J'son & Partners Management Consultancy

Newsletter

Perspectives for LTE development: infrastructure, applications and subscriber base, 2013 – 2018

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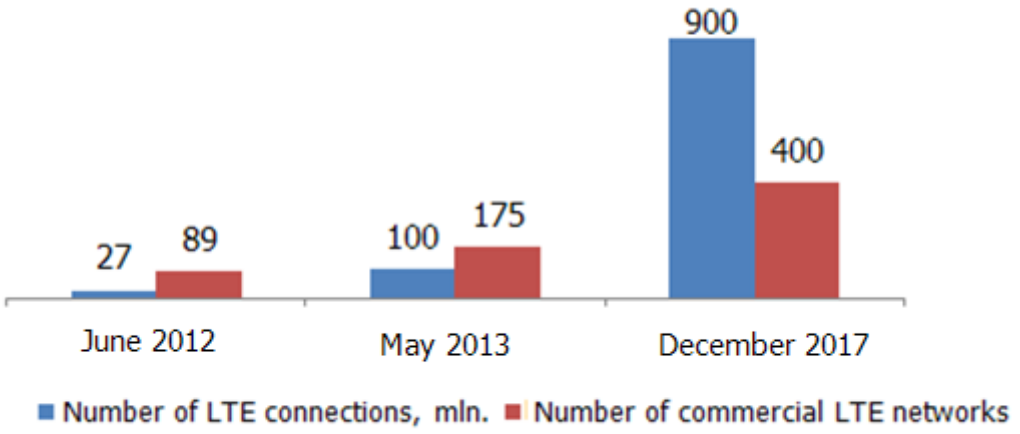
J'son & Partners Consulting presents main results of the research: "Perspectives for LTE development: infrastructure, applications and subscriber base, 2013 – 2018".

LTE networks in the world

There were around 213 LTE commercial networks in 81 countries in September 2013. In 2017, this number is expected to reach 400 LTE networks. The number of subscribers will increase from 100 mln. in May 2013 to 900 mln. in 2017.

Fig. 1. Number of commercial networks and LTE subscribers in the world, 2012-2017



Source: GSA, Wireless Intelligence

About 90% of LTE connections were done in USA, Canada, Japan, South Korea, Australia. At the end of 3Q 2013, the world largest LTE operator Verizon Wireless provided services for 36 mln. 4G-connections in USA. NTT DoCoMo (Japan) with over 20 mln. LTE connections, SK Telecom (South Korea) with 11 mln. LTE subscribers are among the top 3 by subscribers base.

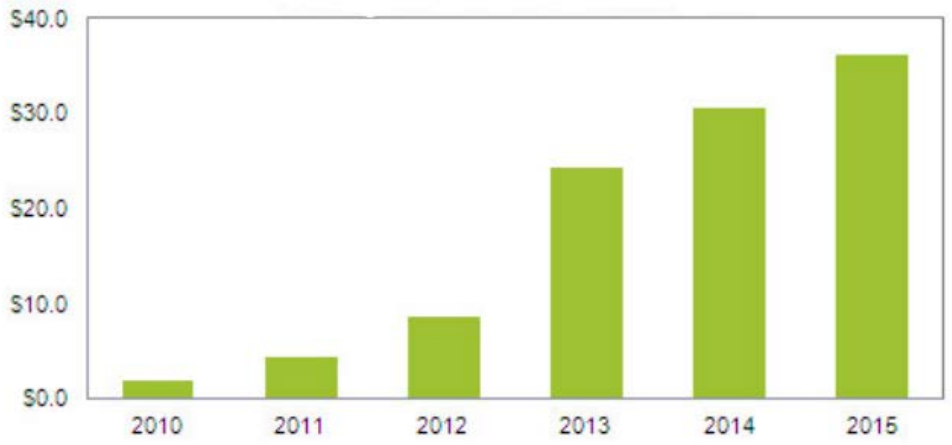
Largest LTE operators in the world by number of connections

Operator	Country	Mln	Date
Verizon Wireless	USA	36.0	3Q2013
NTT DoCoMo	Japan	20.4	2Q2013
AT&T Mobility	USA	17.2	2Q2013

Source: J'son & Partners Consulting by open sources data

According to IHS iSuppli, the total operator costs on LTE-infrastructure were 8,7 bln. USD in 2012. It will increase to 24.3 bln. USD in 2013 and to 36.1 bln. USD in 2015.

Fig. 2. Capital costs of operators on LTE infrastructure, bln.USD, 2010-2015



Source: IHS iSuppli

The concept of self-operation network (SON, Self Operation Network) is one of the "soft" means for transition to the new mobile communication technology that enables the most efficient use of available resources.

SON helps to cut OPEX and CAPEX by automating processes, configuration of base stations, network optimization and network recovery. In Russia SON elements already implemented on commercial network of Yota Networks.

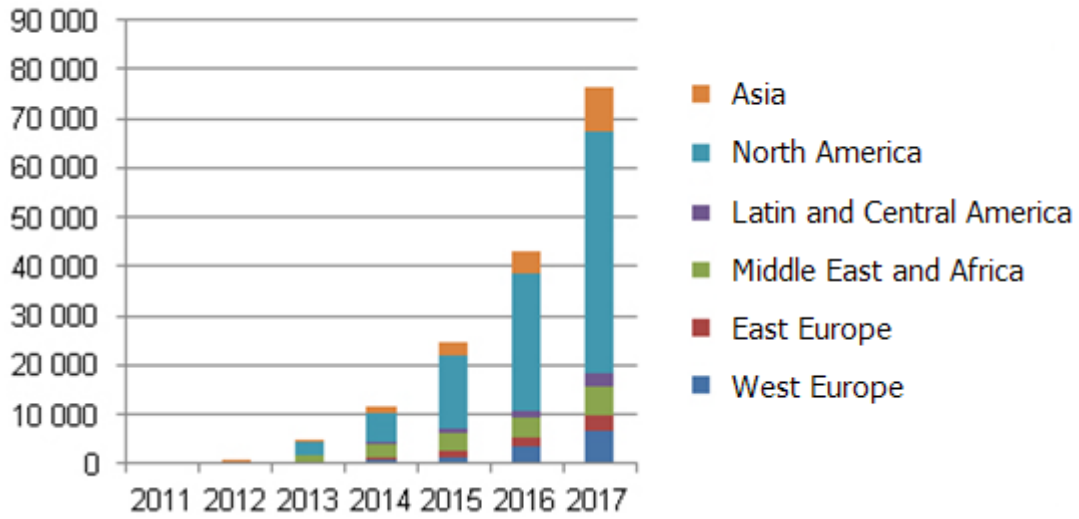
LTE applications

LTE networks enable for implementing a lot of promising applications that are very tricky or even impossible to launch on the "old generation" networks – Rich Communication Service (RCS), Broadcast streaming eMBMS, LTE-Direct, the application in the field of public safety, etc.

Companies should solve some essential questions in order to launch these apps on the market. For effective implement of RCS (Joyn brand), operators will have to provide RCS-interconnect (Spanish operators Vodafone, Telefonica and Orange succeeded in this) and afterwards all other operators' subscribers could use this technology. More complicated task – is to convince key device manufacturers to support RCS on their smartphones. 16 operators in the world have already launched RCS, 67 publicly announced a desire to launch this service. SK Telecom, South Korean operator declared 1 mln. users of Joyn in 50 days after the launch of the service.

LTE Direct technology, which is developed by the chipset manufacturer Qualcomm, is compatible with the common specifications of LTE protocols and frequencies for direct communication between devices (Device-to-Device communication). LTE Direct can be useful when the network is unavailable or unusable equipment and base stations, so one of the most likely users of the technology are emergency services. According to Signals and Systems International, 80 thousand base stations will be deployed for public safety in the world by 2017 and more than half of them will be in the United States.

Fig. 3. Number of base stations in the sphere of public safety, 2011-2017



Source: Signals and Systems Telecom

One of the possible solutions in order to solve the problem of rapid growth of traffic in mobile networks may be the use of advanced technology - evolved Multimedia Broadcast/Multicast Service, eMBMS. The eMBMS technology uses LTE- networks for broadcasting high-definition video (HD) at the same time to a greater number of subscribers faster than is possible with traditional digital multimedia broadcasting (DMB). eMBMS increases network efficiency, improving the quality of service when transferring large amounts of multimedia content, such as live broadcast of concerts, football matches, etc. An important advantage of the technology is that operators will be able to use their existing frequency spectrum and subscribers do not have to buy a special device. The operator Verizon Wireless plans to launch eMBMS in commercial operation in 2014 and the operator Telstra from Australia will soon start testing it.

Using LTE in vertical markets

It is widely planned to use the LTE technology in various sectors of the economy - in the industrial sector, agriculture, construction, health care, in the segment of public safety etc.:

Mining industry. Texas Energy Network (TEN), provider of communications services to the oil and gas industry in the United States, bought the frequency spectrum in the 700 MHz band in Texas to improve the quality of their services based on LTE: remote data collection and analysis for wells drilling reports, the real-time performance of the equipment, centralized expert analysis, troubleshooting, and etc.

Construction companies. Mobile applications on Tablet PCs are often used for workflow management. 71% of surveyed U.S. executives stressed that such applications have helped them increase productivity and reduce personnel costs.

Electric power industry. For electric power enterprises is very beneficial to use optical technology in the most densely populated areas. However, in rural areas with low population density, investment in fiber does not pay off, it is reasonable for companies to use LTE to support SmartGrid, M2M, data transfer, etc.

Agriculture. Division of U.S. Department of Agriculture provides loans to mobile operators (for example, O2 Secure Wireless), deploying LTE networks in rural areas. Back in 2010 the program was started introducing LTE in rural areas of the country. In Russia, the regulator is considering imposing additional obligations on operators wishing to develop LTE at 1800 MHz - in particular to ensure the deployment of 4G networks in small towns. It is possible that the construction of LTE networks in remote and less populated areas of the country will use a range of 450 MHz.

Health care. Some U.S. hospitals practicing telemedicine to provide emergency care in the suburbs and rural areas. LTE, in particular, used for video conferencing patients with medical facilities for remote testing.

Education. In 2011, the company Deutsche Telekom and Nokia Siemens Networks demonstrated the potential of LTE with respect to students in rural schools and remote areas. The initiative - Flying Classroom - NSN project in the framework of corporate social responsibility. The program allows you to take part in video calls and remote sharing of tasks with teachers and partner schools. In Russia operators who have won the auction for LTE-license required to provide work LTE-networks in all schools and colleges of the country at a rate of 1 Mbit/s.

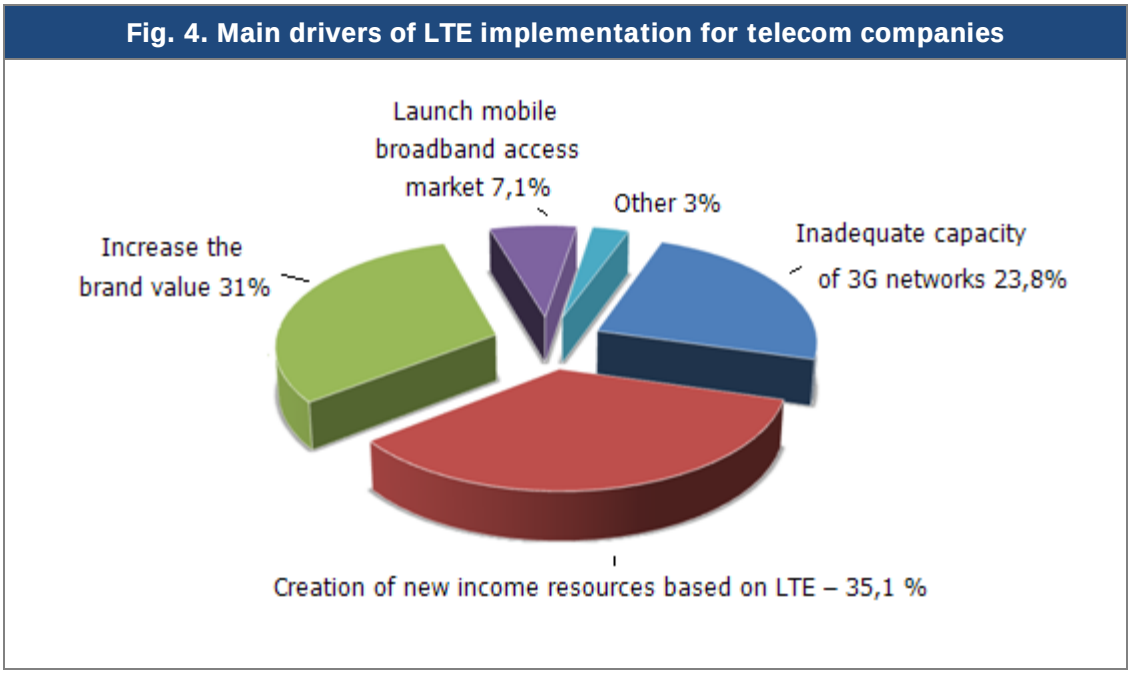
The government, defense and national security. In 2012, the U.S. government has allocated frequencies in the 700 MHz for operator in the field of national security and public safety (NSPS) FirstNet in order to provide such services based on LTE. In the German Army division Cassidian European Aerospace Defense Group (EADS) was introduced equipment operating in two modes: TETRA and LTE.

Specialized solutions for vertical markets start appearing in Russia. In March 2013 the company “Telum” presented LTE-technological solution for industrial companies on the basis of small cells, which operate on the principle of self-operation. In October 2013 the company "Hypercom" started to develop LTE-industrial modems.

Business models and prospects of development

LTE and LTE-Advanced networks are waiting for gradual implementation, despite the improved indexes. The main trend is a smooth transition from 3G/HSPA networks, which show almost the same high operational features in many areas and applications as LTE. The advantages of 3G networks are the maturity of the technology, the extensive use, developed ecosystem of devices, support for traditional services (voice, SMS). While the main disadvantages of LTE at this stage are the lack of voice and SMS support, a strong fragmentation of the spectrum and the associated problems of international roaming, lack of consumer devices models, etc. However, these problems gradually will be solved and operators around the world are investing in LTE in the hope of getting new sources of revenues, enhance the value of their brand and increase the capacity of their existing networks. For companies that do not belong to the mobile operators, the introduction of LTE is one of the few ways to enter the rapidly growing market for mobile broadband access services.

Fig. 4. Main drivers of LTE implementation for telecom companies



Source: Informa Telecoms & Media, 2012

On this stage of LTE network deployment operators provide service by 3 different models:

- ✓ LTE / LTE-Advanced technologies allow operators to expand the 3G-network capacity which is usually not enough to ensure an acceptable level of quality of service (QoS). Launch of 4G can increase customer loyalty and reduce churn of subscribers in a highly competitive market.
- ✓ Services based on 3G/4G LTE positioned as an alternative to wired DSL-connection, as stand-alone premium class services. An example is a MVNO-project FreedomPop (USA), focused only on the mobile transfer data network based on the 3G, WiMAX and LTE networks.
- ✓ Providing broadband access in remote and inaccessible places such as in the countryside. Typically, these programs are fully or partially financed from the state budget. An example of such project is the launch of LTE TDD network in the 2.3 GHz band in Australia by the state corporation NBN Co to serve rural areas using the business model of virtual operators (MVNO).

Recently start to appear new business models, which, for example, use femtocells. Thus, the model FaaS (Femto as a Service) allows operators to deploy their own network of small cells without significant investment and the need to have their own femtogateway.

In the medium-term perspective (5-6 years), the largest Russian mobile operators will have not only build a 4G network in accordance with the licensing requirements and their own investment plans, but also to find effective ways to monetize LTE networks in order to prevent revenue loss due to increasing popularity of mobile OTT-services, increasing pressure from the regulator and the possible deterioration of the economic situation. The main tasks of the operators in the nearest future will be the solution how to transfer voice in LTE (VoLTE), the consolidation of efforts to establish a system of alternative inter-operators' communications (RCS or equivalent), the implementation of small cells to provide the indoor coverage, the problems of the international LTE-roaming, the growth of penetration rate of smartphones on their networks and the search for promising applications for both mass and vertical markets.

Detailed results of the research presented in the full version of the report: "Perspectives for LTE development: infrastructure, applications and subscriber base, 2013 – 2018" (148 p)

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eMobile
E-Plus
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Ford Motor Co.
France Telecom
FreedomPop
Fujitsu
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mmbi, Inc
Mobily
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MTS Allstream Inc
NBN Co
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Now Broadband
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Optus
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Softbank Mobile
Sony Ericsson
Sprint Nextel Corporation
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