

MulteFire

Addressed Connectivity Challenges of Industrial IoT

ETSI IoT Week

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Shane HE

Standardization/Bell Labs & CTO/Nokia

What is MulteFire?

LTE-based Technology for Unlicensed and Shared Spectrum



LTE-like Performance with Wi-Fi-like deployment simplicity

Brings enhanced data and voice services to local area deployments

Suitable for any band that needs over-the-air contention for fair sharing

Broadens the LTE ecosystem to enterprises, industrial IoT, cable operators, venues and more

Meet MulteFire

High performance in Unlicensed spectrum with no need of licensed spectrum

Carrier Grade Quality, Security and Availability

High Network Capacity, Coverage, Range

Low Total Cost of Ownership

Simple, Rapid Deployment

LTE

LTE: 4G, Mobility, Quality of Experience, Ideal for Dense Networks, Self Optimizing

MulteFire

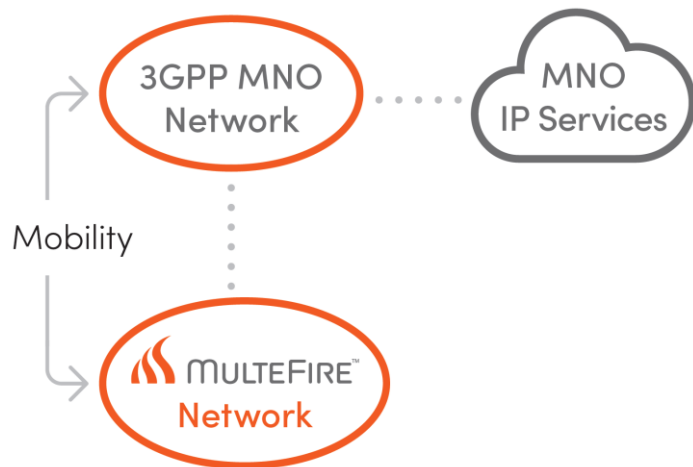
Co-exists with Wi-Fi, LTE-U/LAA

Wi-Fi: Deployment simplicity, Flat architecture, unlicensed spectrum

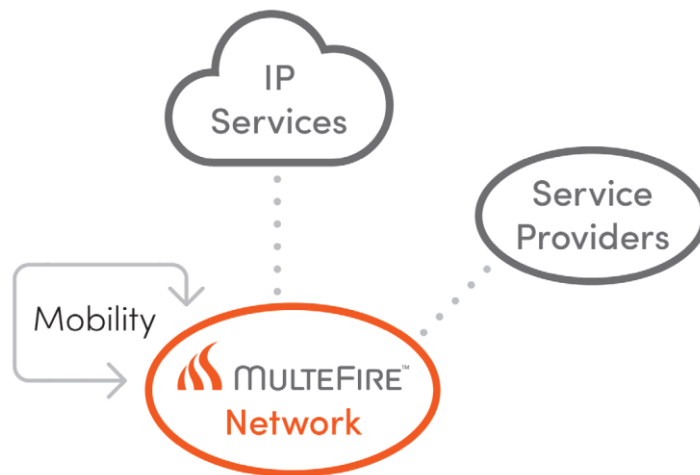
Wi-Fi

Network Architecture for MulteFire

Deployment Models Serve New Business Opportunities



PLMN Access Mode



Neutral Host Network Access Mode

MulteFire performance advantages



Connectivity Challenges of Industrial IoT

Industrial & Business Critical Segments

Industrial Manufacturing

- Discrete Manufacturing
- Process Industries
- Hybrid / Converting

Utilities and Electrical Power

- Power Generation
- Power Transmission & Distribution
- Water Utilities

Public Venues

- Transport Venues
- Military Bases
- Maritime Ports

Healthcare

- Hospitals

Supply Chain

- Warehouse & Distribution

Natural Resources

- Mining
- Oil & Gas

Top Applications



Real-Time Surveillance



Operations Visibility & Optimization



Authentication & Access Control



Worker Safety Monitoring



Remote Diagnostics & Predictive Maintenance



Asset Management & Uptime Assurance

Industrial Network Requirements

Reliability	Throughput
Mobility	Security
Low Latency	Simplified NW Management

MulteFire for Mission Critical Industrial Communication

Predictable Network for large number of IoT sensors and for mission critical requirements

Offer MulteFire

- No additional network element or changes required for Always ON network
- Carrier Grade Small cell solution
 - Fast Deployment
 - Security and Surveillance
 - Mobility, Seamless Connectivity
- Complement existing network



MulteFire is designed to support large number of IoT connections

MulteFire for Industry – a safe and reliable solution

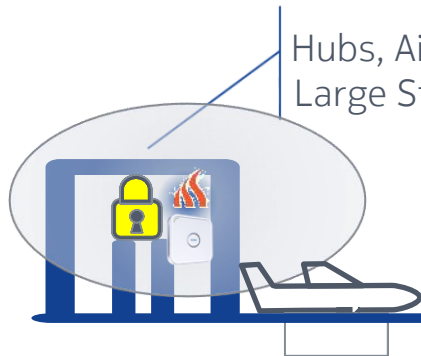
Simplify Large Corporation, Mining / Petroleum operations / Factories

- Large open space (mixed indoor / outdoor) do copes well with enhanced MulteFire coverage.
- Offshore and remote sites rarely benefit from 3GPP coverage
- Large corporations need secure and predictable technology
- Creation of global private networks for industrial or enterprise use without costly spectrum allocation

Remote and
Offshore sites
Mines, Power
Plants, Oil
Platforms



Hubs, Airports,
Large Stations



Factories,
Warehouses,
Real Time



MulteFire for Industry – Port Services



- ***Control and command:***

Automated Guided Vehicle

- ***Task dispatching:***

Tallyman/Crane Terminal Operating System, Trunking

- ***Broadband data:***

Crane controller video transmission, surveillance

- ***IoT services:***

Robotic Container Management System, Truck status monitoring

- ***Co-existence with Wi-Fi***

MulteFire standards status

- MF1.0 published in January 2017, free to download
- MF1.1 will include improvements to the current release 1.0 with features such as
 - Grant less UL
 - Autonomous UE mobility
 - Wide Coverage Extensionas well as IOT
 - eMTC unlicensed
 - NB-IOT unlicensedand a variant in 1.9GHz band in collaboration with sXGP forum
 - MF 1.9GHz

➤ MulteFire Meetings

- | | |
|----------------------|--|
| October 24-27, 2017 | Radio WG Workshop
Lund, Sweden (Ericsson) |
| December 12-15, 2017 | TSG Meeting
San Diego, CA (Qualcomm) |
| February 6-9 2018 | TSG Meeting
Ålborg Denmark (RTX) |
| April 24-27, 2018 | TSG Meeting
Louisville, CO (CableLabs) |
| June 26-29, 2018 | TSG Meeting/Annual Meeting
Espoo, Finland (Nokia) |

MulteFire Enables Innovation for New Vertical Markets

- Enhanced coverage, capacity, seamless mobility, reliability and security
- Leverages LTE features—Release 1.1 will add further IoT optimizations
- Supports both neutral host and single operator deployments
- Neutral host enables new business models
- Exciting opportunity for ‘Private networks’ – especially in the Industrial IoT area



MULTEFIRE™

<https://www.multefire.org/>

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