editor's note

Nay to the Naysayers!

by Richard "Zippy" Grigonis

We've heard it before: Slow progress on standardization and interoperability, unclear business models, unknown economic benefits. IMS didn't exactly rocket out of the gate in 2007, but as you'll see from the contents of this issue, it didn't stand still either.

France Telecom has been running its Technocentre that creates and analyzes IMS-compliant services, and since the world's telecom infrastructure is going to end up with a single service architecture, they merged their fixed, mobile and Internet technical teams into one big entity.

And 2008 is shaping up to be a really interesting year for IMS. (Our bellwether, France Telecom, estimates that between five and ten percent of its revenues will be derived from full or partial IMS services by the end of 2008.)

Work still needs to be done of course. Massive interoperability testing occurred during 2007 and will continue into 2008.

Moreover, IMS calls upon SIP (Session Initiation Protocol) to jump through quite a few hoops, far more than the original SIP specification called for, which is why the history of SIP has been a *tabula rasa* upon which has been written the hopes and expectations (via extensions) of the world's telecom experts. Continued fiddling with it will occur as IMS percolates through the infrastructure.

Still, SIP will remain the supreme communications session protocol, and thus requires the most tinkering to make IMS work smoothly. On the web side, its alternative would be SOAP and flavors of XML. Soon we will have to worry about merging the two of those together. Right now the IMS architecture leaves things to a magic box that we call a SCIM (Service Capability Interaction Manager), within which something magical happens, reminiscent of the 'magic' that goes on in a Session Border Controller when it performs SIP-to-SIP peering.

All of these standards will have to interoperate to some extent, but the SOAP and the XMLs are identified by the types of domains for which they're responsible. Much work will center not on grandiose, architectonic things, but application and user-related stuff. Services and systems will have to better explicitly define what they are trying to communicate – what are the semantics relating to a particular communication session? What's the end user goal? The major end user phenomenon these days is 'presence' and that still has a lot maturing to do. We haven't yet worked out the usage models for presence for all possible environments. When people talk about presence these days, they usually describe some kind of modified 'find-me/follow-me' scenario. That's not good enough for a future dominated by IMS and FMC (Fixed-Mobile Communications).

Imagine that you're sitting in your office and there are five devices near you and three are charging and one's low on battery, and you're near a computer screen and somebody wants to call you, and they're willing to call you through any of those devices. Now, unless the caller is not a friend of yours, what's going to happen? Things can get very complicated when you start to consider all of the different possible presence scenarios. You're not going to want to make all of the presence setting modifications yourself on a minute-by-minute basis.

Now, SIMPLE (SIP for Instant Messaging and Presence Leveraging Extensions) has been devised for presence, but the actual presence models and the automation of modifying presence settings on-the-fly still needs to be worked out a good deal more than it already has. In the future, the presence manager will be the most important component of any communications system. Avaya has been working fervently on these. And Alex Saunders at Iotum also has an interesting presence server you should take a look at.

And when everything is worked out, IMS will be ready and waiting…

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

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IMS MAGAZINE
IP MULTIMEDIA SUBSYSTEM

feature articles

Reducing Churn by Improving Voice Quality

by Rich Tehrani

The first issue of *Internet Telephony* magazine – which was the first publication in the world focusing on IP communications – appeared in February, 1998. In all the years subsequent to this, we have seen the IP communications space explode with growth. Sure there have been ups and downs but we can safely say at this point the technology behind Internet telephony has changed the world for the better.

But this does not mean every VoIP call today sounds fantastic. There are obviously many factors which can affect the quality of a call ranging from available bandwidth to transcoding issues and the conversion from the circuit switched to the packetized world.

When you think about it, IP communications is just so much more complicated today than ever before. In the late 1990s, if you made a VoIP call from one computer to another, that was about as complicated as it got. Nowadays you have to worry about things like voice peering which can wreak havoc on call quality if you aren't paying attention.

As interworking and transcoding in peering networks can sometimes be responsible for quality loss, I thought it made sense to speak with Todd Simpson, CEO of Ditech Networks, as his company is a leader in the transcoding space and also plays in the session border control market.

He started our discussion by explaining there is a lot of interest in SLA management between peering partners… People are paying more attention to peering quality and his customers use Ditech's technology to measure the quality of each call, the network connection (packet loss, delay, jitter, etc.) and other artifacts such as noise and echo that haven't been cleaned up.

Simpson says, "Lots of people have quality issues on their networks and they don't know how to track them down. Our products give you the knowledge to see where quality problems are coming from, which means customers can enforce stricter SLAs." He also says that their Voice Quality Assurance (VQA) product helps providers find network problems which can then be fixed.

Considering the large number of IP communications demos I hear each year, I am consistently amazed at just how good the audio quality of VoIP can be. This is partly because of today's wideband codecs, such as G.722 (or its standard variation used in Polycom phones) with its frequency response of 50 to 7,000 Hz but a bandwidth of only 64 Kbps, thanks to compression. The sound quality of VoIP calls using a wideband codec is remarkably better than what one hears over the PSTN. This is especially true when I listen to 3D stereo VoIP, in particular the technology from DiamondWare (www.tmcnet.com/1333.1).

I also asked about the board-level transcoding competitors and to this he responded that Ditech is confident they have the best algorithms in the industry relating to voice quality. Whenever they are tested against any other solution, their algorithms tend to win, he explains. "This is the essence of our value proposition," he said. "Our platforms are very good as well and we would tend to compete more with a company like Tellabs than board vendors."

According to Simpson, the reason for transcoding is to trade off voice quality optimization on one network with voice quality optimization on another network. To this he added that having the algorithms sitting in the middle gives you much more flexibility in making such choices.

When queried about the International versus domestic markets Simpson explained that in developing countries there is tremendous mobile growth – such as India, Africa, etc. There is much potential for the company's mobile products in these areas.

In the U.S. and Western Europe VoIP is accelerating and this is where Ditech sees their biggest growth potential.

I asked about how the company is going to market – either direct or through partnerships. He said the company is selling more direct today and is looking for new partnerships. He says they do interoperate with

many networks but bundling products more tightly could add value for customers.

When asked if the transcoding market will grow, Simpson said yes because in peering networks it makes too much sense to have different codecs for different networks. "A single codec just doesn't make sense!" he exclaimed.

I asked Simpson about how their Jasomi acquisition is playing out and Simpson explained the company was acquired for their signaling expertise. Ditech continues to invest in the signaling side of their products as well as media processing. Their SBC sales are typically to tier 3-4 service providers, and these are sold through channels.

From there our conversation went into churn due to voice quality, or lack thereof. The company's research reveals that wireless and VoIP providers will lose over 26% of their subscribers due to churn with a total churn price tag in the tens of billions of dollars.

This number makes more sense when you realize that 170,000 people terminate contracts daily around the world because of poor voice quality.

With numbers this high it does seem to be a matter of time before service providers start to take subscriber churn due to poor quality more seriously. As they do so they will obviously spend more of their resources on solutions which enhance voice quality.

Responding to a question as to where Ditech Networks will be in five years, the company's CEO answered, "we have the strongest assets in quality." He stressed that voice will still be a killer application on these networks even if it may be monetized differently than it is today.

Simpson concluded by saying, "Ditech will be the voice quality experts for FMC, wireless and wireline."

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Siemens' Harald Braun

Many executives have debated the benefits of IMS, and whether IMS is going to take hold, and who its main benefactors will be. Some say that fixed/mobile convergence, therefore IMS as well, is losing steam. Others, with a broader understanding of the applications and potential of IMS, look toward the future, firm in their belief that IMS is the enabling technology of the future.

Harald Braun, Head of Convergence Operators, Customer Business Team, at Nokia-Siemens Networks, has for some time led that charge, never shy in claiming this is the year IMS will move from testing to deployment. To a degree, he has been proven correct, with a number of preparations for IMS deployments already underway.

Rich recently had the chance to speak with Harald about the impact IMS has had on the communications space, the state of the IMS market, along with Nokia-Siemens Networks' approach toward the continued evolution of IMS.

For the full interview, please visit www.tmcnet.com/new/executive-suite, or listen to the podcast at www.tmcnet.com/1206.1.

Rich Tehrani's Executive Suite is a monthly feature in which leading executives in the VoIP and IP Communications industry discuss their company's latest developments with TMC president Rich Tehrani, as well as providing analysis on industry news and trends.

RT: How has the creation of Nokia-Siemens Networks impacted your approach to IMS?

HB: Since we built the company, we have had a very, very exciting couple of months, and the impact, in terms of IMS, is very positive. We brought the companies together, really, to combine the strengths of Nokia and Siemens networks. Both companies have their strengths in a particular market area, and the combination of these strengths really gave us a boost in IMS.

We've said all along that you have to come to NSN because this is the epicenter of convergence. This is where it comes together, and we have all the ingredients to be successful. The impact has really been very positive here. For example, we created a forum of more than 100 developers focusing only on IMS applications — it combined the Siemens IMS development program and the Nokia PRO Network Zone.

On the application side, there's really no silver bullet out there, but it's a combination of services, what we see and from different views — from the mobility aspect, from the carrier side, and from IPTV. The idea is to combine them and come up with compelling bundles. And of course, IMS continues to be an extremely important area for the new company, and it is a major focus here. I'm very excited.

There's one more thing. We are the new kid on the block, but we are also the child of two strong parents, and we would like to leverage our parent organizations' strengths. On the Nokia side, you have the devices, so we can really offer everything from the core side of IMS up to the devices. And on the Siemens side, we leverage the Siemens-One program, like the medical applications, and like the surveillance applications.

I think we are well positioned, and we are a very positive influence. As I said before, it's the epicenter of convergence.

RT: When we talk about IMS and applications, the question people ask frequently is: "What are the applications that service providers are going to make money from?" I'd like to hear your perspective.

HB: We have taken application development very seriously. We have labs in Atlanta and Boca Raton, and we have dedicated them to fostering IMS innovations. We are also very excited to invite other people into our labs or provide labs to other institutions. We began, together with AT&T for example, and continue to foster a program at Georgia Tech. That sponsorship is in its second year now, and preparations are underway for another competition.

For us it's not about the silver bullet application, but the variety of applications, and the bundles of applications. One thing we do to drive innovations is to create "think tanks." We have people whose job is to get a feel for the marketplace — what applications are out there, what is needed, the latest of the latest — and then get that information into a whitepaper. That whitepaper should then go to a development program, to develop the products and make them market-ready, so they can be deployed.

I give the team a challenge: Do that in three months. For a while, I was hearing that the term, killer application, was not really the opportunity people were talking about. But, it's come back, and you hear it all over the place again. So, we are taking it very seriously, having our people out there and developing on our own, but we also have competitions going on, as I mentioned.

RT: Tell us more about the Georgia Tech program.

HB: The Georgia Tech program was a very successful undertaking. The first annual competition was absolutely brilliant. The students who participated came up with a couple of very good examples — they were even awarded prize money for first place, second place, third place, and so on. So now we are making these applications ready for deployment.

For example, the winners of last year's competition created a community that gives students access to lecture materials, campus events, and location-based social networking. Second place related to inventory and asset management applications, specifically enabling camera phones to scan things and read bar codes without the need to have RFID on the devices. And there are many, many more examples, which is why we are going doing it again. We have already upgraded the equipment and the labs the students use, giving them the latest technology. This is truly a great program.

Of course, we would certainly like to do similar things with institutions as well. I dedicate myself to a couple of institutions as a coach, like Florida International University, where I'm the chairman of the School of Science and Technology. I give lectures and work with the students to give them some real-time experience. On the ESC, it's the same thing.

We need to foster this kind of thinking in the application area because applications are really coming from the end user. That is the important thing here. It's not really that the carriers or the large enterprises are telling us what to do; it really comes from the end users. That is a great situation to be in, and we at Nokia-Siemens really support that kind of dynamic.

RT: I guess part of it depends on the stage at which operators are in terms of deployment of IMS. So, since you're really in the middle of deployment, what would you say that stage is?

HB: To me, this year is the year of deployment. IMS is real and it's there. I've said that before. In some cases, of course, you don't really need IMS, and that is part of the discussion that's going on in the industry… whether we need IMS for certain things or not. We have to see what the challenges are that operators face today.

There are legacy networks, and there is a new kind of architecture in IMS. IMS provides, at the moment, the best architecture to combine networks, to get to a single network. The operators cannot afford to run multiple networks, because their operational costs would be exorbitant. So, IMS, as the best architecture out there to combine networks, is one of the drivers.

We're also seeing consolidation. Large companies buy each other, and suddenly, they have even more platforms to manage. There again, IMS is the best vehicle to combine multiple platforms. Will this happen tomorrow, this combination? No. It takes a while, but we are experiencing, as I said, the year of deployment. We went through lab trials and field trials, and we are really there now. We have a couple of contracts we are bringing to the marketplace this year.

For example, the cable companies have shown a very big interest in IMS because they are looking for a profitable solution, and, coming from a voice-over-cable service, they now need a mobility solution. For them, IMS is the ideal vehicle — and the business case proves to work for them. The same holds true for fixed or mobile and hybrid operators, as they continue to seek new revenue sources out of this kind of architecture.

RT: Do you see a concern at all that any of the Web 2.0 applications that are becoming more telephony enabled, or communications enabled, are going to pose a threat to applications that we thought would be provided exclusively via IMS?

HB: It's not a threat. It's a mix of all of the above. When I talk to CTOs, we have this discussion — about IMS, the application layer, and application servers. It's really a question of application servers versus Web 2.0 applications. But there is not an "or"; there's an "and." Both need to be there. We are working with our ecosystem partners and, of course, with our development program, to determine how can we most efficiently provide Web 2.0 services in the IMS application layer.

It's a combination. Our operators out there, whether fixed, mobile, cable, or anything else, want to have the latest technology and they want to have it switched and delivered through their networks. At the end of the day, it's about control, about controlling your customers and also providing them the latest applications. I don't see it as a threat. Rather, I see it as a good push for IMS, and, for us, making that happen offers a real opportunity for innovation.

RT: Do you think the drivers of IMS have changed for service providers? What are the reasons people are deploying IMS today, as opposed to a few years ago?

HB: A few years ago, the question was, "How can I combine my networks? Given my legacy environment, how can I combine networks and why should I do it?" Then, the application came into play. Of course, we had our equipment to enable that.

Now, in the past year, we've seen changes in the business drivers. First, the competition that has emerged has created a need for differentiation. I need to provide different kinds of applications in a different way. Other new factors include customer attention and how can I best retain my customers, as well as margin erosion. Competition, differentiation, customer attention, and margin erosion have all intensified in the last year.

Of course, new entrants have come into play with different business models, like the Googles and the Yahoos; even Apple today is thinking about bidding in the upcoming 700 MHz auction. They could then team up with other providers, letting a fixed or cable operator add mobility. That could change the playing field, and it is a big driver.

We just saw Apple, in a very short term, sell a million iPhones, and we've all read that — and we also know it because AT&T is a good customer of ours — the data traffic has increased. So, mobility data traffic has increased tremendously and there are, of course, new drivers for other companies. That is an interesting situation, something to watch for.

Then you have Sprint, which decided to go with WiMAX. Sprint will see major deployments this year and next, which will also result in increased data traffic. There is the notion that WiMAX is going to change business models. There's the idea that we'll see 50 million or more WiMAX devices shipped — mobile phones, cameras, gaming stations, and more. Regardless of the devices, they'll be everywhere, and users will have access through WiMAX everywhere, and they will be able to purchase services, services we can all use.

IMS provides, at the moment, the best architecture to combine networks, to get to a single network. The operators cannot afford to run multiple networks, because their operational costs would be exorbitant. So, IMS, as the best architecture out there to combine networks, is one of the drivers.

So, the drivers have changed tremendously in the last year, and it's really an exciting area and an exciting time. But, we have to make it work; we have to get it to operation. I've said all along, the technology's there, the thoughts are there, the innovation is there — now we have to execute.

RT: Can you explain the term operational fitness I've heard you use?

HB: Operational fitness is very complex — everything is complex when we describe the IMS layers and the service delivery platform. Everything has to go together. Operational fitness is something we need to make things easy for the end user. When it's easy for the end user, he shouldn't even know how we route a call or what settings need to be changed on his phone or his TV or any other device. Operational fitness is not only about helping the operators seek new efficiencies and deploy IMS and converging their services and businesses — it is also about optimizing the end user experience.

For example, there is a patented Nokia Terminal Management System, NTMS, which is one great example of operational fitness. If there is a device that it unable to gain access to the Internet, for instance, this system helps, in principle, to access the network. Whatever network is is — legacy, cellular, 3G, WiFi, upcoming 4G, or others —we lock in the NTMS, which automatically sends an SMS to the device. This SMS changes device settings, hopefully once again optimizing connectivity between the device and the network.

The key is that the user doesn't even know it happens. This for us, is operational fitness — adjusting devices and settings without having to spend hours physically in front of the device. We have thought about that a lot, and a lot of people at Nokia Siemens Network are working on this operational fitness program.

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The Migration to the NGN: A Latin American Perspective

by Ronald Gruia

It was certainly interesting to hear perspectives from the local operators, who were boasting the impressive growth numbers in the Brazilian telecom market, particularly in the mobile segment. While the number of fixed lines remained in the 39 to 40 million range, the amount of wireless users almost tripled from 2002 (when it was around 35 million) to 2006 (once it reached 99 million). Estimates presented by Vivo indicate that as a result, the mobile penetration in Brazil has almost reached 55%. The Brazilian telco market has surely come a long way since the 1998 privatization of the local government owned PTT (Telebrás).

Getting over the 100 million subscriber plateau is a significant result, and indicative of the push of the local government to increase that figure even more. (Consequently, Brazil now ranks as the seventh largest market in the world, measured in terms of wireless subscribers. By 2008, Mexico will join Brazil among the world's top 15 mobile markets.)

This mandate is further reinforced by research such as a recent study co-authored by the GSMA and Deloitte Touche, which suggests a strong correlation between wireless communications and economic development: a 10% increase in mobile penetration can boost GDP growth by as much as 1.2% in emerging markets. (For more details, please reference the report entitled "Global Mobile Tax Review 2007" at http://www.gsmworld.com/documents/tax/tax_report.pdf.)

Hélio Costa, the Brazilian Minister of Communications, warned in his keynote address that operators should reduce prepaid service tariffs, which are regarded as being too costly for Brazilian standards. Operators currently manage an installed base of 110 million subscribers in Brazil, and prepaid services account for roughly 80% of that market. Mr. Costa's speech was countered by operators' requests to lower the big tax burden that they are still faced with (Brazil has the fourth highest telecom tax burden of the world, pegged at 42 percent).

Futurecom is the largest telecommunications show in Latin America, bringing together more than 8,000 attendees from network equipment vendors (selling both enterprise and service provider infrastructure and spanning the entire alphabet, from Aastra to ZTE), service providers (including Brasil Telecom, Telemar/Oi, Vivo, Claro, TIM, Nextel and Intelig Telecom, among others), VARs, system integrators and government (including Brazilian telecoms regulator Anatel).

Despite the above dispute, the overall consensus being presented was fairly optimistic for countries such as Brazil. For instance, according to one forecast presented by mobile operator Oi, the overall teledensity (including fixed and mobile) will increase from 74% (or 39.7 million homes passed) in 2006 to 82% (or 53.4 million homes passed) in 2016. *A priori*, those numbers are indeed impressive, however one major issue is that the next few million customers in the region will be low earners and therefore only command a small ARPU.

Doubtless there will be a need for fundamental innovations in both infrastructure and business models to make deployments in rural regions catering to low-ARPU users (in the $4-5 range) more viable. Furthermore, operators are also pondering how they can provide new sticky bundles (triple and quad play, including voice, video, data and wireless services) to the consumer segment, offer seamless access to these services and also introduce new offerings in a quick and cost effective way. Hence, not surprisingly, these service providers have begun their journeys in transitioning to the NGN. Futurecom provided them with a good venue to articulate their visions, and to showcase some offerings that are already available in the marketplace.

For instance, Brasil Telecom (BrT) had an exhibit of its Telefone Único (which literally translates to Unique Telephone) FMC offering. BrT had introduced its FMC service in the first semester of 2006, and is an active participant of the FMCA (Fixed Mobile Convergence Alliance, a global consortium of telecom operators focused on accelerating the development and availability of convergence products and services). Telefone Único (see the stand photos) allows subscribers to receive fixed and mobile calls in only one device, which shares their contact lists. Similar to the BT Fusion offering, the service embraces the ABC (Always Best Connected)

model, automatically choosing the most economical network, and leverages WiFi and SIP technology. Interestingly enough, BrT is already a step ahead of some of its FMCA peers, as it will rely on VCC (Voice Call Continuity) as opposed to UMA (Unlicensed Mobile Access) to perform the handover of the calls from the GSM to the WiFi network. WiFi network connectivity is provided via a SIMCARD authentication. BrT has already sold 21 thousand Telefone Único terminals in 2006, a figure that surpassed the company's own expectations.

IMS Perspective

From an IMS standpoint, Futurecom revealed that Latin America is ripe to begin embracing both pre-IMS and IMS solutions. BrT ran several pilots in 2006, including one with Lucent's MLife services platform, including various elements of its IMS solution. The key goal is to enable Brasil Telecom to deliver new multimedia services in regions such as Brasília, Curitiba and São Paulo. In addition, Claro is also currently trialing IMS, with an RFP and possible decision expected in 2008. Telefonica and Vivo have also been quite active: on the fixed side, Telefonica is considering an IP Centrex IMS deployment, whereas on the mobile side, Vivo has a VCC RFI currently out. Further south in Argentina, Telecom Argentina has an RFP for IP Centrex.

However, despite this ongoing activity, the hottest item at Futurecom that will probably still be at the forefront of most telco RFPs in early 2008 is billing/OSS. With the migration to 3G, many operators in the region have the need to improve the processes across their entire billing chain, with the goal to lower costs and improve their performance.

Also, other service providers such as Telemar (the largest wireline carrier in South America) are taking a more gradual and pragmatic approach, choosing to implement services that can be accessed by subscribers regardless of whether they are being served by NGN or legacy infrastructure. In one interesting discussion, José Henrique Zilberberg (Senior Telecom Architect from Telemar's Network Planning Division) introduced the Telemar NGN transition strategy, called 7IP. (For more details, please refer to a joint Tekelec-Telemar IEC White Paper entitled "The Return of the Legacy - The Role of Pre-IMS in Operator Networks and Business Evolution" and available at: http://www.iec.org/newsletter/july07_1/analyst_corner.pdf). This pre-IMS approach enables the carrier to separate the timing of investments in NGN/IMS access layer infrastructure from the timing of introduction of new services. Hence, the emphasis is on OPEX savings and not necessarily on service capability, which echoes a similar message from Stu Elby (Verizon VP of Network Architecture).

The 7IP solution was implemented in a production trial held this year at Telemar. The idea is to reuse existing wireline and mobile service platforms and complement them with a new core network intelligence engine having elements on both the signaling/SS7 and the IP sides of the network, thereby giving the origin to the name "7IP". The merit of this solution is its more gradual migration, and many believe that the resulting incremental "pay-as-you-go" buildout will resonate well with other service providers in the region. More importantly, another important benefit is that the 7IP approach helps bridge the gap between the legacy IN (Intelligent Network), where most of the revenues are currently generated and pre-IMS/NGN/IMS networks, where future revenues are expected to be generated.

In conclusion, Futurecom provided a good insight into how the local service providers have begun to evolve their networks. While some have been a bit more *avant garde* than others, the overall consensus was that a more sound gradual migration makes more sense, enabling operators to focus on more immediate needs (such as billing) and to incrementally roll out their NGN architectures. But one thing is certain: the local carriers can certainly match and even in some cases surpass offerings from other providers around the world, judging from the innovation demonstrated in some approaches such as 7IP and the sophistication of some RFPs. This bodes well for Latin America and makes it an interesting and highly competitive market.

During the past few years, Futurecom has been held in scenic Florianópolis, the capital of Santa Catarina state in the Southern part of Brazil. Next year will be the 10th edition of the show, which is slated to take place in São Paulo. (Photo by Ron Gruia.)

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The New Telco Choice: Mass Customization or Mass Alienation?

by Grant F. Lenahan

Moving away from the old one-size-fits-all business model, some service providers have realized that their future depends on the 'mass customization' of services to millions of people who have their own needs and desires. The goal is a grand one: greater loyalty, higher ARPU, higher margins and greater overall customer satisfaction. Not only are these worthy goals, but competitors — especially those coming from web backgrounds — are already starting to provide competitive services that will someday be true substitutes for telephony, cable TV and other services that are core to our industry's revenues. But to get there, they're going to need to design subscriber policies that help them better understand their customers' needs, and surpass them.

Something truly remarkable is happening among telecoms operators. They're about to take the next step in being truly customer-focused, and provide services to subscribers that are personalized to their individual needs.

These policies will enable networks to personalize services and subscriber experiences in real time, tailoring news delivery, content screening rules, display preferences, pricing, and an almost limitless number of options to fit individual preferences, requirements and lifestyles. By basing policies on individual needs, operators stand to gain a significant new source of revenue from better targeted marketing and advertising, as well as develop the deeper relationships with their customers that businesses in other sectors have had for years.

Take manufacturing for instance. This sector has moved away from 'mass manufacturing' of products which are compromised by their need to appeal to the widest — and blandest — audience possible. Flexible design and manufacturing processes have facilitated instead the 'mass customization' model that telcos must follow. There are a number of clear trends in how policies can be implemented that offer direction to operators looking to establish a new rapport with their subscribers.

For example, there are preference policies that allow parental controls over their family's mobile service consumption. There are marketing advertising policies that allow subscribers to receive targeted promotions and messages that truly appeal to them. There are content management policies that can protect minors from adult content or restrict business users from downloads not related to their job function. There are even seamless handoff policies that govern how different subscriber segments may opt for either better quality or lower price network access, depending if they're a business user or a student. In all cases, the experience so far points towards a better experience for the subscriber that the traditional operators need to sit up and pay attention to. The success of the MVNOs points the way.

Virgin Mobile USA saw under-served youth and weak prepaid plans. kajeet saw a lack of family-friendly mobile service for "tweens". Movida saw a Hispanic market in the U.S. with a wide range of unmet needs, from attractive international calling to native language support and convenient distribution channels.

Flying-J may be the most innovative — or perhaps unusual — of the MVNOs. As the largest North American truck stop operator, it recognized the unique needs of over-the-road truckers for communication, news, and alerting services that it is uniquely positioned to meet. Trade in your CB radio for a mobile? These are markets that most large network operators simply don't have the familiarity with or the time, resources, and creativity to address.

Thanks to the MVNOs, some U.S. analysts think that the prepaid market will grow to about 12% or roughly $14 billion of the overall market by 2012. Yet this is simply the tip of the iceberg. Just as web providers offer on-demand, personalized content and information, and just as Google, Blyk, Virgin Mobile and others promise alternative payment models, operators are showing signs of personalizing their services — from mobile plans to video offers to ad sponsored and hybrid payment models. The question is "how far and how fast?"

So, the interesting news here is that subscribers are willing to pay for the personalization they demand. The question is, are the operators ready to take the next step to mass customization, or will they risk mass alienation?

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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The IMS 2008 Buyers' Guide is a compendium of companies from around the world. If you do not see your company's name on this list or know of a company that should be on this list, keep in mind that only those companies that have followed TMC's online submission procedure are included in the Guide. Submitting your company using our online forms makes it easy to provide information and to specify such things as an enhanced listing (a listing that stands out on bold type that will be highlighted in yellow). However, also note that enhanced listing forms received after November 1, 2007 were accepted for the online version of the 2008 Buyers' Guide only.

2008 Product and Services Listing

1 3G Air Interfaces
2 Application Servers
3 BGCF: Breakout Gateway Control Function
4 Billing
5 CCF: Charging Collector Function
6 CDMA
7 CSCF: Call/Session Control Function
8 Dual Mode Handsets
9 Fixed Mobile Convergence
10 GPRS
11 GSM
12 High Availability
13 HSS: Home Subscriber Server
14 I-CSCF: Interrogating Call/Session Control Function
15 IM-SSF: IP Multimedia Service Switching Function
16 Interactive Voice Response
17 IP Phones
18 IP/MPLS Backbone Equipment (Routers/Softswitches)
19 Media Gateways and Servers
20 MGCF: Media Gateway Control Function
21 Mobile Video
22 MRF: Multimedia Resource Function
23 MRFC: Multimedia Resource Function Controller
24 MRFP: Multimedia Resource Function Processor
25 Multimedia Messaging Service
26 Multimedia Resource Function Controllers and Processors
27 Multimodal
28 MVNO
29 OSA: Open Service Architecture
30 OSA-SCS: Open Service Access-Service Capability Server
31 OSS/BSS and Back-end Systems
32 P-CSCF: Proxy Call/Session Control Function
33 PDAs
34 Push-to-Talk over Cellular (PoC)
35 Quality of Service
36 SCIM
37 S-CSCF: Serving Call/Session Control Function
38 Security & Policy
39 Signaling Gateways
40 SIP Servers
41 SIP-Related
42 Site Recovery
43 SLF: Subscriber Location Function
44 Testing
45 Triple-and-Quadruple Play platforms
46 UMTS
47 Video Services
48 VoIP
49 VPNs
50 WCDMA
51 WLAN: Wireless Local-Area Network

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905-760-4200
www.aastratelecom.com
Products/Services: 17,41,48

Acredo Technologies, Inc.
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Products/Services: 4,17,48
Other: Hosted Internet Phone Services, Screen Pop up and CRM Integration (CTI)

Alliance Systems
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www.alliancesystems.com
Products/Services: 2,12,16,19,48

APEX Voice Communications
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www.apexvoice.com
Products/Services: 2,16,21,45,47

Asentria
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www.asentria.com
Products/Services: 12,42
Other: Remote site monitoring

BASiX Automation Integrators, Inc.
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www.basixai.com
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www.callminer.com
Other: Speech Analytics

CapRock Communications
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Products/Services: 47,48,49

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Products/Services: 12,16,19,26,40

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Products/Services: 27

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Products/Services: 2,25,40,48
Other: Unified Communications, Rich Internet Applications

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Other: wireless convergence server

CosmoCom
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Other: Multimedia IP Call Center

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Other: IMS Call Flow Reverse Engineering

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Other: Voice Conferencing/Web Conferencing

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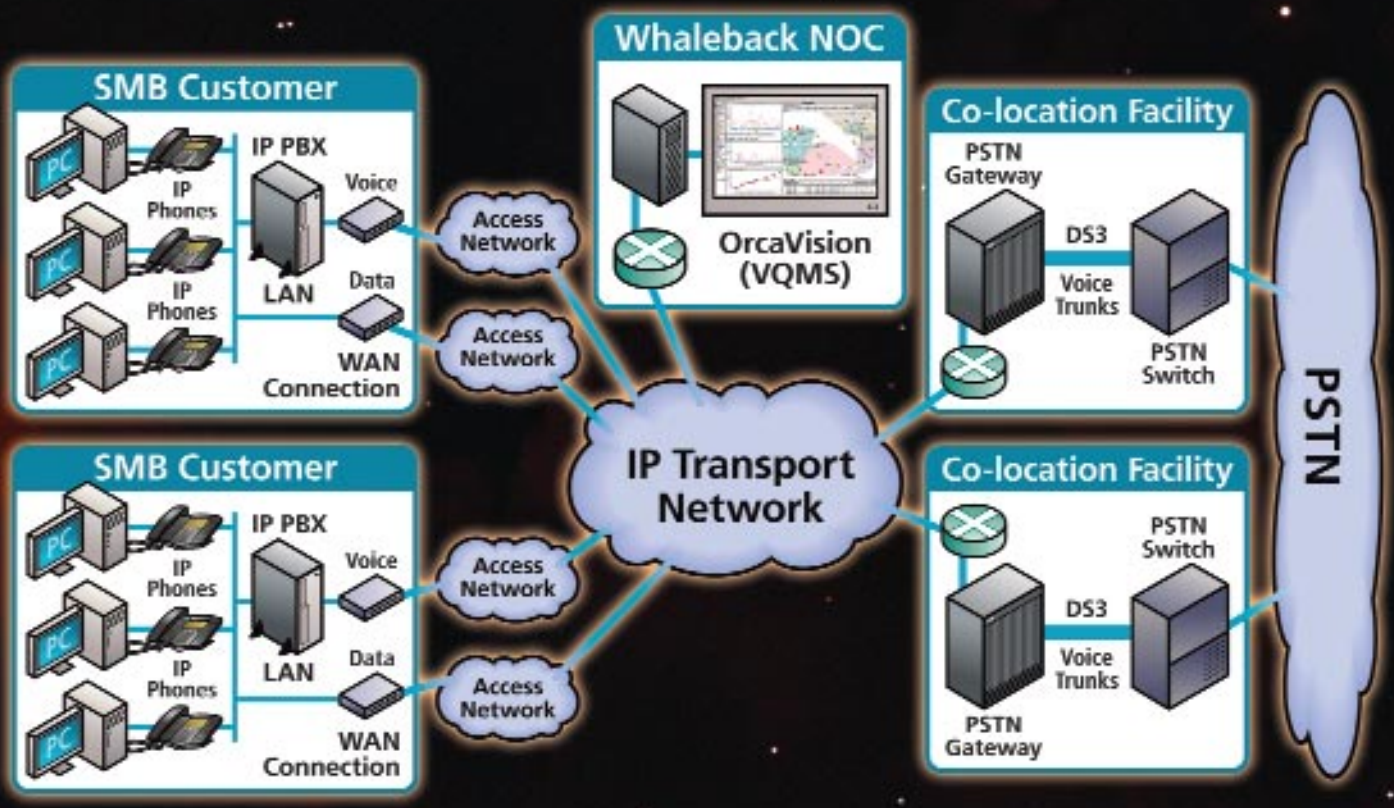

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978-614-8559
www.sonusnetworks.com

Stratus Technologies
978-461-7619
www.stratus.com

8. Dual Mode Handsets

TeleSoft International, Inc.
512-373-4324
www.telesoft-intl.com

9. Fixed Mobile Convergence

Bridgewater Systems
613-591-6655
www.bridgewatersystems.com

Cistera Networks, Inc.
972-381-4699
www.cistera.com

Comverse
781-246-9000
www.comverse.com

Continuous Computing
858-882-8800
www.ccpu.com

Convergin
+972-9-951 7771
www.convergin.com

CounterPath Solutions
604-320-3344 x108
www.counterpath.com

Covergence, Inc.
978-823-5200
www.covergence.com

Gallery IP Telephony
972-9-7747011
www.g-ipt.com

IntelliNet Technologies
321-726-0686 x284
www.intellinet-tech.com

Mavenir Systems
469-916-4393
www.mavenir.com

Reef Point Systems
781-505-8300
www.reefpoint.com

Sonus Networks
978-614-8559
www.sonusnetworks.com

Sylantro Systems
408-626-3049
www.sylantro.com

Tango Networks
972-301-9314
www.tango-networks.com

TAZZ Networks
401-751-9300
www.tazznetworks.com

Tektronix
469-330-4000
www.tektronix.com/communications

TeleWare plc
01845 526830
www.teleware.com

10. GPRS

Multi-Tech Systems, Inc.
800-328-9717 x5178
www.multitech.com

11. GSM

Bridgewater Systems
613-591-6655
www.bridgewatersystems.com

Multi-Tech Systems, Inc.
800-328-9717 x5178
www.multitech.com

Tekno Telecom LLC
630-579-9800
www.teknotelecom.com

12. High Availability

Alliance Systems
972-673-1316
www.alliancesystems.com

Asentria
206-344-8800 x144
www.asentria.com

CePOINT Networks, LLC
603-883-7979
www.cepoint.com

Continuous Computing
858-882-8800
www.ccpu.com

Dialexia Communications Inc.
514-693-8500 x214
www.dialexia.com

Kontron AG
+49 81-65 77 0
www.kontron.com

QuadManage
972 9 7486787
www.i-gts.com

Stratus Technologies
978-461-7619
www.stratus.com
TelStrat
972-543-3500
www.TelStrat.com

13. HSS: Home Subscriber Server

Bridgewater Systems
613-591-6655
www.bridgewatersystems.com

Dialexia Communications Inc.
514-693-8500 x214
www.dialexia.com

Gallery IP Telephony
972-9-7747011
www.g-ipt.com

Kontron AG
+49 81-65 77 0
www.kontron.com

14. I-CSCF: Interrogating Call/Session Control Function

Kontron AG
+49 81-65 77 0
www.kontron.com

15. IM-SSF: IP Multimedia Service Switching Function

Stratus Technologies
978-461-7619
www.stratus.com

16. Interactive Voice Response

Alliance Systems
972-673-1316
www.alliancesystems.com

APEX Voice Communications
818-379-8400
www.apexvoice.com

BASiX Automation Integrators, Inc.
603-758-6458
www.basixai.com

CePOINT Networks, LLC
603-883-7979
www.cepoint.com

CosmoCom
631-940-4200
www.cosmocom.com

Intuitive Voice Technology
602-249-5750
www.IntuitiveVoice.com

IVR Technologies, Inc.
213-634-1522
www.ivr.com

Nordia Inc.
888-858-2166 x5272
www.nordia

OPC Marketing, Inc.
972-267-3279 x202
www.opc-marketing.com

serVonic GmbH
+49 8142 4799 x12
www.servonic.com

TeleWare plc
01845 526830
www.teleware.com

Toshiba America Information Systems, Telecom Systems Div.
949-583-3700
www.telecom.toshiba.com

Virtual Hold Technology, LLC
330-670-2200
www.virtualhold.com

VOCALCOM
514-733-6444 x204
www.vocalcom.com

Voice Teleservices
207-699-2484
www.voiceteleservices.com

17. IP Phones

Aastra Telecom
905-760-4200
www.aastratelecom.com

Acredo Technologies, Inc.
850-266-7121
www.acredo.us

BASiX Automation Integrators, Inc.
603-758-6458
www.basixai.com

CounterPath Solutions
604-320-3344 x108
www.counterpath.com

Intuitive Voice Technology
602-249-5750
www.IntuitiveVoice.com

IPitomy Communications
941-306-2200
www.ipitomy.com

OPC Marketing, Inc.
972-267-3279 x202
www.opc-marketing.com

snom technology AG
978-686-1531 x507
www.snom.com

TeleSoft International, Inc.
512-373-4324
www.telesoft-intl.com

Toshiba America Information Systems, Telecom Systems Div.
949-583-3700
www.telecom.toshiba.com

18. IP/MPLS Backbone Equipment (Routers/Softswitches)

Engineers' Consulting Group
229-316-0443
www.e-c-group.com

Visionael Corporation
650-470-8920
www.visionael.com/

19. Media Gateways and Servers

Alliance Systems
972-673-1316
www.alliancesystems.com

BASiX Automation Integrators, Inc.
603-758-6458
www.basixai.com

CePOINT Networks, LLC
603-883-7979
www.cepoint.com

Dialogic
800-755-4444
www.dialogic.com

IVR Technologies, Inc.
213-634-1522
www.ivr.com

Kontron AG
+49 81-65 77 0
www.kontron.com

Pactolus Communications Software
508-616-0900 x328
www.pactolus.com

Redwood Technologies Limited
+44 1344 304 344
www.redwoodtech.com

20. MGCF: Media Gateway Control Function

VocalTec Communications Ltd.
+972 9 9703888 x888
www.vocaltec.com

21. Mobile Video

APEX Voice Communications
818-379-8400
www.apexvoice.com

SPIRIT
+1 408 540-6033
spiritdsp.com

25. Multimedia Messaging Service

CommuniGate Systems
415-383-7164
www.communigate.com

OPC Marketing, Inc.
972-267-3279 x202
www.opc-marketing.com

Telenity
203-445-2000 x2019
telenity.com

26. Multimedia Resource Function Controllers and Processors

CePOINT Networks, LLC
603-883-7979
www.cepoint.com

27. Multimodal

Commetrex Corp
770-449-7775 x320
www.commetex.com

TelStrat
972-543-3500
www.TelStrat.com

28. MVNO

Bridgewater Systems
613-591-6655
www.bridgewatersystems.com

Comarch
+48 12 646 1504
www.comarch.com

TeleWare plc
01845 526830
www.teleware.com

29. OSA: Open Service Architecture

QuadManage
972 9 7486787
www.i-gts.com

31. OSS/BSS and Back-end Systems

Comarch
+48 12 646 1504
www.comarch.com

Highdeal
212-332-2144
www.highdeal.com

Intec Telecom Systems
404-705-2800
www.intecbilling.com

ISA
800-583-3440 x142
www.isassoc.com

Oracle
650-506-8920
www.oracle.com

Quintrex Data Systems Corp.
319-363-5508
www.quintrex.com

Solegy, LLC
212-801-2506
www.solegy.com

Spirent Communications
818-676-2325
www.spirent.com

Syndesis
905-886-7818
www.syndesis.com

TransNexus
404-526-6060
www.transnexus.com

Visionael Corporation
650-470-8920
www.visionael.com/

32. P-CSCF: Proxy Call/Session Control Function

Dialexia Communications Inc.
514-693-8500 x214
www.dialexia.com

Mavenir Systems
469-916-4393
www.mavenir.com

Reef Point Systems
781-505-8300
www.reefpoint.com

34. Push-to-Talk over Cellular (PoC)

Cistera Networks, Inc.
972-381-4699
www.cistera.com

SPIRIT
+1 408 540-6033
spiritdsp.com

35. Quality of Service

Brix Networks
978-367-5600
www.brixnet.com

CounterPath Solutions
604-320-3344 x108
www.counterpath.com

Covergence, Inc.
978-823-5200
www.covergence.com

Engineers' Consulting Group
229-316-0443
www.e-c-group.com

Intertex
508-385-6335
intertexdata.com

OPTICOM GmbH
+499131 530200
www.opticom.de

Reef Point Systems
781-505-8300
www.reefpoint.com

TAZZ Networks
401-751-9300
www.tazznetworks.com

Tektronix
469-330-4000
www.tektronix.com/communications

XConnect
+44 (0) 870 794 9990
www.xconnect.net

36. SCIM

Convergin
+972-9-951 7771
www.convergin.com

IntelliNet Technologies
321-726-0686 x284
www.intellinet-tech.com

Oracle
650-506-8920
www.oracle.com

Solegy, LLC
212-801-2506
www.solegy.com

37. S-CSCF: Serving Call/Session Control Function

Stratus Technologies
978-461-7619
www.stratus.com

38. Security & Policy

Covergence, Inc.
978-823-5200
www.covergence.com

IntelliNet Technologies
321-726-0686 x284
www.intellinet-tech.com

Intertex
508-385-6335
intertexdata.com

Reef Point Systems
781-505-8300
www.reefpoint.com

TAZZ Networks
401-751-9300
www.tazznetworks.com

TransNexus
404-526-6060
www.transnexus.com

XConnect
+44 (0) 870 794 9990
www.xconnect.net

39. Signaling Gateways

Continuous Computing
858-882-8800
www.ccpu.com

Dialogic
800-755-4444
www.dialogic.com

Encore Networks
703-318-4366 x4366
www.encorenetworks.com

IntelliNet Technologies
321-726-0686 x284
www.intellinet-tech.com

Tekno Telecom LLC
630-579-9800
www.teknotelecom.com

TeleSoft International, Inc.
512-373-4324
www.telesoft-intl.com

Traffix Systems
+972 .3.647.4248
www.traffixsystems.com

XConnect
+44 (0) 870 794 9990
www.xconnect.net

40. SIP Servers

CePOINT Networks, LLC
603-883-7979
www.cepoint.com

CommuniGate Systems
415-383-7164
www.communigate.com

Intertex
508-385-6335
intertexdata.com

Intuitive Voice Technology
602-249-5750
www.IntuitiveVoice.com

Micromethod Technologies
408-426-8069
www.micromethod.com

Nordia Inc.
888-858-2166 x5272
www.nordia

Oracle
650-506-8920
www.oracle.com

Pactolus Communications Software
508-616-0900 x328
www.pactolus.com

Redwood Technologies Limited
+44 1344 304 344
www.redwoodtech.com

TransNexus
404-526-6060
www.transnexus.com

VOCALCOM
514-733-6444 x204
www.vocalcom.com

VocalTec Communications Ltd.
+972 9 9703888 x888
www.vocaltec.com

41. SIP-Related

Aastra Telecom
905-760-4200
www.aastratelecom.com

BASiX Automation Integrators, Inc.
603-758-6458
www.basixai.com

Continuous Computing
858-882-8800
www.ccpu.com

CounterPath Solutions
604-320-3344 x108
www.counterpath.com

Covergence, Inc.
978-823-5200
www.covergence.com

Intertex
508-385-6335
intertexdata.com

IPitomy Communications
941-306-2200
www.ipitomy.com

M5T
514-285-0058 x424
www.m5t.com

Micromethod Technologies
408-426-8069
www.micromethod.com

Psytechnics
603-427-6500
www.psytechnics.com

snom technology AG
978-686-1531 x507
www.snom.com

TeleSoft International, Inc.
512-373-4324
www.telesoft-intl.com

Virtual Hold Technology, LLC
330-670-2200
www.virtualhold.com

VOCALCOM
514-733-6444 x204
www.vocalcom.com

XConnect
+44 (0) 870 794 9990
www.xconnect.net

42. Site Recovery

Asentria
206-344-8800 x144
www.asentria.com

44. Testing

Brix Networks
978-367-5600
www.brixnet.com

Catapult Communications Corporation
650-960-1025
www.catapult.com

EdenTree Technologies
805-499-4555 x202
www.edentreetech.com

Empirix Inc.
781-266-3324
www.empirix.com

Engineers' Consulting Group
229-316-0443
www.e-c-group.com

Ixia
818-871-1800
www.ixiacom.com

Kontron AG
+49 81-65 77 0
www.kontron.com

OPTICOM GmbH
+499131 530200
www.opticom.de

Psytechnics
603-427-6500
www.psytechnics.com

Spirent Communications
818-676-2325
www.spirent.com

Tekno Telecom LLC
630-579-9800
www.teknotelecom.com

Tektronix
469-330-4000
www.tektronix.com/communications

Valid8.com, Inc.
781-938-1221
www.valid8.com

Voice Teleservices
207-699-2484
www.voiceteleservices.com

45. Triple-and-Quadruple Play platforms

APEX Voice Communications
818-379-8400
www.apexvoice.com

Comverse
781-246-9000
www.comverse.com

GlobalTouch Telecom
800-254-3107
www.globaltouchtelecom.com

Highdeal
212-332-2144
www.highdeal.com

Mavenir Systems
469-916-4393
www.mavenir.com

OPTICOM GmbH
+499131 530200
www.opticom.de

QuadManage
972 9 7486787
www.i-gts.com

Quintrex Data Systems Corp.
319-363-5508
www.quintrex.com

TAZZ Networks
401-751-9300
www.tazznetworks.com

Tektronix
469-330-4000
www.tektronix.com/communications

46. UMTS

Tektronix
469-330-4000
www.tektronix.com/communications

47. Video Services

APEX Voice Communications
818-379-8400
www.apexvoice.com

CapRock Communications
832-668-2300
www.caprock.com

GlobalTouch Telecom
800-254-3107
www.globaltouchtelecom.com

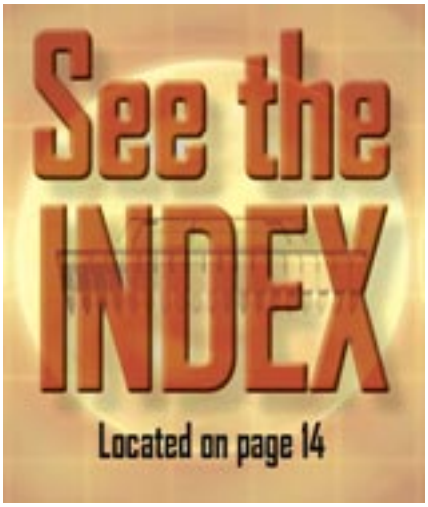
OPC Marketing, Inc.
972-267-3279 x202
www.opc-marketing.com

OPTICOM GmbH
+499131 530200
www.opticom.de

SPIRIT
+1 408 540-6033
spiritdsp.com

Telenity
203-445-2000 x2019
telenity.com

VOCALCOM
514-733-6444 x204
www.vocalcom.com



48. VoIP

Aastra Telecom
905-760-4200
www.aastratelecom.com

Acredo Technologies, Inc.
850-266-7121
www.acredo.us

Alliance Systems
972-673-1316
www.alliancesystems.com

BASiX Automation Integrators, Inc.
603-758-6458
www.basixai.com

CapRock Communications
832-668-2300
www.caprock.com

Cistera Networks, Inc.
972-381-4699
www.cistera.com

Citrix Systems, Inc.
408-678-3360
www.citrix.com/applicationgateway

Comarch
+48 12 646 1504
www.comarch.com

CommuniGate Systems
415-383-7164
www.communigate.com

Comverse
781-246-9000
www.comverse.com

Convergin
+972-9-951 7771
www.convergin.com

CosmoCom
631-940-4200
www.cosmocom.com

CounterPath Solutions
604-320-3344 x108
www.counterpath.com

Covergence, Inc.
978-823-5200
www.covergence.com

Dialexia Communications Inc.
514-693-8500 x214
www.dialexia.com

Dialogic
800-755-4444
www.dialogic.com

Digium
256-428-6114
www.digium.com

Encore Networks
703-318-4366 x4366
www.encorenetworks.com

Engineers' Consulting Group
229-316-0443
www.e-c-group.com

GlobalTouch Telecom
800-254-3107
www.globaltouchtelecom.com

IntelePeer
650-714-4997
www.intelepeer.com

Intuitive Voice Technology
602-249-5750
www.IntuitiveVoice.com

IPitomy Communications
941-306-2200
www.ipitomy.com

M5T
514-285-0058 x424
www.m5t.com

Mavenir Systems
469-916-4393
www.mavenir.com

Micromethod Technologies
408-426-8069
www.micromethod.com

Multi-Tech Systems, Inc.
800-328-9717 x5178
www.multitech.com

Nordia Inc.
888-858-2166 x5272
www.nordia

OPC Marketing, Inc.
972-267-3279 x202
www.opc-marketing.com

OPTICOM GmbH
+499131 530200
www.opticom.de

Oracle
650-506-8920
www.oracle.com

Pactolus Communications Software
508-616-0900 x328
www.pactolus.com

Recollect Recording, LLC
972-377-9074
www.RecollectRecording.com

Redwood Technologies Limited
+44 1344 304 344
www.redwoodtech.com

snom technology AG
978-686-1531 x507
www.snom.com

Solegy, LLC
212-801-2506
www.solegy.com

SPIRIT
+1 408 540-6033
spiritdsp.com

Stratus Technologies
978-461-7619
www.stratus.com

Sylantro Systems
408-626-3049
www.sylantro.com

Tekno Telecom LLC
630-579-9800
www.teknotelecom.com

TeleSoft International, Inc.
512-373-4324
www.telesoft-intl.com

TeleWare plc
01845 526830
www.teleware.com

TelStrat
972-543-3500
www.TelStrat.com

Toshiba America Information Systems, Telecom Systems Div.
949-583-3700
www.telecom.toshiba.com

TransNexus
404-526-6060
www.transnexus.com

Virtual Hold Technology, LLC
330-670-2200
www.virtualhold.com

VOCALCOM
514-733-6444 x204
www.vocalcom.com

VocalTec Communications Ltd.
+972 9 9703888 x888
www.vocaltec.com

VoX Communications
813-217-9777
www.voxcorp.net

XO Communications
703-547-2621
www.xo.com

49. VPNs

CapRock Communications
832-668-2300
www.caprock.com

Encore Networks
703-318-4366 x4366
www.encorenetworks.com

Intertex
508-385-6335
intertexdata.com

51. WLAN: Wireless Local-Area Network

Comarch
+48 12 646 1504
www.comarch.com

OTHER

Acredo Technologies, Inc.
850-266-7121
www.acredo.us
Hosted Internet Phone Services, Screen Pop up and CRM Integration (CTI)

Asentria
206-344-8800 x144
www.asentria.com
Remote site monitoring

Brix Networks
978-367-5600
www.brixnet.com
Service Assurance

CallMiner
239-689-6463
www.callminer.com
Speech Analytics

Cistera Networks, Inc.
972-381-4699
www.cistera.com
Call IP Application Platform: Recording, Broadcast Messaging, Directory Services

CommuniGate Systems
415-383-7164
www.communigate.com
Unified Communications, Rich Internet Applications

Convergin
+972-9-951 7771
www.convergin.com
wireless convergence server

CosmoCom
631-940-4200
www.cosmocom.com
Multimedia IP Call Center

Dialogic
800-755-4444
www.dialogic.com
IP & IP Enabled Components, Signaling IP & SS7 Components, TDM Boards...

EdenTree Technologies
805-499-4555 x202
www.edentreetech.com
IMS Lab Management

Empirix Inc.
781-266-3324
www.empirix.com
Monitoring

Endeavor Telecom
678-460-2500
www.endeavortelecom.com
CPE Installations, Inside Wiring, Trouble Tickets, Site Surveys

Engineers' Consulting Group
229-316-0443
www.e-c-group.com
Professional Services

EventHelix.com Inc.
240-274-1453
www.EventHelix.com
IMS Call Flow Reverse Engineering

Forum Communications International
972-680-0700 x1601
www.forum-com.com
Voice Conferencing/Web Conferencing

GL Communications Inc.
301-670-4784 x114
www.gl.com
Test Solutions

HEADNetworks LLC
603-626-9848
www.headnetworks.com
IMS Network Engineering

Highdeal
212-332-2144
www.highdeal.com
Rating & Charging

Intec Telecom Systems
404-705-2800
www.intecbilling.com
IMS Online and Offline Charging

IntelliNet Technologies
321-726-0686 x284
www.intellinet-tech.com
Diameter

Interactive.com
617-354-8585
www.interactive.com
E-mail marketing solution

ISA
800-583-3440 x142
www.isassoc.com
WAP Customer Care Portals

J. Patrick & Associates, Inc.
212-964-9393
www.jpatrick.com
recruiting/consulting

Nordia Inc.
888-858-2166 x5272
www.nordia
Customer care services (outsourcing)

Pactolus Communications Software
508-616-0900 x328
www.pactolus.com
IP Audio Conferencing

QuadManage
972 9 7486787
www.i-gts.com
Mediation layers from legacy to IMS

Recollect Recording, LLC
972-377-9074
www.RecollectRecording.com
Call recording

Reef Point Systems
781-505-8300
www.reefpoint.com
Border Gateway Function (BGF)

Runcom
972-3-9428888
www.runcom.co.il
WIMAX chip and reference board

Sennheiser Communications
860-434-9190 x152
sennheiserusa.com
VoIP headsets, Bluetooth wireless headsets

Solegy, LLC
212-801-2506
www.solegy.com
Service Delivery Platform

Sylantro Systems
408-626-3049
www.sylantro.com
Application Feature Server

Telenity
203-445-2000 x2019
telenity.com
Service Delivery Platforms, Location-based Services

TeleWare plc
01845 526830
www.teleware.com
Telephony Applications

Telrex
425-827-6156
www.telrex.com
IP Call Recording & Monitoring

Toshiba America Information Systems, Telecom Systems Div.
949-583-3700
www.telecom.toshiba.com
IP-PBX, Soft Phones, Unified Messaging, IP Phones, digital phones, wireless

Traffix Systems
+972 .3.647.4248
www.traffixsystems.com
AAA Servers and Gateways, Diameter products

Virtual Hold Technology, LLC
330-670-2200
www.virtualhold.com
IP-Enabled Callback

Visionael Corporation
650-470-8920
www.visionael.com/
Automated inventory, Next generation services

XConnect
+44 (0) 870 794 9990
www.xconnect.net
ENUM and VoIP Peering Provider

IMS: A Year-End Review and Prognostications

by Richard "Zippy" Grigonis

RadiSys Corporation (www.radisys.com) provides advanced solutions for communications networking and commercial systems, built with such advanced technologies as AdvancedTCA, MicroTCA and COM Express.

Peter Briscoe, the Executive Vice President and General Manager of RadiSys Canada, says, "My view is that IMS is an extremely important architecture for the service providers to allow them to compete in this new world of Internet-style telecommunications. In other words, they've got to come up with a way to allow services and applications to be tried out, succeed or fail, and then the successful ones are quickly ramped up. In order to do that, considering providers typically have a very large customer base they have to deal with, they have to come up with a structure that allows that to happen but also allows them to maintain the quality and the customer experience and all of the good things that we expect out of a communications system. So while they've got to be able to react as fast as the Internet, they can't afford to be low-quality. It's a tough situation in which they find themselves. I think all of the telecom vendors have put their heads together along with the standards people and the architects and have asked themselves, 'How can we give the providers a way to compete that still maintains the kind of high quality we're all familiar with, so people just don't try the service, hang up, and never use it again'. I think that's what IMS is all about."

"One of the keys is services," says Briscoe. "The problem is that nobody has yet come up with new services that are really 'home runs'. But they will appear, because as we move into the IMS era, we're starting to get into multimedia, video and those are things that will differentiate new services completely from the old services that we created in the past."

"Another key to IMS success is the ability for third parties to create applications and services and try them out on the IMS platform," says Briscoe. "There are things in place to allow that to happen, but I still think it's very early in this whole process. In the past year, we've seen a lot of lab activity, we've seen some tries at some new things, but mostly what we've seen is marketing. It's mostly determining 'what sticks'. I don't think we've seen a home run yet."

"Because IMS is linked fairly heavily to convergence of the wireline and wireless worlds," says Briscoe, "and with 3G just coming on and really getting going, the whole system is coming together to a critical mass. A wise telecom person once told me, 'It always takes us longer to get somewhere than we all had hoped, but when it finally happens, it seems to occur faster than all of us can believe'. So I think we're still in the initial 'longer-than-expected' phase.

"RadiSys is involved with many trials and lab activities around the world," says Briscoe, "but there are only a few providers that have actually converted and are providing full-time service. IMS has so many 'moving pieces' it's a complex beast to get going when there aren't 'home run' applications to send over it. So, I think many companies perhaps have decided that they're going to try some new applications independently of IMS, and if they succeed, they'll quickly move them onto IMS as a catalyst to drive it forward."

"For 2008, one of the places that I see a lot of potential is China," says Briscoe. "The 3G licenses there have dragged on and on and nothing has happened. But I believe they will be awarded this year. That will help catalyze some new applications onto IMS. That won't drive the volume, but it will be a catalyst to get some new things going."

Britain's incumbent carrier, BT, accused hardware vendors recently of lagging on providing a full set of standards-based IMS equipment, claiming it either couldn't buy the equipment it needed or could only buy it from a single source. Certainly interoperability testing took up quite a bit of 2007, though 'bits and pieces' of IMS are already in place in various networks. Are these IMS networks? (It reminds one of the question: How many artificial limbs – and other parts – does a person need before you can call them a cyborg?) In any case, expect more extensive deployments in 2008.

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"All over the world we're involved with many video and multimedia applications and services," says Briscoe. "We're exploring them with customers and service providers. That's the phase we're in right now. In 2008 things should move further along and hopefully we'll find some new things. Indeed, I'm already seeing some new things hatched and launched. Hopefully the pick-up volume will drive the whole of IMS forward."

Slow But Sure

Dialogic Corporation announced in October 2007 that it had acquired all outstanding shares of EAS Group, subsidiaries of which include Cantata Technology, Inc. (www.cantata.com), itself consisting of Excel Switching Corporation, Brooktrout Technology and SnowShore Networks. Just around the time Dialogic announced the deal, Yours Truly was speaking with industry legend James Rafferty, Director of Media Gateway Product Management at Cantata.

"Certainly at Cantata one of the things that we've observed is that The Year of IMS is starting to look like what happened with The Year of the LAN," says Rafferty. "In other words, nobody's really sure when it will happen. But the good news is that the components that make up what people are doing with IMS – typically use of SIP, SIP with markup languages – those are coming along just fine. We see strong adoption of SIP. We offer both SIP and H.323 on the IP side, and I must admit that for every conversation we have about H.323 there's 10 to 15 concerning SIP. So SIP is moving along like gangbusters."

"On the standards side, this past year has seen some movement in media server controllers and the Media Resource Function [MRF] in that the IETF finally sanctioned a working group to deal with this called Media Control, which is in the process of doing things like frameworks and requirements documents for media control," says Rafferty. "The expected outcome is that some sort of XML-based protocol will come out of that as well. So this Media Control Working Group has gotten some pretty wide participation."

"In a similar regard, the CT1 Working Group of 3GPP is basically studying the same topic in its Release 8," says Rafferty. "Release 7 came out this past year. The piece in which I was involved has been the interface between an Application Server [AS], the CSCF and then going down to the top component of the MRF which would be the MRFC [Media Resource Function Controller] rather than the MRFP [Media Resource Function Processor]."

"There continues to be a big debate in standards bodies about SIP versus H.248," says Rafferty. "Most of the actual implementations from what we can see with respect to media server control are actually in the SIP space, which is the space Cantata has been in from Day One. Certainly some fairly major players have been holdouts, notably Ericsson, which has been a big advocate for H.248. They're taking similar stances within the standards bodies. But the media control work in the IETF is getting pretty broad participation, much broader than what I've seen in 3GPP. This will take a couple of years to play out. Our former CTO, Dr. Eric Berger, is one of the co-chairs of the effort over at the IETF. The net result will complement what people are doing today, which are things like MSCML [Media Server Control Markup Language, an IETF protocol used in conjunction with SIP to enable the delivery of advanced multimedia conferencing services over IP networks] and so there may actually be a standard protocol appearing on the other side of this as well."

"The trend seems to be a tendency to move away from the old SIP info-based approaches and instead devise approaches that will work over TCP and TLS [Transport Layer Security], so there's more movement in those directions than we've seen previously," says Rafferty. "At Cantata we're definitely seeing more interest than we've seen in the past in terms of customers on the OEM side seriously beefing up security within things like media gateway offerings, and how you control them, so we've been seeing a lot of interest from people during 2007 about TLS and SRTP [Secure Real-time Transport Protocol] and that would apply to all of the different media types be it voice, fax or whatever."

"As for fax, the interesting thing about it is that, from a standards perspective, it's been done for a while," says Rafferty. "Cantata released its T.34 fax several years ago, and that was the last major wave of adoption over on the TDM side. On the IP side, T.38 has come on strongly. I was actually heavily involved in the so-called T.37 work. We called it by other names over at the IETF. But, sad to say, for all of the work that we did on it, the main adopter of that work, to date, has really been the voicemail community. They picked up on the TIFF-F stuff and supported it within their efforts regarding fax mailboxes. But the generalized server community is mostly focused on IP and how to IP-enable a fax machine, or IP-enable a fax server, and so forth. So most of the energy there is directed toward using T.38. From a business standpoint, we're seeing a pretty interesting opportunity there, because there's been some turbulence between what's out there in the network, where, by and large, one encounters gateways that don't support T.38, versus endpoints which increasingly do support T.38. So we actually see a transcoding opportunity there and that's something that can be served by a product such as our IMG [Integrated Media Gateway]. That's one of our big 'up and comers'.

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The Business Case for IMS

by Richard "Zippy" Grigonis

Tekelec (www.tekelec.com) is a network applications company with experience in session control that's helping service providers transition to IMS networks. Travis Russell, Tekelec's Manager, Product Marketing, says, "IMS is really an implementation standard for VoIP in a wireless network. It actually doesn't bring any new technology to the table; if one reads the 3GPP specifications for IMS, it calls out many existing protocols used in VoIP today, with new requirements for routing, authentication and authorization. The intent is to standardize how SIP gets implemented to ensure that wireless networks remain secure and reliable."

"White it's true that IMS enables many new services, the same can be said about conventional IP-based networks today," says Russell. "In fact, many operators counter that they can deliver everything that IMS promises to enable without deploying an IMS architecture. This is true, although the problems with this approach are many. We already know from our experiences with the Internet that ensuring services are delivered only to those having authorized access is troublesome."

Russell elaborates: "Conventional VoIP works well in a network where subscribers are not paying for each service. For example, the 'all you can eat' model where subscribers pay a flat fee for access to various services. However, in our telecom model where revenues are generated through service usage, new mechanisms are needed to prevent fraudulent access to these services."

"The Call Session Control Function [CSCF] introduced in the IMS specifications provides a means for operators to better manage all of the traffic in their networks," says Russell, "and collect the revenues for that traffic reliably. It also ensures that the operator doesn't have to purchase multiple OSS/BSS to handle the various functions such as provisioning and billing based on technology. In the IMS model, everything is shared across all services. This means that one billing system is capable of supporting voice, video, email, messaging, and any other service the operator is providing to their subscriber base. This is not the case in today's model where each service type brings its own proprietary requirements for OSS/BSS."

"There are several new options outlined by 3GPP for charging of services in the IMS model that solve the age-old problem operators see today with multiple billing platforms," says Russell. "By standardizing on the way the various network entities report and generate billing records, operators can deploy one charging platform for the entire network. This eliminates the need for multiple rating, mediation, and billing systems in the network."

One Step at a Time

At Oracle (www.oracle.com), Indu Kodukula Vice President of Product Management for the Oracle Service Delivery Platform, says, "Initially, when IMS was formulated, everybody thought it was going to be the solution to all the problems the telecom industry had about rolling out next-gen data services in a portable manner. What we're seeing is that the principles of IMS, with regard to the separation of control between the service layer and the full network, are very much in evidence. We see that across the board."

"IMS rollouts literally follow in the specifications laid down by 3GPP and 3GPP2. From our perspective, we see three main reasons for that," says Kodukula. "First is that the rollouts have been pretty expensive. Interoperability has been a challenge and even devices haven't really been available that are IMS-enabled. So

IMS is more of a guideline to the future than a specific battle plan for taking on the world's telecom infrastructure overnight. Certainly service providers have bought into it, so their decisions continue to be guided by it, but then they also have differing interpretations of what IMS is and what stage it's currently at. IMS is coming about very slowly. Legacy equipment is not going away at lightning speed. And how does one market an abstract, worldwide service architecture, anyway? Obviously, you market it to service providers because they can test and prove out a service quickly as a result of having an infrastructure based on IMS. It ultimately benefits users, even though the first apps ported to IMS will be existing revenue-generating applications such as voice (duh). But before we get to that stage, interoperability testing must still be done and interworking/transcoding schemes worked out. Even so, IMS certainly is promising.

rather than rolling out a full-fledged IMS network that could easily cost hundreds of millions of dollars, many providers are taking a wait-and-see approach and they're trying to find ways they can roll out an 'IMS Lite' network or something similar where they can test out the feasibility of IMS-like services without the expense of IMS."

"Second, it's not that clear what will be the compelling or 'killer' IMS applications," says Kodukula. "Rather than a roll out costing hundreds of millions of dollars and investing that kind of capital expense, what we're seeing are operators adopting a more horizontal platform which is a service delivery platform that really provides network agnosticity and supports portability of services so that when IMS 'happens', they will be able to migrate services using SDP [Service Delivery Platform] technology on top of the IMS network without having to rewrite the applications."

"The third dimension that we see to this is that no one is switching to an IMS network overnight," says Kodukula. "Initially some providers and vendors in this industry wanted to do a 'forklift' of their existing network and essentially plop in a new, IMS network. Definitely in the last 12 months, however, the trend or mood has changed. Now operators increasingly want a way to build and deploy IMS services on the network without having to do a forklift, thus taking an elemental, step-by-step approach to IMS rollout."

"Still, we feel very positive about this market," says Kodukula. "We provide a standards-based Oracle Service Delivery Platform as a way to build portable applications that run on today's network and that can also be delivered on next-gen networks such as IMS, SIP, WiFi and WiMAX. We offer a flexible platform that enables portability of services across multiple networks. That's something we see resonating very well with our service provider customers."

Dialogic Corporation (www.dialogic.com) makes open systems platforms that enable converged communications so that service providers, developers and system integrators can deliver services content and applications using multimedia processing and signaling technologies.

Alex Mushkin, Dialogic's Product Manager for Multimedia Platforms, says, "IMS definitely has useful aspects. As I see it, there are two sides to the matter. There is a technical side that makes IMS make sense, which involves the infrastructure, in particular wireless carriers moving to the IP-only infrastructure. And there are cost savings after you move everything to IP, which I think is pretty much proven at this point. On that side, those drivers are definitely making things happen.:

"On the other hand," says Mushkin, "on the business side, there's a bit of uncertainly and ambivalence. Carriers are pushing for an open standard that presumably gives more freedom, and yet they're still trying to maintain a universal solution within a sort of virtual walled garden. That's an obstacle on the business side."

"The bottom line is what consumers are willing to pay, says Mushkin, "and right now they don't seem to be willing to pay a great deal. But there are some areas that we see may be useful and those are telephony-related, such as call centers and PBX features, that are not easily replicated in a pure IP environment."

"Security and billing were challenging in the old days of telecom and they will probably continue to be until they problems they pose are completely solved, be it for IMS or any other specification," says Mushkin.

"Obviously, the whole infrastructure won't be completely replaced in a year, five years or even ten years," says Mushkin. "It will be a cautious, gradual process. But on the road to that day, our customers are discovering that even just pieces of IMS deployed can be useful. The media server is one such useful element. Some billing-related features are another, as are related features and interfaces, such as what one sees with the DIAMETER protocol. IPv6 is also an example of a useful feature that can evolve even if IMS doesn't materialize in the way it was originally designed."

Letting the Chips Fall Where They May

Centillium (www.centillium.com) is a communication integrated circuit (IC) company that focuses on developing technological solutions that expand communication bandwidth to the Internet.

Centillium's Director of Technical and Strategic Marketing, Dr. Majid Foodeei, says, "We take a unique semiconductor, 'chip' view of all this. I've been active in the VoIP segment, where many IMS-associated things have already happened – for example, moving to an all-IP environment, or smarter customer premise equipment, or the role of SIP and other common technical mechanisms. Our top three customers in the VoIP area include our two top OEMs, Alcatel Lucent and Ericsson. So as a chip vendor we have seen a drive toward IMS. Our chips often end up in media gateways, which serve the 'multiple silos' of fixed and mobile services. There's a whole host of access types. There is a big drive among these OEMs to merge their platforms. So, when you come across mergers, such as Alcatel Lucent and Siemens Nokia, they had departments of fixed communications, departments of wireless – probably multiple flavors of wireless, from CDMA, UMTS and so forth, and slowly the drive from the organization's top is that they've got to have a converged platform."

"Service providers are making their decisions under the guns of layoffs and cost reduction, and driven by the accepted guidelines of a gradual adoption of IMS and IMS-type functionality that service providers go by and have accepted over the longer term," says Foodeei, "they really make their decisions based on those. Having said that, there is a contradictory thing that we see, which really slows this process: all of the legacy deployments for fixed and wireless, which have tons of customers. So doing a converged platform doesn't happen overnight."

This article is continued on the tmcnet.com website at www.tmcnet.com/1372.1.

From the Desk of Michael Khalilian

IMS Report Card and Interoperability Milestones by the IMS Forum Plugfest III Team

In its latest round of testing, Plugfest III, the IMS Forum Plugfest members completed multi-vendor interoperability for voice, multimedia, video sharing, security and the interworking of IMS core services with 2G and 3G mobile user equipment. Plugfest III achieved the first-ever multi-vendor interoperability enabling secure mobile access to IMS services. Participating companies also demonstrated the interoperability between the Proxy-CSCF and IMS clients using IMS Authentication and Key Agreement (IMS AKA) and IP Security protocol (IPsec).

Sixteen companies participated in Plugfest III, testing the following services:

- VoIP, Instant Messaging, and FMC using femto-cells
- Video Sharing and Multimedia
- Services for Businesses and Unified Communications
- User and Application Profile Handling
- Security, Reliability and Robustness Testing for IMS Services
- Delivery of IMS Core Services to 2G/3G Mobile Devices

We can speak with increased confidence that IMS is moving forward regardless of the noise out there. Standards-compliant and interoperable IMS services are getting ready for deployment. We have seen that multiple vendors can quickly integrate and deploy service in a multi-vendor, multi-service provider IMS network. The proof is coming out of one successful Plugfest after another.

The industry is clearly beginning to seize on IMS for cost-effective delivery of new and existing multimedia IP services, and it is also feeling the pain points that come from not demanding open, standards-compliant, interoperable solutions from their vendors. Open IMS is no longer a question of if, but rather how long do you really want to wait.

Sponsors of the event included Empirix, Intel, and Sonus. Media Sponsors included *IMS Magazine* and Pulvermedia, Inc. Participants in this Plugfest included a cross-section of the IMS industry, in a clear example of the global reach of IMS: Acision, Argela Technologies, Aricent Technologies, Continuous Computing, CopperCom, Data Connection, Ltd. (DCL), Empirix, IPgallery (Gallery IP Telephony), Mavenir Systems, Mu Security, NE Technologies, Radvision, Reef Point Systems, Sonus Networks, Starent Networks and Tekelec.

The IMS technology is recognized to be a cost-effective (OPEX and CAPEX) "Quadruple Play" revenue generating set of applications and services. The IMS Forum Plugfests are designed to accelerate IMS deployment. The first IMS Forum Plugfest focused on basic IP voice, routing fundamentals and the interoperability of the IMS transport layer. The second Plugfest tests built on that foundation to include interoperability for VoIP, IP Centrex, IP PBX, SMS, video sharing, basic security and fixed-mobile convergence functionality.

The Forum also issued the industry's first "IMS Report Card" addressing myths that have held back the widespread adoption of standards-compliant IMS solutions. The Report Card recounts several commonly held myths in the industry and provides proof points based on the experience of the companies participating in the Plugfests that disprove these myths. A copy of the report is available on the TMC website (www.tmcnet.com/1334.1) and also at the IMS Forum website. The IMS Forum is open to all companies developing solutions for IMS. For online registration go to www.IMSForum.org or contact the forum at info@imsforum.org.

I also point you to our IMS Open Community section where members and non-members, can connect to colleagues around the world to address technical, business, marketing and general IMS issues, ask questions and propose solutions. This is an important contribution to accelerating IMS education and deployment. The Forum is very proud of this outreach, the first of its kind in the industry, and you will be hearing more about our activities in the near future. To visit and register for the IMS Open Community, go to our website and click on Community.

For membership information, or to participate in IMS Forum working groups, plugfest and membership info, please visit www.IMSForum.org or contact Michael Khalilian at MKhalilian@IMSForum.org.

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