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Enterprise Architecting Process and Coordination

A Summary of the December 4, 2009 Workshop
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Contents
1. Research Study Report
2. Practitioner Panel
Enterprise Architecting Process and Coordination: Preliminary Findings from CITGE Study

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Background

Enterprise architecture (EA) models the desired relationships between business processes and technology. While the conceptual benefits of EA are many, experience shows that managing the EA can be daunting because of the complex interdependencies among business, technology and the people involved. Having sound EA frameworks and programs are necessary but insufficient conditions for EA success. Effective coordination and governance of the EA practice are also necessary, but this has received little attention in research. The present study, funded by CITGE aims to fill this gap. In this report we summarize the preliminary findings from our study based on semi-structured interviews in which we investigate the processes and governance mechanisms used by architects and stakeholders to coordinate the enterprise architecting process – i.e. defining, implementing, maintaining and updating the EA. In this summary we describe: (1) the research motivation; (2) the current research status; (3) the conceptual foundations of the study; (4) our research design and method; and (5) our preliminary findings.

Research Motivation

Prior CITGE workshops and meetings had identified EA as a research priority. The importance of EA has been established in research and practice, but no specific metrics have been developed to evaluate if a particular EA implementation is delivering organizational benefits. While we do not develop such metrics in this study we argue conceptually that a well coordinated enterprise architecting effort is key to a successful EA implementation that delivers organizational benefits. Coordinating the EA effort can be a daunting process and we don’t exactly know what drives
coordination effectiveness in EA. In order to develop a better understanding of this, we put together a research team composed of an EA practitioner and technical research expert (Dr. Armour), an EA academic scholar (Dr. Boh) and a research expert on coordination in technical collaboration (Dr. Espinosa).

**Current Research Status**

Our research program has various phases, some of which have been presented at leading information systems conferences, including: Hawaii Conference on the System Sciences (HICSS 2008)—Conceptual foundations for coordination in geographically dispersed enterprise architecting; Hawaii Conference on the System Sciences (HICSS 2009)—Research design for coordination and governance in geographically dispersed enterprise architecting; Academy of Management (AoM 2009, Chicago, IL)—Theoretical development and research framework for the study, focused on coordination in large scale technical collaboration; Hawaii Conference on the System Sciences (HICSS 2010)—Forthcoming presentation of preliminary findings from interview study, based on preliminary analysis of the first 12 interviews of the present empirical study; America’s Conference on Information Systems (AMCIS 2010)—EA processes and success minitrack (Armour, Espinosa, DeLone, Kaisler, and Loos). At this point, we have conducted, transcribed, coded and interpreted 30 interviews. In this executive summary we report on the preliminary findings of the empirical study.

**Conceptual Foundations of the Study**

The study is focused on coordination, which is defined as “the management of dependencies among task activities.” In other words, if task activities are fairly independent, then there is very little need for coordination and it may actually be too costly and not yield performance benefits. Conversely, tasks with tightly coupled dependencies need a substantial amount of coordination to ensure that these dependencies are effectively managed. Coordination can be achieved in many ways, but studies have shown that there are three main types of coordination:

1. **Mechanistic Coordination** – i.e., programming and systematizing more predictable aspects of the work, through things like project plans, roadmaps, routines, processes, workflow, specifications, tools, etc. Mechanistic coordination works well when coordinating the most routine and predictable aspects of the work.

2. **Organic** – i.e., via communication and interaction, through things like meetings, one-on-one discussions, spontaneous/informal communication and electronic communication, etc. Organic communication works well when coordinating the least routine and most unpredictable aspects of the work.

3. **Cognitive** – i.e., implicit coordination, based on knowledge and mental schemas people have about each other and their tasks, which help them anticipate and interpret what others are doing, thus providing useful information to plan one’s own activities. Cognitive or implicit coordination has been found to be most effective in real-time and fast-paced tasks like
military operations, flight crews, sports teams, etc., but it is receiving increasingly more attention in more asynchronous organizational work that takes place over longer periods of time. Cognitive coordination comes in many different flavors, including:

a. **Shared task knowledge**—when members share knowledge about each other tasks they can plan their own work more effectively
b. **Team expertise knowledge**—when members know who knows what in the team they are better able to identify expertise that can be accessed for the task
c. **Common Ground**—when members have a shared vocabulary they communicate more effectively because the terminology used has shared meaning
d. **Shared Goals, Vision, Schema, and Buy-In**—very effective in collective tasks so that the effort of collaborators is aimed in the same direction.
e. **Collective Mind**—one of the most powerful forms of group cognition in which collaborators engage in heedful interrelating, such that every decision and action by a collaborator is taken with an understanding of the implications of that decision or action on other collaborators.

Based on these coordination concepts, the focus of this study centers on identifying the key dependencies that exist in an organization’s EA activities and then understand which types of coordination mechanisms are most effective for the architecting effort. We use traditional EA frameworks based on the traditional EA layers and segments illustrated in the figure below to help us identify such dependencies.

In a nutshell, our interviews aimed at uncovering which dependencies were more salient to our participants. Some dependencies may be between EA layers—e.g., dependencies between business processes and information architectures; whereas some others may be between segments or business units. In our interviews, we also tried to identified the EA maturity level of
the organization and whether the episodes described by participants were associated with the baseline EA—i.e., “as is”; target EA—i.e., “to be”; transition from baseline to target; or about implementing individual systems in compliance with the EA, as we illustrate below.

**Research Design and Method**

The study uses a qualitative research approach using semi-structured interviews. We have conducted a total of 30 interviews, lasting approximately 45 minutes to one hour. We have collected approximately 25 hours of audio interview material, which have yielded approximately 400 pages with 200,000 words. To get multiple perspectives on the EA process, we interviewed participants in various roles (CIO, chief architects, technical architects, IT staff not in the EA team but affected by the EA, key business stakeholders not in the EA staff but affected by the EA, and EA consultants. The organizations also ranged widely in maturity levels, sectors and size. The table below summarizes our study sample.

<table>
<thead>
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<th>Role</th>
<th>Government n=3</th>
<th>Institutional n=2</th>
<th>Private n=3</th>
<th>Foreign n=3</th>
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<td></td>
<td>5</td>
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<tr>
<td>Consultant</td>
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<td></td>
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<td></td>
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<tr>
<td>Total</td>
<td>10</td>
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<td>4</td>
<td>30</td>
</tr>
</tbody>
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Note: n = number of organizations
The data collection and analysis method used is based on “Grounded Theory” (GT). This method is very popular and widely accepted for qualitative research involving the interpretation of large amounts of text data. The concept behind GT relatively simple: (a) start with a basic initial interview instrument and general prediction model or framework; (b) conduct, record, transcribe, code and analyze each interview—each interview should either confirm the prediction model or provide information on which parts of the model need to be amended based on the findings; (c) adapt framework and interview instrument as needed; (d) continue with further interviews until nothing new is learned; (e) the final prediction model is the re-formulated model that “emerges” from this analysis—i.e., the final model is “grounded” on the data analyzed. The diagram below illustrates the process we followed (key steps in the process highlighted in yellow).

Preliminary Findings

The model that emerged from our analysis is illustrated below. As the diagram shows cognitive coordination is the most central component of our findings. The diagram also shows that we uncovered two aspects in our findings: a static and a dynamic model. We elaborate on this below and we organize our findings based on the main themes that emerged from the coding of our interview data.
Coordination Processes: we found that (a) organic coordination is prevalent and often necessary (e.g., meetings, one-on-one discussion, spontaneous interaction, e-mail, etc.; and we also found that (b) mechanistic coordination is actually very effective (e.g., roadmaps, segment architecture, steering committees, enterprise data models, etc.); but more importantly, we found that (c) cognitive coordination is key to architecting effectiveness—the effect of cognitive coordination is not only direct, but it also moderates the effectiveness of mechanistic and organic coordination—i.e., weak team cognition makes them ineffective, whereas strong team cognition in the form of shared knowledge, shared goals/vision, common ground, collective mind, etc. makes mechanistic and organic coordination more effective.

EA as a Coordination Mechanism Per Se: we found that when EA is effective and widely adopted, EA viewed as a coordination mechanism per se. This is so because an effective EA helps align business processes, information, technology and people. It also provides a central view of the organization. But EA is effective as a coordination mechanism only if there is a collective mind about EA among those associated with the EA. Otherwise EA is seen as a roadblock.

Data is Central: Data was found to be central and effective in finding alignment between EA and business. Furthermore, speaking in data terms appear to help business and IT achieve common ground. Data seems to be the universal language and theme that provides common ground for business and IT professionals to communicate because it is something that everyone can relate too.
Governance: we identified two main governance modes among the organizations we interviewed: (a) proactive—governance practices in which reviews and steering committee meetings happen upfront, serving as coordination mechanisms per se; (b) post-hoc—governance practices aimed at reviewing IT work for compliance with the EA, which was often viewed as a barrier. Excessive governance in particular was viewed as an impediment, in some cases requiring frequent waivers and retrofitting the EA to the non-compliant systems; and (c) ad-hoc—which we found to be the least effective form of governance.

Dynamic Model: the above findings are part of what we have labeled the “static model”—i.e., at any given point in time organic, mechanistic and cognitive coordination, as well as EA governance have a positive effect on architecting effectiveness. But we also found that these effects become self-fueling over time—i.e. a dynamic effect through team cognition, thus underscoring the importance of cognition even further. In other words, we found that good coordination, effective architecting and having a sound EA strengthen all forms of cognition about EA, thus further improving coordination over time. We found that the most effective forms of cognition in architecting are based on shared knowledge, common ground and collective mind.

Other Findings: (a) Technical vs. business view of EA—we found that EA is most effective when the EA group and key stakeholders view EA from a business perspective, rather than as a technical thing. When EA an business are tightly aligned and business language drives the EA conversation there is more buy in; (b) top down vs. bottom up—top down adoption of the EA was associated with more effective EA practices and more buy-in than bottom up adoption; (c) EA perceived maturity—while EA maturity matters, the perceived EA maturity has a strong influence on the acceptance of EA as a mainstream organizational practice. In particular, when the perceived EA maturity is consistent among respondents there seems to be fewer issues and problems than when there is no agreement on the perceived EA maturity; (d) change management and change dynamics—these are critical and a real challenge, in particular it is difficult to strike a balance between doing things that are strategically important or regular operational work. This is particularly true for organizations that are striving to move from a baseline architecture to a target architecture; (e) no EA success metrics—some participants suggested EA success metrics, but these were generally technical metrics (e.g., avoiding duplication, eliminating redundant data, reuse, etc.), but no metrics were offered to evaluate whether EA is having a bottom line impact on the organization—this is a critical area needing research; (f) geography is not a factor—we were interested in learning how geographic dispersion affects the architecting work, but we found no evidence that geography affects EA work whatsoever, even with the most geographically dispersed organizations that participated in our study.

Some Additional Best Practices Discussed: (a) business process or business segment “owners” appear to be key in helping coordinating across EA layers and across segments within the business process layer—keeping coordination activities focused on business needs is key and
these “owners” help keep this focus, rather than turning into a technical focus; (b) roadmaps—are very useful coordination mechanisms when transitioning from a baseline EA to a target EA; (c) EA repositories—are very effective mechanistic coordination artifacts and when their use become institutionalized everyone can find all the necessary EA information efficiently; (d) commitment from the top—is key. Without it the EA effort is either likely to fail or to duel in the technical domain; (e) review “gates”—are useful mechanistic coordination processes, particularly when they occur between development phases and when they involve proactive governance in early phases and more post-hoc governance towards the end.
Practitioner Panel

Panelists
Joseph Kraus (GAO)
Andrew Fregly (FINRA)
Robert Palermo (Aera Energy)
Chris Emery (U.S. Treasury)

Facilitator
Dr. Richard Schroth (Executive Insights)

Background
Following the research study presentation, four expert EA practitioner panelists made initial comments followed Q&A. The audience and panel were comprised of about 35 EA practitioners, some of which were study participants. The panelists were asked to provide a commentary about the research study results and then offer any other thoughts about best practices and future trends in EA work. After brief remarks from our facilitator and some opening questions to guide the discussion, the panelists provided their comments.

Joseph Kraus (GAO) Excerpts
GAO’s job is to perform financial and performance audits on ongoing government activities and programs. GAO has about 3500 people distributed across 11 locations across the US—i.e., a small, mid-sized agency. An audit has a lifecycle and needs to follow certain regulations and be in compliance with audit standards. From an EA perspective we use a Federal EA methodology following OMB guidelines to develop the EA around segmentation and roadmaps.

GAO is doing a lot of the mechanistic things with financial oversight on all IT investments. We meet regularly. I think one of the biggest things for me was just getting the understanding, the cognition talked about earlier, as being a particular challenge on how to get people to understand about what EA is, not only within the IT org but the business. Governance helps inform that. We have somebody on the business side - that’s a business stakeholder, a business lead, and then we have a segment lead on the IT side, which is built into our governance. But going to meetings and developing an understanding in each of these areas takes time. We have a very good understanding in each of the segments of where we are and where we want to go both from an IT perspective as well as a business perspective, but the real challenge is to get at that level of understanding that we’re talking about earlier - about how do you measure understanding, right, not only the outcomes but the understanding when we have a conversation, and when you sit in a meeting and you have a conversation with peers in different groups, you know when you had a good meeting.
One of the ways, I’ll just give 1 example and stop there, one of our segments is human capital. We’ve developed a very clear understanding where we are with our applications within the human capital segment, how those applications map into business processes, and where we want to be at the end of 2010, 2011, 2012 - it’s a 3 year view that we have on how we’re going to evolve. So that’s been very helpful on achieving that level of cognition, in understanding where we are, and where we’re going to go. So I think the cognition component, this whole thing about understanding is key.

Q: And Joe underneath the motivation, when you came there, was there an organized EA when you became CIO at GAO?

There was an EA group, but I don’t think they were doing EA. They were doing a lot of BPR work which was kind of worthy attraction, but the connection between the architecture and actual implementation of systems was totally absent.

Andrew Fregly (FINRA) Excerpts

Finra regulates the brokerage industry as a self-regulatory organization. There’re about 3000 people, so they’re, I’d say large, medium sized that operates as a large entity and structure.

Structurally we have a challenge in that we had a fairly strong executive sponsor. That was probably about as high as it went in the organization, understanding the importance of EA. It was only through that sponsorship that we had much effectiveness. We have some very good senior architects, we operate at a cognitive level, basically giving a common cognition of where the architects should go, not a tremendous amount of formal process but by alignment we’re able to accomplish a lot. We’re now in a situation where we’ve lost executives’ sponsorship. The organization is undergoing a structural change pressure from the dynamics of the business changes that are occurring, and that’s a big challenge for us right now.

The problem we have is that the communication channel to the business right now, to explain what’s in place, how that can be leveraged, where that architecture needs to be evolved, that coordination and channel is not really present right now. So I think that’s our biggest challenge as architects. It’s basically how do we, as the senior group within the organization, create channels of communication up and outwards within the organization, and how do we basically act to influence the organization to leverage what we have and build on top of that, and it’s really tough.

I think where we’re struggling – there’re so many unknowns. So we know what we know now, we know what we need to do for the next 24 months, but we’re so volatile, what can happen after that? So it’s actually an interesting, it’s a tale of 2 sides of the coin. One side of the coin says we don’t know what’s going to happen. The other side says you’ve got a period here to sort of influence what’s going to happen, and I think 1 of the things we’re looking at is, as I would say to some of the panel members, really looking at our business architecture. This is the time not to really look at our systems architecture, we need to look at our business architecture, and with the
government asking us what should the housing finance industry look like post this crisis, it’s a chance to really look at your business architecture and say “should this business be run this way?” So it’s actually helping EA in a way because there’s a lot of people looking at that.

We have a pending theory within the organization that EA’s value may become impaired as the heat turns up, so they see where the business is in a situation where there’s not a lot of pressure or regulatory organization, I mean we don’t we have that commercial pressure that forces the efficiencies. But this regulatory revamp and the expectations that are coming at us like a match put on the burner in terms of “you have to get more effective”. That’s what’s creating a lot of turbulent dynamics.

I think there’s a connection between that and the research that talks about the question you’ve asked before “is it a belief in people or belief in the process” and my suspicion is that if it matures to a belief in the process, maybe it gets institutionalized to a point that a champion or a sponsor moving on may not have as big an impact, there is enough of that collective mind and buy-in throughout the organization that is less affected by those kinds of changes.

**Robert Palermo (Aera Energy) Excerpts**

We’re one of the largest oil & gas company in California owned by Mobil and Exxon, who agreed to spin off several operations in California, so we’re an independent company, autonomous. We are small, approximately 1200 employees and 4000 contractors. But we’re actually part of a very big bureaucracy, 2 of the biggest bureaucracies in the globe, but they give us a lot of room, and so we act small. We are big in revenue terms….net cash flow in the billions of dollars. So for a small corporation value is very big. We were EA before EA was cool, you know back in the 90s, we’re sort of looking at this going “ok that’s good, we’ll try it”. And fortunate enough, in 1998 we had John Zachman come up, spent the day and evening talking to John, late at night. And then when we jumped on methodology, we picked one, Steve Spewak, if you know his book, we read his book, said it’s a great methodology, so we said “Thanks Steve, please come to California for a year and come sit by our side”. So Steve sat next to us for much of a year, built our plan, then we started implementing it. We had to build our data models and all that. Fortunately, we had a very strong in-house data architect. We also read David Hay’s book on data modeling and said “Thank you David, here is a contract, come on. Let us see you in action. We wanted to see his theories applied. And David Hay spent significant time working in Aera helping build our data architecture.

So we’ve actually had a real fortunate journey, where we had top executive support. We were also very lucky because for us it was not an IT thing. We had a CIO who understood it and was very supportive, but he probably wouldn’t have pushed it without significant pull from key business leaders because he knew these things would fail without the business support. And so luckily we had a CEO, and a COO and some business people that really understood this is the only way to get us out of this mess as well. And we had a CIO who understood how to get it done. This established a key partnership at the highest level of the company. So we gave it a
try, and followed and implemented EA by the book. We didn’t deviate, we followed step by step. You know we now have built a data warehouse where I can get to any fact - people’s names, phone numbers, work order data, pumping unit size, rates, cost data, and I don’t even need to know anything about the source systems like SAP or Landmark or any other products. I can access this information via maps and reports straight from the data warehouse using simple tools. But it was not without challenges, we had all sorts of false starts, but our big investment was 2000 – 2004, so it was a good 4 years of sweat. And then we really moved into the sustaining part and we still have challenges. I always say “EA is wonderful, but you’re imposing structure on a living organism”, and so entropy takes over. So when everybody talks about the challenges are the changing business environments, the changing business processes, I say actually the biggest challenge is changing staff, you know, that’s the biggest challenge for us. Technology is also a challenge because a lot of new technologies are always becoming available. But our biggest challenge is, when we bring people in from the outside, they don’t work in any company that does it this way. They work in silos and stovepipes, they come out of colleges and engineers are taught to build shadow systems right, so actually our single biggest challenge is sustainability because we are constantly trying to get people to say “this is actually how we operate and it is very different.”

So that’s kind of where we are in the journey. You know one of the big keys, this cognitive thing really rang with me, and I think someone earlier mentioned the bilingual, you know not 1200 people, but a key core people we call our process owners and business information stewards and then our IT analysts, out of the 1200 people, there are probably 40 people that I would call fully certified bilingual translators. So they are people who know the language of the (petroleum) business and the language of IT. I mean I’m a business person, I’m not an IT person, I grew up trying to out-code my IT partners, but I was never pedigreed in data modeling or any system architecture and all that. Well today, I can argue with the best IT people on system architecture and data modeling. And we have a bunch of system analysts and data modelers in IT that actually know how we run our business. And so we have about 40 people in the company that are what I call bilingual and that to me is a cognitive thing. Those for us, are critical positions, we cannot afford to lose those positions because you can’t build that tacit knowledge from the past 12 years in a week if someone leaves and we need to hire somebody. So that’s kind of where we are in the journey, I think that’s the history. I mean we have really good success, I think we’re one of the few companies that really try to follow the academic world, we didn’t try to deviate, we said we trust the theory, we have the opportunity to take some risks, and we’re seeing the benefits. We got the direction set, and our IT costs have come down like crazy and our information quality has gotten much better.

Q: Bob’s actually a petroleum engineer, and he is actually the chief executive for their centre for process excellence which is actually the one that drives this. IT almost doesn’t exist, it is almost a non-entity in this organization as their EA has gotten so specific. Bob, approximately how many oil pumps do you guys operate?
We have over 15,000 active wells.

**Chris Emery (U.S. Treasury) Excerpts**

I’m with the Department of Treasury, but I’m employed by the IRS. Before I start, I do want to point out to some of the audience, in my 31 years of IT, this is one of the most impressive individuals I’ve ever met, and that is Tom Lucas who was from the IRS, Tom is the true enterprise architect at IRS, been there 36 years, 37 now, but if you manage to get Tom to be on this panel, if you haven’t had the chance, please talk to Tom because he’s really seen several generations of evolution of the IRS, and currently is involved in a very exciting effort where he is an architect placed in the middle of a huge effort involved in the business as well, so there are good examples out there.

I think EA in most cases, in fact everyone I’ve seen is misplaced within the organization, it’s usually buried within IT, whereas it’d probably got to be much more at a strategic level, certainly in the federal government I’m speaking of. EA has failed to prove its value, if you remember the balance score card approach, the mantra they use is what can’t be measured, can’t be improved. EA has failed to find any viable metrics or measures that, and I’ve heard some ideas today, but frankly there aren’t any accepted measures right now for EA, and that’s hurting us, us being architects. EA really isn’t used for investment decisions, it should be, it can be, you know I consider EA portfolio management, broader aspects, but in its pigeon-holed role in many agencies, EA is really not used. In fact, I kind of concluded my thoughts, I was leaning this way, and then 3 weeks ago, I was in a meeting with a cabinet level CIO with several, about a dozen bureau CIOs reporting to this individual, and this person said - in his 2 years of being a CIO, he’s never used EA to make a decision. So to me, that kind of stamped the failure, failure of EA.

There are ways that things can improve.

Remedies, now these are things that I’ve seen in other agencies, I don’t advocate all these, but I think that there are some areas that could help EA. Segment architecture, which is a leftover from the last administration, and probably the best thing that group ever did. The segment architecture documents for the first time, really emphasized the tie between EA and the business, it was really weighted, although, when you start to peel back the covers of segment architecture, it too is buried inherently with these reference model requirements and things like that, which to me have been part of the failure.

There are agencies that are looking to maybe salvage or move the whole EA group kind of into a solutions architect role, and to me solutions architecture is kind of a enterprise-wide project management, applying the EA principles, of the as-is and to-be to the sequence plan.

To me the purest form of EA is strategic planning, it’s IT strategic planning and help make decisions into portfolio management. Treasury is calling it investment management. There’ve been no plans yet to enact this or how it’s going to be done.
Summary of Key Points from Q&A Session

- EA is not so much about IT but about enterprise strategy. Many business people in organizations don’t see it this way, but when they get it and realize how central EA is for business strategy it gets embraced.

- EA has been used very little for IT portfolio and investment decisions. Part of this is due to the lack of metrics to concretely demonstrate the organizational benefits of EA.

- The concept of being bilingual (IT and business language) is key. The IT staff need to understand the business really well and the business staff need to understand how IT enables business processes and strategy.

Highlights of comments supporting these points:

One of the things in the conversation that seems to emerge a little bit is that it seems like EA functions well when you have an organization that a) invests in strategic thinking, which is forward planning, and b) when it values technology as part of that equation, and then absent those 2 conditions, it almost can’t survive.

I have one little thing to add, well you know our organization well, so when you’re willing to invest in strategic thinking, the issue that I see is that who gets to sit at the table when that strategic thinking is done, and because of the organization being separated into a number of separate lines of business each, with its own focus and really operating somewhat stove-piped, what happens then is that the, there’s a partnership, they’re able to get by without a lot of overall enterprise strategy. They tend to form strong partnerships with the people that are delivering for them within each line of business, which is the development, the leadership and all, and then the management chain on the development side.

I think you really find in the last couple of conferences which I have been, I think we start talking about more like enterprise transformation. But I do believe that if you redefine the same, instead of calling it EA, you will start calling it enterprise transformation planning. I think, if we will stop talking about enterprise architecture kind of like a traditional sense.

I think it’s a very good point and one of the evolutions that I’ve think they’ve done in FINRA is if you noticed he’s the head of the centre for process excellence, it aids the organization that tackles those pain points, and it’s exactly the model we can call it the office of enterprise transformation because that’s his task.

There’s a key thing that I think happens with a lot of IT folks, we talk about architecture, of course the first time the entry level people see architecture is the design of architecture applications, that’s where everybody in IT starts. And so we get this concept that architecture is about technology, and here we’re talking about EA or enterprise transformation planning, that’s not about technology. That’s about business, so often the things that happen, just about everywhere, is that we think this EA thing is an IT thing. It’s in the IT group, it’s dead, it’s
useless. Unless it’s in the business, and the business owns it, it will go nowhere, because the business folks earn the money and spend the money. And we are nothing but, in that sense, a cost, an implementation feature that often time, the business folks will just “well I can just outsource that!” They’ll suffer later for it, but it belongs to the business. But frankly you should say that about everything, I’ve already said there’s no such thing as a IT project, you know there’s a business project, with IT ramifications.

The architecture is a mechanism to solve certain problems, and these are certainly not IT problems, and therefore this is like people keep forgetting that architecture is different from building architecture, it’s a mechanism to solve several kind of qualities that I expect when I build a house, versus, I don’t know, a factor. So once we do that, the architecture is a mechanism, how to accomplish those things, and those things are business.

I had this on my vision statement for 2 years, and now they’re launching this program, and I have invested in modeling tools and capabilities and all these stuff for IT, and now they’re sort of getting there and I introduced myself and said “I think we can help you with that”, the answer was “well when we do business process transformation, if we come across something involving information, we will be sure to call you.” [laughter] … persuasion on how do I go from that state of maturity to where it is at your point, comingle and indistinguishable from business.

Yeah, I’m actually looking at it from - had somebody an advocate to their side of the viewpoint say “ok we understand your business, we really have lived your side of it, from the whole building the pipeline and part of what’s important to somebody in pharma, and say ok let’s take it from your side of it, the business side, and now we’ll integrate and use technology to facilitate the growth of your business. That’s the way that Bob’s talking about, that you take it from the business point of view and build it from there.

There’s a couple of things that struck me, I think people are looking for things that are easily measurable, they have expectations, and I started out with my gut check, my intuition, what it is, and what EA will be and will not achieve. There is no way that an EA will ever be opened it up and I’ll press a button and I’ll see the IT cost savings, there’s no way that I’ll be able to look at an architecture and find a new business opportunity for a new way of doing something. But as I look and say “if it really was wildly successful or even is successful, what are the kinds of things I’d see?” actually I think if I did 1 project with EA versus 1 project without, the part that I did with EA might even cost more, because there’s other things to carry on. If I do 30 projects within EA and 30 projects without a EA, I’m pretty sure the 30 projects without an EA are going to in aggregate cost more but have a much harder time fitting together.

And now talking about the strategic process, we do the strategic process in which we never really even mentioned EA and I think that’s the thing that I’ve heard here too. Don’t say we’re doing an EA-led strategy, you get the business and you say “look, in order to help you make these decisions, some of the things that EA has to offer, look at the process groupings, the domains or segments that we’ve already defined, you want to look at one of these segments or do you want
to change them?” And those are the kinds of things, those are the conversations that you’re having. No one is actually saying “I looked into EA and made this decision. I don’t know about the rest of you but it’s a foundation that allows things to work better, and I agree with finding the pain points if you’re having trouble with integration, you got problems in your EA describing your current system because people don’t know how to do the integration.

Listening to this conversation and the panel, in my own experience, there’s a very instructive irony here. We’ve got a whole bunch of people, IT folks, who talk about failed EA, as we have a business folk who talks about success in EA. And one of the success factors that he mentioned, I also agree is key. Your key IT staff must learn as much or more about the business as the business folks, and the key business staff needs to learn about IT and how it helps their business succeed. And if I can get that, you get to see failures become a success.

EA in the federal government, there have been successes, but actually mentioned segment architecture at the highest level, of integrating business with the needs and requirements. The success was defined when the business head of that unit actually spoke on our behalf in front of the executive board to get more funding, and that, do you have any other things to say about that, cause that was a effort that took place last year.

Bob, one of the reason he’s successful, Bob spent a year in IT as a business person. Same with the COO, they literally went into IT and spent a year. That is unbelievable, you don’t see that in any organization. Bob needs to write a book, because of all the people that went out and worked for him in the last couple of years, 90s and great story.

If you look at Aera’s Vision statement it includes “World class performance” as part of our strategy and a sub-bullet says “we value and use data and information as a strategic advantage” When the journey got tough we had to refer back to this vision statement, because initially many leaders didn’t want to do this, they didn’t know why.
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<th>First Name</th>
<th>Last Name</th>
<th>Organization</th>
<th>Title</th>
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<td>Ed</td>
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Bio of the Speaker

**Professor J. Alberto Espinosa, Ph.D.**

**American University**

Prof. Espinosa is currently an Associate Professor of Information Technology at the Kogod School of Business, American University. He holds a Ph.D. and Master of Science degrees in Information Systems from Carnegie Mellon University, Graduate School of Industrial Administration; a Masters degree in Business Administration from Texas Tech University; and a Mechanical Engineering degree from Universidad Catolica, Peru. His research focusses on coordination and performance in global technical projects across global boundaries, particularly distance and time separation (e.g. time zones). Prof. Espinosa employs a multiple method approach in his research, including theoretical, lab experiments, qualitative studies and survey methods, but his primary focus on on-site field studies in large technical organizations. His work has been published or is forthcoming in leading scholarly journals, including: Management Science; Organization Science; Information Systems Research; the Journal of Management Information Systems; Communications of the ACM; Information, Technology and People; and Software Process: Improvement and Practice. His work has also been published in leading academic conference proceedings and is a frequent presenter in those conferences. He teaches introduction to information technology, business requirements analysis, database and web programming. He also has several years of working experience, first as a design engineer and later as a senior manager with international organizations directly supporting, supervising and formulating policy for finance and global IT functions, where he designed and developed a number of software applications to support geographically distributed work.

**Frank Armour, Ph.D.**

**Research Fellow, Center for IT and the Global Economy, American University**

Dr. Frank Armour is a senior IT consultant and an adjunct faculty member in the Kogod School of Business at American University, where he teaches in the Masters of Information Technology Management program. He has extensive experience in both the practical and academic aspects of applying advanced information technology. His work and research includes enterprise architecture, requirements analysis, object-oriented development and system development processes. He is the coauthor of the book, *Advanced Use Case Modeling*.
Panelists Bio

Joe Kraus, Chief Information Officer, Government Accountability Office
Mr. Joe Kraus is responsible for overseeing the information systems and technology services division that supports US Government Accountability Office. Prior to this assignment, Mr. Kraus was the Chief Information Officer at Intelsat, a global telecommunications satellite company. Mr. Kraus has been the recipient of the CIO 100 Award in 2004 and 2007 for delivering new business capabilities during a period of great change through its use of IT. Mr. Kraus holds a bachelors degree in electrical engineering from the University of Pittsburgh and a Masters of Science from the University of Southern California. He is a member of the Legislative Brach CIO Council, the CIO Executive Board, the Society for Information Management where he serves on the board of the Capital Area Chapter, the CIO Executive Council and Gartner EXP.

Bob Palermo, Vice President – Center for Process Excellence, Aera Energy LLC
Bob Palermo is Vice President – Center for Process Excellence (CPE). Bob has 25 years of industry experience, including numerous engineering and operations assignments in both staff and management positions. He has also served in management positions in information management and technology. Bob has been with Aera since its formation in 1997. Bob holds undergraduate and graduate degrees in petroleum engineering from the Colorado School of Mines and the University of Southern California, respectively. He is a registered Professional Engineer in the State of California. Bob is a member of the Society of Petroleum Engineers, the Society of Petroleum Evaluation Engineers, the American Society for Quality, and the Association for Manufacturing Excellence. He has published articles on Enterprise Architecture and Petroleum Engineering. Bob is the father of two children and lives in Bakersfield, CA with his wife Renee.

Christopher B. Emery, US Department of Treasury
Chris Emery has more than 31 years of information technology experience, including 18 years with the federal government. He has been the head of Applications Development, a Chief Enterprise Architect, and CIO. Presently, Chris is working in the Office of CIO at the Department of Treasury where he is working on IT optimization. Chris earned his Bachelor's degree in Information Systems Management from the University of Maryland. He has published articles and presented on the topics of Enterprise Architecture and Portfolio Management. Born and raised in Maryland, Chris is the father of four, he resides in Odenton with his wife Penny.

Andrew Fregly, Associate Vice President and Enterprise Architect, FINRA
Andrew Fregly is currently an Associate Vice President and Enterprise Architect at the Financial Industry Regulatory Authority (FINRA). Over his 30 years in the software industry he has held a variety of technical and leadership positions for consulting organizations, product companies, and IT shops. The major technical focus of his career has been on the development and application of search, analytic, document management, case management, and collaboration software. Mr. Frelgy holds a BS degree in computer science from the University of Maryland with additional post-graduate work at George Mason University.
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