

# **IMS Opportunities, Markets, and Potential Roadblocks**

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## **Introduction**

In our last article on [IMS and Push to Talk over Cellular](#), we provided several scenarios for IMS (IP Multimedia Subsystem) deployments and highlighted the interoperability challenges faced by IMS applications. In this article, we dig deeper and drill down into the real opportunities and potential markets for IMS. We also identify problem areas that need to be resolved rather quickly for IMS to be a commercial success, notably security. Fresh insight on this topic was obtained at the May 14-17, 2007 **Communications Developer Conference** (Santa Clara, CA) where several participants offered their opinions on where IMS is going.

## **Background**

IP Multimedia Subsystem (IMS) is an evolving **reference architecture** that promises to offer a common way for multiple wireless and wire-line networks to deliver multimedia applications over an all IP network. IMS is evolving through several standards groups (most notably 3GPP), research labs, vendors and carriers. IMS will allow wireless and wire-line carriers to use a common IP core network to deliver a host of new, content rich, multimedia services combined with legacy services across a variety of access technologies.

IMS began in the **3GPP** (Third Generation Partnership Project) group as an effort by GSM wireless carriers to standardize service delivery. It is now active in at least 14 different standards forums. There is also **3GPP2**- a collaboration of North American and Asian organizations under the framework of the ITU's IMT-2000 initiative. 3GPP2 specs are based on evolving ANSI/TIA/EIA 41 specs commonly known as CDMA 2000. Other groups are also involved. The Open Mobile Alliance (**OMA**) is defining IMS services. The **Parlay Group** is integral to IMS architecture as they are defining standard API's for IMS frameworks.

Yet IMS is not a standard; it is a reference architecture that defines functions within a three-layer architecture that contains:

- 1.) Access/transport/device layer
- 2.) Control layer
- 3.) Applications layer

IMS operates in a closed IP environment where the service provider must maintain absolute control over quality of service (QoS), security, and data policy to provide guaranteed service to end users. The key principles of IMS are now very well accepted:

- Decouple access networks from applications
- Provide functions as modules
- Use standardized interfaces, reusing as much as possible (e.g., SIP)

**Before and After:** Prior to IMS, service providers generally picked a single technology per service and their network quality was dependent on that technology. With IMS, there is a common IP-based core and a number of technically independent access portals. Because the network is access agnostic, service providers can support multiple access technologies. The service provider can, therefore, pick and choose the most appropriate access technology for each individual market segment, e.g. business, residential, government, or shopping malls. In this environment, end users can then select the device that best matches their predominant use, or one that is multi-functional. Service providers can select different access technologies for different situations. They can even use multiple overlapping technologies where appropriate.

Fixed and mobile network operators are expected to invest \$10.1 billion in IMS capital infrastructure between 2006 and 2011, and generate \$49.6 billion in service revenue from IMS-enabled applications within that timeframe, according to ABI Research.

Some pundits call IMS the “last gasp of the intelligent network” and predict that it will collapse under its own weight of complexity and cumbersome software implementations. We very well remember the hype and hoopla surrounding the **Intelligent Network (IN)** and the **Advanced Intelligent Network (AIN)** of the late 1980s, early 1990s! The complexity of the IMS standardization effort is evident when viewing the many interconnected functional blocks within the IMS standards framework.

### **Where is the Value Add for IMS?**

IMS’s primary advantage for enterprises will likely be in **fixed-mobile convergence (FMC)**. IMS could provide advantages in fixed-mobile convergence by enabling increased mobility at lower costs. It also has the potential for access and control of services in the network. IMS promises to accelerate convergence in many dimensions (technical, business-model, vendor and access network) and make “anything over IP and IP over everything” a reality. For this promise to be realized, progress has to occur on many fronts: standards, products from vendors, infrastructure rollouts, new applications, business models, etc. IMS is a complex architectural framework, and itself is an enabler and part of a larger picture as network services converge and evolve.

In one IMS scenario, once the users have established a voice call (VoIP), they could upgrade to a video conference call by selecting the appropriate upgrade code. The network would understand the communications context and upgrade both parties without dropping the voice call. Other parties could be added (or dropped), with both fixed and mobile subscribers participating in the conference call. The network would understand the context of the current session, when the user wants to add another party, or send a command to a computer-based application.

The enterprise customers would be using VoIP over WiFi or VoIP phones connected directly to an IP PBX. The mobile subscribers would need dual mode phones with a VoIP/ video over IP capability on their handsets. Of course, the voice and video calls would need to be based on SIP – the call control/ session control protocol used by IMS applications.

For U.S. wireless carriers, there is little incentive to move to VoIP since they have a solid cellular/TDM voice network (either CDMA or GSM based). However, the MSOs/ cable operators have no such voice infrastructure. Their telephony deployments are now focused on VoIP. So IMS could be very appealing to MSOs for service convergence in a triple or quad play environment. At the **Communications Developer Conference**, James Rafferty of Cantata Technology mentioned that ***Cox and Comcast have a keen interest in deploying IMS applications.*** Those companies are following the direction set by **Cable Labs**, which has already endorsed IMS and has developed its own specifications on how it will be applied in a Cable Network/MSO setting.

Rafferty also noted that **BT is setting up an IMS test bed in the UK.** This is understandable, since BT's 21<sup>st</sup> Century Network is based on an “all IP” access and core network. Hence, BT is likely to be a leading edge telco in deploying IMS applications. As mentioned in the previous [Viodi View article](#), Rafferty stated that a service provider probably would not make money on the first IMS service (due to the huge infrastructure required to support it), but would realize a payoff on the 3<sup>rd</sup> or 4<sup>th</sup> IMS service.

Steven Maroulis of Nortel stated that his company had signed a contract to deliver IMS hardware and software solutions to a “well known” service provider, but he was not permitted to mention their name. In an email follow-up, Maroulis claimed that: “Nortel has one of the most open solutions and we are committed to IMS Interoperability Test (IoT) Leadership with and excess of 175 IoT events touching all layers (applications, clients, terminals, core nodes) and all domains (GSM/UMTS, CDMA, Wire-line and Cable).” He offered the following information points for this article (author has bolded the last point for emphasis):

- Nortel leads in deployment with 100+ IMS ready customers worldwide
- Nortel has 20 IMS contracts and pilots completed or ongoing with carriers worldwide including 100 IMS compliant elements across wire-line, wireless and cable domains
- ***Many vendor's IMS announcements are NOT IMS but PoC or VOIP***

### **Problem Areas and Potential Roadblocks**

The most apparent potential challenge will be interoperability. It is now clear that the conformance and interoperability challenges with IMS will be huge. To date, there have not been any “**interoperability**” events or conformance test suites beyond those in place with the existing protocols IMS adopted. We wonder what organizations will step up to certify IMS conformance/compliance for specific applications or configurations?

Network World's Jim Duffy recently called attention to the problem of securing an IMS network. Recent events and published reports indicate that **IMS security specifications are lacking**, and that the architecture may open up more vulnerabilities than benefits.<sup>1</sup>

In a **Wireless Week** Webcast last fall, Bill Stone, Executive Director at Verizon Wireless stated that IMS Security had not been properly addressed. He also cited several IMS areas needing improvement:

- Too flexible, so very complex to implement multi-vendor solutions
- SIP not optimized for wireless – too chatty, increases latency
- Mobility and roaming- must preserve customer quality experience
- Management of non-SIP applications needs to be considered
- Security enhancements and policy management are urgently needed

### **Conclusions**

- We believe that the 2007-2010 timeframe will be a time when IMS applications are tested, but not widely deployed. IMS will continue to mature during this time-period and most core (but not access) networks will be based on IP.
- IMS is well regarded by tier 1 telcos that have fixed line and mobile networks. Again, they are looking at IMS for Fixed Mobile Convergence, but only if the network is “rock solid” in terms of reliability, availability and security.
- Wireless only carriers have less incentive to make the necessary investment in an all IP/ IMS network. They will make incremental investments on new IP applications to augment their TDM access networks.
- Mobile WiMAX success could accelerate IMS deployment, as it is a wireless IP access network that could be exploited for voice and video applications.
- To be competitive, tier 2 telcos will convert to IMS if there are obvious advantages demonstrated by the bigger players.
- Peer- to- Peer models will also compete with the IMS Client – Server approach. SIP Peer to Peer is being standardized and Skype is a big success story for their very popular VoIP service.
- There will be a slow transition from hybrid (TDM/IP) to all IP networks, which will delay widespread implementation of IMS.

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<sup>1</sup> [IMS networks face security challenges](#), Jim Duffy, **Network World**, 05/08/07