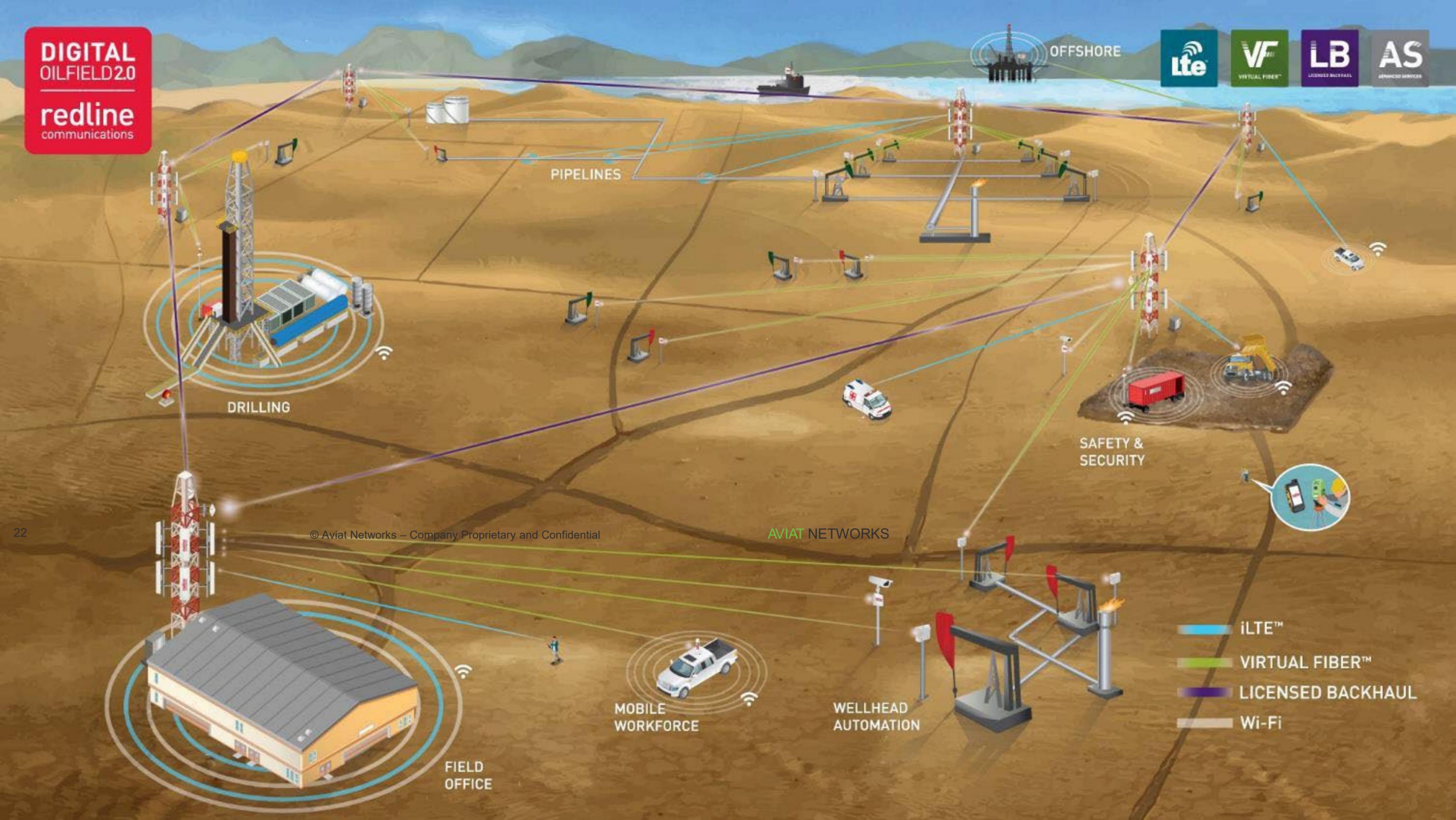
AVIAT NETWORKS

MOBILE WORKFORCE

WELLHEAD AUTOMATION

FIELD OFFICE

-  iLTE™
-  VIRTUAL FIBER™
-  LICENSED BACKHAUL
-  Wi-Fi





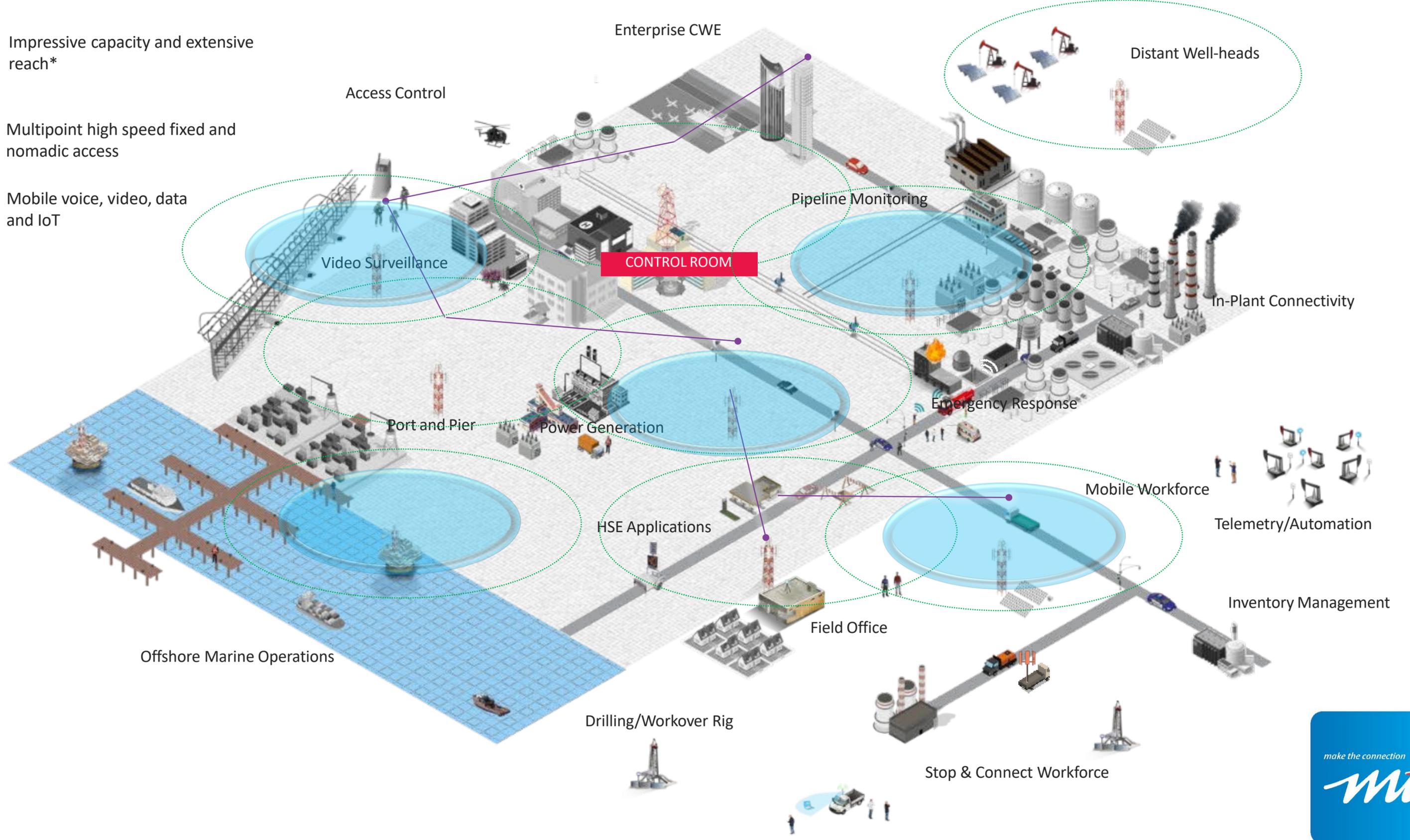
Impressive capacity and extensive reach*



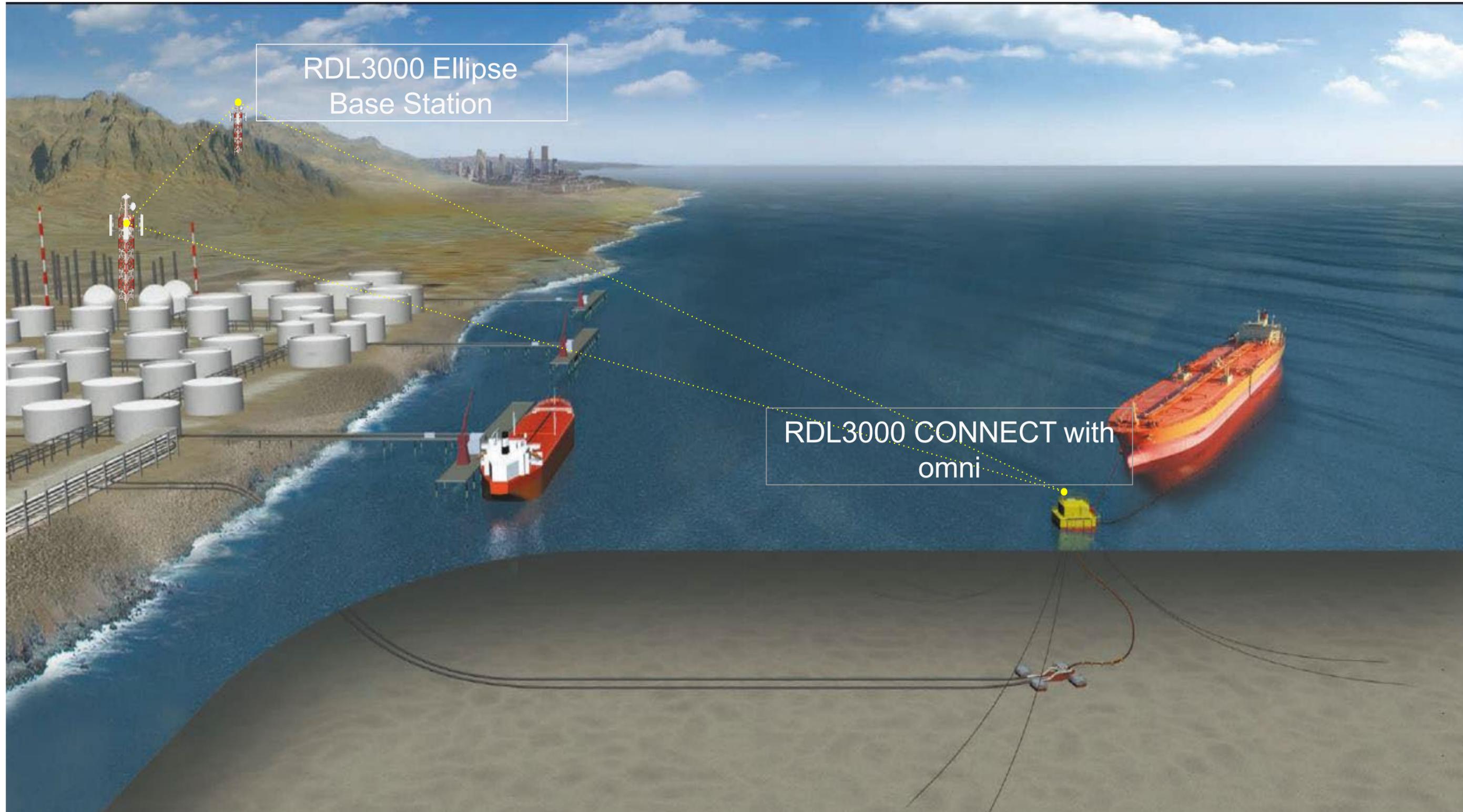
Multipoint high speed fixed and nomadic access



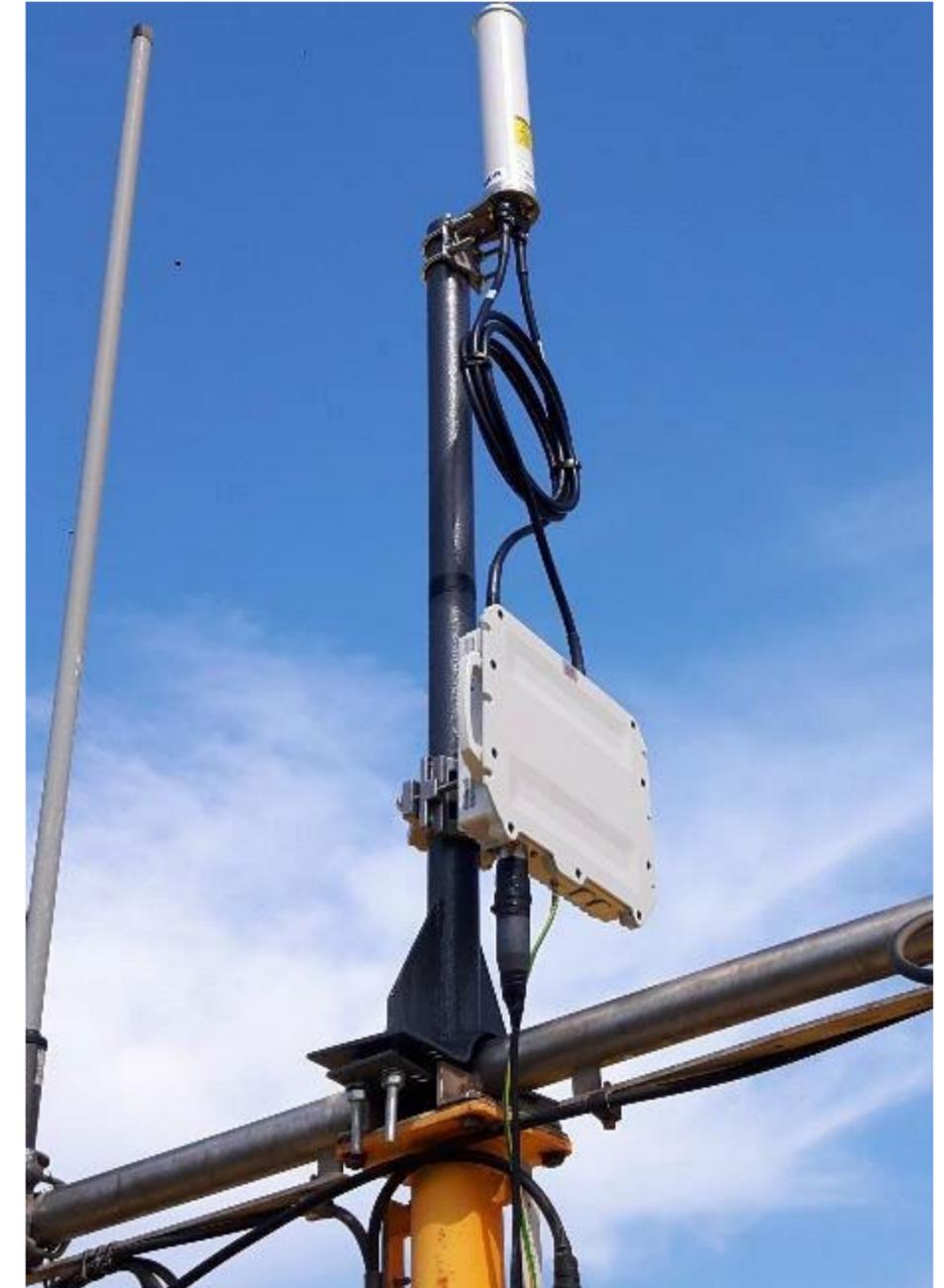
Mobile voice, video, data and IoT



SINGLE POINT MOORING CONNECTIVITY – ONSHORE TERMINAL TANKER LOADING



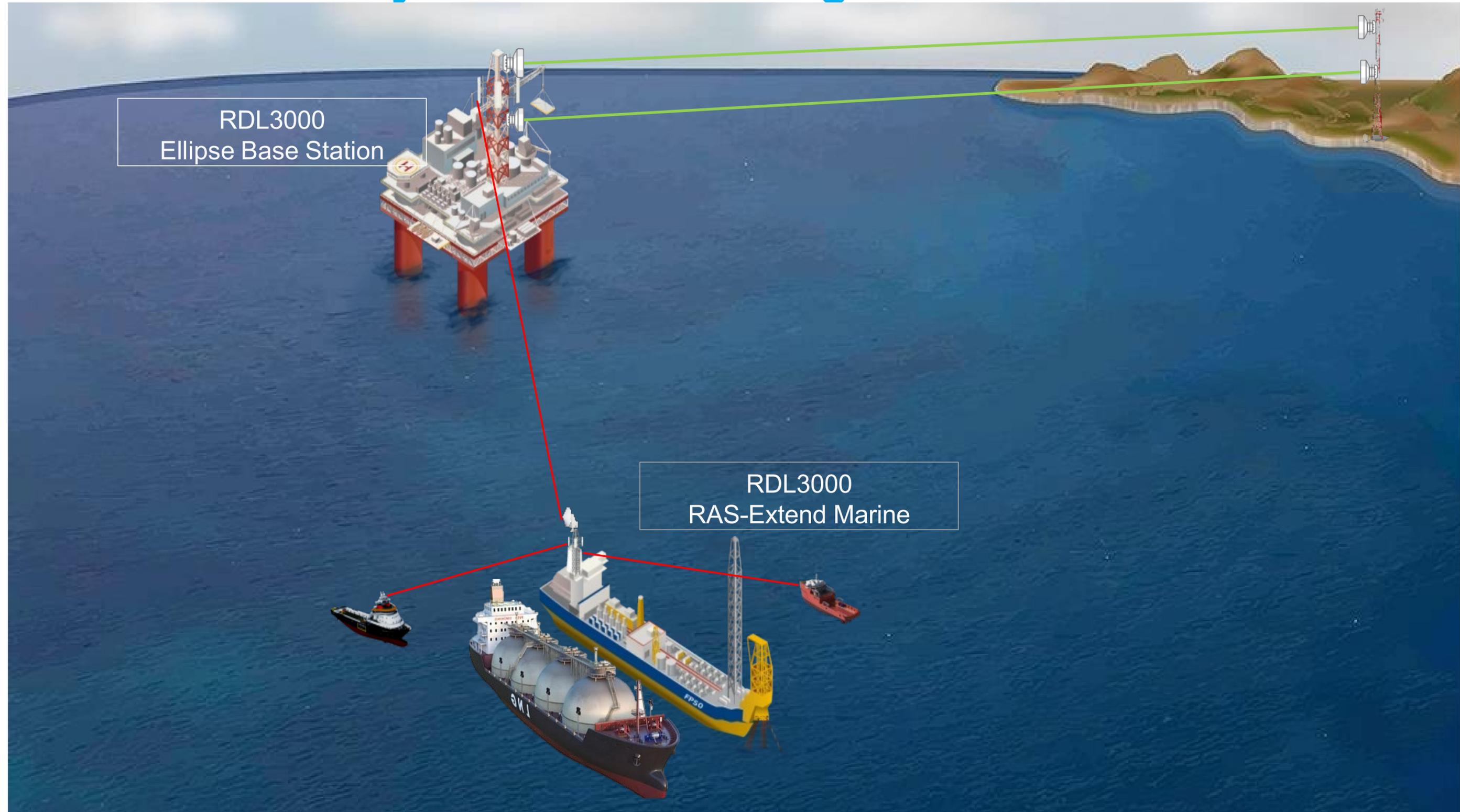
SPM Installation



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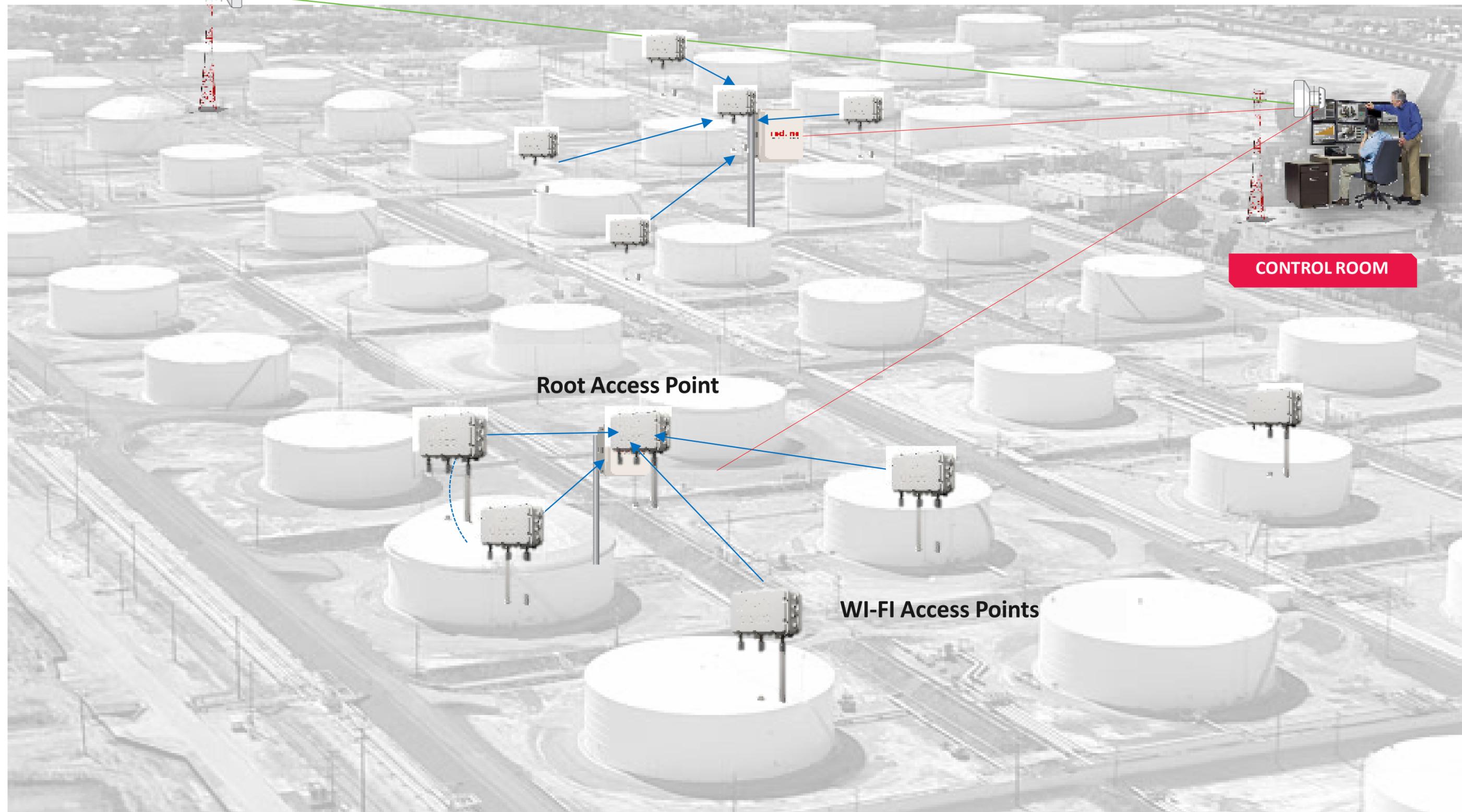
FSO Connectivity – offshore loading



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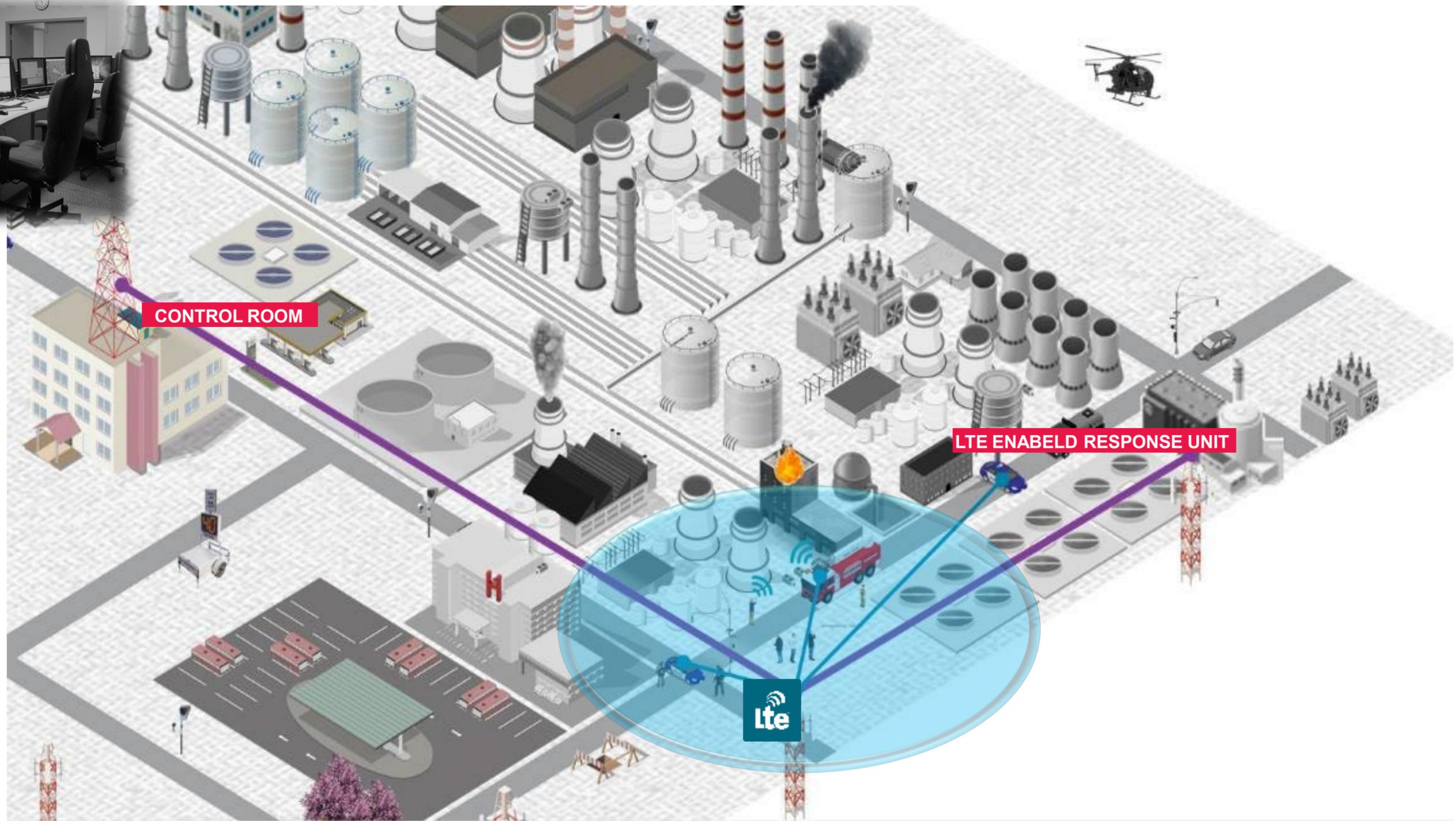
BACKHAUL OF WI-FI ACCESS POINTS INSIDE PROCESSING PLANTS



MOBILE ACCESS INSIDE THE PLANTS - HSSE ▶



Dispatch Console
Video Wall



MOBILE ACCESS – INSPECTION, ROBOTICS



Aviat Premises and Cloud-Based Software Tools

DESIGN

Link Planning & Design

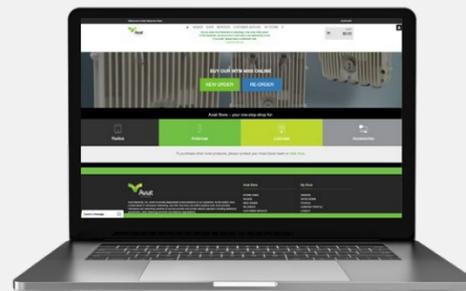


- Design Microwave, E-Band and Multi-Band links in the cloud
- 3rd party product support
- Advanced features, eg: MIMO
- Equipment look-up database
- Free to use



STORE

Online Ordering with Fast Delivery



- Fast and easy online ordering
- BoM creation, including radios, antennas, licenses and accessories
- Fast delivery from stock
- Order tracking



PROVISION+

Element Management

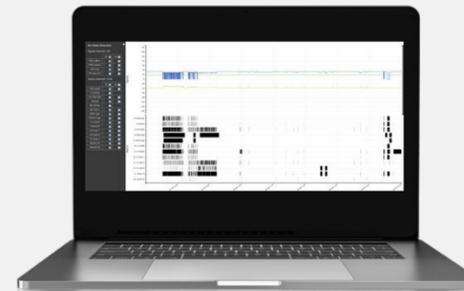


- Single pane of glass for all Aviat Transport and Access products
- Multi-layer network visualization and troubleshooting
- RestConf NBI and SDN



FAS

Frequency Assurance

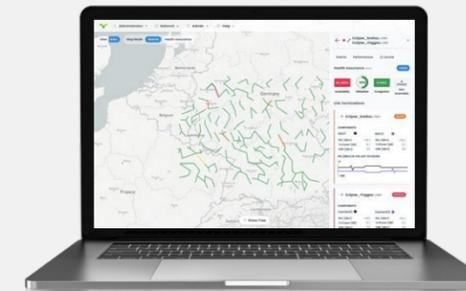


- Monitor and report interference
- Protect against WiFi-6E interference issues
- Improve link performance, protect against outages



HAS

Health Assurance



- Reduces network downtime
- Predictive algorithms continuously analyze the network
- Identifies problems before impacts occur
- Simplifies capacity planning



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Aviat Value

- **Absolute Reliability**

- Industry-Leading Durability: lifecycle rating exceeding 20 years.
- Extreme Temperature Operation: -40°C to +75°C

- **Military-Level Security**

- High Security Standards
- Advanced Cryptography

- **High Capacity and Scalability**

- Supports Thousands of Devices
- Wire-Speed Processing: Optimized for massive IoT data traffic

- **Versatile and Flexible Connectivity**

- Multi-Frequency & Multi-Terrain Compatibility: 470 MHz to 6 GHz & all 3GPP bands and works in all terrains and weather conditions.
- Comprehensive Device Support: Compatible with TCP/IP and serial communications, supporting a diverse array of RTUs, PLCs, mobile devices, and M2M connectivity.

- **Remote Management and Ease of Use**

- Efficient Network Operations: Remotely manageable, instant, one-step provisioning from the field, no specialized hardware or skills.
- Low Power Consumption: Designed for energy efficiency, with low power requirements suitable for solar or alternative power sources.



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• **Cost-Effective Solution**

- Reduced Infrastructure Needs: Long-range point-to-multipoint operation minimizes the need for multiple towers, while compact, lightweight eNodeBs reduce installation costs.
- Single Unit Versatility: Serial and TCP/IP communications, simplifying infrastructure & reducing costs.
- Rapid Deployment: Deploys faster and at a much lower cost than traditional fiber & microwave solutions.



• **Enhanced Operational Efficiency**

- Unified Connectivity: Private LTE networks unify office & field operations, extending office applications to the field and ensuring connectivity for personnel, vehicles, and fixed assets.
- Real-Time Data Collection and Control: Enables management by exception, high-resolution video surveillance, and analytics at the network edge, enhancing operational efficiency.



• **Integrated Digital Architecture**

- Mobile and Fixed Connectivity: Supports connectivity for mobile devices, vehicles, sensors, and general machine-to-machine (M2M) communications.
- Virtual Fiber TM Backhaul: Proven globally, this solution backhauls the LTE network and offloads bandwidth-intensive applications, ensuring seamless integration with existing IP infrastructure.



• **Advanced Management System**

- Single 'Pane-of-Glass' Interface
- Integrated Functionality
- Advanced Analytics Tools
- Usability and Automation
- High Availability Configurations
- Managed Service Offering
- Flexible Deployment Options

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THANK
YOU!

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