MulteFire and a Balanced Approach to Wireless

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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
MulteFire is an LTE-based Technology Built on 3GPP Standards

Similar performance benefits and same coexistence as LAA/eLAA

- **Traditional LTE ecosystem**
  - Requires licensed spectrum anchor
  - Mobile operators in select regions (e.g. US)

- **Mobile operators worldwide**
  - Mobile operators worldwide

- **LTE-U**
  - Based on 3GPP Rel. 12
  - Downlink

- **LAA**
  - 3GPP Rel. 13
  - Uplink

- **eLAA**
  - 3GPP Rel. 14 and beyond

- **Broadens the LTE ecosystem**
  - Operates in unlicensed and shared spectrum

- **MulteFire**
  - Standardized by MulteFire Alliance
  - New deployment opportunities
MulteFire Supports Customized Networks and Services

‘Private’ MulteFire Network
• Unlicensed/Shared spectrum
• Controlled by company
• Local coverage
• Customized services

‘Public’ MulteFire Network
• Unlicensed/Shared spectrum
• Controlled by service provider
• Part of wide-area coverage
• Generic voice/data services
MulteFire Delivers Key Performance Advantages

**Capacity**
Low to high data rate applications, large number of devices

**Coverage**
Superior range, both indoors and outdoors

**Seamless mobility**
Seamless handovers, high mobility devices, service continuity with WAN

**Industry-grade reliability**
Customized QoS classes, guaranteed latency

**LTE-based security**
Both SIM & non-SIM credentials, locally routed traffic for privacy

**Future proof**
Rich LTE roadmap: VoLTE/voice, IoT optimizations like eMTC

**Coverage**
Superior range, both indoors and outdoors
MulteFire Release 1.0 Specification Completed

- Based on 3GPP standards – leverages 3GPP for seamless mobility, security and interworking with 3GPP networks
- Pioneering technology for standalone unlicensed operation, over-the-air spectrum sharing and neutral host network architecture
- Implements Listen-Before-Talk (LBT) for fair co-existence with Wi-Fi and LAA and between different MulteFire networks

**Frequency Bands**

- **3.5 GHz (USA)**: 150 MHz
- **5 GHz (Global)**: 500 MHz

**Spectrum Types**

- **Shared Spectrum**
- **Unlicensed Spectrum**
Innovative Business Opportunities
MulteFire Enables Innovation and New Business Opportunities

- Delivers LTE-like performance with Wi-Fi-like deployment simplicity
- Allows anyone to create, install and operate their own private or neutral host MulteFire network
- Creates new business opportunities that allow existing and new market verticals to deploy and benefit from the LTE technology and ecosystem
**MulteFire Deployment Models Serve New Business Opportunities**

Allows more entities to deploy and benefit from the LTE technology and ecosystem

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**Neutral Host Access Mode**

- Self-contained, single deployment can serve multiple operators

**Traditional Access Mode**

- Single network operator, e.g. private IoT Network or MNO
Neutral Host Enterprise Example – Challenges for a Hotel Chain

**Capacity/Coverage:** wide area network cannot fully serve all geographically dispersed sites

**Cost sensitivity:** Partnership with MNO deployed DAS/small cell at all locations not always cost-effective

**Reliable wireless required:** robust wireless connectivity is a required amenity—serving any user
Neutral Host Enterprise Example – Benefits for an Airport

*Enhanced voice and data* cellular access for passengers, guests and MNO subscribers

*Dedicated access* to business tenants such as restaurants, bars, lounges, etc.

*Secure wireless* to airport operating agencies, support staff and government agencies

*Additional IoT services:* wireless surveillance, monitoring of assets and IoT devices
Industrial IoT Example – Challenges for a Port

**Capacity:** Hundreds of Wi-Fi access points are deployed to accommodate multiple services; adding more APs increases interference and decreases capacity

**Coverage:** Signal blocked by complex surroundings (containers, cranes, trucks) that interrupt connectivity links

**Mobility and Reliability:** Requires low latency (<100ms), high link stability with high mobility 24/7
Port Services that MulteFire Supports

- **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
Private MulteFire Networks Enable New IoT Deployment Scenarios

**Locally controlled**
Dedicated LTE equipment, independent of surrounding cellular network

**Optimized**
Network tailored for industrial applications, e.g., quality-of-service, latency

**Readily deployed**
Unlicensed/shared spectrum available, hosted or self-contained EPC, self-organizing network
MulteFire Alliance

- An independent, international member-driven consortium – 3GPP/ETSI style organization with IPR Policy and working procedures
- Goal is to develop technology that will be widely adopted in global standards
- Dedicated to building a global ecosystem in support of the common interests of members, developers and users in the application of LTE and next generation mobile cellular technology in configurations that use unlicensed and shared radio spectrum
- Voluntary call for membership – join us!

www.MulteFire.org
In Summary

• MulteFire delivers LTE-like performance with Wi-Fi-like deployment simplicity

• MulteFire provides enhanced coverage, capacity, reliability, security and seamless mobility

• Supports both neutral host and single operator deployments

• Exciting new opportunity for ‘Private Networks’ – especially suited for Industrial IoT
Thank You

We’re offering you a new way to wireless.