



Mobile Telecommunications in 2009

Challenges

Mobile network operators and service providers are facing the following challenges:

- ❑ Rollout of Long Term Evolution (LTE)
- ❑ Acquisitions and new entrants
- ❑ Flexibilization of the IT infrastructure
- ❑ Cost-savings

Rollout of Long Term Evolution

Long Term Evolution (LTE) is a standard developed by 3GPP for 4G radio technology. In theory the end-user can achieve download and upload speeds of several tens of Mbps with LTE. The speeds experienced in actual practice are dependent on a number of factors, including the spectrum available to the operator, the number of users per antenna and the distance between the end-user and the antenna. To date only a few handsets that support this technology are available; however, Siemens, Motorola, Nokia, Ericsson and LG Electronics among others have indicated that they consider LTE to be the new standard for mobile telephony and that they intend to introduce new LTE-compatible handsets in the future.



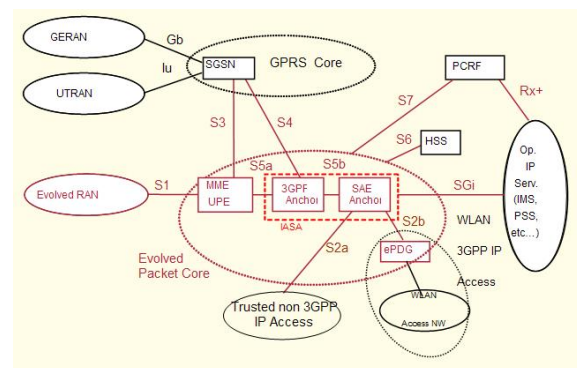
An LTE-compatible LG handset, presented at the CommunicAsia Expo in Singapore.

The higher download and upload speeds can be achieved with LTE due to new radio technology that makes optimal use of the available spectral space. Furthermore, LTE can use more spectral space, thus increasing capacity.

Part of the LTE standard is the so-called Evolved System Architecture, a network architecture based on the 'All-IP' principle. In contrast to GSM and UMTS – technologies that use different protocols within the network for voice, data and messaging traffic – all backhaul data

transport within LTE is Ethernet-based. Ethernet facilitates very rapid transport (up to 100 Mbps). This standardization also avoids protocol conversions within the network, resulting in fewer delays (latency). This benefits services such as voice and video. Furthermore, IP makes the network more scalable because within the Evolved System Architecture, network capacity is only consumed if the end-user is actually transmitting data. Network resources can be dynamically allocated, depending on the desired QoS. This makes 'oversubscription' possible, resulting in an increased backhaul capacity within the LTE network in comparison to a UMTS network. This allows the operator to optimize network capacity allocation, which results in cost savings.

A central component of the Evolved System Architecture is the Evolved Packet Core, which enables using multiple access technologies. Operators can make use of this facility during the migration of the current network to the LTE network.



The Evolved System Architecture supports multiple access technologies.

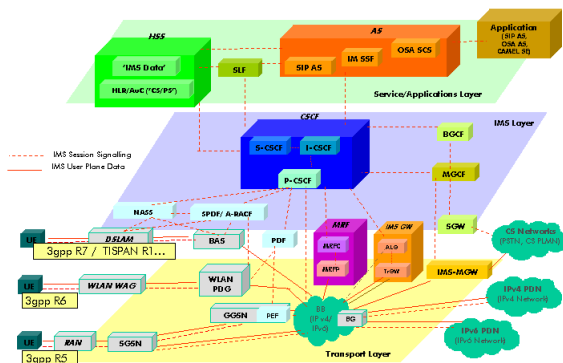
WiMAX could be an alternative to LTE. WiMAX is a technology that has been standardized by the IEEE. Using WiMAX, in theory the end-user could attain speeds of up to tens of Mbps, both downlink and uplink. The speed achieved in actual practice, just like LTE, is dependent on the spectrum used, the number of end-users per antenna and the distance between the end-user and the antenna. Handsets that support this technology are already available.

Conceptually, LTE and WiMAX partially use the same frequencies. Operators are consequently forced to make an explicit choice between these technologies. A range of factors plays a role in this decision, such as the degree of standardization, costs, backward compatibility, the characteristics of the services to be supplied and the type of operator and his market



approach (for example choosing between hot-spots or national coverage). The choice in the European market appears to predominantly lean towards LTE.

LTE combines high data speeds with the possibility of providing national coverage with seamless handover. The expectation is that these characteristics will facilitate new services, such as mobile streaming TV, video calling, video blogging and online gaming. In addition to more rapid access to the network, this also requires network-independent access to the service platforms. Many operators have now implemented IMS. IMS makes it possible to offer services on a network-independent basis and connects seamlessly to the Evolved Packet Core via the S-Gi interface.



The network topology of the IP Multimedia Subsystem.

This network independency enables Rich Communications, which allows the end-user to switch between various networks and peripherals during a session. Furthermore, this technology gives the operator control over the data sessions built up within his network and assists IMS in billing the services consumed by the end-user. The relocation of a session from one network or peripheral to another is something that IMS supports, but generally not yet accommodated by the mobile providers' network and IT support organization.

VDVL has extensive in-house knowledge about mobile network technologies and the impact of the rollout of LTE on your processes and automation. VDVL can help you bridge network technology and information technology, while watching over your business objectives. Furthermore, we have extensive project management experience enabling us to help you in preparing the business case, your project plans and selecting and managing your suppliers.

Flexibilization of the IT infrastructure

When the mobile telecom market emerged, the initial players had the benefit of being 'lean and mean'. They were faster in introducing new services than the landline service providers. The key reason for this was the lack of legacy systems. Now that the mobile market has been around for over a decade and the portfolio of mobile players has increased in size, this advantage is disappearing. Mobile providers are increasingly confronted with the same issues faced for years by the landline service providers: legacy systems, increasing complexity of the IT landscape and great difficulty keeping the level of knowledge of developers within the internal organization up to par. The competition and market dynamics are however still fully present. This means that the demand for short time to market remains unrelenting. It must be possible to rapidly introduce new price plans and products to the market. This makes it increasingly important to maintain the flexibility of the IT infrastructure.

VDVL translates your business objectives into processes and IT. We have a vision for the design of IT architecture and we guide its implementation. We help you make the right architecture decisions regarding processes and IT, so that together with you we design sustainable, robust and flexible processes. We help you make trade-offs if required by making the implications of potential choices clearly understandable.

Takeovers and new players

The mobile market is in a constant state of flux. Orange was taken over by T-Mobile in 2008. VDVL helped T-Mobile with the migration of Orange customers to T-Mobile, by designing processes that ensure that the customer remains accessible during the migration and can keep his telephone number.

The frequency auctions could cause renewed turmoil in the mobile telecommunications market in 2010. New players will be given the opportunity to enter the playing field and existing parties will have to make significant investments in order to maintain their position. With the additional frequencies in the 2.6 GHz and 700 MHz band there is an opportunity to enter the market with new mobile services.

Another important dynamic is content providers such as Apple, Google and TomTom becoming



increasingly dominant. These players are in a position to offer services that compete with the services of mobile providers. This does require them to have access to the end-user: the mobile broadband connection that is owned by the network operators. Furthermore, network operators have the opportunity of offering network services to these new players, such as authenticated user access, the supply of user data, location information, secure connections, QoS, etc. This is how network operators can optimally anticipate the emergence of these service providers.



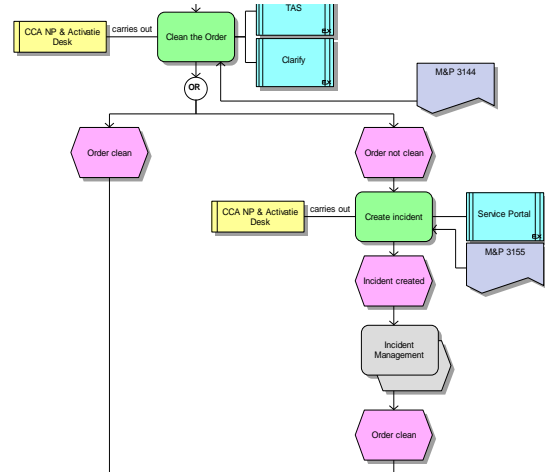
The frequency auctions could result in a new playing field in the mobile market.

Such new players can also provide added value and enrich the portfolio of the mobile provider. Collaborative ventures can be formed to, for example, make it possible to offer Location-based Services. Together with players such as Google and TomTom, mobile operators can develop new services that combine geographic data with mobile access.

VDVL helps you with the implementation of these new services by managing these projects or by designing processes and IT for the delivery and maintenance of services. VDVl can assume the role of system integrator, thus taking this concern off your hands. VDVl has extensive experience with the introduction of new services in collaboration with partners such as Lasersoft, Logica, Cordys and Software AG.

Cost-savings

In the current economic climate there is a great deal of emphasis on saving costs. Mobile parties are giving due consideration to the frequency auctions that will require significant investment. Furthermore, the frequency auction will make the market accessible to new players. This makes it all the more important to be able to approach the end-user with competitive rates. Cost savings must however not be allowed to jeopardize service delivery quality and the flexibility of the organization and IT.



Process optimization resulting in reduced operating costs.

VDVL helps you reduce operating costs by implementing solid automated processes. VDVl designs flexible and robust automated systems that reduce the cost of future changes. Furthermore, VDVl optimizes your existing processes and IT, thus achieving cost benefits and improving quality.

Contact

Call or e-mail us for a further introduction and for more detailed information about our experience and references.

- Contact : Ben van Leliveld
- Position : Partner and Senior Consultant
- Mobile : +31 6 5335 4337
- E-mail : ben@vdl.nl

This '2009 Mobile Telecom' White Paper is published by VDVl consultants telecom | internet.
website www.vdl.nl