Volume 1/Number 1 January/February 2009

www.ngn-mag.com

TMC

NGN™

Next Generation Networks

Premiere Issue

Heading for 4G: WiMAX & LTE

Rich Tehrani Looks at GCS

Multi-Billion Dollar Opportunity: NGNs & Multimedia Contact Centers

Tomorrow's Revenues - The New Rules

Questions about IMS Remain

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Editor's Notes

Welcome to NGN Magazine!

by Richard "Zippy" Grigonis

Welcome to Next Generation Networks (NGN) Magazine! NGN is the successor to IMS magazine. Don't worry, many of the IMS columnists you know and love are still writing for us. What has happened is this: We recognize that although the IMS architecture is going to be a major part of the world's wireless and wireline networks, certainly the future of communications networks is even more expansive than what IMS alone can describe. The canvas upon which network operators and providers "paint" their services grows larger every day. Indeed, their toolkit of "paints" has become more varied and colorful, too.

Even the IMS Forum has recognized this fact, and has merged with the NGN Forum, to considerable effect. (Michael Khalilian, the Chairman and President of the NGN Forum & IMS Forum, continues to write the closing column to this magazine.)

None of this, of course, is bad news. On the contrary, as a result of all this, we have many novel and exciting subjects to tackle in our new publication: In addition to such revolutionary broadband wireless technologies as WiMAX and LTE, there's Telco 2.0, Service-Oriented Architectures (SOA), Web Services/Web-Oriented Architectures (WOA), Software as a Service (SaaS) and other permutations and cross-pollinations of Internet/World Wide Web-based technologies, all of which make the development and deployment of extraordinary new services easier and less expensive than ever before. Most of these technologies can compete with IMS, though all can be wielded in such a way so as to complement and even revitalize IMS, which become an even better access-independent platform for service delivery. After all, part of the fun is seeing the continuing twists and turns in the evolution of today's IP Communications industry.

Thus, we once again find ourselves in a decisive moment in the history of telecommunications. In the coming months and years, each network operator and service provider will have to make profound technological and business model choices about how they will sustain themselves for the next decade or so. In most cases, the choices require a close, intense, and introspective look by operators as to what they want to do and what the economics of the situation dictate. What sort of world of communications are we fashioning? And can we make it economically viable?

"Orienteering" is a sport wherein participants called orienteers use a detailed, accurate map and compass to race across unfamiliar countryside and find specific points on a landscape. This particular element of route choice and the ability to navigate through the rough country are the essence of orienteering.

Present-day network operators, carriers, service providers, etc., are a bit like orienteers, racing to points called IMS, SOA, Web Services, and so forth. As in real orienteering, the route to and between these points is never specified, and is entirely up to the choice of the orienteer.

Here at NGN we cull through what's happening out there in telecom and report back to you on how you can navigate the great wilderness of uncertainty that lies before many of us. Look upon us as a combination of a trusted advisor, map and reliable compass pointing the way.

With NGN, you'll never get lost in the wilds of telecom. **NGN**

Richard "Zippy" Grigonis is Executive Editor of TMC's IP Communications Group.

NGN Next Generation Networks

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Global Convergence Solutions Worth Consideration

by Rich Tehrani

This is my first column in NGN Magazine and I am happy to report for this inaugural issue I have some great information on a company which can help you build efficient and cost-savings next-generation networks. To that end, I have had multiple conversations with Neal Axelrad, CEO of Global Convergence Solutions (GCS) a company which is relatively unknown but employs some very bright and experienced people solving the challenges of the next-gen service provider.

According to Axelrad, 95 percent of the company is comprised of early employees and founders of ITXC which was sold to InfiniRoute Networks – an early VoIP peering company focusing on PSTN to IP conversion. This company was later purchased (in 2006) by Transaction Network Services (TNS).

Suffice it to say there are few people who have more experience in IP communications – especially from the early days – than the team that saw this transition to multiple IP communications companies and who founded ITXC. Moreover, this team developed some of the first cutting-edge routing and reporting systems.

GCS was founded by the people who decided they wanted more control over their financial destiny and M&A roadmap. They started a professional services company catering to the same service providers they worked with in the past and from there they branched out. The services provided ranged up and down the seven-layer OSI stack and focused on design, implementation and support of carrier network infrastructure.

The company stayed platform-agnostic and over time, customers started to ask for solutions which led to relationships with hardware providers like Sansay, Stratus, NexTone (now Genband) and others. As they worked, they saw that many carriers had needs in the routing, interconnection, and interworking of networks as they were transitioning to next-generation networks.

Other customers consisted of Web/VoIP 2.0 companies who understood the front-end well but needed assistance designing back-end IP-communications networks. In one case they took a system based on Asterisk and case-hardened it with by adding an SBC as well as media gateways and in the end came up with a system which was much more resilient and able to fend off denial of service and other attacks.

From there, the company became well-versed in providing dynamic routing solutions and this led to product Number One, EZ- LCR, a dynamic lossless Least Cost Routing (LCR) routing engine which acts as middleware between carrier billing systems and VoIP session controllers such as session border controllers and soft-switches, but doesn't need any custom coding or special synchronization processes. Indeed, EZ-LCR works with any NGN that supports SIP 302 re-direct. Even if you have multiple NGN networks and platforms, you can just point them at EZ-LCR. It can do complex routing across LANs, WANs and the Internet using standard SIP signaling. It even supports failover routing, preference base over-ride routing, Time of Day routing, % routing and batch route blocking.

From there, customers asked for intelligent routing modules which handled dynamic route changes. At this point, product Number Two was born, EZ-QOS. If you are reading carefully and fully-caffeinated you may know (or have guessed) that some or all of the following related products/services are also available: EZ-Reporting, EZ-LNP, EZ-CDR, EZ-Net-

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work Control as well as Operational Outsource, NGN Design and Global Network Implementation.

What is the company's hottest new product? Well, if you realize the company has expertise in open source and SBCs, then you won't be surprised to hear that a product merging the best of these worlds is in the works. No word yet on how it will compete in terms of features against some of the more established products on the market.

Axelrad explains that Phase Two of the company involves taking software out of the platform and making it more modular and ensuring that customers use the piece-parts they have in their network very well. This software is designed to help carriers ensure that the investments they make can be utilized more efficiently. In other words, they want to ensure that a single purchase such as an SBC makes the most sense and if so, they want to make sure that it integrates most effectively with other network elements.

Phase Three takes these services and moves them into the enterprise segment while Phase Four is a new product based on what's called Managed Communication Application Peering, a centralized application routing and control engine allowing in-house and third-paty applications to move across multiple networks and platforms. The goal of this solution is to allow companies to communicate more effectively with suppliers, customers and internally on a SaaS basis.

My two conversations with Axelrad encompassed the credit/housing/Wall Street crisis and on my second call he mentioned to me that carriers are now looking to his company to help them focus on cost savings as much as revenue generation.

In addition, he tells me that quite often service providers use his company's services to better interconnect the disparate solutions they have in their networks – allowing them for example to better and more holistically manage multiple endpoints and platforms. This is roughly analogous to the former activities of Genesys Labs – now part of Alcatel-Lucent but first begun over a decade ago to provide middleware in call centers. Back then, Genesys enabled some of the first bridges from disparate dialer and ACD platforms.

GCS has managed to get to their enviable position without funding and is looking for its first round. I am impressed with what I hear from GCS. The company's aim is to help operators better utilize their current network infrastructure. As long as carriers think cost-savings and/or new revenue generation is important, they'll inevitably gravitate to the good value provided by GCS' ability to enable more efficient NGNs to be built. **NGN**

NGN/IMS Plugfest 6 Conference Call

The NGN/IMS Forum invites you to the Plugfest 6 Open House and press/media conference call during the Plugfest 6 week of testing. The call will be held on January 15, 2009 at 11 a.m. EST. It will provide a status on the progress of the week of testing and will share the initial findings and results of the IMS/NGN Plugfest 6.

Plugfest 6 participants and sponsors includes companies such as, Intel, NTT, HP, Radvision, Aricent, Acision, Mu Dynamics, Tekelec, Sonus, Wipro, Starent and Marben.

Representatives will be on the call to discuss the progress that their companies have made at this Plugfest 6.

The topic of Plugfest 6 is delivering ready to use IP Video, DIAMETER, IMS SIP, Security, UC Services and IP BSS/OSS. The following local and visited network services will be tested including the following:

- Inter and intra-domain NGN services routing.
- Visited networks scenarios for consumer and enterprise customers, including security and reliability.
- Billing, charging and service Creation/SDP for IMS and NGN.
- Presence and location based services.
- Interfaces operational testing (SIP-Gm, SIP-Mw, SIP-ISC, interface security profiles, Sh-Diameter and Cx-Diameter interfaces).
- Other services including SIP signaling compression and multiple profiles for public and private users.
- Services including VoIP for residential and enterprise, Unified Communications, IP Video, FMC and other multimedia applications.

The IMS/NGN Plugfest will be held January 12-16, 2009 at the InterOperability Lab (UNH IOL) in Durham, New Hampshire. The IMS Plugfests are the industry's only interoperability events covering NGN services over wireless, wireline and cable broadband.

The results will be announced at the INTERNET TELEPHONY Conference & EXPO, February 3, 2009 at Miami Convention Center (www.itexpo.com).

Please RSVP at PR@IMSForum.org.

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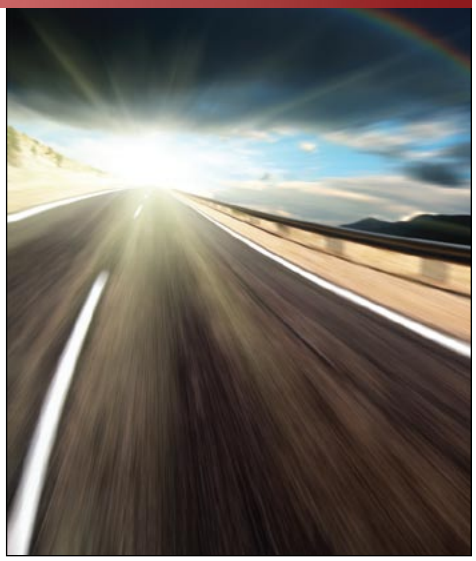

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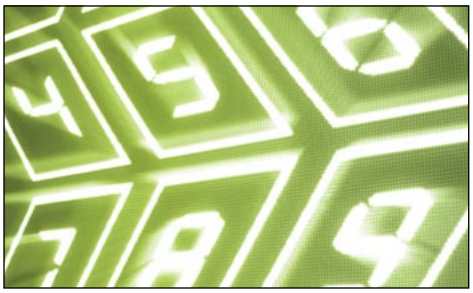

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Fixed Mobile Convergence Global Online Community

Fixed Mobile Convergence addresses the growing demand in today's business environment for seamless connectivity between fixed and wireless communications services. It is the ultimate convergence of all voice, video, and data communications, independent of location, device, or access technology.

The Fixed Mobile Convergence Community, sponsored by Research In Motion and powered by TMCnet, is your resource for staying up to date on the latest news that's important to optimizing your business' communications.

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- FMC Showcase
- Ask the Expert
- RSS feed for FMC news
- Feature articles
- White papers

http://fixed-mobile-convergence.tmcnet.com

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www.tmcnet.com/2646.1

Motorola Announces Mobile Commerce Solutions and First Deployment in China

Motorola announced the launch of a comprehensive mobile commerce solution for financial and retail merchandising needs that offers an enhanced user interface with security and reliability built in. The solution has been deployed by Union Mobile Pay (UMPay), a mobile payment company established by China Mobile Communications Corporation (CMCC) and China UnionPay. The company's services include Mobile Wallet, Financial Messaging, Top-up and Mobile Ticketing.

Motorola's M-Wallet solution allows consumers to personalize financial needs such as account inquiries, money transfers, bill payments, utility payments and e-ticketing on their mobile phones, thereby reducing the need to go to banks or carry bank cards. Additionally, the platform also provides business-to-consumer (B2C) solutions for merchants covering merchant membership cards, electronic coupon and prepaid cards.

www.motorola.com
www.umpay.com.cn

www.tmcnet.com/2647.1

Huawei Trials LTE 4G Network in Spain

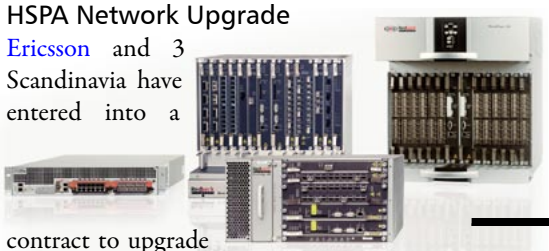
Upon completion of long-term evolution, or "LTE" mobile field trials in Spain, officials at Huawei Technologies reported they had achieved speeds of up to 173 Mbps — more than 10 times as fast as the peak speeds available from 3G networks such as a high-speed packet access.

Huawei deployed end-to-end LTE solutions including base stations, SAE System Architecture Evolution and self-developed LTE terminals. The company's LTE trial reportedly successfully delivered sustained high-volume content and steady transmissions across the urban areas of Madrid while also recording the maximum data speeds available with LTE technology.

www.huawei.com

www.tmcnet.com/2648.1

Ericsson, 3 Scandinavia in European HSPA Network Upgrade



Ericsson and 3 Scandinavia have entered into a contract to upgrade the operator's HSPA network to 21 Mbps downlink speeds. This will enhance mobile broadband speeds in Scandinavia, giving 3's customers improved access to mobile broadband services, including Internet and music and video downloads.

Currently, Ericsson will offer the improved speed in selected parts of the network in Sweden and Denmark. However, Ericsson and 3 will continue to expand network coverage throughout 2009. According to the agreement, Ericsson will provide radio base stations, RBS6000, core network features and a mobile backhaul like Redback SmartEdge 1200, Marconi OMS 1400 and MINI-LINK TN.

www.ericsson.com

www.tmcnet.com/2649.1

Cisco Delivers Advanced Network-Based Media Processing Platform

Cisco recently announced a media processing platform designed to simplify live and on-demand media sharing across PCs, mobile devices and other digital screens, by seamlessly formatting video and rich media for viewing on any device.

The first product being introduced within the Cisco Media Processing portfolio is the Cisco Media Experience Engine (MXE) 3000, which delivers the ability to transform a single source of content so that it is playable on any device. It also delivers real-time post production and processing capabilities such as watermarking, voice and video editing, text and image overlays and noise reduction to create customized broadcast quality video experiences.

According to the company, the Cisco MXE 3000 joins a new class of media-optimized technologies and solutions that enable better video experiences, faster delivery of rich media content and simplified media sharing across the network.

www.cisco.com

www.tmcnet.com/2650.1

Telecom New Zealand Selects Pactolus SIPware

Pactolus Communications has announced that its SIPware Prepaid Service has been selected and deployed by Telecom New Zealand International. Telecom New Zealand International will use the SIPware Prepaid Service to add 'white label' services to its offering. This will allow retail MSO and IP service providers to brand and offer subscribers affordable, feature-rich services.

TNZI has collaborated with many MSOs to roll-out new international services, which transparently layer prepaid international long distance "bucket-of-minutes" plans that are rated in real time until used up, and are supported by existing VoIP services.

The solution enables MSOs to more successfully compete against free and flat rate VoBB international calling services to prevent subscriber attrition, and integrates easily with pre-existing core VoIP services. It also lets subscribers add value-priced international dialing capabilities to their current post paid VoIP accounts, and use the service without additional dialing or account authentication processes.

www.pactolus.com
www.tnzi.com

www.tmcnet.com/2651.1

EtherSpeak Intros New Pricing for ShoreTel SIP Trunking

EtherSpeak Communications has introduced unlimited pricing plans for its SureTrunk service, the first-of-its-kind native SIP Trunking for the ShoreTel platform. With the

new unlimited pricing plans, known as Freedom plans, EtherSpeak hopes to boost the adoption of next-generation IP telephony by the ShoreTel community. The Freedom plans have already been implemented and include a monthly rate as low as $32.50 per trunk for local and long-distance calling in the continental U.S. and Canada. Customers of ShoreWare-based IP phone systems are also being offered BurstaTrunk service options along with the SureTrunk solution.

In July, SureTrunk earned the distinction of being certified as a ShoreTel Technology Partner Program (TPP) solution. The SIP Trunking service allows ShoreTel customers to enjoy all the advantages of IP-enabled communications. It also eliminates the requirements of additional hardware, firewalls or gateways.

www.etherspeak.us
www.shoretel.com

www.tmcnet.com/2652.1

Veraz Deploys SBC for Dollar Phone

Veraz Networks recently announced that Dollar Phone has selected the company's session management and security solution for its wholesale transport network. The solution, which includes Veraz's next-generation session border controller (SBC), the Network-adaptive Border Controller (N-aBC), will provide Dollar Phone with an advanced security platform integrated into their core network designed to handle both TDM and IP based security threats.

The N-aBC is designed to provide cost-effective and secure interconnection capabilities for both SS7 and SIP services. By separating the signaling security from the media security, the N-aBC also enables a single point of signaling security management across multiple endpoints in the network. In addition, because the N-aBC is built into Veraz's ControlSwitch softswitch platform, security and routing policies can be fully integrated and managed centrally, simplifying operations and improving network security.

www.veraznetworks.com

www.tmcnet.com/2653.1

NatGeo Chooses LifeSize HD Video Conferencing

LifeSize Communications announced that National Geographic has selected its HD video conference and telepresence solutions. Under the terms of this new agreement, National Geographic will use LifeSize HD video conference and telepresence solutions to connect the Society's offices and reduce the environmental impact of inter-office air travel.

According to National Geographic's Manager of Presentation Facilities, Eddie Dornack, they selected LifeSize because they delivered a true-to-life video experience that is an effective travel replacement.

"Our goal is to inspire people to care about the planet, and our environmental principles are of the upmost importance to the scores of writers, producers, editors, photographers, and staff members who make the Society what it is today. LifeSize helps us meet our operational needs in an environmentally friendly way," explained Dornack.

National Geographic deployed a combination of more than 15 LifeSize Room, LifeSize Team MP, and LifeSize Express systems across the globe, with plans to increase the number of LifeSize endpoints over the coming months. The LifeSize Networker product was also chosen for seamless ISDN to IP connectivity in those locations using ISDN connections.

www.tmcnet.com/2654.1

Emerging Markets, Data Services to Fuel Mobile Growth

Bucking downward economic trends and predictions, a London-based IT market analysis firm is calling for emerging markets and data services to fuel global mobile growth. Officials at Ovum predict that there will be 5.63 billion mobile connections by 2013. The figure marks a 43 percent increase from this year.

According to Steven Hartley, a senior analyst at Ovum, and author of the report titled "Global Mobile Market Outlook: 2008–2013," the mobile market is seeing a shift in the global balance of operator power. Specifically, Hartley said, an increasing share of customers in emerging markets will go to new, rapidly expanding players such as Zain and Orascom.

The firm says its forecast takes current market conditions into account. Global penetration in 2008 is estimated at 59 percent and is predicted to rise to 80 percent by 2013, according to the firm.

www.ovum.com

www.tmcnet.com/2708.1

Boingo Inks WiFi Deal with Skype

Skype users can now access more than 100,000 Boingo Wi-Fi hotspots worldwide, and pay using Skype Credit thanks to a new deal inked between the company and Boingo Wireless. The new offering, called Skype Access, will be embedded into Skype as a central feature, first in the Skype for Mac 2.8 Beta software released in early January and then in versions of Skype for other operating systems later this year.

With Skype Access, users can connect to a Boingo Wi-Fi hotspot with a single click of their mouse and pay per minute for the Internet time used. Skype Access periodically looks for available Boingo hotspots and provides the price per minute to use the Boingo network using Skype Credit in the forum of a pop-up dialogue box.

www.skype.com
www.boingo.com

by Ronald Gruia

Number Portability in the IMS World

This year's edition of Futurecom (LatAm's largest telco show, held in São Paulo, Brazil) provided yet again a good perspective on how that dynamic marketplace is evolving as it transitions to the NGN. One of the hot topics discussed at the show was NP (Number Portability), or the mechanism that allows fixed and mobile subscribers to preserve their telephone numbers when changing service providers, physical locations or types of service.

In Brazil, the first stage of NP (as mandated by the local regulator Anatel) went into effect at the end of August 2008. Brazil represents the second largest implementation after the US, benefitting more than 170 million Brazilian fixed and mobile subscribers. From a Latin American standpoint, other countries such as Chile, Colombia, Ecuador and Peru will soon follow suit, as NP gets mandated within the next couple of years.

Traditionally speaking, number portability was based on IN nodes. For mobile portability, the Mobile Subscriber ISDN (MSISDN) number is checked in the NPDB (Number Portability Data Base), and then a prefix is added (the RN or Routing Number, which is associated with a geographical or telephone number that has been ported out from a donor carrier to another carrier). Any node in core wireless network is responsible to perform the MSISDN check in the NPDB if it has not been done yet. The NPDB is typically populated based on regulator requirements. In the IMS domain, number portability can be viewed from a different perspective, moving from a traditional service-specific numbering to a technology-neutral "identity" management system; i.e., ENUM. (For more on ENUM, visit www.tmcnet.com/2591.1) A common numbering solution such as ENUM can facilitate the porting of numbers between fixed and mobile networks, albeit it does not address other issues such as tariff transparency.

In the future, with IMS, it is conceivable that users will be dialing with the tel URI for telephone numbers (as specified in IETF RFC 3966), which is translated by the CSCF to a SIP URI. The SIP URI would encompass the domain name, which can then direct the call to a specific operator's I-CSCF. So at least in theory, a futuristic IMS-only implementation of NP would simply involve a change in the respective entry in the DNS/ENUM system. However, the actual process is more involved, as ENUM requires other aspects: it has to know how to translate the number (number @domain) and also to work with the DNS configuration in order to determine what that means in terms of IP address and which type of domain it is routed to. For the case of legacy PSTN users, the process would be more involved, as it would also need to involve a check with the NP database.

Obviously, SIP routing works differently from SS7 routing, since each mechanism is intrinsically distinct, but NP is another example of the flexibility of the SIP/IMS approach than the legacy IN/SS7 modus operandi. That said in the IMS domain subscribers usually have more choice as to which provider they connect to.

Key Takeaways

NP is about being reachable at both a new and previous operator(s) via a given number. Today, interconnect with other operators is typically still carried out in the "old fashioned" way by relying on SS7, which essentially means that NP is realized through IN databases. ENUM for NP only comes into play when interconnection becomes IP-based. An IMS deployment will have an ENUM database, but this would typically only include "on-net" destinations – i.e., numbers on the same IMS network, all handled by the same operator.

While many expect that with the ongoing NGN migration, NP should become easier in the future (since SIP is designed around domain names), the practical realities suggest otherwise. IMS was still devised from the ground up to preserve some classic business models where the TNs (telephone numbers) were the key element for billing and routing purposes. As a result, SIP implementations of IMS network elements have to be tweaked in order to follow these older models. For instance, we still will not find operators wishing to charge yearly domain registration fees rather than monthly minute termination fees. Since voice is usually the initial "IMS app" deployed and users interact with voice services via the legacy 12 button numeric keypad interface to dial numbers, it will be practically impossible to avoid the preservation of telephone numbers within the IMS architecture, at least for the foreseeable future. Telephone numbers are not only imperative for billing and routing purposes, but also an integral part of the end-user experience, and it will take a long time before the *status quo* changes.

SIP is a building foundation of IMS, but the fact remains that IMS limits some of the inherent flexibility of native SIP, including full support of domain names, URI schemes and topology flexibility. Reasons for this limitation include:

1. Standardization approach was wrong from the start, as it was conceived from a "walled garden" or "gated community" perspective (while SIP was built from the ground up as a fully "open environment"). IMS also attempted to predefine services and service interactions, which runs contrary to the Web 2.0 mashup service creation philosophy.

2. Emergence of proprietary SIP implementations: Network Equipment Vendors (NEVs) started creating their own SIP extensions and other proprietary features in order to better differentiate themselves from their competitors. This is almost a repeat of the situation in the 90's with various IN standards and implementations.

The bottom line is that a whole array of operational management issues has been typically ignored by the NEVs. The above issues will obviously impact the management of services such as NP, and the arsenal of options available to operators for such offerings. The situation will be dramatically improved if NEVs stick more closely with the original concept of SIP and focus more on helping service providers to manage the service and network. **NGN**

Ronald Gruia is Program Leader and Senior Strategic Analyst at Frost & Sullivan covering Emerging Communications Solutions. Reach him at rgruia@frost.com.

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by Åsa Carlson

IMS Pioneers Pave the Way For Success

IMS-based services are now breaking through in several areas. This was apparent when some of the pioneering operators shared their experiences of new communication services with their competitors at an Ericsson-hosted event in November.

For two days, more than 100 executives from 45 operators — both frontrunners and their more cautious competitors — came together as an industry in a small but important step towards ensuring the global success of IMS.

Information and knowledge-sharing are crucial to the further success of new communication services based on IMS. One successful example of such collaboration is the Rich Communication Suite (RCS). In one European country, several mobile operators have made a joint effort to launch RCS nationwide, showing the importance of cooperation in boosting new mass-market services beyond SMS and MMS. Those who attended the Ericsson event shared this story and many other presentations on different ways to successfully deliver IMS-based services to consumers.

One European operator explained how they are decreasing enterprise-communication costs dramatically by offering a new converged-communication solution to SMEs. Their next step is to now target larger firms too. The operator provides the company with one net solution for mobile, fixed and data communication. The enterprise saves money because the solution includes unlimited calling within the firm as well as on-line control of operation and costs.

Another European operator talked about their vision of being an integrated operator and their long-term plan for PSTN replacement to VoIP. The operator has 1 million subscribers and is growing rapidly. "IMS will provide a common control and service layer to every subscriber," the operator's representative said. A third operator from a Nordic country shared the company's first steps into IMS. Its strategy is to become a competitive multimedia player, offering services that will work regardless of the network used to access it. As a first step in its IMS rollout, it is now offering VoIP to residential users and hosted IP-PBX and business trunking to enterprises.

The operator presentations reinforced the general impression that IMS has had the strongest possible start in VoIP and enterprise services. Many operators choosing IMS say that their greatest motivation for doing so is that they are able to add new services easily and enjoy a short time-to-market for new, innovative applications. Other strong reasons are the need for transformation to all-IP networks with the potential to decrease operating costs. With this transformation, several operators stressed the need for using standards like MMTel for voice services in the IP domain.

However, some challenges remain, such as the availability of terminals in the market supporting IMS, as well as the integration with OSS/BSS. Most operators are also concerned with business models, which services to provide and figuring out what customers will be willing to pay for. During his presentation, a senior expert in consumer behavior from Ericsson ConsumerLab said: "For a telecom operator, it's about keeping its position as a single point of contact for the subscriber and providing services that the customer wants; some services have to be provided for free, while others the customers will pay for."

Looking into the future, the expert from Ericsson ConsumerLab stressed that, eventually, every device that might benefit from a network connection would have one.

An application and widget developer emphasized the importance of standardized technology with open application programming interfaces (APIs) and close collaboration between the telecom world and application developers. Traditional telecom operators consider ISPs as both partners and competitors. It is therefore important for telcos to understand new business models and how to cooperate with new players. Looking ahead, finding new business models will be one of their main challenges.

There are more examples from which to gain inspiration. One Asian operator that didn't attend this year's conference is challenging the competition by targeting the broadband market with HSPA. They provide their subscribers with a multi-broadband solution, including 2G and 3G telephony, mobile broadband and WiFi hotspots in the region's biggest city. The broadband subscribers can access the Internet both with their computers and WiFi phones that are a part of the subscription.

Looking into the future, the expert from Ericsson ConsumerLab stressed that, eventually, every device that might benefit from a network connection would have one. This means that consumers will demand convenience and a ubiquitous connection – an evolution from today's mobile services and Internet to any service on any screen from any access point. Full-scale IMS can make this vision a reality and will open up the telecom industry for new mass-market services. Because IMS is happening now, operators that want to be involved need to be prepared. But this is not only a matter for vendors and operators; to guarantee its success, IMS must be a true cross-industry phenomenon — a view shared by the event's speakers and delegates. **NGN**

Åsa Carlson is responsible for driving the marketing of IMS across Ericsson.

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by Grant Lenahan

Tomorrow's Revenues: The New Rules

In this column I'll focus on how to make money.

Good, I knew you'd all like the topic <grin>.

But it's true. In this column I plan to kick off a seven-part series that looks at how we, as an industry, will make money on IMS and other "Next Generation" Networks (NGN). Oh, and on today's networks too. Remember my favorite economist — Willie Sutton. Today's networks are where the subscribers are, and, therefore, where the money is. While today's networks may be where the money is, tomorrow's services are where the money will come from, and tomorrow's IMS and NGN networks will be vastly better at delivering them.

In the meantime, I'm concerned that we — as an industry — can't see the forest for all the trees that are being hyped. Charging, Online Charging, Advertising, Content, Commerce and myriad supporting technologies are being talked about as if they were independent opportunities. They aren't. Advertising, for example, is closely linked to both content and to Charging — after all, it is just one of several sources of revenues.

> ...the essence of the change our industry must undergo... From a vertically integrated service offering to being part of a larger, multi-party value chain.

So let's back up, sweep aside the hype, and see the big picture. Then we can figure out, together, how to get there. I'd like to start with a very few, rough-order-of-magnitude facts, courtesy of PriceWaterhouseCooper, the Organization for Economic Co-operation and Development (OECD), Gartner and Morgan Stanley. The global mobile market is roughly $750B. The Media and Entertainment market, which includes content, gaming and advertising, is $2.2 trillion — three times larger. The e/m-commerce opportunity is hard to measure exactly, but is larger still — and growing rapidly. I won't go into detail here, but much of this data is available in presentation format in my recent presentation at the TM Forum's Management World Americas, at www.telcordia.com. The bottom line is that there is more money, available yet untapped, to our industry than we make today. The questions are, "What percentage of those markets can be captured by Service Providers?" and "How?" (See the three illustrations accompanying this column.)

Many of the above-mentioned opportunities are hyped, without caveat. Yet the caveats are many. Communication Service Providers (CSPs) have no God-given right to any of these revenues. They must earn market share by providing a value proposition that is superior to existing channels for music, games, video, goods, and advertising. Similarly, in any two-sided value proposition, CSPs must also attract (and retain) consumers to their channels, and encourage them to participate in non-traditional plans. This requires that the consumers' buying experiences be superior — via some combination of better quality, convenience, value, security, and user experience.

Therein lies the essence of the change our industry must undergo: from a one-sided business case to a two-sided one. From a vertically integrated service offering to being part of a larger, multi-party value chain. Thinking this way changes the question from, "Can I succeed with advertising?" to "How does advertising fit into a content delivery value chain?" and "How can my network intelligence [sometimes via IMS and NGNs] make this experience better for both the consumer and the merchant?"

I won't try to answer these questions here. Rather I will lay out an agenda to address several inter-related topics over the next 12 months. Wherever possible, I'll also create pointers to additional information on each topic, with an eye toward a collaborative community experience.

To orchestrate our potentially confusing journey, I've stolen from Lewis Carol: "Start at the beginning. Continue to the end. Stop." So I will begin with the money, proceed with the requisite steps to get *at* that money, and finish with discussions of how all this applies to content, advertising and various forms of "other people's content". My agenda, always subject to improvement, is as follows:

- Where's the money?
- Mixed revenue models — how advertising is just another form of complex charging
- What steps must CSPs take to win market share?
- Privacy and Trust — your competitive weapon
- Content and Advertising — Perfect Together
- Eating someone else' Pie — making money on m-commerce, off-deck and user-generated content

One column at a time, I hope we can show where the hype lies, what the real opportunities are, and what steps our industry must take to expand our revenue base and prepare ourselves for success in the coming decade(s). **NGN**

Grant F. Lenahan is Vice President and Strategist, IMS Service Delivery Solutions at Telcordia Technologies, Inc. For more information, visit www.telcordia.com.

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by Andy Huckridge

After Interoperability What's Next?

We recently saw the conclusion of the Multiservice Forum's GMI2008 event and an ETSI IMS Test event. In both of the test events, the by-and-large outcome is that Interoperability has now been tested-in. What test methodologies are next being considered?

Sometimes, everyone is right.

NGN networks rely on more and complicated software components as the building blocks of complex networks, or service offerings. From the above events it can be seen that we largely have the interoperability issue licked, at least for those vendors who want to test against each other that is. But now the testing paradigm is evolving and changing; today we are exposing more software blocks directly to the end-user, testing the actual software in more unforeseen ways. When testing software, the purpose is to validate correct behavior – there are only two possible outcomes to a test, either the software functions as it is supposed to function, or it does not. A third possible outcome is that the test itself is incorrect. But sometimes, things are not this straightforward.

There is Only One Way

Staff involved in test design often mentions to me that for a test to be meaningful you always need to know the correct response to each Stimulus sent to the Device Under Test (DUT). For tests utilizing a UI, the inputs can consist of mouse movements and characters received from the keyboard. For protocol tests, the inputs are often defined as a sequence of requests and responses. For each input, there is a set of valid responses.

A protocol is an agreed format for communications, much the same way that a conformance test audits the functionality of an implementation against a specific version of a protocol specification. For each functionality, there is a set of message sequences that exchange the predefined set of data to reach that functionality. A state diagram describes the valid state transitions and the different messages that are sent from one party to the other to reach the next state in the communications process. A valid message sequence traverses this state diagram according to the protocol design.

My Way or the Highway

Protocol conformance can often result in an argument. When products of two different development groups do not communicate between each other, the developers start pointing fingers at either one of the implementations. The protocol specifications often leave space for interpretation. Protocols are still just agreements, and the purpose is interoperability between vendors. But not always. Sometimes the purpose of protocol specifications is just marketing. Some vendors have no interest to be interoperable. They can dictate standards, and if they so desire, write new ones.

Only the Destination Matters

A network that consists of products of one vendor only can appear to be extremely interoperable, and fast. There is little reason to use all the connections between complex sequences of messages if you can reach the same result with fewer messages. You can make shortcuts.

Some vendors have no interest to be interoperable. They can dictate standards, and if they so desire, write new ones.

Other shortcuts relate to usability. It seems to be perfectly valid to respond to VoIP call initiation with a "Ringing" message, even if in reality there is not yet anything really ringing on the other end. To the consumer, this will create a false impression of effectiveness and operation where there is none.

You Will Decide the Correct Way

All the above arguments have their supporters, for test tool vendors it is also not easy to test, since any valid response is often ok. Only the well trained user of the piece of test equipment will determine that outcome. Sounds suspicious — right? Well it is — but only for conformance test methodology. It is not suspicious if no specification exists. In real life, it is impossible to define all possible requests and responses to software.

In the Negative, Robustness & Security test methodology the purpose is to verify the service / DUT stays up and the associated software does not crash. An intelligently broken message can result in extremely weird responses. Sometimes a request results in an error message. Sometimes the broken message is passed through and accepted as a valid request. And oftentimes the request is just silently discarded. All these being perfectly valid functionality. Good testing! **NGN**

Andy Huckridge is Vice President, Marketing, Codenomicon. Andy has worked in the Silicon Valley telecommunications industry for more than a decade and has a broad background in defining and marketing products for the semiconductor, VoIP and IMS/NGN space. Reach him at andy@huckridge.com

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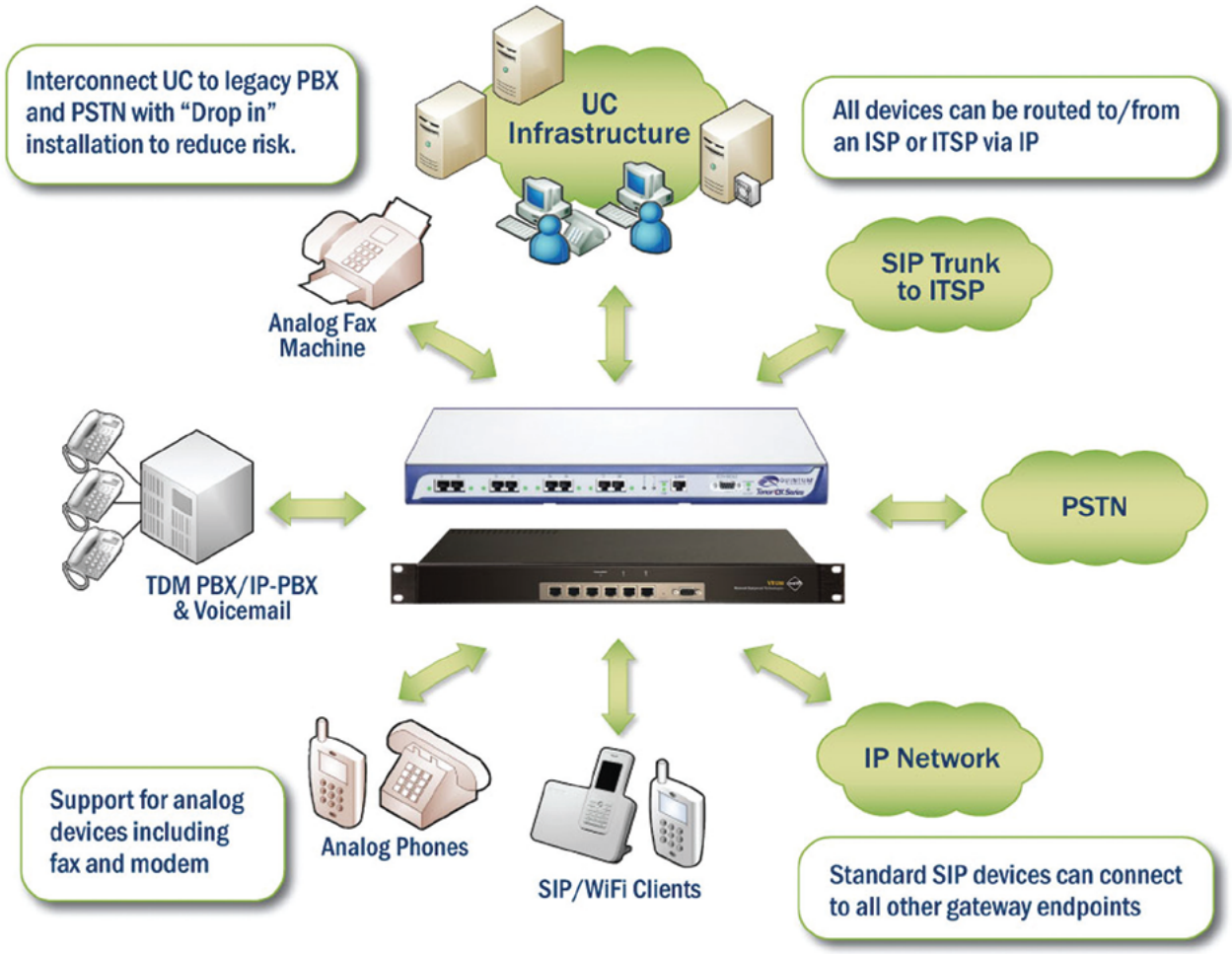

The Unified Communications Global Online Community, sponsored by NET/Quintum Technologies, is designed to serve as the premier resource for information on Unified Communications technology and solutions. As the Unified Communications space continues to evolve, readers can stay abreast of trends and issues driving this exciting technology Bookmark this page to keep informed.

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http://unified-communications.tmcnet.com

by Richard "Zippy" Grigonis

At **$1.3 trillion**, the US represents over a third **of the global $3.8 trillion** telecommunications market.

–TIA

11,000 companies provide telecommunication services representing **$400 billion annually**

–First Research, Inc.

3,000 wireline carriers have annual revenues of **$240 billion**.

–First Research, Inc.

People who:
never or rarely use email **(57%)**
Internet **(49%)**
or picture messaging **(54%)**.

– Mformation

68% of mobile users find buying a phone frustrating when they know that there are applications and services on it that they will never use.

– Mformation

32% of service providers will not consider, or have considered and rejected, **deployment of PBB-TE, but only 5% express similar negatives for MPLS-TP.**

–Infonetics Research

Even though MPLS-TP is not yet defined, almost **80%** of service providers said they are **considering MPLS-TP,** while **53% will consider PBB-TE.**

–Infonetics Research

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by Gary Kim

Questions about IMS Remain

If you lived through an earlier time when Integrated Services Digital Network (ISDN), Advanced Intelligent Network (AIN) and then Asynchronous Transfer Mode (ATM) represented the "network of the future," you will understand why some remain skeptical about IP Multimedia Subsystem (IMS) in its grander permutations, even though IMS adoption is inevitable, for prosaic reasons.

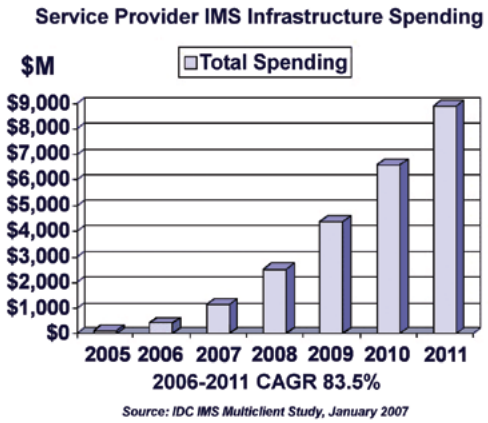
In fact, history suggests healthy skepticism about confusing "next generation networks" as a technology with NGNs as the foundation for business models and revenue streams. Too often, we all fall into the trap of thinking the former for the latter.

To some extent, IMS — as an NGN platform — represents a choice of network architecture. But it also represents a philosophy about what services might require, in terms of network capabilities. IMS also is a service creation platform, allowing service providers to create new services fast, prototype them fast and deploy them faster.

But IMS is not a business model, though there are business model implications. Is IMS about retaining control of a walled garden? Yes, it can be used that way. Is IMS also a way to open up networks to third-party applications? Yes, it can be used that way as well.

Should IMS allow service providers to create low-volume applications affordably enough to make a business out of those applications? Yes. Is IMS better suited to development of low-volume, niche applications? Yes.

Is IMS a way to incorporate more "web" and HTTP applications as part of a "managed" service? Probably. Will IMS allow service providers to control all HTTP applications that are web-based? No.



IMS will not allow service providers to "capture" applications using a web browser. But IMS will allow them to incorporate web experiences with other features provided as "services."

Beyond that grand level, IMS in principle will allow service providers to create applications more rapidly, especially applications that must invoke multiple media types and operate over all sorts of devices, independent of the underlying network.

The danger lies in believing that IMS successfully will provide value if it is implemented "top down," starting with the architecture and only later figuring out what actual services and applications are feasible. The better approach is to experiment with services and let the architecture evolve.

In other words, create applications that use SIP, or cross wireless and wired network boundaries, or incorporate video into "non-video" experiences. Use presence, location, instant messaging, texting and voice in ways people haven't had use of in the past.

In other words, stay focused on applications and let IMS evolve.

Will IMS eventually become a standard part of service provider architecture? Yes, for really simple reasons. At some point, one will not be able to conveniently buy a Class 5 switch, a TDM-based business phone system or other network element that runs SONET rather than IP.

IMS is inevitable because IP is inevitable, because Session Initiation Protocol (SIP) is inevitable, as well as services that span mobile and fixed networks.

"The term IMS is losing its luster in the market," says Keith Nissen, In-Stat analyst. "It's now entering its deployment phase where it is being marketed as more of a service such as VoIP or video sharing. The term 'IMS' never comes up."

In fact, some would argue that it is business model immaturity that accounts for cautiousness about full-bore IMS adoption.

"Do it when you need, if you need it" then emerges as the deployment driver. To be sure, faster application development and delivery, plus the ability to capture revenue and value within the "service" revenue model, are important.

For many service providers, though, many of those advantages can be gained by building on session initiation protocol and open interfaces, at least for the moment. In fact, APIs and SIP are building blocks for full-blown IMS.

Part of the reason is the addition of connectionless and locally-assembled services to the traditional connection-oriented and monolithic services model. To be sure, there are clear limits to the utility of enabling connectionless services.

One can enable text chat on a TV screen, but what is the revenue model for the service provider?

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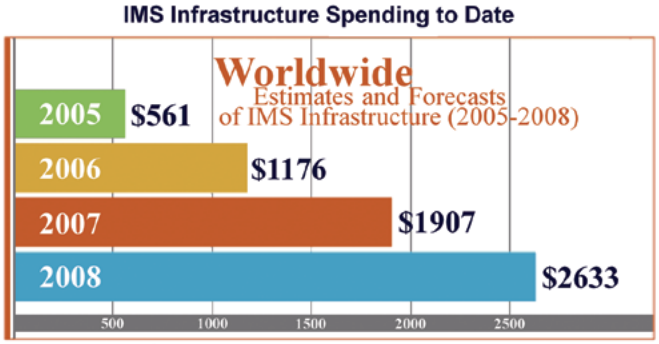
More promising perhaps is the offering a wider range of services reaching across access and device types, leading to a greater share of the end user's communication and information wallet.

Using IMS or SIP to add voice, video, instant messaging, presence, directory access and other real-time features to social applications or online and mobile applications are possible examples.

Also valuable are applications have the same look and feel, regardless of how they are connected to the network, including automatic propagation of a single address book across devices, networks and applications.



Source: Venture Development Corp.

Presence-enabled business services, push-to-talk, push-to-view, push-to-video, group chat, instant messaging, multi-party online gaming, audio conferencing, web conferencing or videoconferencing as well as Interactive Voice Response (IVR) are possible applications using IMS-style capabilities.

Some correctly will note that these functions often can be enabled without using IMS, and that is precisely the point. IMS might not be necessary to create features, but IMS or something similar might be needed so there is a way to scale features across many new applications and devices, rather than recreating those features on a case by case basis.

In fact, what is true of all next-generation networks also is true for IMS: it is a waste of time and capital if all they provide are existing services.

The value of any NGN or IMS is new value-added services for incremental revenue at a lower cost per subscriber. Proponents of completely-open applications accessed over transparent pipes will not be so enthralled with IMS, but that isn't the intent.

IMS is a service provider's way of creating and delivering valuable and differentiated services that create new revenue. In that sense, it is about walled gardens, to a greater or lesser degree. There are all sorts of ways this can develop. Apple uses a more closed approach while Android offers a more open approach, but both are part of a service provider's revenue model.

To be sure, NGNs and IMS platforms likely will be widely used by service providers to open up their walled to applications created third-party providers. For some, this is an unacceptable alternative to a fully-open applications environment. For service providers, the IMS approach is a rational and necessary adjustment to new business models not built on voice services or simple transport and access.

IMS also is envisioned, logically enough, as a way to maintain end user quality of experience, a fundamental requirement for a successful subscription-based service.

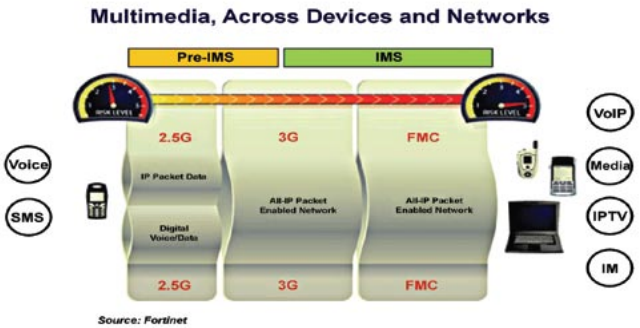
It isn't that users shun applications that "mostly" work. It's just that they tend not to want to pay for using such applications. But there is interest in "federated" models, where access networks partner with third parties who offer applications and services the access provider participates in, on a revenue-sharing basis.

Though some will not completely approve, this new approach is a sharp and distinctive break with historic service provider thinking. Traditionally, "not invented here" was reason enough not to adopt a new service and provide it. In the past, service providers have assumed they must control all elements of a proposition. Now, they want to ensure quality of experience, but there is no insistence on purely internal development or operation.

That is one reason for the insistence that IMS and NGN are mostly about new business models, applications and services, not the details of the platform.

IMS will enable network operators to retain or in some cases increase their revenue while offering their subscribers greater variety and choice, while third-party providers will have greater access to subscribers as well as the opportunity to continue creating new services consumers want and will pay for.

That doesn't mean everyone would agree about how open the garden ought to be, though the advantages are clear enough. Among them: quality control, consistency of end-user interface and experience; optimization of applications for the chosen devices; exclusive content serving as a competitive advantage; customer control and revenue control.



Source: Fortinet

Still, there are some potential downsides: less end user choice, possible higher cost, less customization than some might prefer, says Svetlana Issaeva, Pyramid Research analyst.

"Ultimately, IMS will only fulfill its true promise once telcos start thinking beyond closed models," Issaeva argues.

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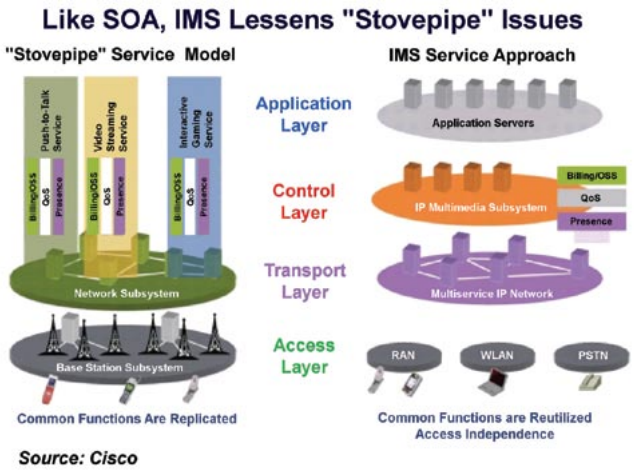
Some might argue there is more of a semantic difference here than anything else. Partnerships are an almost-essential part of new thinking on NGNs or IMS services. So it might make more sense to speak about NGNs as offering services created to greater or lesser extent with third-party support, but in all cases offered as a completed service.

The issue is not "closed" or "open;" rather it is "packaged using third parties" rather than "packaged using internal resources." IMS should help by allowing creation of new apps at a lower cash cost per user and higher service revenue from new customer segments in the long term, says P.K. Prasanna, an inCode analyst.

That said, IMS does allow the possibility of monetizing applications that might otherwise occur as over-the-top Internet apps, says **Dr. Jerry Lucas, TeleStrategies CEO.** Fixed mobile convergence, though touted as an obvious IMS application, might not be, says Lucas.

One of the key claims to fame of IMS is that it merges wired and wireless networks using a single architecture that relies heavily on existing standards. The problem is that there are serious differences of business perspective, Lucas argues.



At least some in the wireless community see the IMS-based NGN movement merely as an attempt to save the dying wired networks business model, for example. One doesn't have to agree with that perspective to argue that without massive new amounts of revenue from new services, it is hard to see the relevance of wired networks in a decade or so. So IMS and similar strategies likely are quite necessary if wired networks are to remain key parts of the end user communications and entertainment environment.

However one assesses the relevance of FMC as a key IMS application, there is no question but that some providers, including AT&T and Verizon Communications, among others, do have high incentives to unify all services across their network platforms, even if many other providers will not have the same possibilities.

Then there is the argument that if users have unlimited use of mobile voice, texting and web access, they don't actually need FMC.

IMS is an architecture that provides a signaling and control plane over an all-IP network that lies under a server and application plane. IMS assumes an all-IP network underneath and end-to-end SIP signaling. So how much of the value comes from SIP, as opposed to full IMS, some skeptics ask.

Lee S. Dryburgh, ss7.net founder, is among those who are somewhat skeptical about IMS, which promises the ability to create new services.

"Just what these IMS-powered services are, nobody seems to know," Dryburgh says. Whatever its operational advantages, it does not yet seem that IMS is fulfilling some unseen subscriber need, he argues.

And to the extent new needs are arising, they are just as likely to be satisfied by over the top applications accessed over a broadband connection.

"For the most part, IMS represents the antithesis of this by clinging to a command-and-control intelligent core and vertical market," he argues.

It also appears that IMS attempts to reinvigorate a business model that is based on scarcity, and scarcity increasingly does not exist, he argues. That applies to bandwidth, end user processing power and most other important inputs.

A business model based on scarcity makes no sense as we go into an era with an abundance of processing, bandwidth, and storage, Dryburgh tends to argue.

Service providers will disagree, arguing that packaged services will coexist well with over-the-top applications for any number of reasons. For every argument that open networks and over-the-top applications will be dominant, one has to contend with the Apple iPhone model, which shows that a managed, packaged and controlled ecosystem is not incompatible with innovation.

The other argument is that, although some users want unlimited control, most end users simply want attractive services that work well, and do not seem opposed to buying them "as a service."

In all likelihood, service providers ultimately will leverage IMS and similar mechanisms to harness innovation in ways not possible in the past, even if over-the-top applications also grow.

Perhaps the bigger danger is too much focus on IMS the platform rather than compelling new applications that IMS can help facilitate. **NGN**

Gary Kim has been a journalist, industry analyst and commentator since 1983. Among many other things, he is a founder of Dagda Mor Media and its COO.

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by Richard "Zippy" Grigonis

Heading for 4G: WiMAX and LTE

Whether you call it Personal Broadband, Mobile Broadband, or the Mobile Internet, both WiMAX (Worldwide Interoperability for Microwave Access) and LTE (Long-Term Evolution) are about providing broadband access on-the-go. WiMAX and Mobile WiMAX (802.16m) is an open specification from the IEEE, the same folks who brought you WiFi. LTE, with its somewhat higher bandwidth, is emerging from the 3GPP world of proprietary technologies (indeed, LTE can co-opt existing 2G and 3G spectrum as well as new spectrum), though there are efforts underway to make it more "open" if not more expensive to deploy than WiMAX.

WiMAX and LTE have been portrayed as competitors, with Sprint and Intel lining up on one side to champion WiMAX, and Verizon Wireless, Ericsson boosting LTE on the other (companies such as Motorola have an interest in both technologies). However, this is an overly simplistic view of the situation.

Alvarion practically invented WiMAX. It remains the world's leading provider of innovative WiMAX and wireless broadband network solutions, with more than 3 million units deployed in 150 countries. Alvarion's product portfolio encompasses the full range of frequency bands, with both fixed, nomadic and mobile solutions designed to enable the delivery of personal mobile broadband, business and residential primary broadband access, corporate VPNs, toll quality telephony, mobile base station feeding, hotspot coverage extension, community interconnection and public safety communications.

Alvarion's Ashish Sharma, Vice President of Corporate Market Development, says, "We're one of the founders of the WiMAX industry, we got going even before the WiMAX Forum came into existence, of which we are a founding member. We saw a clear need in the marketplace for WiMAX, which would do for broadband what cellular technology did for Voice – make it ubiquitous, personalized, and easily transportable. That was our vision. You couldn't do it with legacy 2G and 3G technologies because of their bandwidth limitations. For example, 3G is based on narrow channel widths. We figured that the channel size should be expanded greatly, and on top that there should be a wireless broadband radio interface such as OFDMA [Orthogonal Frequency Division Multiple Access] which is more spectrally efficient, so it allows you to send much more data than competing technologies such as WCDMA [Wideband Code Division Multiple Access] or UMTS [Universal Mobile Telecommunications System] cellular 3G. Consumers can now have a personal wireless broadband connection that they can carry with them in the form of a laptop, small screen devices such as MIDs [Mobile Internet Devices], UMPCs [Ultra Mobile PCs] or it could be something like an iPhone."

"Our second vision was to provide plain broadband connectivity in many underserved areas such as dialup and developing markets," says Sharma. "In Europe, for example, there are still areas that lack a broadband infrastructure. WiMAX is ideal for such situations, because it gives you a very good business case, as opposed to having to dig cables in the ground, which is what's required by the fiber technologies. There are now more than 400 commercial WiMAX deployments, and we have been involved with more than 240 of them. We continue to see lots of demand, both in terms of the connectivity and personal broadband applications."

And now other technologies such as LTE are slowly coming along, but LTE is very similar to WiMAX, but with a larger bandwidth," says Sharma. "Both WiMAX and LTE will coexist because the way a lot of the mobile operators do broadband is very different. Their definition of data is different from that of DSL and cable providers. 3G broadband is essentially narrowband so users can download clips. They're downloads – it's not like full streaming, high-speed Internet access. That's not their business model. But WiMAX was designed from the ground up to provide full broadband Internet access, just like you have it at home or in the office. I don't believe that LTE is really targeting that market. LTE focuses more on downloads on-the-go. With WiMAX, we target everything from cameras to anything that today has WiFi embedded in it. Tomorrow they will have WiMAX embedded in it, thus extending the reach of access to the Internet and the many Web 2.0 applications residing there."

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Wrist-Slapping the Incumbents

Aptilo's sophisticated wireless service management platforms are designed for service providers, enterprises and municipalities who need rapidly deployable, scalable multiservice solutions to quickly manage data and voice services over WiMAX, Metro wireless and WiFi networks.

Torbjörn Wård, CEO of Aptilo, says, "Before founding Aptilo in 2001, I had worked at Ericsson for 12 years. I remember the 'fights' between CDMA and TDMA, and then CDMA against GSM. There's always a fight to pick, and it looks like something like that will occur between WiMAX and LTE. But it's good to have an external enemy – it keeps people on their toes. Thus far, GSM has been a 'winner' in terms of sheer numbers, though there are hundreds of millions of CDMA users. When people ask me whether WiMAX or LTE will be a 'winner' I generally respond that, when it comes to broadband, it's been provided by either cable, DSL or now fiber. I in turn ask these people, 'Which of these three do you think is the winner in broadband?' People then look at me and frown, saying, 'There are simply different technologies for different operators and markets.' And my argument is that there's a roughly equivalent situation involving WiMAX and LTE. For an operator running GSM or 3G, obviously they're sticking with their existing roadmap and are working on the evolution of their GSM and 3G networks, even though 'evolving' to LTE is more like a forklift upgrade. But they're sticking to that path because even their equipment suppliers are working on it. Moreover, they have the licenses and are thus more prone to get licenses for LTE, whereas with WiMAX operators, there could be cellular operators with WiMAX licenses, but in most cases these comprise many different kinds of operators. There are wireline operators, telcos, cable companies and greenfield operators delving into WiMAX. There's greater diversity with WiMAX."

"If you look at Asia, which is one important market for WiMAX," says Wård, "several countries have said that, from a political and legislative perspective, 'We are not satisfied with the competition in broadband and wireless broadband. It's not good enough and it's not expanding fast enough.' These operators see the political, financial and general economic gain of having people connected to broadband. They have goals for broadband penetration. In some countries, such as Malaysia, they've said, 'We will not give 2.5 gigahertz licenses to the existing telcos or cellcos, even though there are four of them here in Malaysia. They have their 3G platforms. Instead, we will give about five WiMAX licenses only to companies that are new.' They directed the licenses away from the incumbents, because they felt there needs to be many more ways of providing broadband, and the established guys aren't going to be fast enough in their deployments. So, it's a way for a government to slap operators on the wrist and say, 'You haven't really performed well and so you won't get the chance for the new licenses'. I see this kind of thing occurring in a number of countries. Sometimes, out of five or six WiMAX licenses, only one or two will go to the incumbents."

"Of course, in places such as India, they don't even have 3G," says Wård, "so cellular operators are definitely interested in WiMAX there."

"There is some confusion, some of it unwarranted, regarding the positioning of WiMAX and LTE, sometimes placing them in opposition to each other like a boxing match."

"There are really two WiMAX value propositions," says Wård. "First is what Sprint/Nextel is doing, which puts WiMAX head-to-head with LTE or 3G turbo, or HSDPA, or EVDO. It's about wireless broadband, the promise of mobility and functionality on many devices. The second value proposition essentially involves providing broadband – period. It just so happens that wireless is a good way of doing this when you don't already have cables buried in the ground."

Playing Both Sides

Cisco offers a complete end-to-end broadband wireless solution featuring the best-in-class Mobile WiMAX technologies, which are tightly integrated with Cisco's IP NGN transport and service delivery infrastructures.

Cisco's Kittur Nagesh, Director of Marketing in the Service Provider Marketing Segment, says, "There is some confusion, some of it unwarranted, regarding the positioning of WiMAX and LTE, sometimes placing them in opposition to each other like a boxing match. The context for all of this is what's happening with the mobile Internet. In the last 10 years, new Internet applications have driven the need for high performance data delivery. Mobile operators have gone well beyond mobile voice, offering various applications, such as SMS that have become pervasive. But as we go forward, the data and application-driven aspects of the mobile Internet will increase even more profoundly, and will enable richer applications, both for productivity and collaboration on the business side, or infotainment on the consumer side. The radio networks, which were largely handling mobile voice are now in the process of adapting to these high performance applications. There is a mutual positive feedback between the two. New bandwidth-hungry applications force the development of new RANs [Radio Access Networks] and personalization, while additional bandwidth encourages its use."

"From a Cisco standpoint, these new radio technologies such as LTE or WiMAX, or even the existing 3G technologies as HSPA or EVDO, are all enabling a new wave of applications which will call for exploiting the virtues of IP networks from end-to-end," says Nagesh. "That's good for us, be it LTE or WiMAX. We have enabled new kinds of networks over the past 10 years through our product portfolio for routing, switching, gateways, service engines, application awareness, deep packet inspection, and so forth. They help bring these capabilities with the notion of personalization and billing flexibility, so that there's a win-win ecosystem. The underpin-

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nings of all this are IP networks. So we're exciting that what some people call 4G networks, such as LTE or WiMAX are on the move. WiMAX is already here, while LTE trials start in 2009, with roll outs occurring perhaps in 2010, 2011 or 2012."

"Regardless of when large-scale LTE adoption occurs," says Nagesh, "it's fair to say that end-to-end high performance IP architectures and solutions will drive the next wave of the Mobile Internet, which in itself is good for the ecosystem and for Cisco, since we can build on our strengths and can extend our portfolio of gateways, content service engines, and so forth to adapt to and serve the needs of these high performance networks."

"Also, if you believe that the Mobile Internet data explosion will continue, then there are obvious radio aggregation 'choke points' that will be alleviated by Carrier Ethernet type services and high performance cell site routers that will become the norm. The many handsets and other devices are now pumping so much data into the network that the scalability and performance aspects of the technology has become extremely important, because we do believe that in the Mobile Internet world, some providers and operators will exploit it successfully and make money, and others might actually 'bite the dust'. So in some sense we're talking about a market inflexion for how operators and service providers capitalize on this phenomena, adapt, and build the appropriate infrastructure, intelligence and personalization. The segmentation will be so microsegmented that it will all become a matter of the network doing things for particular individuals, rather than similar groups. So there is the possibility of capturing 'long-tail' markets in a nicely-architected end-to-end IP system if there is sufficient intelligence operating in the network."

Different Strokes for Different Folks

Juniper Networks, Inc. is a major player in high-performance network infrastructure equipment.

Mallik Tatipamula, Head of Wireless/Convergence says, "Everyone debates whether WiMAX and LTE are competing or complementary technologies. In the 2.5G and 3G world, GSM took one path and CDMA another. They have fundamentally different modulation schemes. When it comes to WiMAX and LTE, however, the good thing is that both of them harmonize on a single OFDMA modulation scheme, although there are some minor differences in terms of which MIMO [Multiple-Input and Multiple-Output] scheme each technology uses in the physical layer. But fundamentally, the bottom line is that OFDMA is used, so there is some commonality. And when it comes to IP, both WiMAX and LTE are all IP-based technologies. They are both distributed and 'flat' architectures. Again, this is unlike either the GSM or the CDMA approach – GSM/UMTS employing the ATM architecture and CDMA2000 being IP-centric."

"WiMAX is a standard coming from the IEEE, which happens to be a more open architecture than LTE, which comes from the 3GPP world which is more of a controlled, walled garden approach that's trying to evolve toward more openness. It's the classic clash of the data and telecom worlds."

"In terms of penetration and/or adoption, there are three major camps," says Tatipamula. "The first is an 'LTE-only' camp. The second is a 'WiMAX-only' camp. We're now starting to see a third camp, where operators are adopting both technologies. Take for example, the operators in Asia PAC. We've heard that many of them are not only going to adopt LTE as their next-gen 4G technology, but at the same time they are deploying WiMAX too. Europe is very much LTE-centric. However, we are seeing demand for WiMAX in Taiwan and in many emerging countries, especially the Middle East, Africa, and India. We see more demand in WiMAX in developing/emerging countries where they have very little or no wireline infrastructure. Fixed WiMAX allows a quick way to provide residential broadband services."

"Europe is very much LTE-centric. However, we are seeing demand for WiMAX in Taiwan and in many emerging countries, especially the Middle East, Africa, and India."

"That in turn brings up the related question of Mobile WiMAX *versus* LTE," says Tatipamula. "There are multiple camps. The one we should be looking at is where operators are adopting both WiMAX and LTE together. That's very interesting, because we should examine how they expect each technology to be used by segments of their customer base. LTE with its higher bandwidth is seen as suitable more for mobile TV and music downloads, along with any laptop connectivity on-the-go via an external card. At the same time, however, the operators want to expand the mobility market with some innovative customers solutions by having WiMAX enable visual-centric portable data devices, relying on embedded or external cards. They're also looking at having WiMAX embedded and external cards used in visual-centric handsets, or in SOHO broadband tenant applications. There's also the possibility of using WiMAX in some consumer electronics, such as cameras, camcorders and so forth. So there are slight variations in terms of applications when comparing WiMAX and LTE. Operators are positioning these technologies for different application needs."

"So we believe that both WiMAX and LTE will co-exist in certain regions, and that operators will use WiMAX for one set of applications, and LTE for another." **NGN**

Richard Grigonis is Executive Editor of TMC's IP Communications Group.

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by Manuel Vexler

An Untapped Multi-Billion Dollar Opportunity: Next Generation Networks and Multimedia Contact Centers

Since the mid-1960s contact centers evolved along with voice technologies. From sales calls by local or overseas agents, to help centers for any imaginable service and last-minute automated political messages, contact centers evolved in lockstep with the voice network. While contact center technologies, such as IVR and skills-based-call-routing are being deployed to reduce wait-time, increase customer satisfaction and reduce operational costs, contact centers still depend on the services offerings of traditional carriers and are held back by their unhurried roll-out of next generation network technologies and converged multimedia services.

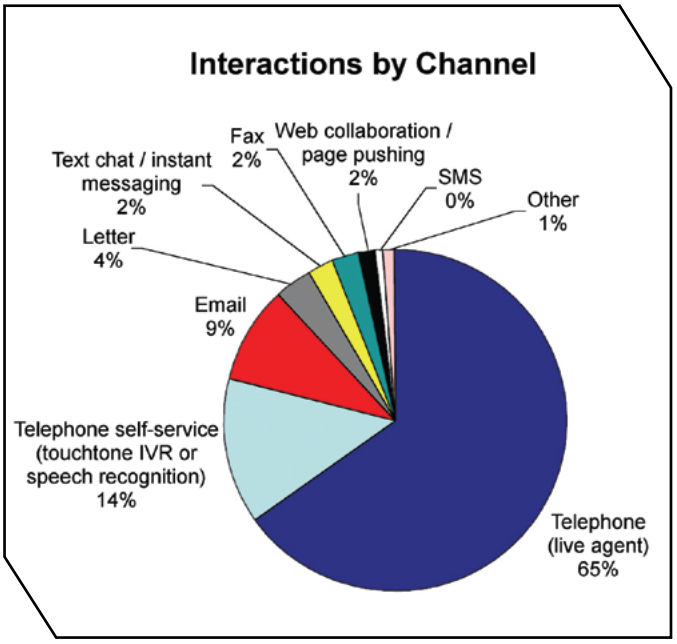

Figure 1. Multimedia in Contact Centers (ContactBabel, 2008)

A recent analysis by ContactBabel on the U.S. Contact Center market shows little progress being made in the direction of multimedia technologies. Voice is clearly the dominant media with email and text messages a distant second. Contact centers are still behind in capitalizing on the power of visual media. Images and videos are very popular with services such as YouTube, FaceBook or interacting as avatars in SecondLife. Contact centers risk being left out from these rapidly emerging ecosystems formed around social networking. By not taking part in social network advertising, consultative sales, and support groups, contact centers risk following the same attrition curves that fixed line telephony is already experiencing. In addition, the emergence of the smart phone makes the text chat and IM tools an integral part of the media used by higher income people.

So the question for the contact center industry is what direct benefits they can realize from using NGN services instead of traditional voice and VoIP services to efficiently reach their customers, while keeping customer satisfaction scores high and operational costs low.

First let's examine how an NGN network implementing federated identity can save an estimated $16 billion a year for the U.S. contact center industry. Customer authentication and identity verification consumes close to 30 seconds for each call or 88 cents per customer. Federated identity is the process of using network authentication to automate the verification of the customer identity. In an NGN IMS network this function is performed automatically between the customer's terminal and the network. In addition using the same process, contact centers can receive real time information about user location, presence information and select the proper communications media. For example, if the customer is in a meeting, the customer care can be provided in a Instant Message dialogue instead of a phone call.

In addition to tens of billions of dollars in cost savings, activating NGN multimedia services can result in building new high revenue services. For example, contact centers, if staffed with the right medical personnel, can provide remote care in routine examinations. Many chronically ill patients require brief doctors' visits for a blood test or a basic electrocardiogram. While telemedicine devices are readily available, the lack of the NGN infrastructures makes standardization of such devices and quality interactive video still difficult, hence discouraging usage by the population at large. According to Insight Research, "telecommunications services market will grow from $6.3 billion in 2006 to $8.1 billion in 2011 at a CAGR of 5.4 percent over the forecast horizon due to growth in every healthcare segment." To reach this level of growth will require an immediate implementation of NGN services which will provide the right level of confidentiality and service quality required by the medial industry, and HIPAA.

In conclusion, the contact center industry is one of the primary beneficiaries of the evolution of the telecom network from current voice and 'best-effort' IP to an all-IP network capable of delivering multimedia services with proper quality of service and policy control.

For additional information and participation at NGN Forum and IMS Forum technical working groups and plugfest please visit www.NGNForum.org or contact us at Admin@NGNForum.org.

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Manuel Vexler is the Technical Chair, NGN Forum™ (www.NGNForum.org).

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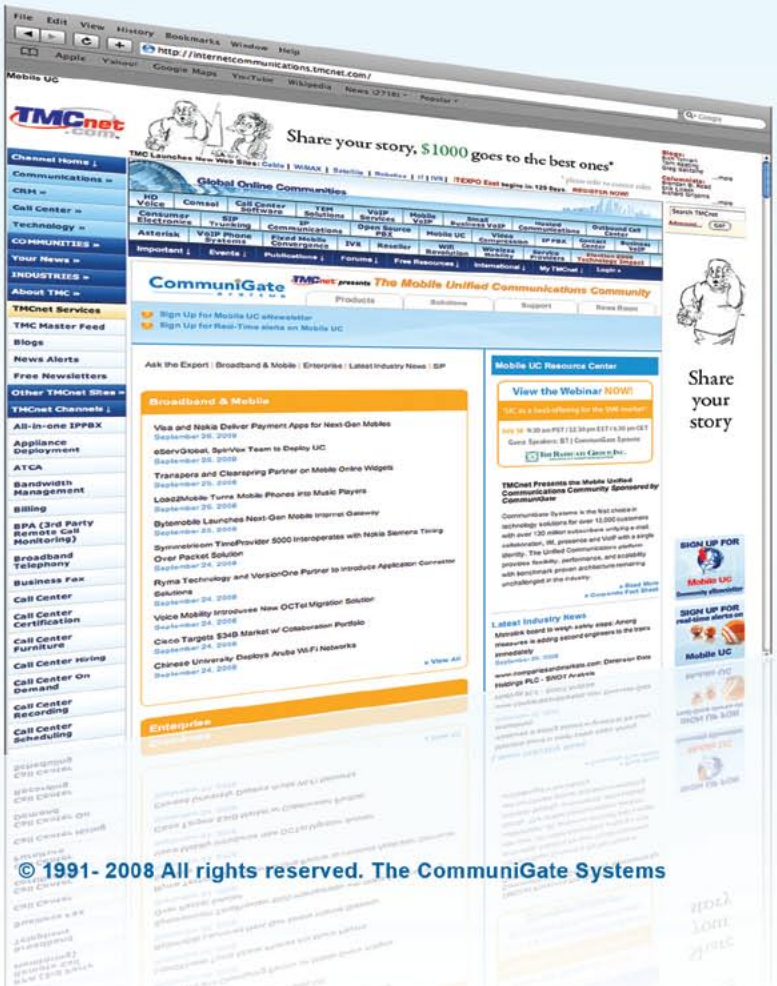

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by Michael Khalilian

NGN Forum & IMS Forum 2009 Plan

Welcome to our first NGN magazine edition. With the increased competition in voice, entertainment and enterprise markets there is an urgent need for fixed, mobile and cable MSO service providers to partner with application development companies, digital content providers, enterprise and smart phone manufacturers, and financial institutions. As you know, the IMS Forum and the NGN Forum recently announced their partnership to form the NGN Forum™. By combining IMS, SIP, Unified Communications (UC) and Service Delivery Platforms (SDP), our organization unites developers, service providers, integrators and solutions providers to further NGN and IMS deployment. The NGN Forum is a pioneer in developing profitable business models for converged services targeting consumer and enterprise markets.

Our new organization enables our members to fully address the emergence of a single market comprised of information technology (IT), telecommunications, and media sectors that formerly operated in separate markets. The NGN Forum membership includes over 2000 executives, technical and marketing professionals across equipment vendors, solution providers, integrators, service providers, and governmental agencies. In addition, the NGN/IMS Forum also has created the industry's first joint Venture Capital (VC) study group consisting of its members and over 20 venture capitalists, private equity groups and financial institutions.

The NGN/IMS Forum will continue to help our members to:

- identify new markets and develop executive level contacts with new customers
- reduce time-to-market by shortening integration cycles and test costs
- reduce the costs of technical training
- participate in NGN/IMS Forum open house and round tables in the US, Latin America, Europe, and Asia
- gain exposure to financial and institutional investors

Our sixth NGN/IMS PlugfestTM will be held January 12-16, 2009 at the InterOperability Lab (UNH IOL). The IMS Plugfests are the industry's only interoperability events covering NGN services over wireless, wireline and cable broadband. Plugfest 6 will focus on NGN Consumer and Enterprise Service Interoperability. It will test Ready to use IPTV, Diameter, IMS SIP, Security, UC Services and IP B/OSS. Plugfest 6 will continue to address the robustness, reliability and certification of key IMS SIP and Diameter interfaces as well as the following local and visited network services including:

- Inter and intra-domain NGN services routing
- Visited networks scenarios for Consumer and Enterprise customers
- Billing, charging and service creation/SDP for IMS and NGN
- Presence and location based services
- Interfaces operational testing (SIP-Gm, SIP-Mw, SIP-ISC, interface security profiles, Sh-Diameter and Cx-Diameter interfaces)
- Other services including SIP signaling compression and multiple profiles for public and private users
- Services including VoIP for residential and enterprise, Unified Communications, IPTV, FMC and other multimedia applications

NGN/IMS Forum Plugfests provide a hands-on environment to ensure that network operators have reliable, available and secure deployments of IMS architecture and NGN services free of costly downtime. Since 2006 The IMS Forum has pioneered events that allow vendors to gather and rapidly push forward IMS and NGN initiatives that benefit the telecom industry. For more details on press coverage that is provided "In the News" visit the Forum news and press section.

The NGN Forum membership includes over 2000 executives, technical and marketing professionals across equipment vendors, solution providers, integrators, service providers, and governmental agencies.

We have already begun to plan some exciting activities for 2009 including the following:

- Technical working group papers and other activities for wireless, wireline and cable on:

Next Generation Networks (NGN) and Communications Services; IP Multimedia Subsystem (IMS) Architecture, Framework and Services; IP video / IPTV ; Service Delivery Platform (SDP); IP OSS/BSS (Billing/Charging/Security/Reliability); IMS SIP; Diameter; and Enterprise and Unified Communications (UC).

- Technical and business webinars
- NGN Marketing reports and ROI analyses of NGN/IMS services
- NGN and IMS Plugfests and Certifications
- Service Providers Advisory Board

For online registration and info contact the forum at: info@NGNforum.org or visit www.NGNforum.org. For the Forum video interview with TMC visit: www.tmcnet.com/tmc/videos/default.aspx?vid=569. NGN/IMS Forum membership and Plugfest participation is open to all companies. **NGN**

Michael Khalilian is the Chairman and President of the NGN Forum™ & IMS Forum® (www.NGNForum.org, info@NGNForum.org).

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