



Motorola

LTE — Long Term Evolution

Definition

LTE (Long Term Evolution) refers to the new air interface that will be delivered by 3GPP in its Release 8 Specification set. LTE will provide users with a personal media experience similar to that of fixed line broadband both in terms of bandwidth and latency, meaning applications that can be delivered today on fixed line will soon be available over the air and fully mobility with LTE. By combining expertise from across Motorola including network and video head-end solutions, and professional services, the Motorola LTE ecosystem will deliver innovative applications that can help operators to increase revenues and gain a competitive advantage.

2009 - The Year of LTE

Motorola wrapped up the first half of 2009 with significant LTE advancements. Earlier this year, Motorola deployed a live LTE demonstration network in Las Vegas during CTIA, replicating the successful live LTE experience in Barcelona at Mobile World Congress. During these two drive tours, visitors were driven around the streets to experience the performance of LTE in a real-life metropolitan RF environment. Motorola also launched its Wireless Broadband Radio (WBR) 500r LTE eNodeB bringing a very agile zero-footprint LTE solution that addresses the full scope of operators' deployment needs, and its advanced Self Organizing Networks (SON) solution.

Motorola is actively involved in LTE trials with operators in North America, Europe and Asia, and offers operators an LTE trial network and testing lab in Swindon, in the United Kingdom. In addition to the collaborative trials with operators, Motorola's Hangzhou R&D Center is actively engaged with the TD-LTE trials initiated by China's Ministry of Industry and Information Technology (MIIT) as part of its efforts to develop a globally competitive TD-LTE industry.

Picture a future where access to information is unlimited at speeds that make file size irrelevant. High definition video is transmitted wirelessly to devices of all manners. The digital revolution has arrived. This is the LTE future as brought to you by Motorola.

Operators will be faced with having to make a decision on their next generation network upgrade; while HSPA+ may seem a natural and easy upgrade to support the growing demand on data services, it will require a significant investment to replace the legacy equipment and upgrade ancillaries and will bring only limited benefits compared to next-generation LTE.

LTE not only brings the realization of true mobile broadband experience nearly anywhere (multi-megabits with virtually no latency), it also allows operators to introduce new exciting services (HD video blogging, HD video on demand, media mobility, online gaming, and others) and brings a significantly improved business proposition (2.5 times capacity, lower cost per bit, spectrum flexibility, media mobility, flat IP architecture, and end-to-end QoS).

Motorola is uniquely positioned in LTE thanks to our years of experience in OFDM and mobile broadband innovation. Our WiMAX leadership position and the common technical features with LTE give Motorola the ability to bring to market an early and field-tested LTE end-to-end solution – like our 3rd generation OFDM broadband platform that is common to WiMAX and LTE.

Motorola's LTE solution is comprised of its OFDM broadband platform and a selection of radio options that include MIMO and smart antennas as well as its advanced self-organizing network (SON) solution. Motorola's WBR 500 series LTE base stations offer flexible deployment options with frame based-mounted radios, remote radio heads and tower top radios to support a wide variety of LTE deployment scenarios across numerous of spectrum bands to meet the needs of the global market.

Motorola's LTE portfolio also includes evolved packet core elements, compelling end-user devices, backhaul beyond voice network, network management solutions,

video solutions that monetize LTE investment, and a complete portfolio of professional services.

Motorola's eNodeB, EPC, and SON have won multiple awards, including recognition for SON in the Service Management category at the 2009 CTIA Wireless E-Tech Competition, and for the EPC as a finalist in the 2009 InfoVision Awards.

Motorola's leadership in LTE is demonstrated by its #1 position in LTE RAN standard contribution, LTE trial activity with leading operators, membership in the LTE/System Architecture Evolution (SAE) Trial Initiative (LSTI) and its demonstrated industry-first LTE-CDMA hand-over.

LTE BRINGS OPERATORS BEYOND MOBILE BROADBAND

LTE will not only make existing applications faster, but will enable a wealth of new applications previously available only on a wired Internet connection. LTE takes the user beyond mobile broadband by bringing together the best of wireless and wireline experiences. LTE will be about personal media, with the ability to access content, share it and take it with you wherever you go.

Want to view an HD movie when out and about? LTE is the answer. Not only will access to all multimedia content and applications be available "while on the go", but the wall between wired and wireless will come down. "Follow me content" (moving from one environment to another with your content moving seamlessly with you) will become second nature.

For service providers and operators, LTE will provide incredible spectrum flexibility, significant added capacity and a platform for delivering premium applications — cost effectively — in both developed and emerging markets.

LTE's Key Benefits

*** Greater capacity / Lower cost per bit:**

With expected sector peak data rates in excess of 160Mbps and up to-to-four times HSPA/EV-DO capacity for voice and data, LTE will provide significant improvements to the user experience but also a much lower cost per bit compared to legacy 3.5G technologies.

*** Simple architecture:**

LTE's Evolved Packet Core is IP centric and technology agnostic, allowing operators to provide common applications and services across other fixed and wireless access technologies.

*** Spectrum flexibility:**

LTE will offer high levels of spectrum flexibility with the ability to deploy in a number of spectrum bands ranging from 450-2600MHz and a spectrum bandwidth that scales from 1.4MHz to 20MHz. This makes it very well suited for deployments by operators in both developed and emerging markets and offering operators the ability to reform existing spectrum in small increments and allowing them to make the most of new spectrum (such as 700MHz in North America and 2600MHz in Europe, the Middle East and Africa).

LTE PROMISES TO ...

- Reduce latency – <15ms end to end latency
- Provide higher data rates – ~10Mbps per user
- Lower the cost per bit – 4-10x improvement compared to 3.5G technologies
- Enhance provisioning: more services at lower cost and better user experience
- Improve capacity – 2.5-4x compared to legacy 3.5G technologies
- Enhance flexibility of use of existing and new frequency bands
- Simplify IP-based flat architecture, Open interfaces
- Allow for reasonable terminal power consumption
- Enable one network for all access technologies and the ability to offer common services and applications across all access technologies through an access agnostic Evolved Packet Core (EPC) and IMS based services and applications —

LTE IN THE MARKETPLACE

LTE is expected to be the technology of choice for most existing 3GPP and 3GPP2 mobile operators looking to migrate to a next generation network. In effect, LTE can be deployed in the existing FDD spectrum bands and offers a smooth migration with the ability to keep global roaming agreements and hand over calls to existing 3GPP and 3GPP2 networks, offering the coverage benefit of existing 2G and 3G networks. While LTE is mainly focused on FDD, LTE is also capable of using TDD spectrum and gives global operators the ability to standardize on one mobile broadband technology even if they have spectrum holding in both FDD and TDD in their various markets.

CONSIDER THE POSSIBILITIES WITH LTE

- Continuing to watch the latest HD TV series recorded on your DVR on your mobile phone, automatically transferred as you walk out the door
- Uploading HD content onto your social networking profile to let your friends know what you are up to
- The PowerPoint file you just saved on your laptop instantaneously becoming available on your smartphone
- Or even your LTE-enabled digital camera uploading your latest picture on your home server or social networking site for your family to see while automatically and instantaneously backing it up

Subscribers will be able to utilize the possibilities LTE creates in the way they want. Whether they are online gamers looking to play on the go, or families that want to share their vacation video instantaneously with friends, LTE will break the boundaries of existing communication systems and unlock the personal network of every subscriber.

MOTOROLA AND LTE

LTE will be about personal media, with the ability to access all your content, share it and take it with you wherever you go. Motorola's expertise in OFDM, LTE chipsets, backhaul, consumer devices, IP core, video solutions, applications and services will provide the backbone for an LTE ecosystem that delivers true media mobility and accelerate the delivery of personal media experience. Leveraging the benefits of Motorola's mobile broadband experience in OFDM network deployments, Motorola's LTE end-to-end solution will provide a seamless and flexible path to LTE with a high degree of future proofing for the service provider.

MOTOROLA LTE ANNOUNCEMENTS

Motorola's LTE news can be found on our MediaCenter at <http://mediacenter.motorola.com/>

- Aug 2009 - KDDI Selects Motorola as Key Development Vendor for Nationwide LTE Network
- Aug 2009 - Motorola LTE Drive Tour Arrives in Sweden
- Aug 2009 - Motorola Accelerates TD-LTE Commercialization with Success in Trials
- May 2009 - Motorola's LTE Advanced Self-Organizing Network (SON) Helps Operators Deploy LTE More Cost Effectively
- Apr 2009 - Motorola LTE Live Drive Debuts in Las Vegas
- Mar 2009 - Motorola Spotlights LTE eNodeB at CTIA Wireless 2009
- Feb 2009 - Motorola Reinforces Commitment to TD-LTE
- Feb 2009 - Motorola Launches Long-Term Evolution (LTE) Trial Network in the UK
- Nov 2008 - Motorola Demonstrates Industry First Over-the-Air LTE Session in 700MHz Spectrum
- Jun 2008 - Motorola to Include Recently Auctioned LTE Spectrum Bands in First Commercial Product Release
- Mar 2008 - Motorola Demonstrates Industry's First CDMA/EV-DO Rev-A to LTE Network Handoffs
- Mar 2008 - Motorola Long Term Evolution (LTE) Demos Join Personal Media Mobility Experience at CTIA Wireless 2008
- Mar 2008 - Motorola Joins LTE/SAE Trial Initiative
- Feb 2008 - Motorola Long-Term Evolution (LTE) to Accelerate Delivery of Personal Media Experiences at Mobile World Congress 2008

For more details about Motorola's LTE solutions please visit:

<http://www.motorola.com/experiencelte> or <http://www.motorola.com/lte>



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