Insider's TeleManagement World

TMW Americas 2006

Wedge Greene & Barbara Lancaster

LTC International

Date: 12/13/2006

About LTC International Inc.

LTC International provides leading companies in the telecommunications and IT sectors with a unique level of service based on true subject matter expertise. Our Business Operations Architects® each have at least ten years of hands-on experience in service provider and IT intensive companies. Our consulting team has experience in all areas of business profit optimization, wireless and wireline communications, Internet services, as well as software and hardware planning, implementation and operations.

LTC has incorporated more than 1,000 years of first hand operating company and software application experience into our Business Management Toolkit. This comprehensive set of tools, guidelines, checklists, templates and training programs is designed to remove uncertainty and accelerate success for our clients.

http://www.ltcinternational.com

Expect Results®

INSIDER'S TELEMANAGEMENT WORLD

TMW AMERICAS 2006

Summary: We take a look at the Fall TeleManagement World Americas 2006 conference, through the lens of an insider, Wedge Greene. Wedge has participated in the TMF for over a decade and currently sits on the TMW Advisory Board. He recounts the highlights of his 4 days at the conference and provides personal commentary and opinions on the conference trends and industry directions. He looks at new initiatives inside the TMF Advisory Board Meeting; reviews the Keynotes and the special sessions including the Operator Roundtable, Converged Operations Summit and the Executive Master Class. Wedge also looks at progress made by the working teams; the recent merger of OSS/J and NGOSS resulting in the TMF PrOSSpero program. The application of TMF standards work is covered in a look at NGOSS Catalyst's Labs and in real world examples of BT 21C and Telstra. Wedge's optimistic assessment of the TMF's role and progress to date can be understood given his long standing role in the TMF and as a creator of NGOSS. Tempering this view, Barbara Lancaster has added in a few counterpoints throughout Wedge's report helping pointing out where more work is required if service providers are to reap the intended benefits.

TeleManagement World Americas 2006

Towards the end of every TMW show, the old timers get together in small groups to informally recap and "judge" the success of the show. This year the consistent view was that the service providers, analysts and old time vendors considered it a success. The active vendors on the Expo floor were somewhat more reserved or (should that be realistic?), noting that all deals take a long time to close. Anyway, by Thursday noon, everyone was exhausted; a clear indication that minds and bodies were kept at a marathon pace for 3-4 days. This was a working meeting and while interacting with peers is among the greatest of pleasures, no one could consider this meeting a junket.

It was a well attended conference with some 1500 members of the OSS/BSS community converging in Dallas, Texas for the bi-annual conference of the TeleManagement Forum (www.tmforum.org) – the TeleManagement World (TMW) Americas. The number of attendees and the number of vendors (near 80) on the Expo floor give a strong indication that the American OSS/BSS market is emerging form its long doldrums. While still well below the record attendance figures at the height of the bubble, when sheer size drove the TMW to the larger conference facilities in Las Vegas, this year's attendance represents a large growth over last year in vendor booths (sprinkled with a few organizations and providers) and an increase of about 300 in the number of attendees.

Likely because of the universal cuts in business travel and conference budgets, the two TMW's have evolved to become more like two annual regional events, rather than the "twice-a-year cannot-be-missed" event it was from 1997 – 2002. The fall/winter Americas show is still much smaller than the spring European show. Not all of the size difference is attributable to the more desirable conference venue of Nice, France over Dallas, Texas. The shows echo the effects of the much deeper crash in America and the slower climb back. As a result, in America, things are just waking up. And that metaphor is a good one for this show - it felt like most participants were still a little sleepy and doing their morning stretches. A few early risers were preparing for a morning run, but most were still on their first cup of coffee and quietly contemplating the world. The speakers were vocal, mostly insightful, sometimes strident, but the audiences were for the most part quiet and attentive. When the audiences get strident and the speakers attentive, then the TMW show will begin to rock again.

Inside the TMF Advisory Board Meeting

This is the meeting at which the TMF staff provides a formal progress report of the past half year to the TMF member leadership. While the size of the board has remained constant, the number of advisors has significantly increased over the last few years - reflecting the large influx of new members which now totals more than 500. However, the typical new member is small and cannot devote the resources to the TMF that once rapidly advanced interoperation agreements. Mergers and acquisitions have reduced the number of large American and European providers, but the Forum has successfully attracted a broader range of company types and a significant new membership from East Europe and the Asia pacific region. Cable companies are now joining and a new TMF marketing effort is targeting media companies with IPTV tie-ins and significant web presences (MSNBC News sent a keynote speaker, but he did not warm to the TMF product.). Among groups still conspicuously absent are the American replacement to the CLEC (successful mid-tier companies like Yipes, Paetec and Masergy).

Bottom line: the TMF is economically healthy but in danger of becoming unfocused. Positively, services have expanded even measured against the time of the bubble. Board driven programs started around the turn of the century are now well established. The content rich TMF web site (www.tmforum.org) now gets more than 700,000 hits a month from something like 60,000 independent visitors; a rather good

chunk of the OSS/BSS community; but it is difficult to find content in the portal and the non-insider can be overwhelmed by the endless projects. Finding implement-able product is still difficult. And it is left to the seeker to decide what is worth implementing.

Two significant initiatives developed over the last year were prominently featured at the TeleManagement Forum Advisory Board meeting. The flashiest new project is the "Landscape project" which is working on a rationalized architecture, converging the older concept of the Service Delivery Platform (SDP) and the newer IMS service delivery architecture to build a Service Delivery Framework (SDF). This project is breaking ground by framing the architecture discussion around creating and delivering advanced applications and content based services. The battle cry is "enrichment" rather than the previous business driver of "efficiency". Work has started on component breakdown architecture. The project seems well lead by Appium, Telcordia, and BT. I find it the most significant new thing in the forum this year.

More pedantic but no less important to your future is the progress being made this year by the "Business Transformation Benchmarking Program", lead by forum staff and e*Tezeract. This program seeks to provide a comprehensive and international database of service provider business performance metrics. The first round of metrics associated with service delivery and customer interactions have been established and the project is moving forward to gather more results and also to expand the base of metrics provided. Contributing service providers can see how their performance actually stacks up against their competitors and ecosystem members around the globe. And they can also identify internal areas which need improvement along with a view of how much improvement should be possible for the money to be spent. Companies contributing their details to the benchmarking study receive free access to the results. Benchmarking results are available for purchase to other subscribers. It is not clear that the forum understands this program or its implications. How can subscribers be assured the data is accurate? Will Service Providers let potential embarrassments be discovered by competitors and then exploited? Further, for the next TMW in Nice, the TMF is solicitation nominations for 'best of' called the TMF Excellence Awards with the intent of issuing product and service awards. Will the TMF seek to be a JD Power?

This Advisory meeting was clearly meant to advise the advisory board and not to take input from the advisory board. All that had been solicited earlier. Questions were severely limited and orchestrated by the Chairman who picked who he wished to hear from. There were no spontaneous outbreaks from this audience – the groups which should be the most strident and controversial, especially behind closed doors.

The Keynotes

Jim Warner hosted the keynotes yet again (his retirement was short lived), following each podium presentation with an armchair interview of each keynote speaker. The questions were obviously rehearsed, providing the feel of an interactive session while avoiding audience questions. Keith Cambron, CEO of at&t Labs, Mark Lukasiewitcz, VP NBC Digital Media at NBC News (whose news channel web pages get 1 Billion hits a month), Philip Dance CIO for Technology, BT Group, and Keith Willetts, TMF Chairman and industry consultant spoke as keynotes Tuesday morning.

NBC's Lukasiewitcz gave an entertaining talk that said "the story is the important thing, not the channel," which reminds us of "it's the customer stupid". He was invited as part of the TMF Board's targeting of media producers in the membership drive. It was obvious Lukasiewitcz did not know much about the TMF yet equally obvious the TMF must listen to his message (or get to the technical infrastructure staff at NBC), if their memberships drive is to be successful.

Keith Cambron, CEO of at&t Labs gave a very measured and sober assessment of the technical problems facing Service Providers and at&t's approach to solving them (I distinguish pre-merger company as AT&T and post merger as at&t). Paraphrasing him, "Traditional/Existing management systems are not sufficient to manage the converged networks which are being deployed," and "Older systems simply cannot scale." Noteworthy was an observation that great strides had been made in network management but security management and service management still needed significant effort. **"I do not see the progress in software development,** he said." It was spoken as a challenge but I must take it also as a critique. We have known what to do for nearly a decade but are still haggling about how.

While I did not see the brilliant flashes of insight and revolutionary progress evident in the old AT&T's web services SOA architecture (turns out they were in a later technical track presentation), nevertheless Cambron showed he did understand the central issues and claimed to be systematically solving them. They are still embarked on a program of NOC consolidation for efficiency. [An approach pioneered by Mike Lawrey of Telstra.] That NOC consolidation leads to improved efficiency and customer satisfaction is an assumption I question and which should be put to the test in the Benchmarking program. Cambron indicated at&t had made great strides in network management but were still lacking in new service management technology. He concludes that **"I do not see the progress in software development that we see in networks**."

Note that two speakers took pains to comment on the lack of progress in software development. This is surely still the biggest challenge facing the industry and one that the TMF must continue to attempt to solve. I worry that the old main TMF product of interoperable agreements and the newer product, reference software, is taking 2nd place to marketing the TMF itself.

Re-engineering OSS & BSS in the Real World

The most heralded re-engineering project today is the BT 21C project. We were given a very entertaining insiders' view into the BT 21C project with a "How I did it" keynote by Philip Dance. Phil explained his decision making process and why BT made the choices they did in structuring the 21C project: however, his "Put together for our customers and not for ourselves", sounded weak when the early 21C phases all deal with core network consolidation. He attributed a large degree of their success to their management systems and rapid network deployment of BT's "automated test systems". This is a key insight and not coincidentally was among the first areas MCI applied automation designs in the late 1990's. However, as an analyst, I must point out that it is way too early for BT to be claiming that 21C is a success.

BT's 21C architecture is based on a web services implementation of NGOSS principles accompanied by some OSS/J interfaces. Dance said 14 platforms were involved in delivering 160 ensemble services based on the eTOM mappings. While we winced when he used the "lego building block analogy", we applauded his reference to reusable component services being the foundation of all OSS/BSS design in 21C. (Again, this was followed up by detailed technical presentations in the later conference tracks.)

BT's surprise TMF announcement was that they will be providing consulting services to help other service providers transform their networks. This is a logical outcome of the "follow me" trend we have written about previously that is sweeping the strategic planning community. There is no doubt BT has undertaken a massive commitment and preliminary results are being delivered. However, the 21C project is transforming the "easy part"- the underlying network and network management processes first and mostly just to deliver heritage household and business services. IPTV is the first of their new services and this, so far, has been delivered only to one community, off the track in Cardiff, Wales. Yet BT did lead their effort internally, using contractors only under BT guidance, delivering to BT architectures.

This certainly lets them claim more success than other service providers and as much as any Systems Integrator.

Market Good – Regulation Bad

Lastly Keith Willets, Chairman of the TMF, gave one of his typically inspirational talks. He again underscored why he is one of the best speakers in the OSS/BSS community. This time his talk should have been subtitled "Economics will get you". He talked about how regulatory practices are causing many problems for service providers and vendors and perturbing the market, resulting in misallocation of capital. Keith pointed out, "Skype has more customers than at&t and Verizon combined, but a fraction of the revenue," yet in today's perturbed market still achieved astronomical valuation and disproportionate capitalization. He implied regulation policies were the real cause of the bursting bubble. I might argue that greedy investors played a part in creating impossible levels of debt and that it took service providers to actively bid up the astronomical prices paid for 3G spectrum ….

Keith spoke against "open access" in IP networks and for a universal fair price for a fair service. We happen to agree that it is better to price based on costs and invest on opportunities rather than by regulatory policy. Too bad the world will never move there; as a policy objective this is good – but not as something to actually base your strategies on. Keith, my good friend, this author believes that universal fairly-priced services will come with technology advances such as Application Aware Networking which uses deep packet inspection with policy-based differential priority and forwarding decisions to structure the flow of traffic based on costs and revenue. Keith finished with a prediction that new services will follow the "long tail" effect, from which we conclude that the point of transforming to the lean service provider is to provide more enriched, customized services in the future. I still do not see how lean implies enrichment.

Linear Roundtables

Dual sessions labeled "Transformation Roundtable" & "Operator Roundtable"; proved to have seating in rows and a panel of speakers raised above us, These sessions included more in depth comments from Philip Glass, Jeff Smith, once CIO of Telstra, and several TMF sponsors. Key themes were about getting budget control and building a cadre of vested partners in the organization, in order to succeed at transformation. Choice "paraphrased" quotes (and author comments):

➢ HP's Paul Voelker: "Here is what I have, how can I leverage this and pick new products in order to deliver new services". (A pragmatic strategy from a mature market leader. One that will not play well with those who see revolution as the only way to achieve dramatic reductions in cost and improvements in performance.)

➢ Sanjay Mewada of NetCracker (someone to watch): "Envision a picture of what the network will look like five years out and then design OSS/BSS for that; then operationalize a plan to get there." (With absolutely no evidence of a crystal ball anywhere in his briefcase however.) His "Usability of services is first priority and management is second" provided a more actionable concept though.

➢ Jeff Smith said to the big established Consulting Systems Integrators when they offered to re-engineer and transform Telstra: "Come back when you have successfully transformed yourselves." (We note that Telstra's current management is once again tied to Accenture and IBM Global Services in their current attempt at transformation.)

➢ Mark Francis of at&t: "Cultivate champions for transformation inside Operations." (Absolutely true, well known as a strategy, but almost always incorrectly applied.) "Architecture without funding

control is an influence game and overtime it wears you down." (Keen observation and from an IT perspective I can say truer words were never spoken.) Mark also noted that component architecture via SOA allows incremental release of services throughout a project and not just at the end of the transformational work. (On the surface it seems BT and at&t are taking contrasting positions in transformation strategies.)

Jeff Smith is a particularly interesting player. Coming from outside telecom, he took over as Telstra's CIO just after they had disposed of most of their IT staff. He was never popular with the Telstra board and had an unfairly rough time with the Aussie press; however, he provided some very original strategies during his tenure. While he made clear progress there, corporate inertia was too great and external government owners too impatient. Most intriguing is Jeff's decision to move to CEO at Majitek, a small start up in Melbourne. Majitek has a modern fine-grain style infrastructure product that allows control services to be built to run on Grids. I predict we will hear a lot from Majitek, if and when they overcome the down under isolation trap and begin to focus on a single product strategy.

Teamwork

Behind the conference tracks, the "early risers" were working away at standards meetings. These participants are the backbone of the TMF. Throughout the year, architects and policy makers from vendors and service providers work at hammering out designs that represent the most basic commonly held visions of the OSS/BSS community. Common wisdom states that the forward visions mostly come from the service providers, with the vendors working to dilute the most progressive ideas in favor of continuing their market directions and preserving their invested capital. Nevertheless some standout contributions from vendors do occur in these meetings, reinforcing the benefits that can come from a collaborative relationship with your suppliers.

In reality, the dynamic of idealistic architectural visions vs. practical realities of the market place is the core dynamic of the TMF. At its best, the TMF product reaches a balance of the two drivers. It does this through the engineered leadership balance which puts Service Providers, OSS/BSS vendors, network equipment and services vendors, and system integrators on equal footing on the TMF Board. It does this via the real world labs of the Catalyst Projects. But at the core it is the dynamic of the standards teams (paying Huck Finn to paint the fence) contributing time and travel costs to participant in the "*working teams*". But the working teams came up only once in the keynote session. When hard work rewards were handed out.

At each TMW, one or two individuals who have made outstanding intellectual contributions to the standard's products of the TMF *and* who have put in lots of sweat equity for many years into the working teams are recognized. This recognition is the award of *TMF Fellow*. It is perhaps the highest industry award given to OSS/BSS designers (although it is limited to active TMF participants). So far every award is well deserved. This year Dave Raymer of Motorola was singled out at the TMW Americas. Dave has worked in the Forum for many years, first on the mobile team in the earliest catalyst projects. In a very large way Dave set the tone and the high bar for the TMW Catalyst program. In recent years Dave was one of the few "leader-visionaries' who headed the NGOSS Red Team which had the task of hammering out the central architecture of NGOSS. For years, Dave led a dual life, for he also kept the OSS/J project teams firmly grounded in reality. With the merger of the OSS/J organization into the TMF earlier this year – which resulted in PrOSSpero, the choice of Dave as this fall's inductee was obvious. Of all, Dave most represents the fusion of NGOSS and OSS/J.

PrOSSpero vs. NGOSS

PrOSSpero (as Martin Creaner letters it) is a merger of OSS/J and the TMF. This was a big organizational initiative for the TMF, announced last spring at the TMW Europe. For years OSS/J members have worked inside TMF groups and Catalyst projects while under the organizational charter of the Java User Community. So in some ways, this was an insider merger; however, there were reasons OSS/J was separate for so many years. TMF products used to be about architecture and collaborative standards. OSS/J was about producing software under standardized interfaces. OSS/J directly rejected NGOSS style component architecture and eTOM/TAM re-engineering of components, to favor mainstream 'link up existing products design' using established product feature boundaries. (Truthful disclosure: a position the author argued was anti-architectural and pseudo progress.)

The board is seems is mostly behind this merger but the advisory board still expresses doubt and may withhold full support. There are many who worry the TMF should stay in standards and cooperative agreements and not become a software shop; a task to which it may be ill suited and in which there is no embedded TMF staff expertise. The working team membership is also mixed about this. Some vendors like Valaran, itself an architecturally driven, small service-based infrastructure company, have openly joined PrOSSpero, singing its praises – I expect this is because of the Java connection. Other companies like AutoMagic are concerned that architecture and rigorous adherence to design principles are being sacrificed for expediency. Greg Fiedler wants more discipline in developing sound business process design and analyzing component processes in the PrOSSpero program (here, here!). In some ways this debate on 'should the TMF be in the software business' is a "shutting the barn door after the cows are out" discussion. The merger occurred; now how will TMF make it work and not marginalize NGOSS?

AutoMagic is another rising star. I felt this consulting group with a canned UML NGOSS/eTOM model was the outstanding new development at last year's TMW Americas. This last year they have enriched their offering. They have built a formal software engineering model of the decomposition of NGOSS, SID, eTOM, and TAM - perhaps the only rigorous treatment of core NGOSS in existence. This may be the second place to go first for any company considering using NGOSS in operational and product transformation.

NGOSS Catalyst's - Re-engineering OSS & BSS in the Lab

In its current state of implantation, NGOSS is still about connecting large applications through messages. The standard approach is to use an Enterprise Service Bus (basically a pub/sub messaging system orchestrated by workflow) as the connector. But the services themselves still tend to be existing (heritage/legacy) applications and COTS (Commercial Off The Shelf) products. SOA (Service Oriented Architecture) is making inroads at replacing the ESB product with a web services connector; more because of the reduced cost and the awkwardness of implementing with the ESB COTS products. However, the applications being connected are still big, multi-function applications, each with their own data stores. So, while new, reengineered architectural models, following NGOSS and eTOM, describe single function services, the power of this decomposition is lost during implementation when the architecture is mapped onto larger composite applications.

The Telecommunications Applications Map (TAM) was developed to provide a high-level decomposition of applications into functional groups, so that similar, reusable functions would be grouped together and reside in well known service boundaries. The actual TAM has an epistemological history antedating NGOSS. Now TAM is the composite service model of the business applications layer of NGOSS. It does not address the common infrastructure services which are described in the NGOSS "red team"

architecture documents. Some progress is occurring in Catalyst teams understanding of NGOSS, because the vendor-driven approach of mapping existing COTS onto the eTOM functional service map is now replaced with the mapping of COTS onto the TAM. This is good because the TAM describes the composite architecture while the eTOM describes the functional actions. However, in practice, the eTOM delivers a much more decomposed, fine-grained design than the TAM.

Catalyst projects are among the most successful product that the TMF offers the OSS/BSS community. This year Catalysts were surging back into prominence with six major project efforts – but as always the results were mixed. But that is the point of a Catalyst; some should fail or fail to demonstrate their goals. After all, Catalysts are the laboratory in which the design ideas of the TMF working groups are applied to real world practice. A team is created to attempt to solve an important service provider problem. Members form in "birds of a feather" sessions and must have at least one Service Provider. Vendors with products that can be applied to solve the problem join in, as does usually a Systems Integrator. The object is to push from concept at one TMW to live demonstration of a viable solution by the next – just six months later. Working in successive six month chunks, the teams push the concept to a logical end. A good Catalyst project might for example show delivery of an existing service (re-engineering) and delivery of a future service (rapid service support design.) Today it is expected that every Catalyst team must be successful and all have praises to sell – this just is not true. We, who learn, also learn from failure.

Returning to NGOSS implementation approaches, the "decomposition failure" is evident in the Catalyst Showcase "*Realizing SOA-based NGOSS*". This group took a strong model-driven architectural approach concentrating on a data-centric integration of the composite services. That is, design followed the SID data model and implementation consisted of mapping this shared service model onto consolidated databases. IMHO, this catalyst still fell into the on-going problem of mapping a larger pre-existing application onto the TAM (telecom Applications Map), aggregating these smaller services within a larger applications. (This is much like the American political process of voting area redistricting. The borders are drawn to conform to the desired outcome – here a legacy system or COTS.) In this catalyst the actual messaging occurs in an ESB layer not over SOA. The SOA of the title is limited to a web service wrapping for the human interface services. This is far from state-of-the-art design thinking in the use of SOA.

IMS Everywhere

This year the TMF took a page from the organization of other commercial conferences and provided a strong model of grouping presentations into tracks of similar function and business goals. (This was also done in the spring TMW Europe in Nice.) I had the honor to chair the Wednesday morning sessions for the Converged Operations Summit.

Last year IMS was hardly featured at the TMF, but got one of the strongest responses from the audience. This year IMS themes dominated and were scattered throughout the program. The community is waking up to the challenges and opportunities of this new approach. Every track had IMS related presentations, many of which overlapped each other in competing groups. Next TMW, I recommend the staff consider tracking by target services and technologies. I cannot report on all of the IMS talks, including some very good tutorials, but I will single out one example presentation and the IMS catalyst.

In the track I chaired (among the ever present vendor pitches thinly masquerading as field studies), IMHO the outstanding presentation came from Laurie Harvey of Appium concerning IMS and SDP/SDF creation. She argued that IMS and classical SDP can coexist under a new component SDF framework.

This framework is being designed, or at least consolidated, in the TMF Landscape Project. This is an approach that resonates with us. Incidentally, while I have not used it, I hear good things about the specialized Appium applications server – according to Sun benchmarks. If you are planning a service creation and service management project in the IMS area, you should put them on your potential vendor list.

For me the most exciting Catalyst this year was *Accelerating VoIP and IMS Services (AVIS)*". This group demonstrated-live the development and use of IMS services, together with user feature control interactions via a customer portal. And these were services you would love to have right now on your mobile phone. The architecture was very clean and defined; although they also settled for macro-size components of COTS products. Nevertheless, there was a clear, rational delineation of network service, operational service, service delivery, and service management. The demo followed a life-cycle approach of showing service build, service activation, service modification, and management of service QoS. This is the 2nd year for this catalyst and shows that, like my old FineGrain NGOSS Catalyst, cohesive groups that start with a clear vision, have ambitious goals of supporting real time service demos, and stick with this over the long haul in a coherent catalyst team can achieve remarkable and significant results.

The Executive Master Class

For me, the high point of the entire TMW meeting was this session lead by Keith Willets and Rob Rich on transformation. The good news is that they intend to repeat it at Nice next spring, so you still have a chance to hear this. If idealism exists in Service Provider Transformation, this is the heart of that perspective This session was actually set up as a roundtable with all the seats, including the presenters arranged at tables (alas, no drink or food). This was a marathon session of tag teaming between Keith Willets and Rob Rich (ex of Yankee Group and now an independent consultant) coordinated by Jim Warner. It is a shame that Colin Orviss was ill and missed participating in this session, but Keith stepped in and handled the technology slides with aplomb (they were all trends and no software). It is an open rumor that this group is working on a joint book – about time that the *Lean, Mean Service Provider* got updated.

I have not the space or the right to steal their thunder by repeating these sizable presentations. Simply put, the gist was the relationship of many trendy business paradigms (like web 2.0, long tail products, and the New World Order) to Service Provider transformation projects. They have produced a seven part transformation life-cycle, fully animated, which includes stages such as commit, rationalize portfolio, remove barriers, transform processes, transform systems, etc.

Rob Rich sums it up like this: "it is becoming clear to virtually all carriers that:

> 1. They are operating in a complex dynamic ecosystem
> 2. There are a number of opportunities where they are well suited to provide significant customer and partner value and differentiation.
> 3. In order to provide leadership in one or more of these roles, they will need to focus their strategic intent and execution (to quote marketing guru Al Reis, "When you try to be all things to all people, you end up being nothing").
> 4. In order to cope with complexity and remain agile in the ecosystem, they will need to develop/ evolve world class processes in key areas, monitor progress through KPI measurement, adopt standards based architectures, and take advantage of the risk avoidance and time to market benefits of COTS."

While none of these is radically new news, it is presented in a package that may help service providers identify some logical starting points for their transformation programs. All I can add to this is 'remember

to keep a balanced focus between what your customers would find truly relevant and a disciplined, architecture driven design.'

<p align="center">*- End -*</p>