

## **PRESS BACKGROUND**

# **HSPA, LTE AND BEYOND – HOW THE LETTERS CHANGE OUR DAILY LIVES**

*The online multimedia world made possible by broadband has changed people's perceptions of data speeds and network service quality. Regardless of where they are, consumers no longer accept slow speeds on their laptops and mobile devices, as they send and receive email, music or video clips. From the network operator and service provider perspective, speed isn't the only issue – more network capacity is needed to handle the growth in mobile traffic from both business and private users.*

To address these issues, Ericsson has led the development of High Speed Packet Access (HSPA), a standardized evolution of Wideband Code Division Multiple Access (WCDMA), the world's leading third generation mobile standard. Ericsson is also at the forefront of Long Term Evolution (LTE) of 3G networks, which delivers even higher broadband speeds.

With current download speeds up to 42Mbps and upload speeds of 5.8Mbps, HSPA offers users fixed broadband speeds from their notebooks, smartphones and other devices anywhere there is coverage. People can experience a rich combination of voice, text, audio, photo and video content wherever they go. The coming years will see these data rates increase substantially, and operators will be able to more than double their system capacity and reduce latency delays for interactive services.

LTE, the next generation of mobile communication technology, enables the fast transfer of huge amounts of data in an efficient and cost-effective way, optimizing the use of the radio spectrum. With increased speed and decreased latency, consumers can enjoy the latest services that is available online – such as real-time-web, on-line-gaming, social media collaboration, video conferencing “on the go”. LTE will meet the demands of new and enhanced Internet applications of the future.

Mobile Broadband brings people closer together and give them more flexibility and control over their daily working and private lives. Mobile applications in areas such as healthcare, public safety, travel and transport, utilities and manufacturing, are of increasing importance.

### **HSPA going strong**

HSPA is a huge success. There are currently more than 300 commercially deployed HSPA networks, serving subscribers in over 130 countries worldwide (December 2009). What's more, a burgeoning ecosystem of mobile broadband devices and services has emerged around the

technology. For example, there are over 1800 HSPA-enabled devices launched on the market – including phones, notebooks, PC modems and wireless routers.

Ericsson predicts that out of the estimated 3.4 billion people who will have broadband by 2014, more than 80% will be mobile broadband subscribers, and of those, more than 80% will use HSPA/LTE.

Experience from several countries has shown that adoption rates soar as soon as mobile broadband is available below a US\$30 price point for unlimited monthly usage.

Ericsson supplies Radio Access Network equipment to close to half of all operators, which have commercially launched HSPA to date. Consistent with Ericsson's tradition of supplying future-proof products based on cutting-edge technology, Ericsson's upgrade to HSPA was done with only a software upgrade of its existing WCDMA radio base stations (RBSs).

HSPA provides mobile broadband capacity and coverage using the same resources in the base stations that are also used for voice and other services. This enables operators to provide simultaneous voice, video and data services and shared channel high-speed data services (multi-services) over the same carrier – thanks to two- to three-fold increase in system data capacity.

The next phase of the HSPA Evolution will bring end-user data rates up to 84Mbps and higher in the downlink. This is made possible through the transmission of multiple parallel data streams to a single terminal using a technique called Multiple Input Multiple Output (MIMO), combined with higher-order modulation and multi carrier techniques.

2x2 MIMO doubles the potential downlink data rate using multiple transmit and receive channels and antennas to improve performance and throughput.

Separately, using multi-carrier technology, data rates of up to 42Mbps, 84Mbps and even higher can be achieved on the HSPA downlink by combining WCDMA frequency carriers. Multi-carrier technology enables consumers to receive data simultaneously on two, three or more frequency channels. This increases the user data rate in the coverage area of an HSPA network and on the cell edge, where consumers normally experience lower data rates.

Furthermore, on the HSPA uplink, the introduction of 16QAM will provide data rates of up to 12Mbps.

## **Long Term Evolution ... and beyond**

The Third Generation Partnership Project (3GPP) standard initiative, LTE, improves the user experience even more. It offers the performance needed for the latest Internet applications “on the go” such as real-time-web, on-line-gaming, social media collaboration, video conferencing. LTE will meet the demands of new and enhanced Internet applications of the future.

The specification work on LTE was completed in March 2009 as the SAE (System Architecture Evolution) specifications were included. Implementation based on the March 2009 baseline will guarantee backwards compatibility.

LTE provides a clear evolution path to meet future demands for a system that supports different spectrum allocations. It provides smooth migration for 2G, 3G and other radio spectrum (including TV bands) for use in future mobile communication networks. The standard is specified for data rates of at least 100Mbps in the downlink and latency below 10ms. During 2008, Ericsson demonstrated LTE at data rates of 160Mbps. Commercial roll-outs of LTE started globally during 2009.

Operators gain deployment flexibility and simplicity from LTE. It offers a choice of carrier bandwidths – from 1.4MHz to 20MHz – and supports both Frequency Division Duplex (FDD) and Time Division Duplex (TDD) access. A large number of paired and unpaired spectrum bands have been identified by 3GPP for LTE and there are more to come. This means that an operator may introduce LTE in ‘new’ bands where it is most suitable to deploy 10MHz or 20MHz carriers, and eventually deploy LTE in all bands.

LTE radio network products will have a number of features that simplify the building and management of next-generation networks known as Self-Organizing networks. For example, features like self-configuration and self-optimization will simplify and reduce the cost of network roll-out and management. The LTE radio access network will be deployed in parallel with IP-based core and transport networks that are easy to build, maintain and introduce services on.

In addition to mobile phones, many computer and consumer electronic devices, such as notebooks, ultra-portables, gaming devices and cameras, will incorporate LTE embedded modules. Since LTE supports hand-over and roaming to existing mobile networks, all these devices can have ubiquitous mobile broadband coverage from day one.

In summary, operators can introduce LTE flexibly to match their existing network, spectrum and business objectives for mobile broadband and multimedia services.

Looking beyond LTE, the International Telecommunication Union (ITU) defines '4G' as network technology with throughput of 100Mbps for wide area/mobile use and 1Gbps for hotspot coverage to be applied in new spectrum bands with 100MHz channels. Such systems will be commercially available to meet these requirements long beyond 2010.

**Something from this?** Ericsson continues to pioneer wireless technology and is leading the development of LTE. Together with NTT DoCoMo, Ericsson initiated LTE standardization at the international standardization body 3GPP in 2004, and has made the largest amount of approved contributions to the group. Ericsson also expects to hold 25 percent of all essential patents for LTE, making it the largest patent holder in the industry.

**Notes to editors:**

LTE and HSPA White paper

LTE achievement list

3G Reference List

LTE media kit

Ericsson's standard multimedia content is available at the broadcast room:

[www.ericsson.com/broadcast\\_room](http://www.ericsson.com/broadcast_room)

*Ericsson is the world's leading provider of technology and services to telecom operators. Ericsson is the leader in 2G, 3G and 4G mobile technologies, and provides support for networks with over 1 billion subscribers and has a leading position in managed services. The company's portfolio comprises of mobile and fixed network infrastructure, telecom services, software, broadband and multimedia solutions for operators, enterprises and the media industry. The Sony Ericsson and ST-Ericsson joint ventures provide consumers with feature-rich personal mobile devices.*

*Ericsson is advancing its vision of "to be the prime driver in an all-communicating world" through innovation, technology, and sustainable business solutions. Working in 175 countries, more than 75,000 employees generated revenue of SEK 209 billion (USD 32.2 billion) in 2008. Founded in 1876 with the headquarters in Stockholm, Sweden, Ericsson is listed on OMX NASDAQ, Stockholm and NASDAQ New York.*

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