Architects Anonymous - Rehab for Telecom

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LTC International

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A Manifesto for Telco 2.0

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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.

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Architects Anonymous:
Rehab for Telecom

Summary:

The world of telecom systems projects is in need of rehab after the excesses of the past. For too many years service providers have accepted that OSS/BSS projects will costs millions of dollars and show little tangible improvement in business performance. We have become dependent on binge projects: bloated projects that never quite deliver on time, on budget or on scope, and never achieve the business transformation expected

After years of denial, the competitive pressures on the industry are creating an awareness of the need for change. Having reached the bottom – it is time to recognize our problem, face up to it, and break away from our dependency on the comfortably inefficient old ways in order to reap the benefits that accrue to the nimble and the swift.

LTC International offers a **Ten Point Program** for those who no longer want to suffer from projects that just don't deliver to plan. In our little drama, the *Architects Anonymous Program,* we present how those who have been there and suffered too, can accompany you on your way to success. We use the TMF's programs as examples and starting points for our OSS/BSS transformation, but do not stop there.

Business Operations Architects®

THE ARCHITECTS ANONYMOUS TEN-STEP PROGRAM

Welcome to Architects Anonymous

Barbara: Hello. I'm Barbara and I'm one of the founders of the *Architects Anonymous* (AA) program. Welcome to all of you: to those of you whose rehab is well under way, and those of you just coming to terms with the excesses of your past careers in Telecom systems architecture.

All of us here today are present or past employees of service providers. We're all on the road to recovery, some just starting out, others keeping sober one project at a time. We all have a history of dependency on binge projects – you know the sort of thing: bloated projects that never quite deliver on time, on budget or on scope, and never achieve the business transformation expected. The binge habit has ruined many phone companies and cost our industry plenty. For too many years we have accepted that OSS/BSS projects should eat up huge chunks of our company's money, and yet we've also come to passively accept minimal actual improvements in business performance as a result of all that spending.

How could we have become comfortable with such a self-destructive situation? It's easy to blame the pushers: the vendors of OSS/BSS applications, the systems integrators, the consultants. It's easy to blame peer pressure: sure everyone else was doing it, so we just went along, just to be sociable. But you know, we can't put the blame on other people. We're the ones who knew what needed to be done, but we let the silver-tongued pushers talk us into it. "Just one project. It can't do any harm. What's a couple mega bucks to a company your size? You'll feel better once you've said yes, you know you will." And then – bam! – you're hooked.

We were all in a sort of binge-induced daze, weren't we? [*Murmurs of grudging assent from the audience.*] But now we're all waking up, aren't we? [*Yes Barbara!*]

Excellent! We need to accept that there is a real problem before we can step up and solve it. Awareness is emerging because service providers just don't have that sort of money to throw around any more. Having reached the bottom – it is time to recognize our problem, face up to it, and break away from our dependency on the comfortable in order to reap the benefits that accrue to the nimble and the swift.

There is hope, everyone. We have a ten step program that will better our lives as business leaders, systems architects, and committed people - that will lead to a healthier service provider industry. Each step describes a change in attitude and behavior that will help you define and deliver new, slimmer, healthier systems projects that will really do you good.

With us today is Wedge, a Recovering Architect who is going to share some of his thoughts on past overindulgences and how the program can help. Wedge will explain the program, in his own inimitable way.

Wedge: Hi everyone, I'm Wedge and, yes, I <u>am</u> a *Recovering Architect*.

***Audience**: Hello Wedge.*

Wedge: I agree, Barbara. Competition does shrink margins, and network investment is sucking up money at an alarming rate. Most executives I talk to are starting to question the wisdom of our traditional projects. If we don't change, the health of many large service providers is going to be severely damaged. My friends: binging can be fatal. But help is here.

This ten-step program is offered by *Architects Anonymous*. I know most of you have already acknowledged that change is necessary. If you are ready to be *success oriented*, the program will help you get past the *inertioids*, and onto the path to success.

Barbara: Architects Anonymous understands because like you, we have been there. AA will assign one of our 'recovering architects' to be your personal guide, a trail-blazer for the trip to the New Telecom Ecosystem. Together then, one step at a time…

Wedge: The ten steps are our golden rules for planning and delivering successful telecom transformation.

For too many years we have accepted that projects should costs millions of dollars and show little tangible improvement in business performance. Shrinking margins are forcing the realization that Telecom has become dangerously dependent on the old, comfortable ways. Resistance to change is endangering the health of the Telecom industry. Having reached the bottom – it is time to recognize our problem, face up to it, and break away from our dependency on the comfortable in order to reap the benefits that accrue to the nimble and the swift.

First, let's think about where new projects come from. Where does the spark for change originate?

Step One: Create something new!

Wedge: [*writing on the board*: **Create something new!**] Don't just fix something old. The most useful systems projects take your company to a new level of capability: new services, new ways of dealing with customers, new ways of eliminating waste.

Barbara: Projects that merely try to fix up old systems that you never should have bought in the first place are not much fun, and will never create that new environment you really need. But note that simply putting in yet one more new shiny system is not what we mean. That is one of the characteristics of those old binge projects that did you so much harm. "The old stuff doesn't work very well, so let's spend a lot of money on something that does the same thing, but not quite so badly."

No, let's discipline ourselves only to spend money on new capabilities that will earn their keep by increasing revenues, making customers happier and reducing waste. Of course, while we are at it, we will fix as many of the old process problems as we can: we're all wiser than we used to be, aren't we? [*Murmurs of doubtful assent from the audience.*]

[Voice from audience: You mean it's not worthwhile spending money just to fix known problems?]

Wedge: You can implement patches and software upgrades, of course. What I'm talking about is the need to focus new systems projects on achieving real business progress, not just on fixing the inadequacies of the old systems. Being frustrated and disappointed with an underperforming old system is understandable. But that sets a very limiting foundation for defining the requirements of a new system. We need to seize new *business* initiatives as opportunities to piggy back *total systems* change!

Leverage new initiatives! If we're planning to launch a new service, too often we're persuaded to make do with the capabilities of the old environment even if it falls far short of what we really need to deliver the service well. "The systems already provide you with 80% of what you need, so live with it." Resist this FUD [Fear, Uncertainty, & Doubt] argument. You know that really means: "Most of my current budget goes to maintenance … just give me more budget and I'll get your new service implemented some time next year." Then your opportunity for change becomes

captured by the groups with hidden agendas of turf-protection. It only leads to greater inertia – loading the cart heavier and making real change next time even more difficult.

Barbara: Yes Wedge, this "leverage what you have" attitude may be for the best of intentions – a reaction to the waste of binge projects in the past, which is understandable, but still should be resisted. The first rule is to aim to create something new and worthwhile not just patch up the old stuff. We're not trying to eliminate projects completely. Instead the AA program helps you to kick the habit of expensive, wasteful projects.

Step two: Be ambitious!

Wedge: Exactly, but we cannot stop there - we need to be bolder. To be ambitious! "The Lean Service Provider" program is fine for creating focus and cutting waste, but it does not lead to enriched services. We need "*More from More*". If a new business initiative really needs a new system, then go for it. But make sure it doesn't turn into a binge project or provide only marginal value – by sticking to your overall strategy for change!

On the surface it often appears to cost more to move to the new than to adapt the old. However, adaptation to the old always includes compromises on your goals. Those compromises diminish the planned profits of the new service, and increase the complexity and cost of using and maintaining the adapted system. What's more, if the new platform is designed to be more flexible and future-proof, on a common collaborative framework as we will discuss later, then it will provide a foundation for multiple new services, some of which we haven't even thought of yet.

The payoff will grow even greater in future years thanks to the lower cost of maintenance, higher degree of flexibility and streamlined business processes: products are created and modified almost on demand, systems deploy and manage themselves, and networks grow based on demand.

Barbara: But Wedge, why is this not just another binge project – the biggest of them all?

Wedge: Your project must deliver a high payback to justify the significant costs of change. Modest goals will give modest returns, and it will be difficult to justify the cost of the transformation project. So set goals that will deliver high rewards for the company to more than offset the costs of change.

For example, the TMF is currently offering **PrOSSpero** as a technology for realizing **NGOSS**. PrOSSpero is a step up from where we were, providing both common interfaces and standards for compliance. But PrOSSpero is originally vendor driven; it offers just enough change to look new - while requiring the vendors to make the least effort and smallest change to their products. It offers standardized interfaces, but the applications are still those super-sized products you currently have. And how will changing the interface fix all the underlying problems with your current infrastructure?

Likewise, using web services as a technology for implementing the Enterprise Service Bus (ESB); this provides an effective way for old applications to talk to each other. But have you really moved to a service oriented architecture (SOA) when you just wrapper existing applications? You may extend their use, but you also extend and solidify their control over everyone. And does this lessen the maintenance cost of the old application?

[*Voice from audience: No way, Wedge. It just increases and broadens our systems integration tax.*]

Barbara: Every project that side steps significant re-engineering, resets the cycle of missed expectations and failure. Just like with antibiotics, failure to rigorously follow the full course of treatment only strengthens the bugs, making them harder to kill the next time.

Wedge: Since past attempts to change have not delivered the benefits expected, and required, we have created an even higher hurdle for ourselves: we've given grist to the naysayers, the purveyors of Fear, Uncertainty, and Doubt (FUD). We have strengthened the corporate *initioids*. Instead, we must reach for fundamental and genuinely progressive transformation of architecture and technology, even if is a more challenging prospect.

The **NGOSS Red Architecture** proposed a common platform of reusable framework services accessed as in-common resources by a multitude of discrete, multi-use business services. These are business services that implement the eTOM processes. In its best implementation, all the plumbing is common and there should be a fine grained service for every box in the decomposed **Telecommunications Applications Map** (TAM). This is the best approach from our own backyard.

Yet going there is not sufficient. Look farther a field for solutions – not just in the same old places. Fight the egotistical smugness of ignoring solutions that are 'not invented here' – here being your company but also being our telecom industry. Never assume that your architecture or solution is complete, closed, perfect. New standards, new forums are seed grounds for new technologies and new approaches. Besides the many existing standard groups like the TMF and the 3GPP, many new forums like the **Open Grid Forum** (OGF) are starting up. Join and lead definition and adoption of these standards; don't just follow along. Not only can you be part of the Telco 2.0 revolution, these groups can be part of your support network making sure you don't backslide into your old habits.

Step Three: Start with a Vision!

Wedge: [*writing on the board*: **Build a Vision**.] Little word, big job. When you are thinking about setting forth on any new systems adventure, it is essential to be clear about what you are aiming to achieve. This is what the Telco 2.0 Vision is for: to articulate a clear definition of exactly *what will be different* about the business and its performance capabilities when the project is complete.

This is not just the old vision statement which fit on a PowerPoint slide. The Vision is the future you envision - and the path from here to there. The Vision is the concept of the better service - and the rationale for the change. A Vision has strategy, a set of goals, a business case, and an alignment plan – in effect, the full support structure to complement the specification of the new architecture and fresh processes. But the core, the seed of the Vision, is a depiction of what the future will be like when you succeed. This story of the future includes not just the things you see, but how they interact and function. It must describe how every participant is affected by the new technologies, processes, organizations, and facilities. How the suppliers are affected, how the integrators are affected, how management, engineering and operations are affected, and centrally, how your customer's lives are enhanced. In effect you must create a model of the future where the transformation is successful, before you can determine how to craft that future. We failed in the nineties in applying every new network technology without any clear vision of what we were rushing toward.

We believe a future story can be structured to enhance the chances for successful transformation. A Telco 2.0 Vision is composed of Strategy, Goals, Business Case, Technical Architecture, and an Alignment Plan.

[*Writing on the board*: **Strategy**] A Vision fits into and leverages a corporate strategy. It becomes the *What* of the overall corporate Strategy, complementing the business side of *How*. Strategy is ultimately the province of executives - not the domain of architects. But, as advisors, we can learn from the foremost strategy scholars of the last decade to leverage what they believe will help and communicate this to our leadership.

Telcos today need a strategy of transformation. Kaplan & Norton's Balanced Score-card was developed to enhance success in achieving a transformation and maintaining success afterwards. We agree there is merit in this approach. They argue for the systematic application of mission, values, resource strategy, and specific strategic initiatives associated with reaching quantifiable goals. They find successful strategies include the identification of synergies and then enhancement and protection of these synergies. They caution to protect against unintended consequences. They warn against a non balanced implementation of the chosen goals and strategic initiatives.

Kaplan & Norton require all strategic statements be created as measurable/empirical statements and goals – for corporate success all transforming objectives must have an accompanying measure of success. Then the strategy must provide for adequate funding of the initiatives and a driving dissemination of the message, thereby creating aligned awareness inside and outside the corporation. Lastly their research concludes that effective leadership doubles the effectiveness and probability of success.

But this alone only tells how to use strategy, not how to create the goals and initiatives. Kaplan & Norton provide a technology for making strategy operational throughout the corporation. But how do you chart a course and decide upon the goals and strategic initiatives - Especially in the uncertain market of today? Hugh Courtney believes that by investigating, describing, and eventually quantifying the uncertainty, the course becomes much clearer. Applying his methods in the classic 20/20 Foresight, we find the residual uncertainty of most telcos today is either at level 2 (identifiable alternate futures) or Level 3 (range of future outcomes). Unfortunately, this is where performing strategic analysis and getting strategic decisions right is the most difficult and requires the most effort. Systematic rigor is necessary and advanced methods have been developed for this. These include: event trees, decision theory, scenario-planning exercises, and game theory; all of which help to quantify the value of specific futures and the return from making specific decisions.

But most telecom managers are not trained to dealing with uncertainty. Instead, having spent so much effort creating or rather inheriting processes, we have trained management in how to respond to predictable circumstances. This heritage does not support us in this market environment. We see it when management continues to try the same failing approach over and over; as if the world will right itself so they will not need to change. Or perhaps it is simply that these approaches, for responding correctly to uncertainty, require special training. Getting talent on board that is both creative, and schooled in these advanced methods for teasing strategy from uncertainty is a Gate Zero requirement for telecom transformation.

But with transformation, do you choose to lead or follow? Shape or adapt? The telecom industry is still at what modelers call a catastrophic event. The bubble was the result of unbridled enthusiasm over the possibilities of new technologies and open markets, coupled with

straightforward, but strategically naïve, responses from management at setting strategy. However, the bubble is not a simple market event – instead, like an earthquake, there are warning tremors, the big event, and aftershocks. The ultimate winners that will arise from the shell of the burst-bubble are not yet determined. While trends are established – such as the current RBOC unification and ascendancy in the USA - the main battle for market, for the customers, is yet to be fought. Will these gains be temporary? Specifically, while communications as a service product will exist in 10 years, will these be delivered by the direct descendents of today's telcos? Or will this be the domain of internet portal companies like Google, eBAY, and Yahoo or even of hardware & media companies like Microsoft and Sony, or perhaps via electric utilities (level 2 uncertainty)? Or will the industry so churn and shatter, that unknown new players dominate (level 3 uncertainty)?

Committing to no-regrets moves is a first step. "No-regrets moves" are choices which will bring positive results no matter what other changes occur in the market. Ultimately who owns the customer and who owns the access are the two most important goals; how good is the network and how desirable are the services the winning plays. So we maintain that the strategies of

(1) Improving the intelligence of a fused 'network and the systems' infrastructure;

(2) The automation of the OSS/BSS and all other collaborative, process based systems;

(3) and Valuing the customer;

will create a near-certain, positive influence toward ultimately winning – a clear "no-regrets" strategy.

Barbara: Clearly Leadership is critical to building an environment where options and possibilities are set out, strategy created and then applied to the operation of the transformation. As long as executives and managers fear rocking the boat, as long as they acquiesce to what they suspect are bad decisions, then the transformation will fail and the corporate future become even more uncertain.

Wedge: [*Writing on the board*: **Goals**] The second component part of the Vision is goals. Everyone involved, including outside suppliers, must be in no doubt what the project is <u>for</u>. Spell out exactly what the transformation project will deliver, what it will not deliver, and how things will change when it's done.

Barbara: In the old world of binge projects, it was common for project groups to avoid being clear about the project vision. They believed that keeping things vague and ambiguous gave them wiggle room to change deliverables and functionality without anyone noticing. (Yes, classic denial). Failure to describe the future state clearly just meant that everyone invented their own definitions of success.

Wedge: Goals include clear criteria for determining when the goal is met. This isn't "peace on earth", it must be measurable. If the success criteria are assumed and not specifically agreed, you can be sure that other people's views of success will not quite be the same as yours.

Barbara: You might keep things vague in the hope that even if you fail, people might think you succeeded. Of course it's just as likely that you'll succeed according to your terms, but everyone else thinks you failed. Vagueness serves no useful role in defining a project. Be real. You need to build the vision along the same lines as an advertising campaign (except dealing in facts and not merely fond wishes).

So go for it. Step up with your advertising campaign that expresses clearly just what will be delivered. Describe what will be different, and how the project will move everyone towards the corporation's priority goals and performance objectives. Everyone then can see why the project is important, they will understand exactly what is planned and they will set their internal expectations accordingly. You now have a real opportunity to successfully meet those expectations – because you set them!

Wedge: [*writing on the board:* **Technical Architecture**] For many of us that consider ourselves architects, of course the technical architecture is the interesting and important thing. Good architecture is elegant. It bears much in common with designing custom homes and skyscrapers: form follows function. Balance is brilliance. Symmetry is sweet. Every part should contribute to the whole, and no part should exist in isolation. Architecture is not a bunch of labeled boxes and lines.

In driving towards a real architecture, beware of another FUD play. Many *inertioids* claim they already have an architectural vision when what they have described is a just a set of common interfaces. Architecture is not just standardizing common interfaces. It includes…

Voice from audience: There's that word again! What's an inertioid?

Wedge: [*writing on the board* **Inertioid***: Pronounced In-ersh-oid. Noun or adjective.*] Any entity (human, machine or droid) whose natural inclination is to get in the way of any change, without consideration of the value of the specific change itself. While the concept behind corporate antibodies fighting good innovation, as described by Hayden Christenson, is sound, we were concerned by the current trend to misuse the term antibody to represent those forces that fight *good* innovation in the corporation. Antibodies fight bad germs which act to hurt the body's function; so a different term seems necessary to describe attackers blocking innovation of better, creative products. A simple correction to *corporate antigens* likely would be lost in general usage. So LTC International coined this application of the term **Inertioid** which we find useful. Hope you will too. [Also, note that this esoteric physics term is normatively neutral and can be used to describe any blocker against innovation, even when the blocking is against innovation that would be unhealthy for the corporation.]

[*Pointing to* **Architecture** *on the board*] Back to the Telco 2.0 Vision, the role of the Architecture is to describe the 'what and how'. This architecture mandates the use of a common platform that enables achievement of the business performance goals *under one universal framework* for customer services, operations & management, and engineering. Again, that is the same framework that supports products, engineering, BSS, and OSS – not four frameworks. Good Divisions share-and-share and play well together.

Modern framework architecture requires the full description of distinct resource and business services and the model for service interaction. This architecture describes how services interact; how policies are built and enforced; how processes are created and governed. The Red Team NGOSS architecture describes a service framework, but, because of historical setting, is tuned toward Enterprise Service Bus (ESB) implementations. Modern service interactions should be based on Service Oriented Architecture (SOA). For example, in 2002, the Fine Grain NGOSS team demonstrated a framework architecture based on services deployed within a grid with common support for devices, OSS, and BSS – today's bar must be higher still. A full Telco 2.0 architecture should encompass common facilities for supporting the anywhere, any platform, anytime customer; plus the wiring of the world thru ubiquitous computing and pervasive networks.

Lastly, architecture must exist within a pre-existing environment. Transition plans and existing facility re-use should be incorporated. The existing network and systems are usually a diverse collection, and the smart team will utilize tools such as semantic analyzers to help map the existing environment in order to develop a strategic transition plan. It is important to capture accurately what must be left behind as well as what can be re-used to successfully develop the stepwise roadmap to achieving the new architecture.

[*Writing on the board:* **Business Case**] No Vision is real until it is accepted and put into practice. Similarly no Vision can be judged until it is valued. No Vision has worth until someone pays for it. Every vision needs a business case, not to justify the idea, but to value the idea. Unfortunately, few telecom managers understand how to create or even read a business case. Management tends to be recruited from engineers or project managers who just do not have the formal training necessary. Wharton Business School is just as tough and exclusive as MIT and generates a similar high value product. A proper business case will accurately cost the project, determine the expected revenue/savings associated with it, apply a risk factor, and produce from this a net-present-value. This NPV is compared to the costs the company would expect without success in the project, and must be significantly positive to precede. For projects aiming at significant change, a Decision Tree will accurately gage the projects risks and value.

[*Writing on the board:* **Plan**] Lastly, while possible, it is not necessary to design one all-encompassing, Telco 2.0 project – "the mother of all projects." The creation of a fully fleshed Telco 2.0 Vision for your company allows you to achieve that vision through step-wise project initiatives. With a preexisting full Telco 2.0 Vision, each new service, each new project, whatever the driver or origin, can be aligned with the Vision, leveraging the existing common resources, and filling gaps by building the parts it needs, as donations to a collaborative whole. This does mean it will initially cost more (than isolation or stove-piping) as this creates reusable services and prepares these for generalized deployment and use in other parts of the corporation. But as this continues, more and more resource services and common processes will exist, decreasing the need to build new stuff. This will create technical and process alignment and eventually decrease the cost of all projects. An early cost hump exists, but it trials off if governance forces adherence to this common plan.

Barbara: And no Vision can be realized without our familiar friend, the benchmarked project plan. Creating your specific flavor of the Telco 2.0 Vision is itself a project. But when this Vision is stable, it is better to have many small projects that work on this than one big one. Each of these small projects should bring specific value to the organization. Smaller projects are easier to fund, manage, and evaluate. A string of small success will build momentum and eventually self-justify further investments in similar directions.

Step Four: Gather Informed, Collaborative Teams!

Wedge: Visions do not just happen – they are created. Standing behind any transformation initiative is a dedicated and visionary corporate executive. This executive must be charged with the responsibility for insuring successful change. They must be adequately resourced. They must either be at the CTO/CIO level or have strong established communication and trust, as a Change Czar, with senior executives and with the board. Re-engineering to Telco 2.0 is not only costly; it will often be one of the most visible projects to the investors and customers of the corporation.

Many skills are needed to create and control this ambitious undertaking. To succeed in formulating and then in delivering on the Vision, the architects must be part of extended teams

with technical skills covering all roles, and business subject mater experts from all related areas. Further, architecture must exist within a pre-existing environment of platforms, technology, applications, and processes. Transition plans and existing facility re-use should be incorporated. This will mean teams must include existing established system experts as well as the new technology advocates. The new solution must fit into, or replace, the processes that people already conform to, so operations needs a voice that can incorporate any concerns they might have.

Creating your specific Vision for Telco 2.0 is the first step in a transformation of the company. This requires a senior team of the best-of-the-best. Participants should include acknowledged experts in their fields with deep experience and understanding. They need to know what has worked and what is expected on the horizon, in order to build a vigorous and future-proof design. Perhaps the most important technical resource will be one or more of what we call [*Writing on the board:* **Polyarchitects**].

Telco 2.0 includes extensive technical and logistical advances in both systems technology and network technology. It is rare to find individuals who have knowledge and experience in new IP network technology, internet middleware, information modeling, and modern distributed systems technology. But these senior staffers do exist because the introduction of IP networks and distributed systems went hand and hand in the Nineties. We call these individuals Polyarchitects, because of their balanced skills and wide-ranging experience. Usually a polyarchitect will have participated in standards and forums and contributed to or lead major past corporate projects. For example, a wireless Polyarchitect™ will understand not just the IMS systems architecture, but the IP transport technology and specific protocols and internet middleware it depends on: like SIP signaling/association, QoS, RTP, security, Directory structures and protocol, etc. A polyarchitect modeler, with skills in UML information modeling, will be able to design the extensions to the SIP model for the specifics of your network, and will understand the next-gen devices and how they function. Polyarchitects™ see the larger picture; they do not replace subject matter experts, but complement them, keeping the focus of the team balanced. We like to say that polyarchitects straddle the present with one leg grounded in the past and another in the future.

The Vision team should understand that it needs to keep getting its hands dirty to stay abreast of current concerns. Typically, members of the vision team, once it is approved, will be distributed to help lead various specific re-engineering projects. Polyarchitects™ stay part of an extended team updating the Vision and supplying leadership to concrete projects. They insure compliance to and relevance of the Vision in a continuous improvement cycle with the skills to pull it all together.

But the Vision is just the start of re-engineering. It must be implemented in the corporation, the data centers and the network. Implementation will be a sequence of small byte-size projects with specific goals to replace a type of aging infrastructure or to create a new service. This implementation project team ideally will include:

Leadership: an architect (a polyarchitect for larger/core projects) familiar with the vision (and tasked with insuring compliance with the vision); plus a program manager/project manager tasked with logistics (having all the resources available as needed) and schedule compliance.

Technological advocates: modern framework architecture can be complicated and the team needs to include people who know all about these matters. I typically include in my teams a framework programming specialist/integration expert, a data modeler with familiarity with the SID, a functional/product Subject Matter Expert (SME), a separate management systems expert (if this is

not specifically a management project), and a tester/documenter. The framework programmer understands the many resource service available and how to utilize them in the application. It is important that they know they will go on to other projects/other groups when this is done so their loyalty is to the framework and not the project domain. Likewise, the data modeler is a shared resource assigned only for the duration of the project, and returning to the labor pool afterwards for further assignments in this capacity. This way compliance is maintained with the corporate version of the standard data model as the model becomes enriched. Both the framework programmer and the data modeler will train their subject matter fellows in any enhancements the project makes to the common reusable resources of the framework and standard model.

Architecture is design plus alignment. Architects used to think that all they had to do was design the architecture. If only it was so easy! The duty of a polyarchitect is also to effect collaboration between groups and alignment of the requirements for all parties. The duty of the polyarchitect is to clearly paint the picture of that alignment too, and that means developing and communicating the project vision. Collaborative tools such as Wiki's greatly help. The Vision gets documented in a edit controlled Wiki and all the projects have their own section with edits overseen by the program manager.

The best way of achieving alignment of the architecture with the pre-existing corporation is to include the people who will use it and the people who are expected to benefit from it, on the team that designs and builds it. Such a simple concept but very difficult to achieve in given how telcos are structured today.

Constituent advocates: That "It takes a village" is not just a cliché. Besides the subject matter experts, the team needs constituent voices from all the groups who will be affected by the change. This means that besides their voices delivered by senior staff in the Vision team, each implementation team should have ex-officio membership from the operations group targeted to use the new services and management facilities. When the project is to implement a new service, marketing should have at least ex-officio membership and I often place them full time on the team. This way they keep the new product introduction (NPI) processes aligned and can lead all the relevant gating decision presentations to management. Sometimes the sales team will have ex-offico membership, so they can be ready when the service is ready.

Do you already people on your team who can build this Vision and then staff the implementation teams? If not, find them. Vendors can help with the polyarchitects, the processes designers and the subject mater experts. (We are here - just ask us.) But you will need to choose the Constituent Advocates from within your organization and customers. And no impacted group should be left without representation. No project-tification without representation!

Barbara: I am astounded that some service providers still do not bring operations into the team from the very beginning. And yet we expect them to rapidly approve new services for deployment when they finally do get handed them cold. Sometimes we use all kinds of excuses like "the unions won't let us", or "we've asked them for input in the past and they failed to turn up for the meetings", or "they never have any new ideas anyway". Sounds rather hollow don't they?

- Unions will absolutely support innovation and change – if it's for real. All too often the grand new set of zero-touch provisioning systems has meant staff cuts, while failing to deliver 'zero touch'. The membership and leadership have lots of ideas about how to improve the performance of the company. If you develop a trust relationship, they will be happy to tell you.

- If representatives are not turning up for well organized meetings with clear agendas, and reasonable advance notice…could it be that you failed to include in your budget the money to pay for their time? (Or more accurately, the overtime that will have to be paid to get their regular work done.)
- To get people to think outside the box, you can help them by building in some time to decompress, to reset from the daily grind, when they get to the Requirements meetings. Present some examples of neat new things that other companies may be doing, just to get the creative juices flowing. And make sure that you've got an experienced facilitator running the session to keep things moving at the right pace.

Everyone understands that the success of complex projects depends on engaging the right suppliers, building the right team (and virtual teams), winning support, facilitating collaboration, working round inertioids and influencing influencers. This means building relationships, or if that sounds too personal let's call them *alliances* because that leaves more room for short term expedient relationships. We need useful alliances, and not all alliances are useful. Where do we look for useful alliances?

Step Five: Leverage the Discontented!

Wedge: To change you must become different from what you were - so simple to say and so difficult to accomplish. You must want success for the projects that convert to the new approach. Effective management is necessary – but is it sufficient? The proper mix of skills, roles and team members gives you the necessary ingredients? But what provides the fire for this pot?

Find the entrepreneurs within the organization. Seed momentum for change by finding and including those individuals who are frustrated with the way things work today. They want to contribute but are prevented by some aspect of the system. It may seem contradictory, but every big company has employees who both care about the company and are also discontented with the way the company does its business. Find the ambitious and creative individuals - the change artists – who will help you work round the stalling tactics of any inertioids.

If the staff is happy with the way things are, they will never put full effort into shaking things up. They will however, always ask for ownership of the change program. This way they can control the impact of change on their contented lives.

Pick leaders for the change-team who have no past portfolios to protect. In examining past performance, it is often better to pick a group which set high goals and failed, rather than a group which succeeded because they managed to minimize the impact of change on themselves. Find the ambitious and creative individuals - the change artists.

This same argument also applies with vendors - do not just pick a big cumbersome company who is just like you once were. The big guys are comfortable, a well known quantity; they've worked shoulder to shoulder with you for years – they're just like the old you. These are the companies who led or supported all those big, ultimately marginal projects of the discredited past. Beware, because many inertioids lurk here too… Can you afford the risk that they will behave differently now?

Barbara: It is worth repeating: "comfortable" equals "marginal success", at best. Picking someone like your old self - as a team member, as a supplier or as a partner - is a recipe for maintaining the

status quo. But you want to change. You need to change. You are going to change. You recognize that it won't be comfortable, but are ready to go for it.

Wedge: Pick the vendor that is *different in ways you need to be different in order to succeed*. Look for the ambitious change-oriented companies that have built products that enable transformation in exactly the ways you want to drive your future capabilities. Select suppliers who bring the different perspectives you need in order to succeed with the radical changes you want to make. You'll find the right team in smaller companies, or maybe, just maybe, in a small group hidden within one of the big players, or even – radical thought – in a specialist supplier from outside the mainstream telecom industry.

Step Six: Reorganize, Motivate and Enable!

Wedge: Align rewards with successful change. Once you have identified the change artists and the inertioids, build tailored motivation strategies for each group and each key individual.

Change artists are naturally inclined to make things happen. The trick is to motivate and reward them to ensure the *right* things happen. Measure out rewards based on delivering business results, and not merely on adhering to plan. (Some people still think this amounts to the same thing – but it doesn't.) Look for productive and useful collaborative behavior and reward that too. This reward is not simply money; it must include with praise and recognition. Ironically, the best motivational reward for these folks is often to tell them they did well and then make their reward a crack at another challenging project. Ensure that change artists who create the right flow of useful innovation in the company are encouraged and positioned as role models.

On the other hand, the unfortunate truth is that all perceived-as-disruptive projects suffer from the actions and delays of corporate inertioids. Effective and significant change is unwelcome to individuals, internal groups, and vendors with vested interests in maintaining a comfortable status quo. To avoid change, they will actively spread Fear, Uncertainty and Doubt (FUD). You must actively overcome or at least mitigate these forces with the tools of Motivation and where necessary, Reorganization. Apply rewards and punishments, praise and pressure, and lastly carrots and sticks with clear understanding that these are associated with the corporate re-invention. Even those inertioids, who by nature oppose change, can be directed to help the company if the motivations are properly engineered.

Hand in hand with motivation, Management must also provide the enablers for the teams to reach success. This means realistic audits that identify strengths and weaknesses. Each group must be directed to help and not hinder progress. (***Barbara****: here again are those carefully crafted rewards*) Build bridges between those groups that generate progress. Isolate or remove groups that just don't get it.

Sometimes, the inertioids are so well organized and entrenched in certain pockets of the organization that they need to be physically broken up. The old groups must be dissolved; and new organizations built. This is the opportunity to underpin the new teams with new process models and tools – along with the carefully crafted rewards.

Sometimes long-standing fixed domain teams must be dissolved and replaced with common internal labor pools and dynamic, short-lived teams. This is a form of internal contractor – where each team has a short time to provide a clear deliverables; only those that deliver, remain together as a team. And those who deliver receive rewards that are accurately aligned with the desired outcomes.

Outsource when you need skills and insight. Do not outsource because it's simpler than rearranging internal groups. Outsource when you need immediate resources and rapid results. Make this outsourcing an *alliance for success*, not simply a supplier relationship. Fixed price projects just shift risk (and the costs associated with risks) to the supplier; these projects allow internal inertioids to expand project scope and create other blockers which reduce successful outcomes. It is better to negotiate time and materials contracts with smaller margins – but offset these margins with pre-determined bonuses for specific successes. No matter how hard one tries to set the deliverables before a project starts – everyone learns things as the project continues, more information becomes available, and risks become more quantifiable. It is easier to renegotiate goals/deliverables, or mutually expand scope when these are associated with increased success driven incentives – not simply because a vendor did not deliver what you wanted on time and within budget.

Barbara: Develop your motivators carefully – people and vendors will do exactly what they have to do to earn the reward. Some Darwinian evolution is inevitable, herd culling will occur (internally and in your supplier list), but the corporation will be stronger, and the people who remain to work in the company will be a whole lot happier and more productive.

Step Seven: Leverage the Power of Processes!

Wedge: Rationalized and improved processes must drive every re-engineering project. Process definition is not just something incidental to the project. Process improvement is at the same time the *purpose* of transformation, and the *mechanism* of transformation. Fitting new processes to any organization is not a simple activity. Budget accordingly, but expect high return on this investment.

Barbara: For OSS/BSS projects, given the advent of the TMF's standard eTOM, most service providers already have been through one or more cycles of process development and implementation. That doesn't mean the job is finished!

Wedge: The eTOM and the accompanying SID data model are high-level models – they are designed to be extended for new services and your specific approaches. The eTOM is a strong basis for industry wide, shared common approaches. It is designed with the assumption it will be enhanced before deployment - to meet your specific technical needs, and filtered or extended for your specific business needs.

Start with a good familiarity with the eTOM (or forge vendor alliances to help). Then perform extensive process audits of the existing organization with the accompanying fact finding and business goal discovery. Then, gap analysis can provide a reasonable basis for estimating the cost and scope of the process rationalization project.

But, even when we use eTOM, the methodology of process design will still involve trade-offs, uncertainties and disputed decisions. There are several reasons for this, and we need to understand and handle all of them.

First, not everyone involved will be completely aligned with the methodology, the assumptions underpinning it, or even with the concept of eTOM itself. The dynamics of human-to-human interaction can impact the success of process deployment and operation. A common flaw in modern process design is the hidden assumption that all participants in business flow will adhere uniformly to the process. That is of course not true. It follows that processes should be designed knowing that the human participants will not always follow them; either out of human dynamics

or environmental changes. Applying game theory and strategic management theory to processes allows corporations to build collaborative interactions that shape progress within the process - thereby increasing the probability of successfully realizing specific goals.

Second, by contrast with human beings, who cannot be relied upon to consistently follow the process even when it's the right thing to do, software applications can be relied on to follow the process even if the instruction is stupid, excuse me – suboptimal. In the absence of tried and tested standardized process, every new custom process needs to be mercilessly tested and tweaked wherever necessary to build confidence that the system will indeed to what is expected in every situation. Testing of infinite possibilities is not usually within a real world project budget, so we need to know when to stop, without incurring the risk of a real world disaster. The good news is that some framework solutions include the notion of testing, automated rollback when problems occur, and in the most advanced: continuous virtual simulation, allowing continuous convergent improvements – so the risks are significantly lowered.

Third, while standardized processes offer the potential for reduced costs and fewer process glitches, in practice the up-front cost of moving to standardized process can be high. Higher than just accepting the inbuilt processes associated with COTS, but this is a savings only in the short term. Most vendors of telecom OSS/BSS software are not, as yet, compliant with any industry-standard processes in their design. Where they claim eTOM or ITIL it is often an after-the-fact overlay, an ill-fitting force-fit. Vendors will start to incorporate the standard processes only if service providers demand that they do, and pay prices that reflect this, and so far, service providers have seldom been aggressive in their demands of the vendors.

Barbara: Meantime, we need to be able to be gymnasts and jugglers. We must build processes that reach for the standards while conforming to the requirements and working assumptions of commercial off-the-shelf software (COTS), and at the same time plug the gaps and eliminate the overlaps. Overlaps that inevitably are produced when we attempt to integrate a set of applications not designed specifically for our environment. There is a better way.

Wedge: Complicating this, the real nature of the "as-is" environment is often clouded: we have inadequate measures of system and process performance; we know there are problems, but diagnostics are not easy; in some companies there are so many issues, that fighting fires leaves no energy, no will for building fireproof operational environments.

But no one claimed rehab will be easy. One thing that we as architects can do is persuade our corporations to follow the example of those companies who have established the executive role of CPO: Chief Process/Policy Officer – a domain czar bringing skills and understanding of process cost analysis, re-engineering methodologies, and compliance management. CTOs and CIOs can rely on policy czars to (1) cost, (2) create, and (3) ensure compliance of processes. A CPO assumes the overarching responsibility for process management and evolution.

Barbara: A CPO enhances success because they are the single point of responsibility. We all know that a responsibility shared is a responsibility shirked – with Operations bearing the brunt of the resulting negative costs.

Processes are a bridge from the how to the what, existing in the worlds of both managers and technologists. Now let's move from 'how to succeed' to 'what to use/build' - three technologies necessary for the full vision of Telco 2.0. These technologies are the tangible components of Telco 2.0. They establish the technical foundation for delivering future-proof solutions and make it possible for us to wholly break our dependence on the old ways.

Step Eight: Jumpstart NPI with Service Delivery Frameworks!

Wedge: The TMF's "Landscape Project" is blending 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 turning toward "enrichment" rather than the previous business driver of "efficiency". An SDF must include a set of tools that create business applications by utilizing a common information model (such as the TMF NGOSS SID), the resource framework services, and established processes and policy incorporated in business service components.

With the proper framework service to build upon, an SDF can shorten the actual development of the new service – but architecture and service design must start with knowledge of the resource services that are available as building blocks. The SDF facilitates the creation of policy and processes for support of the new business service.

Barbara: Shortening the time to get a new service in the field is an important part of the new telecom. New Product Introduction (NPI) is a complex process that most companies claim to have, and few follow. Lots of effort has gone toward getting this right and too often this has resulted in one fad following another. We get yet another chance to get it right, using the banner of Service Delivery Frameworks to lead the charge. But NPI includes determining what should be built and released, and when is the right time for release, as well as feature content. It is a core corporate process that defines a modern telecom.

Wedge: New product introduction processes can be made more efficient by including a checklist of common issues and using collaboration systems to make it easy for all views to be captured (customer, operations, engineering, marketing, etc.). A good NPI encourages everyone working together at each stage/gate – allowing for team building as well as technology creation. Leave any group out of the collaboration loop, or let them opt out…and they cannot be expected to be ready, on time, to effectively support the new product.

Barbara: Here again is a place to use those definitions of success, and to craft those carefully targeted rewards to directly reinforce achievement of the measured results.

Today, the broader concept of "Time to Money" is replacing "time to market" as one of the key measures of success. This is an important change that recognizes that just getting something out fast doesn't mean that it will be profitable. Time-to-Money looks past product launch to sufficient market acceptance and profitability. And that relies on services that can be successfully offered, provisioned and supported.

Step Nine: Believe in Self-* Systems!

Wedge: *Writing on the board: "Self-*"* Self-* (pronounced *self-star*) is our short hand term for systems that are designed specifically to be self-organizing and self-managing, including properties such as: self-defining, self-configuring, self-awareness, self-optimizing, self-protecting, self-healing (self-monitoring, self-diagnostics, self-restoration). Further, these systems exhibit the structural characteristic of self-similarity.

Working self-* systems have been around since 1999. Self-* systems are compatible with the TMF Red Team architecture of framework and business services – but go much further. We only have time for the "postcard" view of self-* architecture:

In a typical self-* service fabric, the 'application' pattern is loaded as metadata into a Registry. A Service Launcher reads this information and automatically deploys the service into a Container on a server in the grid pool. The service gets its start up state from a proxy to the Registry. The service then registers itself with the Monitoring service. Then, to do the job of the application, it goes to the Discovery service to find address of all the component/resources it needs. Then it links to them and the application is functioning. Periodically the service renews its healthy state data in the Monitor. If the Monitor finds the healthy state data is expired, it assumes the service is lost, de-registers it from the Discovery service, and then requests the Service Launcher to re-launch the service elsewhere in the logical domain.

Service fabrics contain a large set of 'mandatory' component services. These provide for common requirements. Security services are an example. Some self-* implement the entire AAA framework. Another component service is a transaction controller; often many copies of which are deployed as resource services. The most complete frameworks include a collaboration service and other patterns for service orchestration which support the notion of a service SLA. Generally, all these orchestrations and interactions are governed by Policy statements. The services act as active 'agents' to enforce this policy.

Self-* systems utilize many currently available advancements in IT. This includes the technologies for virtualization and the use of grids as the system platform. Open source solutions exist as well as vendors with successful deployments past them. Self-* systems support future environments associated with Telco 2.0 including ubiquitous computing and pervasive networks.

Barbara: Telecom is continually stretching itself with new, better network technologies but has become resistant to similar advances in IT. These new approaches were created to address the very big IT issues that cause so much telecom budget to go toward IT maintenance. The goal is to end those two year development cycles and free the resources for use in creating new services quickly.

Step Ten: Demand Smart Devices

Wedge: Everyone agrees that IP is the technical foundation for the new networks. However, little similar effort is going into making the devices that are deployed for the IP networks significantly smarter. Along with Telco 2.0 we need Network 2.0++. Network devices should behave much like self-* services/applications:

The smart Network 2.0++ device will have an active engagement (not its current passive relationship) with the larger system. Devices will support some programmatic communication system, usually a web service interface or a java interface. On startup a device will seek out code libraries and update itself to the proper release. It will find the Discovery service and attach to proxies for loading configuration and policy. It will find the monitoring service and register its state. It is required to periodically renew this information and refresh its lease on life. If the monitor finds the state information old, it assumes the device is not functioning. It puts in an automatic service recovery request, often attempting to restart the device before opening a trouble ticket. I must emphasize that the device leads the health-conversation – not relying, as is done today, on the management system to identify a failing device and drive communications to its MIB. The device and the network have a peer-peer relationship not the old manager-agent pattern.

A Smart device has situational awareness; it will use protocols and support services to discover its peers in the network environment. It will then use policy and the derived information to

structure network connections and control the QoS applied to services. It becomes aware of the information type and needs of the transmitted data. In some instances, it will spontaneously build its own virtual network based on the user applications associated with the dynamic flows.

Barbara: Devices can do bits of this now, for example discovering its peers and nailing up a traffic-type dependent QoS virtual network; but no device does all of this. The goal is a smart plug-and-work network.

Wedge: While some device vendors are moving in this direction, service providers must not be content to wait for these products. Instead you must actively demand this technology. Copying the old RFP's with their obsolete management requirements, even when these requirements are international standards, only confuses vendors – and drags the whole weight of the past into your limited current budgets. A company building a Network 2.0 device should not need, for example, to also implement SNMP, CMIP or TL1. Instead buy a COTS service to translate for the old devices. Many vendors who want to advance the smarts and efficiency of their devices will actually welcome this, as retrofitting their advanced devices to passively respond to older manager-agent patterns is a big burden – one they take on only because you keep telling them they must.

Barbara: Never be satisfied with your progress. You can be sure that you have at least one competitor who will not be satisfied with theirs. Together, Self-* Systems and Smart Devices will help make beneficial change and useful technology advancement the new corporate culture norm in the telecom industry.

Closing

Barbara: Thanks Wedge. Unfortunately we don't have time for questions right now, but I know you're always happy to discuss the program and the questions it raises with architects and other business leaders who want to throw off their dependency on the old world of binge projects, and begin new lives as real artists for change, and as designers of Telco 2.0. Place your questions and comments on the LTC blog and Wedge or I will quickly respond. [Writing on the board: http://www.ltcinternational.com/inside-out/]

Wedge: There you will also find more detail in individual whitepapers and blog entries on the parts and requirements of the Telco 2.0 transformation. Lastly, let's thank our sponsor, **LTC International**. Let's all give them a round of hurrahs for the great beer and wine they serve. [*Hurrah!*] All this Rehab makes me thirsty …!

- *The End… of the beginning* -

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