5G private networks for logistics and warehousing

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Logistics and warehousing environments

- Very complex and characterized by many concurrently running processes

- From a connectivity point of view, this carries two important implications:

  1) the requirements for automating these processes are particularly stringent

  2) the operational benefits gained from automating these workflows are particularly large

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Performance requirements

- Real-time operation of Automated Guided Vehicles (AGVs) and Autonomous Mobile Robots (AMRs)
  - Require latencies of no more than 30 ms

- Minimized disruption to the supply chain
  - Reliability and availability of the network needs to be as close to 100% as possible
  - Five-nines reliability as the minimum requirement

- Remote operation of ship loading cranes involves transmitting large amounts of video footage, particularly high uplink throughput of at least 30 Megabits per second (Mbps)
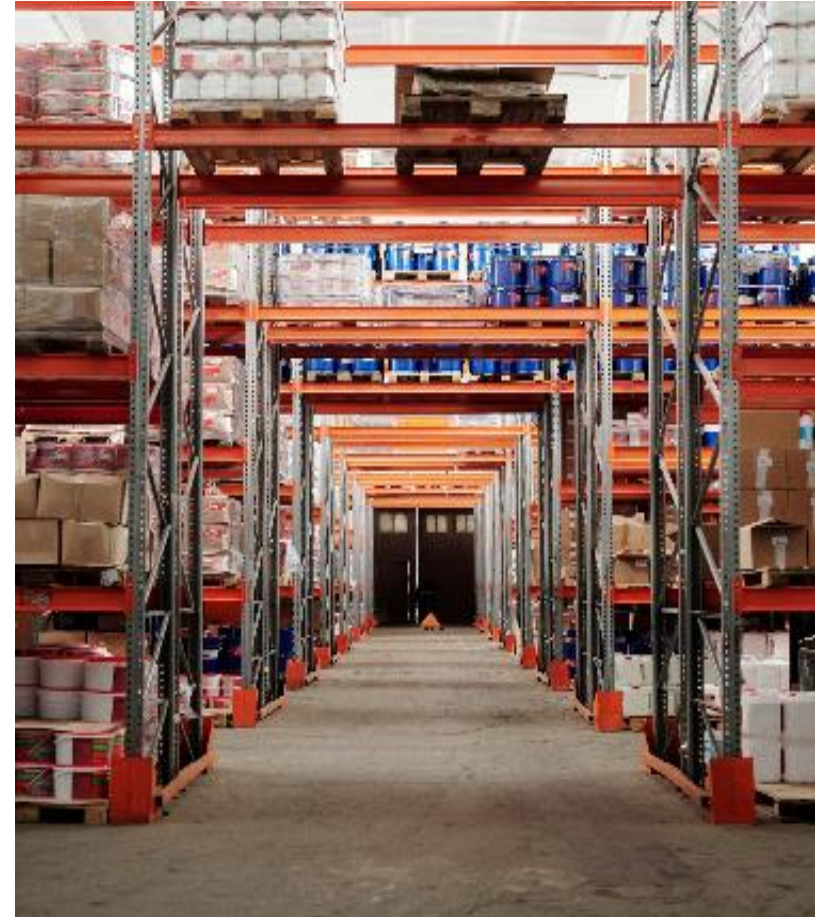
Source: ABI Research

5G private network benefits for logistics environments

✓ Increased coverage
  • Extends across the entire facility/warehouse/port
✓ Increased security
  • Safeguard integrity of network data of warehouses and logistics; network control ideally resides on the premises
✓ Increased productivity
  • More automation and remote control
✓ Optimized maintenance costs
  • Track health of machines
✓ Reduced downtime and increased mobility
  • Seamless handover between small cells
✓ Monitor worker safety and well-being

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The 5G private network opportunity: ports & logistics use case

Pain Points
- Signal blocked by complex surroundings (containers, cranes, trucks)
- Machine downtime or faulty operations

5G Private Network Opportunity:
- Support latencies required for real-time operation of vehicles, no more than 30 ms
- Increase productivity through automation and remote control
  - Move more containers per hour with lower cost per move
  - Track and monitor shipments like refrigerated good
- Gain transparent visibility into the entire terminal
- Extend coverage across the entire port or warehouse, indoors and outdoors including moving machines

Source: ABI Research

The spectrum opportunity

- Different initiatives to broaden enterprise access to mobile network spectrum:
  - Spectrum sharing between public authorities & enterprises
  - Locally licensed spectrum available for industry verticals
  - 5 GHz unlicensed spectrum available globally today

Shared spectrum   Locally licensed spectrum   Under consideration

Source: ABI Research

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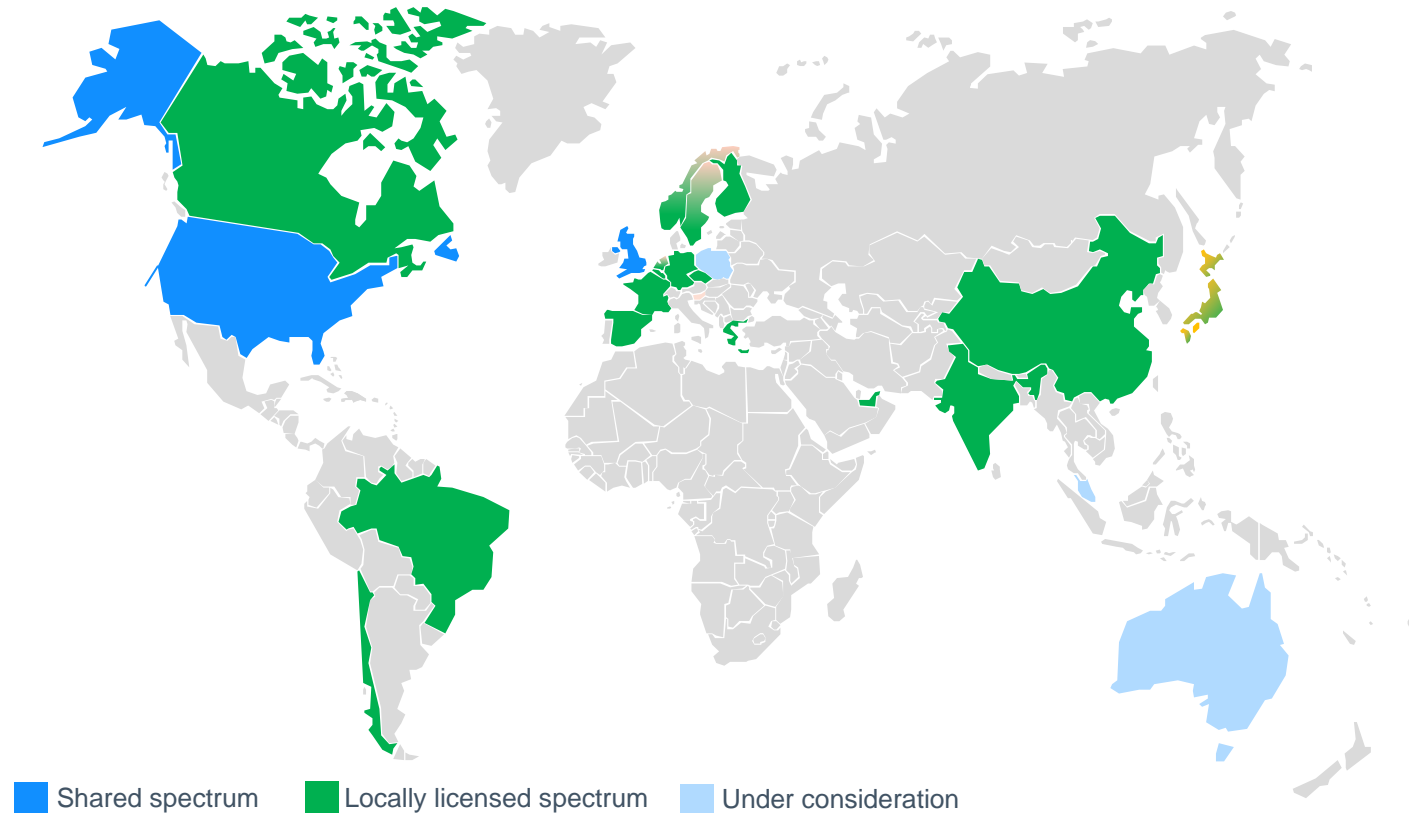
The unlicensed spectrum opportunity

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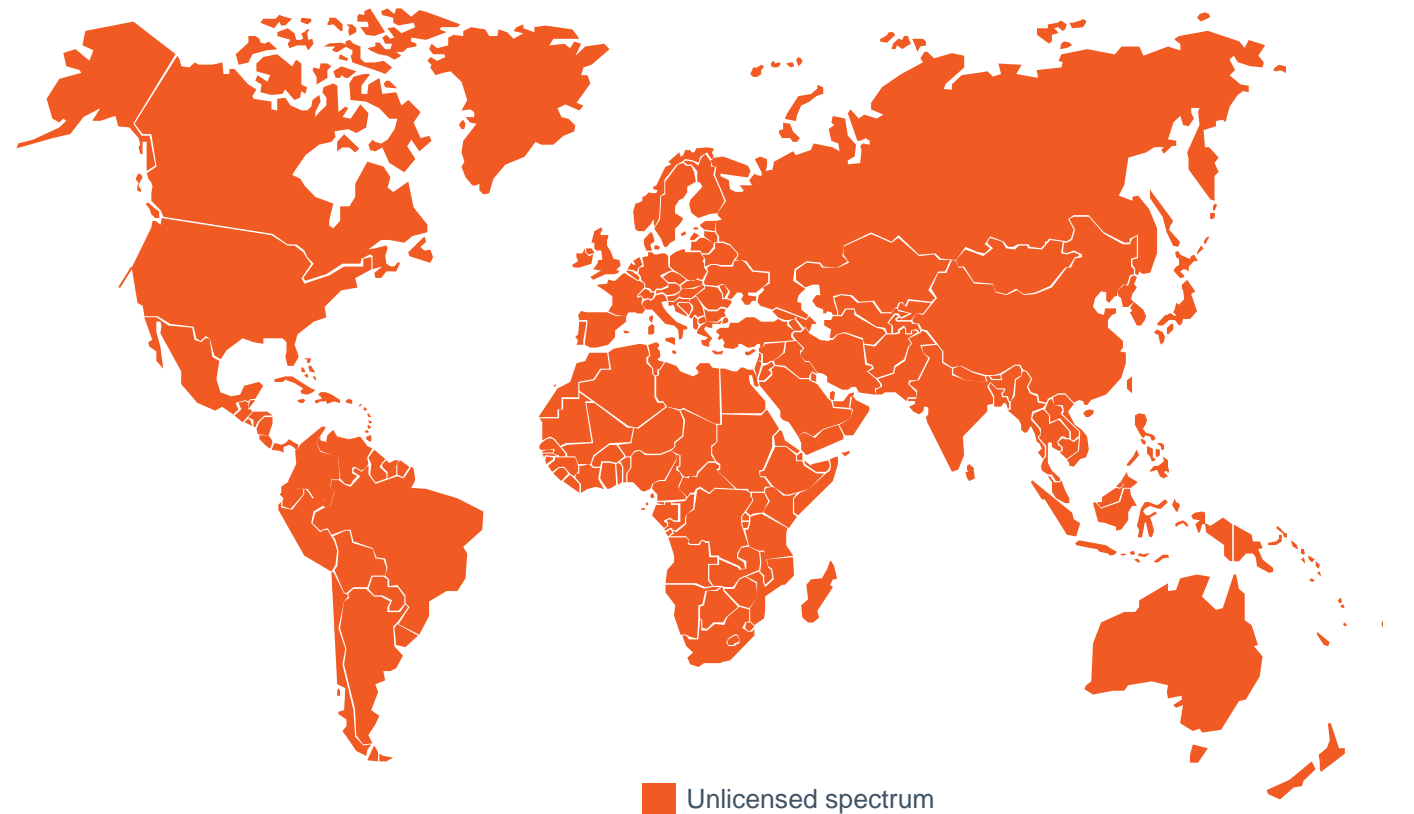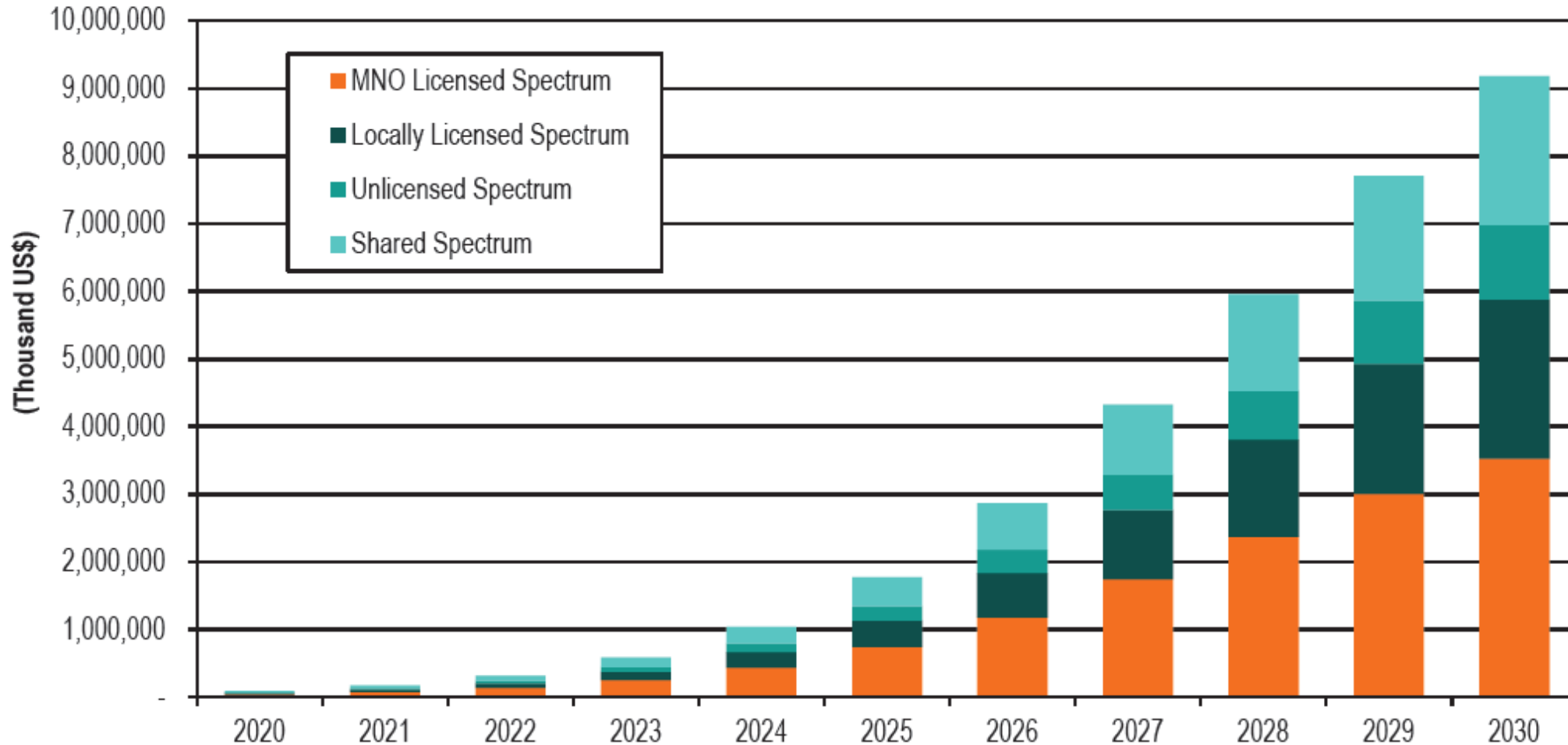 - **5 GHz unlicensed spectrum available globally today**

■ Unlicensed spectrum

Source: ABI Research

Ports & Logistics Private Network Revenue by Spectrum Type

World Markets Forecast: 2020 to 2030 (Source ABI Research)

Introducing MFA—a champion for 5G private networks

- In 2015 created the MulteFire® specification to enable standalone operation of LTE-based technology in unlicensed spectrum

- In 2021 rebranded to reflect expanded scope in facilitating 5G private network deployments based on 3GPP standards

- MFA is 3GPP Market Representation Partner (MRP)

- MFA is championing the global industry adoption of private networks using:
  1. MFA-defined MulteFire specifications for LTE
  2. 3GPP-based Uni5G™ Technology Blueprints for 5G

- With Uni5G or MulteFire, enterprises can efficiently deploy their own optimized, reliable and secure private network in locally licensed, shared, or unlicensed spectrum.

Introduced Uni5G™ Technology Blueprints

Classified MulteFire® as legacy 4G/LTE-based technology

Awarded a unique Global PLMN ID which will be made available to members and enterprises

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From MulteFire to Uni5G

- **MulteFire®** is a **4G/LTE-based technology** that **operates standalone in unlicensed or shared spectrum**, enabling industry verticals to deploy their own private wireless network with Wi-Fi-like deployment simplicity and LTE-like performance.

- **Uni5G™ technology blueprints** leverage 3GPP 5G standards to define **profiling and classification requirements**, enabling industry verticals to efficiently deploy their own optimized, reliable and secure **5G private network** in locally licensed, shared or unlicensed spectrum. The first blueprints will be finalized by December 2021.

Summary

- 5G private networks will be an important enabler for warehousing and logistics

- Initiatives are broadening enterprise access to mobile network spectrum with spectrum sharing, locally licensed spectrum, and unlicensed spectrum

- MFA is enabling 5G private networks by offering Uni5G Technology Blueprints and supplying a unique PLMN ID to enterprises through our Network Identifier Program

- Learn more:
  - Download ABI Research: The Importance of Spectrum Liberalization for Private 5G Networks White Paper: https://www.mfa-tech.org/white-papers/

- Join us! Discover more about MFA membership benefits and visit us in booth #207

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Thank you