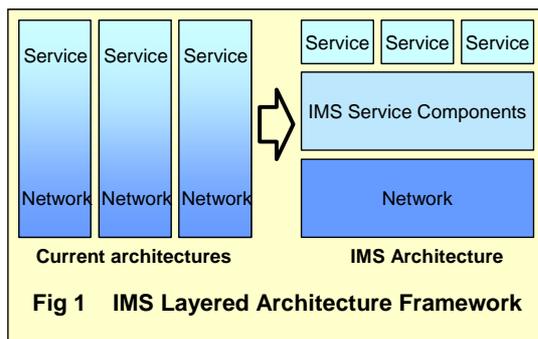# IMS – the "Mobile Internet"

*With the transition to all-IP networks well under way mobile- and fixed-network operators are focussing on building service creation and delivery platforms to exploit the capabilities of these networks. Should IMS be the service architecture of choice?*

## What is IMS?

IMS is an enabler for the development and operation of new services over next generation (IP) networks. It is not a technology but a part of the UMTS specification developed by the 3GPP It defines the functionalities and interfaces required for delivering multimedia services over IP networks. Originally specified for multimedia services over mobile IP networks it is being extended to fixed networks by the ETSI TISPAN group. It combines multiple concurrent session control with authentication, presence and location information, quality of service enablement and service specific charging capabilities to provide a capability of offering an unlimited range of feature rich services.

A key aspect of IMS is that it is a layered



**Current architectures**          **IMS Architecture**

**Fig 1    IMS Layered Architecture Framework**

architectural approach – the service layer it defines is independent of the network layer.

In the same way that in a fixed network environment an NGN replaces a range of individual networks with a single IP network, so IMS can be viewed as replacing a range of individual service capabilities with a set of common service components.

To achieve an ambition of creating an Internet experience over mobile networks IMS makes extensive use of Internet protocols. In particular it builds on the widely used Session Initiation Protocol (SIP) as the basis for session control.

IMS is 'access independent' but it is also 'access aware'. This means that an IMS defined service can use any form of access network, with IMS dynamically tailoring the service to reflect the characteristics (e.g. latency and bandwidth) of the access connection.

## Capabilities & Benefits

In a telecom services marketplace increasingly driven by a young, internet-savvy generation of consumers and with increasing competition from players in other sectors the service provider has to be able to create a compelling service experience. IMS is a significant revenue creation enabler.

- Services can be "rich", combining voice, messaging and content with location and presence information.
- Services are created from standard service components using standard APIs, allowing very rapid service creation.
- Services can be delivered seamlessly irrespective of the user's location or local access connection.
- A QoS mechanism allows network resources to be matched to service requirements, giving a better and more consistent user experience.
- IMS has a service-specific charging capability, enabling a broader range of tariff models.
- IMS provides single-step user authentication – once authenticated a user can access all other IMS services he/she is authorised to use.

The benefits of IMS go considerably beyond the ability to offer richer services.

- IMS, being essentially access independent, is a route to fixed/mobile convergence (FMC) services, and for this reason is of especial interest to fixed network operators.
- The ability of an IMS infrastructure to bridge both IP and legacy networks means that it can provide a cost effective migration mechanism for legacy services, thereby maximizing the value of legacy infrastructure.
- Appropriate roaming agreements between operators will allow mobility of rich services not just between local networks but internationally.
- The implicit authentication and charging mechanisms and the standardised service creation interfaces can open the networks to innovative, third-party service developers.
- IMS also offers potentially significant cost savings as service components are constructed on a 'write once, use many' principle, simplifying service creation and operational maintenance.

## Making the business case

Despite the apparent benefits it can be difficult to construct a sound, quantified business case for full-scale IMS adoption.

On the revenue side mobile data services take-up remains disappointingly low and 'killer' applications are as elusive as ever.

On the cost side, studies have suggested potential lifetime operational savings of up to 25% though typical expectations are in the range of 10 to 20%. However a fairly wide-scale deployment of IMS is likely to be needed before such levels of saving can be realised.

For fixed operators moving from legacy to NGN networks the case for a full scale IMS investment will generally be strong. The case for a mobile operator will be much less clear-cut.

Faced with these difficulties it is not surprising that many of the IMS investments to date have been small scale 'point solutions'.

## Managing the Complexity

Some concerns remain, particularly with regards to the operational management of IMS.

The separation of service from network and the creation of services from common service elements heighten the challenge of matching service problems to network causes and vice versa – especially when an end-to-end service involves multiple IMS domains.

However, the question for most operators now is not whether to invest in IMS but when and how.

## Strategies for IMS

Effective investment in IMS requires careful planning at both business and technology levels. IMS, like IN before it, is a key weapon in the fight to keep intelligence in the network and offset the rapid commoditization of telecom services. Unlike IN, its use of open standards and its layered approach mean that creating services no longer requires knowledge of the underlying networks, opening service creation to a whole new set of innovative designers. The business strategy must identify clearly where the operator wants to be in the value chain and what relationships with other network / service operators, service creators, virtual service operators and service component providers may be needed to achieve that position.

A number of issues also need to be addressed in the technology strategy. A clear goal architecture, at least 3 to 4 years out, is needed. For most operators this will need to be achieved in a number of steps, giving progressive service migration and maximising legacy value. The impact on operational and business support systems will be very significant and must be fully assessed.

## IMS – a service architecture for tomorrow's services

Tomorrow's consumers will expect and be prepared to pay for a wide range of personalized, high quality, content-rich services delivered seamlessly wherever they are. With an appropriate service architecture and effective service creation and delivery platforms, network operators can position themselves as the primary suppliers of such services. IMS is continuing to evolve, and will need to demonstrate that its complexity is manageable, but it clearly holds the promise of being the key to future service revenues for network operators.