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From the Editor – About this Issue

Leonard Fehskens


This issue opens with Chapter Spotlights from the flourishing Ottawa-Gatineau and newly resurrected Ohio Chapters of the AEA on their recent activities. It continues with two “Four Questions” practitioner perspectives by Chris Armstrong and Vish Viswanathan, enterprise architecture entrepreneurs who have long been active in the development of the TOGAF® standard. This issue’s “Talking Shop” is with Tom Graves, a prolific writer and blogger on enterprise architecture and related subjects, in a wide-ranging discussion that explores how our pasts influence the way we think about the future of enterprise architecture. We then have two short subjects: Sharm Manwani and Oliver Bossert write about a survey they are conducting in conjunction with the AEA on the use of enterprise architecture in the burgeoning context of digital business; and Roger Evernden (via Good E-learning) discusses the personality factors that affect our performance as architects. Mark Meyers follows with an article on how the idea of “clumping”, a demonstrated key to success in many areas, can be applied to the development of strategy. The issue’s peer-reviewed contribution is a very topical article on the successful use of enterprise architecture in the US Veterans Health Administration by a team of architects from the US Department of Veterans Affairs. My series of “off the beaten track” articles (“Len’s Lens”) continues in this issue with an exploration of the different ways people frame the way they think about design and architecture in general, and enterprise architecture in particular. Finally, I review a recent book on how the way people actually make economic decisions differs from how economic theory assumes they make such decisions. The book is an interesting read in its own right, but more importantly is straightforwardly applicable to the decisions enterprise architects and enterprise architecture stakeholders make.

As always, I urge you to consider contributing to the Journal. You don’t have to write something to do so – you can suggest something you’ve seen published elsewhere that you think would be of value to the enterprise architecture community if it were featured in the JEA. If you do want to write something original, we’re now accepting non-peer-reviewed short subjects (a few pages) and articles (a half dozen or so pages), as well as the traditional peer-reviewed longer articles. We’re especially interested in business and other forms of enterprise-related material, as well as technological topics. Finally, you can always send us your own “Four Questions”, suggest someone you’d like to have submit their “Four Questions”, volunteer to “Talk Shop” with me, or suggest someone you’d like me to “Talk Shop” with.
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Please send articles to the JEA Chief Editor at journal.submissions@globalaea.org. Author submission guidelines can be found on the AEA website at www.globalaea.org.
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Wondering how to connect with local architects and share war stories over a beverage of choice? I was, back in late 2014. I had been a little bit removed from the Enterprise Architecture (EA) community for a couple of years due to work overload, but was getting somewhat burnt out and wanted to rekindle my creative juices by engaging with my fellow enterprise architects. Having presented at one of the early meetings of the AEA Ohio Chapter when it launched in 2010, I immediately thought of them as a great place to plug back in and learn from others.

We have had three meetings so far this year – two in person and one virtual. In our first meeting in February 2015, we jumped quickly into our keynote presentation as Dan Vaught from Cardinal Health talked about some key infrastructure architecture trends, specifically their plans to deploy Software Defined Networking through the use of WAN overlays. From there, Chandra Sharma, Chapter Vice-Chair, gave some chapter updates and executed some key chapter business. We ratified the chapter renewal as well as the new chapter leadership and steering committee. We also learned via poll that those in attendance wanted more events, specifically virtual events, and we got a great list of ideas for potential topics.

After that, Kevin Costa from MEGA took the stage to talk about Turning IT Towards Innovation. Kevin’s presentation challenged our thinking about how we are actively supporting the business while taking into account both innovation and risk. With time running short, we closed out the meeting with a whirlwind tour of the recent Open Group San Diego event I had attended. I shared with the group the conversations of the week and my slides held links to all the key presentations and videos.

Our next meeting was virtual and took place in May 2015. Kevin Willey, Director of Enterprise Architecture at Kroger, shared with us his story about EA at Kroger. He talked about the scale of Kroger, which at a transaction level is on an average day four times what Amazon deals with on Black Friday. He talked about his vision for transforming EA into a practice management approach, his view of the difference between Systems Engineering and EA, and his definition of innovation. He even talked about putting the mainframe back into circulation. Kroger’s is a Fortune 25 company experiencing phenomenal growth and it is clear that EA is at the heart of keeping the IT Landscape up to the task of supporting this hyper-growth.

After a few minutes on chapter business, Erica Hansen, Principal at Intellectual Capital Exchange (ICEX) and adjunct professor at Columbia University, then joined us to talk about the Future of Enterprise Architecture. She talked about how the role of EA is changing, how enterprise architects are facing the cloud, the limited understanding of the full potential around data architecture, and the importance of finance to EA. She also brought in some perspective on Security and its impact on the IT Landscape as well as a perspective from the Infrastructure & Operations parts of the organization. Most importantly, Erica shared what organizations are doing to address the flux of the organization, things like revisiting principles, creating patterns, reviewing processes and metrics, rewriting services, and up-leveling skills.

Our most recent meeting happened in August 2015. Tim Westbrook from EA Directions, an EA advisory company, led a great discussion on the Value of Enterprise Architecture. Following Tim, Bob Mick, Director of Professional Programs at The Ohio State University College of Engineering, introduced us to OSU’s plans to implement a new Masters of Global Engineering Leadership with an Enterprise Services and Architectures track. I then updated the group on the latest from the Open Group Baltimore, where a lot of major, industry-relevant announcements happened.

We closed with a wonderful depiction of the EA journey at Progressive Insurance by John Kresic. There is so much we can all learn from the journey they have been on, and John is an outstanding speaker who really captivated the audience with his storytelling.

In the AEA Ohio Chapter, we have plans to run four events a year – two in person and two virtual. Our next event will be in person in November 2015 and we are
excited to see what we pull together. This is a great team of volunteers (myself, Scott Sloan, Chandra Sharma, Voytek Janisz, and Michael King) working hard to bring these events to life. Maybe someday, we might even take a run at putting together a regional EA conference for our membership. But our first goal is to complete year one, then we will regroup and see where we go from there. Hopefully, we will see some of you JEA readers at a future event!

ABOUT THE AUTHOR

Michael Fulton is President of CC&C Americas, an EA Capability Building company whose mission is to build and grow Enterprise Architecture (EA) capability in the individual, in the organization, and in the industry. Mike is an experienced architect with over 8 years of experience in EA and over 20 years of IT experience. He is both TOGAF Certified and a Cloud Certified Architect, chairs the AEA Ohio Chapter, co-chairs the IT4IT™ Forum Adoption Work Group, and sits on the IT4IT Forum Steering Committee. He has led IT4IT Architecture, Cloud Architecture, IT Strategic Planning, Disruptive Cost Innovation, IT Leadership Development, and EA Capability & Training Development at a Fortune 50 Company. Michael also spent time working across the entire IT Lifecycle, including time in Service Management, Program Management, Project Management, Application Development, and IT Operations. Mike is an experienced speaker and trainer, a practiced leadership and strategy coach and mentor, and is well known across the industry. He brings a strategic viewpoint and the ability to communicate with all levels of the organization.

Mike can be reached at mike@ccandcsolutions.com for more information about the AEA Ohio Chapter and its future events.
INTRODUCTION
This has been an exciting year with many fascinating events. Through cooperation with several other professional organizations and the University of Ottawa, the chapter was able to host or co-host quality speakers speaking on a wide range of topics relevant to enterprise architecture.

DECEMBER 12, 2014 – CMMI DMM MODEL
After several smaller events with ISACA on information security, we invited DAMA and the University of Ottawa (UofO) to a presentation by Carnegie-Mellon, on the Software Engineering Institute CMMI Data Management Maturity (DMM) Model. Melanie Mecca flew up to Ottawa to give a super overview of the new model which will be a key influence on enterprise information architecture.

MARCH 5, 2015 – MATURING THE ORGANIZATION
The next major event was on March 5, 2015 at the new KPMG office in their state-of-the-art presentation facility. Co-sponsored by BackOffice Associates and Privacy Analytics, the half-day seminar theme was "Maturing the Organization from Data Transactions to Information Decision Support". The seminar was jointly hosted by local chapters of the Association of Enterprise Architects (AEA), the Data Management Association (DAMA), and The Data Warehouse Institute (TDWI). In the 150-person crowd there was a wide range of attendees from government, industry, and academia. The speakers and panel addressed the issues of:

- The role of enterprise architecture, data modeling, and data management in providing the right information, to the right people, in the right way at the right time
- Capturing and shaping transactional data to provide effective and efficient decision support
- The role of data in the organization and its influence on enterprise strategic plans and initiatives

Professor Marc von Rosing from the Global University Alliance presented on "Using Information Modeling Principles to Identify Opportunities for Business Transformation”. He enthusiastically went through the slides and also elaborated on lessons learned globally including his native Scandinavia.

Julia Mench, Global Vice-President Human Capital Management Practice, BackOffice Associates, presented on "The Role of a Centralized Data Universe in Effective Corporate Planning and Business Transformation". Using case studies to illustrate the concepts, she focused on the importance of people and how critical it is to have reliable data on an enterprise’s most important resource.
The final presentation addressed "How to Launch a Successful Open Data Initiative". Hudson Hollister, the Executive Director of the Data Transparency Coalition, discussed the impact and challenges in the implementation of the US Digital Accountability and Transparency Act of 2014 (DATA Act) especially how it promises to transform the US government's finances by replacing disconnected documents with standardized and searchable data.

APRIL 8, 2015 – COMPLEX PROJECT MANAGEMENT

Next on April 8 at the Royal Canadian Air Force Officers Mess, sponsored by Build The Vision, the guest speaker was MGen (retd) Doug Dempster MBA, the Executive Director for the Centre for Executive Leadership at UofO. The session addressed issues associated with complex projects, procurement, and how enterprise architecture can be a key enabler for their successful conclusion. The topics included:

- What constitutes a complex project?
- What are the main issues with procurement?
- What are the main challenges to complex project delivery?
- How can enterprise architecture enable their successful conception, guidance, and delivery?

This presentation was expertly delivered and addressed the integration of multiple concepts including portfolio management, project management, procurement, handling complexity, and enterprise architecture. Doug used numerous case studies from his time in national defense (Canada) and NATO where he had extensive experience managing portfolios and projects nationally and internationally.

MGen (Retd) Doug Dempster is the Executive Director for the Centre for Executive Leadership at the University of Ottawa. Mr. Dempster spent 30 years in the Canadian Forces retiring as a Major General after being deputy commander of the Canadian Army and then became chief strategy officer of the Defense department in the four years following the 9/11 attacks. Subsequently, he served as NATO Assistant Secretary General for Executive Management, where he led a major business transformation in the organization. He has handled extremely difficult projects and initiatives during his career in the CF and NATO and has created a new Masters program at the University of Ottawa (Telfer School of Management) on Complex Project Management and Procurement.

JUNE 2, 2015 – DATA LOSS PREVENTION (DLP)

In conjunction with ISACA Ottawa, the chapter had a very successful event discussing Successful Content-Aware Data Loss Prevention (DLP) Deployments. The distinguished speakers, who came in from all over Canada, provided valuable insights into an area where enterprise architecture was deemed to be essential. They discussed must-have controls for monitoring and detection of attacks on enterprise business flows. They noted that many monitoring technologies have focused on very specific channels and use-cases, and tying together their outputs to improve their collective accuracy has proven elusive. Because of the pressure from advanced threats, organizations have to bring to bear new technology as well as more human effort. Knowing how to shift the focus from looking at individual data items to looking at the use and exchange of information in context will be critical.

Key questions answered in this session include:

- How do you utilize DLP to protect unstructured and structured data?
- How do you prepare for a DLP deployment?
- How do you execute a phased approach for enterprise DLP architecture?
- What key processes and practices are needed for a successful DLP implementation?
- What are the key obstacles to a successful content-aware DLP deployment?

The panelists were excellent and included Lawrence Dobranski, Scott Wright, Alex Rau, Adam Gray, and Daria Riber (moderator). They noted many of the data loss events happening in retail (e.g., Walmart) and government breaches of citizen information. They emphasized the need for a solid enterprise security architecture within an integrated enterprise architecture. Some 120 persons attended the end-of-year event at the Sheraton.

SEPTEMBER 29, 2015 – MODELS 2015 – EA WORKSHOP

Hosted by IEEE and UofO, the chapter will be focused on the workshop that is designed to bring solution and enterprise architects closer together. Those interested in presenting and/or a paper are requested to contact Robert Weisman (workshop organizer) at: robert.weisman@buildthevision.ca

The full description of the workshop can be found at: www.buildthevision.ca/models-2015-page.html

Links to the full conference website can also be found there. See you there!

PLAN FOR 2015/2016 – CALLING FOR VOLUNTEERS

The executive has been working hard at delivering a superb slate of events and is preparing for an even better year ahead. Cooperation with other professional associations has been well appreciated by all. If you are in the AEA Ottawa Chapter or in the region and want to
give back to the profession, please do not hesitate to contact robert.weisman@buildthevision.ca.

ABOUT THE AUTHOR

Robert Weisman MSc, PEng, PMP, CD is the Founder and President of the AEA Ottawa-Gatineau Chapter. He is also Vice-President of the ISACA Ottawa Chapter. Currently Bob is CEO of Build The Vision, Inc. and is a long-time active member of The Open Group. He is pursuing his PhD studies in e-Business at the University of Ottawa where he is working on creating an enterprise architecture program for graduate students in all faculties.
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Four Questions

A Practicing Architect Asks and Answers Four Questions of Their Own Choosing

Chris Armstrong

Question 1: Which areas within enterprise architecture are you focusing on over the next couple of years?

Ultimately, we need to continue to focus on the most important perspective of the enterprise architecture profession – relevancy. This is achieved by demonstrating value, but in order to do that, we need to understand the consumers of architecture content and services. For example, it is well accepted that modeling is a key architect capability and I think as a profession we’ve been effectively maturing the practice of modeling over the last few decades. However, in order to rationalize the investment in modeling, we need to be cognizant of who is consuming that content and deliver it in a form that helps the consumer do their job better. We should also be mindful of emerging channels by which we deliver enterprise architecture content to include rich and dynamic platforms like the web and mobile devices.

Question 2: What trends are you seeing around enterprise architecture consumers?

By far the most prevalent movement is a focus on the “up-stream” audience, namely business and IT executives, C-level executives, and the Board of Directors. This is mostly due to organizations understanding that they need enterprise intelligence about how their business is positioned within their marketplace and how effectively their IT investments are supporting their evolving requirements. The enterprise architecture profession is well staged to deliver the holistic, integrated view of the enterprise required, but likewise needs the attention of the executive audience to secure funding and support for enterprise architecture. Nonetheless, we must not overlook the “down-stream” consumers, namely the solution delivery and IT operations teams that are building and operating the future state enterprise.

Question 3: What are you observing about the intersection of enterprise architecture and agile software development?

Agile software development is certainly an emerging approach to continuously responding to new and changing requirements, but just like all investment vehicles, it requires an enterprise context to enable the most effective decision-making. However, we really need to take a different approach when enterprise architecture engages agile teams. First, the “ask permission” governance models present in many organizations need to evolve to more of a “beg forgiveness” flavor, so that, for example, enterprise architecture is not perceived as being an obstacle to adopting new technologies. Teams should be encouraged and rewarded for taking risks and evaluating emerging technologies. However, those decisions need to be balanced intelligently against existing investments and security concerns. Enterprise architecture needs to encourage innovation, not stifle it. Second, enterprise architecture needs to be an enabler of architecture best practices and provide more coaching and mentoring than traditional compliance assessments. Third, enterprise architecture needs to engage agile teams earlier in their lifecycle, so they have the greatest opportunity to learn what’s happening in the real world and provide those architecture best practices in a timely, convenient fashion to successfully influence positive outcomes. Lastly, delivery of architecture content in a form that is readily accessible, relevant, and immediately useful is essential for enabling real, valuable, and measureable reuse.

Question 4: What emerging standards do you feel are ones that will have the most impact on enterprise architecture?

We’re certainly looking forward to the publication of the next version of the TOGAF® standard. It’s been rewarding to participate in its evolution within The Open Group Architecture Forum to bring the latest enterprise architecture best practices to the community. We’ve also been involved in developing an enterprise architecture value chain and capability model to serve as a reference architecture for implementing enterprise architecture at end-user organizations. My company, APG, has also been involved in The Open Group IT4IT™ Forum, where we’ve been helping to develop a reference architecture for the business of IT. We’re very excited about using IT4IT for driving improvements to the IT operating model using enterprise architecture to operationalize an IT value chain that focuses on end-to-end effectiveness. We’re also working in The Open Group ArchiMate® Forum to formalize an industry
standard UML® Profile for the ArchiMate® 2 standard, which should lead to more rapid adoption of the ArchiMate modeling language via users of UML modeling tools. APG is also contributing to the Capability-Based Planning project to uplift this emerging practice within the Architecture and ArchiMate® Forums.

ABOUT THE ARCHITECT

Mr. Chris Armstrong, President of Armstrong Process Group, Inc., is an internationally recognized thought leader in enterprise architecture, formal modeling, process improvement, systems and software engineering, requirements management, and agile development. Chris represents APG at The Open Group, the Object Management Group, and the Eclipse Foundation. He is a co-chair of the TOGAF Certification Standing Committee (CSC) and EA Capability Improvement project, was a significant contributor to the TOGAF® 9 standard, and is contributing to the next version of The Open Group TOGAF®, ArchiMate®, and IT4IT™ standards. Chris is certified in TOGAF®, ArchiMate®, Open FAIR, UML®, and SysML.
Four Questions

A Practicing Architect Asks and Answers Four Questions of Their Own Choosing

Vish Viswanathan

**Question 1: There are numerous interpretations of enterprise architecture as a profession and enterprise architect as a professional depending upon where one comes from. What is your thinking?**

Enterprise architecture is about providing an integrated, rationalized, standardized, and agile architectural foundation for an enterprise, enabling provision of information for management’s strategic and tactical business decision-making.

The reality is that while enterprise architecture is absolutely recognized as essential for business survival and growth, unfortunately it is still perceived as an immature discipline, as it stands today. In its current state, enterprise architecture is an art and a science since the cultural, human, organizational, and political aspects essential for enterprise architecture’s success cannot be digitized completely. Those of us who are used to definitive products, solutions, and services throughout our career, primarily sold and promoted by vendors through their sleek marketing campaigns, may be unable to come to grips with this mostly conceptual and essentially strategic discipline of enterprise architecture. Sometimes, this results in “architects” of all sorts with specific product and technology focuses claiming to be “enterprise architects”.

From an end-user perspective, the problem starts at the very top of an enterprise:

- Senior management do not generally consider enterprise architecture as their key focus area, especially at the Board level. We as enterprise architects need to have a dialogue with them as to what is in it for them, what they have to give, and what they will get if they are willing and committed participants in their organization’s enterprise architecture evolution.
- The above results in a lack of specific and measurable job goals and KPIs for CIOs, CTOs, Chief Architects, and Enterprise Architects, especially if the enterprise architecture function reports to the CIO (IT). If enterprise architecture is a strategic and key transformational role, as it should be, are adequate influence and resources available to build a proper enterprise architecture foundation?

- Effectively, while the intentions of enterprise architecture are good and appropriate for the enterprise, what gets delivered is generally perceived as not providing sufficient business value. This leaves the impression that enterprise architecture has failed to deliver, resulting in a poor reputation for the profession of enterprise architecture as a whole.

Recently, I had the opportunity to contribute to *Forbes magazine* under the banner *A Fool with a tool is still a fool*. No one can challenge the need and veracity of the discipline called enterprise architecture with its set of standards, guidelines, best practices, tools, and time-tested processes like the TOGAF® ADM. But enterprise architecture can at best offer only a toolkit guided by a solid logic and framework philosophy. Let us not take the blame as a discipline. Let us use the enterprise architecture toolkit innovatively and show quick wins!

**Question 2: Given the current state, as a long-term enterprise architecture professional and a pioneer in this space, what is your opinion about enterprise architecture’s current state of play?**

Looking at the positive side, the enterprise architecture cup is, of course, half full. It is not all bad news.

The good news is that, in spite of all of the above challenges, most organizations have started their enterprise architecture journey – some call it enterprise architecture, others call it Digital or Business Transformation, Business Change Management, or “creating a new operational model”, etc. Call it by any name – the toolkit for enterprise architecture exists and is improving all the time. All industries are now turning to enterprise architecture as a business enabler and business architecture is gaining momentum as the sharp end of enterprise architecture. Recently, our organization had even certified several enthusiastic senior doctors, surgeons, and other health professionals in TOGAF® and ArchiMate® across 16 countries across Asia as enterprise architecture in e-health is becoming a necessity to improve healthcare in developing countries.

Essentially, it is for us, the enterprise architecture community, to fix the problem. The very first step is to understand the landscape of enterprise architecture of today, be on the same page, and articulate realities and
dispel the myths of enterprise architecture clearly to our key stakeholders. Many of us know and do these intuitively; however, it is worth articulating.

**Myth 1: Enterprise architecture can be implemented in an organization using a framework (such as the TOGAF® standard) out-of-the-box.**

Enterprise architecture is never implemented wholesale, definitely not “out-of-the-box”. Enterprise architecture is carefully blended into an organization through a series of well-planned iterations. Organizations start with an open framework like the TOGAF framework, but as it gets customized and tailored, it adapts to an organization’s culture to become their own “personalized” enterprise architecture model. As enterprise architecture matures in an organization, the TOGAF framework is still inside and powering their enterprise architecture but no longer very visible.

**Myth 2: Enterprise architecture is primarily about documentation using a professional modeling tool.**

Models of current state and target state do not by themselves make for a fully-fledged enterprise architecture. Documentation is only a start. Often this could be a good beginning on which to build your business case. However, until enterprise architecture is able to affect and influence business decisions on an ongoing basis, it is not yet mature in the enterprise.

**Myth 3: Enterprise architecture is all about governing projects to ensure conformance.**

Governance is not all about enterprise architecture professionals attending compliance meetings and checking conformance. In some organizations that may be what they mostly do – conduct compliance meetings. Again that is not a bad start, but one way to move forward is to learn from those compliance meetings, identify reusable patterns, and build a repository as the next step. Governance is not complete until the structure, process, and “what artifacts to govern with” are all established and operational in a transparent way.

**Myth 4: Enterprise architecture can be created and rolled out by a central team in a definitive timeframe**?

Every enterprise has an enterprise architecture – mostly EA by accident not EA by design. Enterprise architecture is not a one-time and time-bounded exercise. As long as the enterprise is operational, enterprise architecture will have to be operational and agile to change, continuously adding business value and new business capabilities all the time.

**Myth 5: Enterprise architecture can be implemented solely by a set of smart in-house professionals.**

In my experience, most in-house enterprise architecture teams need one or more external mentor to give them a jump start, to bring in best practices and innovations from external sources, to unblock organizational and technical deadlocks, and to offer new perspectives. The insider/outsider combination is a constant factor that is apparent in every successful enterprise architecture evolution.

**Question 3: What are the top five challenges of enterprise architecture as a profession?**

- Agreeing on common definitions, terminology, and boundaries of enterprise architecture based on business value, and tailoring them based on cultural sensitivity for the particular enterprise
- Getting the right strategic hook, a strategic program, a business pain point, or a business imperative for each iterative cycle of enterprise architecture and measuring the impact in short quick cycles
- Gaining senior management commitment and ongoing involvement in enterprise architecture evolution
- Setting and agreeing on the right KPIs for enterprise architecture professionals and other enterprise architecture stakeholders
- Recognizing and acquiring the necessary resources and skill, especially at the start-up stages of enterprise architecture

**Question 4: In these days of extensive disruption in the IT/business scene, how do you as an enterprise architect remain relevant and future-proof?**

My simple advice to enterprise architecture professionals is:

- Let us be creative and at the same time be empathetic to our stakeholders regarding their concerns and expectations. Put yourself in their shoes and try to think like each of them.
- Let us take leadership and responsibility and reach out to other groups in the enterprise.
- Let us not be afraid of complexity; learn to reduce all complex situations to their most basic viewpoints and solutions.
- Be on the lookout for an enterprise architecture mentor and work with him or her until one is self-confident and self-sufficient. That is the only way to learn both the art and science of enterprise architecture.
ABOUT THE ARCHITECT

Vish Viswanathan is an internationally recognized enterprise architecture consultant, trainer, advisor, and implementation program manager. He is results-oriented and well known for his strategic and analytical abilities. With broad and extensive experience in IT services, strategy, new business set-up, and new technology solutions and products, he is a well-rounded and complete enterprise architecture professional, bringing all of his 38 years of IT experience into the enterprise architecture practice focusing on delivering excellent business value to customers.

Vish has been actively involved with The Open Group since 2001. Starting as The Open Group regional director/champion for APAC, he was the Vice-Chair of the Architecture Forum for over five years. Currently, CC&C Solutions, where Vish is a Managing Principal, is a Gold member and participates in a number of Open Group initiatives. As an accredited TOGAF® and ArchiMate® training provider, CC&C provides training and implementation services related to enterprise architecture across the globe to several Fortune 500 organizations.

Prior to CC&C, Vish held senior executive positions with IBM and Fujitsu in India, Australia, Japan, and Singapore.

Vish has championed several enterprise architecture initiatives and is the founder and chairperson of the AEA Sydney Chapter, the first chapter to be formed outside of North America. Vish regularly presents on thought-provoking topics at several international conferences.
Over the past decade, the IT space has seen quantum improvements in speed, functionality and price/performance. In spite of this, most enterprises have an undeveloped EA, with disconnected and duplicated business processes, data islands, vast number of siloed applications and inflexible technical infrastructures. As the IT industry is going through a phenomenal disruption with emerging technologies such as Cloud, Big data, Mobility and Internet of Things, this “EA by accident” is under severe stress fuelled by ever increasing demands for business agility and innovation.

Successful EA transformation always involves the “insider” - enterprise champion(s) and the “outsider” - a mentor collaborating all the way to achieve a shared vision.

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Talking Shop

A Conversation with Tom Graves

Tom Graves and Leonard ("len") Fehskens

Abstract

Two architects talk shop and let the conversation take them wherever it will.

INTRODUCTION

Nobody would ever accuse either of the participants in this conversation of being unduly terse. The raw material from which we edited this down to a reasonable size ran to almost 13,000 words. That raw material comprised a rapid flurry of about thirty emails between us over a two-week period, followed by a ten-week pause, during which we each attended to other things, and finally three weeks of back and forth organizing and reorganizing, clarifying, cutting, and paraphrasing. We're both happy with the outcome of that process, and both agree that it's an accurate, if abridged, rendition of those original email exchanges, mostly in the original words.

THE CONVERSATION

The conversation started with a fairly lengthy and detailed exchange about the beginnings of our careers. We both entered the realm of IT as programmers – Len early in his career, Tom somewhat later in his – but for both of us programming was a means to the end of using computers to do other things that were more important to us. For Tom, recurring themes were skills education and desktop publishing; for Len, the recurring themes were modeling and simulation and development support tools. For both of us, these early experiences shaped the way we much later came to think about architecture and its role, specifically the idea of architecture as a means rather than an end in itself and, more importantly, that the value of architecture as a means derives largely from its holistic perspective.

But even before our careers began, our experiences as children and eventually university students also shaped the ways we thought about working with and, more generally, interacting with other people. We were, unsurprisingly, classic nerds, socially inept, which, surprisingly, seems to have sensitized us to the critical role that people play in enterprise.

The integration of these two ideas, holism and people-centricity, provides the basis for what Len calls the "first person plural" perspective, the distinguishing characteristic of both the things we are most interested in, and the way we think about them.

During this part of our conversation we discovered we both played musical instruments; bass flute in Tom's case, drumset in Len's. This prompted Tom to ask: "What kind of public-facing experience – on stage or whatever – did you have from this (rather than hiding in the backroom, as many techies are wont to do)?: One reason I ask is because the cross-links and cross-fertilization in music between science and art seems to be another common key for broader-scope architects".

Len: We played fraternities and dormitories on multiple campuses, and the occasional mixer. I have played in front of audiences as large as five or six hundred people. As the drummer, I was in the back and walled off from the audience by my kit, but the experience certainly prepared me for speaking in front of large audiences.

Tom: You've also shown the huge importance of something that I didn't have at all, namely the 'dorm-room' type of connections. There were a few key figures for me around that time, but all were lecturers or other 'grown-ups', not fellow students or peers.

Len: I'm not sure the nature of one's network matters as much as its simple existence. In my experience, all the good jobs I have had have been a result of personal connections. Not that personal connections got me jobs without consideration of my merits, but they exposed me to opportunities that I would not likely have otherwise been aware of.

Tom: Yep – and that's been my problem all along, because I don't think there's been anywhere that I've had that kind of network.

[We talked about how our experiences influenced the way we thought about our accomplishments.]
Len: I can't speak for you, but I was raised to assume that success was the way it was supposed to be, so the things that stuck out were the things that weren't the way they were supposed to be.

Tom: I was never given any clear indication of what 'success' actually was – only that whatever it might have been, it either wasn't for me, or I didn't match up to it. I do sometimes have to make a conscious effort to remember that there were real highlights too – mostly in terms of support for others, rather than from others (though that has happened from time to time – including from you, of course).

Although it doesn't fully work as an antidote – 'facts' and feelings aren't the same – it's useful to remember some of the successes. For example, I've written and had published around 25 books by now.

Len: I want to talk about that at some point – you are one of the most prolific writers I have ever known.

Tom: My first book (a kind of 'teach-yourself' on dowsing, or what US folks call 'water-witching') was published almost 40 years ago, was translated into around 10 languages, overall has sold perhaps 200,000 copies, has been continuously in print ever since it was published, and a fair few people have told me that it changed their lives – they built whole careers on it. Later I was one of the people who first made desktop publishing viable; people built their careers on that work, too. A whole community built up for a while around the books I wrote for a publisher who'd wanted "a book for the self-development market that didn't insult the intelligence". The work I did later again on domestic violence has been much attacked (because it doesn't blame anyone or set anyone else up as 'the scapegoat'), but I've been told that that too has made real difference to people's lives, particularly in the lesbian community.

[The discussion shifted to what motivated us.]

Len: It would be nice to be recognized for the quality of my thinking in the enterprise architecture space, but ultimately I'm driven more by my belief that a properly conceived profession of enterprise architecture could be of enormous value to the human race. I suspect that's what drives you as well.

Tom: Yes, agreed, and that's a large part of what drives me to do this. The only difference (and again, I'd guess it's the same for you) is that I wouldn't constrain it to enterprise architecture alone, but expand to the whole suite of related disciplines – futures, strategy, knowledge-sharing, social-change, and so on.

There's also the key point that one real advantage of being an 'outsider' is that whilst we still get all the peer-review and validation checks (if often in unpleasant forms), we do have much lower risk of being trapped in 'groupthink', because there's no group to which we 'belong'.

Len: Yes, but the thing I worry about is because I arrive at my positions through a sort of Socratic dialogue with myself, making sure that I have strong justifications, not just hand waves, for every step along the way, and highly valuing consistency and lack of internal contradiction, I wonder if perhaps the bar to my changing my mind about something that I've "thought through" may be too high.

Tom: For me, it's perhaps more in a Sophist dialogue (in the Pirsig sense). One way I've described the process I use is in the post 'Sensemaking – modes and disciplines':

http://weblog.tetradian.com/2012/08/12/sensemaking-modes-and-disciplines/

Although the modes can be very different, even diametrically-opposite, there's strict discipline in each of them. That's in strong contrast to many people's approaches, where discipline seems to be conspicuous only by its absence.

Going back to that point about 'no network', right from the start I was pretty much an outsider, even in my own family. We were outsiders relative to the village where we lived – we had almost no social contact. When I went away to boarding school at age 8, there was almost no-one with whom I shared any interests – whilst interests such as sport meant nothing to me at all. I was largely an outsider at art college – I thought like an artist/designer, but couldn't do like they did. At the Royal College of Art, they put me in a department of my own, because I didn't fit any of the standard categories – hence why my Masters is in 'General Studies'. And after my first job-interview, it seemed clear I was essentially unemployable – hence why I've made my own way all these years, and never yet been a 'permanent' employee anywhere. I've also changed my career path at a root level perhaps five times so far, and moved 'home' between continents four times already. Hence not much of a network in any context, really.

In a sense I'm quite proud of what I have managed to achieve, given those circumstances, and the amount of 'anti-support' I've had almost every inch of the way. Though let's just say that 'fun' has been conspicuous mostly by its absence. If you wonder why I do tend to get a bit too intense at times, yeah, that might go some way towards explaining it.

Len: I think the value of peers is the "brothers in arms" camaraderie, especially the knowledge that you're not the only one trying to make sense of it all. If I'd had only people I looked "up" to, rather than "across" to, I wonder if the experience of growing up would have been even more daunting. (That may be a contradiction of my
remark above about the nature of one's network not mattering.)

**Tom:** Most of the time, not only has there been none of the 'brothers in arms camaraderie', but often I've been "the only one trying to make sense of it all" – and it's been damn lonely, as well as a constant struggle to cope with the abuse that goes with that task. The few people who _have_ helped during those times have usually been older than me, more experienced, with more awareness of just how hard this work really is.

**Len:** This suggests a side conversation about hobbies and other non-work-related interests. Having given it a little thought as a result of this observation, it seems to me that all my "non-work-related" interests have something to do with design.

**Tom:** Yeah, makes a lot of sense, but I also link it to that theme I mentioned elsewhere about skills development – about developing one's own power and capability, and responsibility with/for that power.

**Len:** As an adult, I will admit that I am fascinated by the concept of design. But as a child, all my favorite "toys" were construction toys. Wooden blocks, interlocking plastic bricks (like Lego, but actually construction bricks), Erector set (the US version of the Meccano set), sticks and flexible plastic joiners (for vertices joining three, four, five, six, and eight edges), Lincoln logs, and a set comprising plastic girders and risers with panels that could be attached as siding. I build and fly model rockets, mostly of my own design. I love to study and design model railroad layouts. I have always wanted to design my own home, and can’t resist the opportunity to study any floor plan I come across, even to the point of buying booklets of them. Even my photography is design-driven – I approach image composition as a design problem. I look at virtually every artifact I encounter in terms of its design and its fitness for purpose. Most of my day-to-day frustrations and disappointments are manifestations of what I consider to be bad (thoughtless) design.

**Tom:** Agreed, though I would frame it differently – a failure or refusal to acknowledge the responsibilities that would be expressed in themes such as design, and other themes as well.

Anyway, brilliant stories, that show that there’s much more to you and your career than you’d let on so far: previously all I’d heard was about your later experience at HP. What this indicates to me is:

- The value of experience of public presentation that is not solely to a technical audience
- The probable importance of ‘non-business’ interests (e.g., music in public, in both our cases) to an architect’s development
- The importance also of a willingness to try anything and dive in at the deep end

**Len:** One last thing that just occurred to me. As a freshman I rowed with the MIT lightweight crew. This experience, and my experience playing in a band, taught me two extremely valuable lessons that are hard to explain to someone who hasn’t experienced them in some similar way. The first is what it really means to be part of a team. Too many "teams" nowadays consist of a group of people who are given related assignments and periodically come together to report on what they have done by themselves, then go off again and continue working on "their part of the problem", whatever bounded subdomain is their "responsibility". Bands and crew don’t work like that. They only work when they work together, in perfect harmony. The second is that when you achieve that perfect harmony, all awareness of "working" disappears. You are simply "in the flow", no longer a separate entity but completely, egesslessly, integrated into the collective consciousness and action of the team.

**Tom:** Yes, agreed, that's two very different meanings of 'team'.

I've had to work on my own so much that the 'flow' kind of team experience is one I've rarely had, but I have had it – such as playing in a folk-music Irish session at full-bore. I'm familiar with the 'flow' experience overall, but mostly on my own rather than with others.

**Len:** As an undergraduate I became especially interested in eastern religions because they seemed to seek that kind of relationship with the universe as a whole, and if it felt that good at the team level, it must feel, well, "cosmic" if achieved with the universe.

**Tom:** Yes, likewise – I still keep the 'Tao Te Ching' close by, for example. It's interesting in the Tao to see the different places where he's having to be 'politically correct' – particularly in the description of rulership, and so on – _versus_ the sections where he's describing those various aspects of the 'flow' mode, how 'everything works better when things work together, on purpose', and so on.

**Len:** This idea of flow has strongly influenced the way I think about design. The best designs do not call attention to themselves (except maybe by exception) because they are so perfectly in tune with their context that they disappear into it. And as an editor I tell reviewers that the way to recognize good writing is that you become completely unaware of the fact that you are reading something; it is as if you are thinking or experiencing the article rather than reading it.

**Tom:** I agree about 'flow'. And yet – as you say – so hard to explain to people who just don't (won't?) 'get it'.
Len: I'd like to get into why you're interested in what you're interested in, what you hope to accomplish, how you see yourself accomplishing that, what you imagine as your legacy, etc.

Tom: What I'm interested in is that 'moment of magic' from which skills and technologies arise – that moment where "I can't" shifts to "I can" – and also the human responsibilities (literally, 'response-abilities') that accompany that shift. From there, how skills and technologies of all kinds (physical, human, and otherwise) can be used to build a better world for everyone.

Other than it being 'magical' in pretty much every sense, I don't know why I'm interested in this. I just am. And always have been, too – right from the earliest times I can remember.

Len: Asking the question this way presumes that I have some control over what I'm interested in. My sense is that I'm interested in what I'm interested in because that's who I am; these are the things I find interesting.

Tom: Yes, exactly – especially the "because that's who I am", the sense of no real choice about it.

Len: If you were to ask what drives my exploration, it would probably be a need to understand how things that affect me "work", so that I can influence them to effect better outcomes. The long slow realization of my life has been that much of what is "wrong" with the human condition is of our own doing, some individually, but mostly as a species, and especially as various societies/cultures. Most of that has been "unintended side-effects", again mostly as a result of thoughtlessness and expedience. It's becoming increasingly clear that if we don't get our act together, we are soon going to pass the point of no return, if we haven't already, with respect to catastrophic consequences of our rapacious shortsightedness. I don't buy the Pollyannaish technological deus ex machina scenario.

Tom: I also don't buy the deus ex machina scenario. In part that's what my 'RBPEA' (Really-Big-Picture Enterprise-Architecture) posts have been about: getting people to use present-day enterprise architecture concerns to get some solid practice in the skills they're going to need to be able to use at larger scales when things really go sour in a non-ignoreable way.

Len: What do you hope to accomplish?

Tom: Helping others find their power, and the responsibilities that go with that power – typically expressed as skills, in many different forms.

Len: What do you see as the central memes of the conventional wisdom on enterprise architecture? I.e., what do you see as the "foundational beliefs" about enterprise architecture of the enterprise architecture community at large. Why do you think the enterprise architecture community has adopted these memes? Do you think they are "fit for purpose"; i.e., effective for the uses to which they are put? If not, why not? What do you think will happen if the enterprise architecture community stays wedded to these memes?

Tom: I'm trying to get at here is, if we're going to get the enterprise architecture community to change the way it thinks about enterprise architecture, they're going to have to have a reason to change. If what they're doing "works" for what they're using it for, they will have very little incentive to change.

Tom replied by asking Len what he thought the central memes were.

Len:
- An enterprise comprises "the business" and IT, and enterprise architecture is about "business/IT alignment".
- Architecture is about the fundamental structure of a system.
- An enterprise is a "sociotechnical system", and people are components of that system.
- Enterprise architecture can optimize a business's performance, by engineering the enterprise.
- Enterprise architecture can and should aspire to be scientific.
- The best way to think about enterprise architecture is according to the business/information/application/technology domain model.
- Enterprise architecture enables "business transformation". This means enterprise architecture is about agility.
- Everything can be thought of as a business, or at least everything that matters to me as an enterprise architect.

Tom:
- Whatever we work on, ultimately the one thing that matters is IT – because IT is, by definition, the center of everything.
- Enterprise architecture’s role is therefore to tell the business what IT it needs, and to improve the provision and centrality of that IT.
- There is a clear separation between IT and 'the business'. Neither of these are actually defined, other than that 'the business' is, in essence, 'anything not-IT that might affect IT'.
• It’s all about structure and waterfall-style change management, as typified by terms such as ‘layer’, ‘building-block’, ‘reference-architecture’, ‘future-state’, and ‘roadmap’. Predictability, reliability, certainty, and efficiency are core values; purpose is almost an afterthought.

• IT is inherently more important and more valuable than people, and we should exclude them from the architecture as much as possible. People are a nuisance to be managed (hence ‘stakeholder management’), barely tolerated (‘human actor’), a source of disruption to be avoided wherever possible. Human concerns such as motivation and story are literally an afterthought.

• There is a thin awareness that we’re always dealing with sociotechnical systems, not solely technical ones – but the emphasis is always more on the ‘technical’ rather than the ‘socio-’ of ‘sociotechnical’.

[On why we think the enterprise architecture community has adopted these memes.]

Len: These memes have been handed down as received wisdom; they are what the “inventors” of enterprise architecture believed; it’s where the money is.

Tom: This ‘enterprise architecture’ came out of a bunch of large IT providers talking with the centrally-managed IT departments of large IT-oriented organizations. Historically, it was ‘enterprise-wide IT architecture’ (EITA), conflated to ‘enterprise architecture’, presumably on the basis that ‘everyone knew’ that the domain of interest was big-IT.

The practical problem is that there’s another domain that’s more correctly called ‘enterprise architecture’, namely ‘the architecture of the enterprise’ (‘real-EA’). For a long while the ‘enterprise architecture’ community pretended that the name-clash didn’t exist; more recently it’s shifted to a pretence that EITA and real-EA are one and the same – again, because ‘everyone knows’ that computer-based IT is the natural center of everything.

[On whether these memes are “fit for purpose”; i.e., effective for the uses to which they are put.]

Len: It depends on the scope of the enterprise architecture engagement. The smaller the scope, and the more IT-focused it is, the more likely these ideas will actually “work” to some degree.

Tom: EITA is fit for purpose for classic big-IT – particularly the physical infrastructure for big-IT. The further we move from that specific purpose, the less fit for purpose it becomes.

[If it’s not ‘fit for purpose’, why isn’t it?]

Len: Agility of the IT function will not confer agility on “the business” as a whole. Transformation of the IT function will not affect transformation of the “business” as a whole. People do not like to be treated as components. System-focused architecture leads to thinking of “the system” as an end in itself, rather than as a means to some end.

Tom: Unfortunately for ‘conventional EA’, classic big-IT is becoming less common (except in large cloud-type data centers), and less central to business needs for information management, and to the broader sociotechnical systems and social contexts to which a literal ‘architecture of the enterprise’ must apply.

With its literal ‘ignore-ance’ of the social dimensions of enterprise, ‘classic-EA’ is not well suited to address whole-of-scope concerns such as security, disaster-recovery, social memes, and social-agility.

The crucial constraint is the ‘BDAT-stack’, based on a rigid hierarchy of big-IT hardware, computer-based applications, computer-based data, and a blurry ‘the business’. It’s a useful frame for big-IT, but misleading and incomplete for almost anything else – a single arbitrary viewset within something more like a hologram. The idea of ‘layering’ is useful, as structured relationships between views, but locking the entire architecture into a single viewset is not useful: that distinction is crucial, yet not even visible in ‘conventional-EA’. The BDAT-stack rigidly locks ‘conventional-EA’ to big-IT: unless and until greater flexibility in layering and viewsets is allowed, ‘conventional-EA’ is inherently less and less useful the further we move away from classic big-IT.

[What do we think will happen if the enterprise architecture community remains wedded to these memes?]

Len: Enterprise architecture will “wither on the vine” as the forces of “the cloud”, BYOD, and app mashups together relegate IT to infrastructure support in the “back office”; “shadow IT” in the front office(s) will come to dominate the actual “business-driven” IT, and the only thing the central IT function may be able to retain control of is access to the cloud and centralized corporate databases, which will become increasingly irrelevant. The idea of enterprise architecture will be overtaken by the idea of business architecture performed in the front office.

Tom: It will fade away into irrelevance, for anything other than a steadily-shrinking domain of big-IT.

The term ‘enterprise architecture’ will become permanently tarnished as a ‘failure’.

Total confusion will remain as to enterprise architecture’s actual scope. Many will continue to place it as ‘an IT-thing’, subordinate to ‘business-architecture’ or whatever; others will place it in its literal sense of ‘the architecture of the enterprise’. Arguments will continue to reign within what’s left of the enterprise architecture.
community, but dismissed by everyone else as 'academic', irrelevant to 'real work'.

Without a unifying discipline to keep things together within organizations, architectures of all kinds are likely to fragment, often into nothingness. Inefficiencies, ineffectiveness, breakdowns, and outright disasters will increase, but most people will remain unable to explain how or why these have occurred, or identify what to do about them.

Various attempts will be made to try to fill the gap, much as we're seeing with attempts to frame 'business architecture' as 'the new enterprise architecture'. Most will repeat the same 'single-center' mistakes as in conventional IT-centric 'EA'; for example, that monetary profit alone is 'the center' of enterprise architecture – such as we see in Osterwalder-style business-models.

To make it work, enterprise architecture must be a literal 'architecture of the enterprise'; anything less will guarantee the fragmentation and failure of the respective architecture.

In a viable enterprise architecture, everywhere and nowhere is 'the center' of the architecture. IT is important, but it's not the only center – in fact, given comparisons with business spend, it's perhaps 10% at most of any architecture, and, since everything in an architecture depends on everything else, that 'everything else' is equally as important as the IT.

Above all, to break out of an IT-centric concept of enterprise architecture, we need to drop the supposed centrality of the BDAT-stack, and allow the scope of enterprise architecture work to be determined by the context of that work.

If we don't allow enterprise architecture to break free from IT-centrism, it will fade away into irrelevance within perhaps a decade at most.

If we do allow enterprise architecture to break free from IT-centrism, it has the potential to become a core discipline for all sociotechnical concerns, in business, government, and elsewhere.

Enterprise architecture is a generalist discipline, almost to extremes: people who work in it are likely to have and need many different interests, connecting rationality with emotion and more (music was one example that we discussed). People who move a discipline forward are often the 'outsiders', the literal 'eccentrics' who provide ideas, structures, and leverage for change.

THE TALKERS

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The Role of Enterprise Architecture in Digital Business

Sharm Manwani and Oliver Bossert

Abstract

Enterprise architects face many challenges to be relevant to key stakeholders. The growth of digital business offers major enterprise opportunities if these challenges can be addressed. To assess best practice behaviors, an enterprise architecture survey has been created by McKinsey & Company and Henley Business School. This article introduces the survey scope and invites the JEA audience to contribute its expertise in order to develop new organizational insights.

Keywords

Enterprise architecture role, digital, stakeholders, survey

INTRODUCTION

Intuitively, it makes sense to architect an enterprise before building or redesigning it, just as we would expect to do for any complex construction. The advent of digital drives new imperatives to change the enterprise, which surely offers many opportunities for enterprise architecture. Yet the role of enterprise architects is sometimes misunderstood, or worse considered to act as a barrier to agile change. In this briefing, we discuss how the enterprise architecture survey from McKinsey & Company and Henley Business School aims to provide insights into tackling these challenges.

In 2003, a Harvard Business Review article concluded that ‘IT doesn’t matter’. The article was controversial, positioning IT as a commodity and proposing a ‘follower’ response. In the ensuing decade, with the evolution and rebranding of IT to digital, few would agree with such an extreme position. Digital has been disruptive, with technology enabling new and fundamentally changed business models. Established companies are spending a much higher percentage of revenue on IT and more recent entrants such as Uber derive major competitive advantage through digital. It is now acknowledged that IT transformation can become a survival issue – since the marginal cost of an additional user can lead to a “tipping point” at which the winner takes it all and the laggards go out of business (see Blockbuster versus Netflix). To be a part of the debate, enterprise architects need to understand the intertwined impact of digital technology and selection of the right business model.

While digital has helped many start-ups, most organizations are not greenfield, hence enterprise architects need to exploit both new IT and the opportunities from legacy IT. We can posit that IT has moved from the back-office to customer interaction with e-business, and then to digital ubiquitous IT, including product and the Internet of Things. When successful, this moves IT increasingly from a cost to an investment perspective. A recent McKinsey article defines three views of digital as: creating value at the new frontiers of the business world, creating value in the processes that execute a vision of customer experiences, and building foundational capabilities that support the entire structure.

Enterprise architects have a key role to play in all three areas, particularly in making strategic investment decisions. Poor technology decisions such as choosing the wrong ERP software can harm corporate performance. Even very technical decisions such as those influencing website performance can have massive impact on the business. An outage of about 40 minutes was estimated to have cost Amazon up to $5 million in lost revenue. However, such technology decisions should not be taken in isolation and it is critical – particularly with digital – that enterprise architects are key contributors to integrated decisions by linking business/operating models to IT services/platforms.

For enterprise architecture to drive strategy, the communications skills of an enterprise architect become pivotal, requiring language targeted to the Boardroom. An MBA is not mandatory but knowledge of the strategy frameworks used by the organization is critical for enterprise architecture. This need is visible in the growing importance of business architecture evidenced in a survey organized by Allen Brown, CEO of The Open Group. This asked if there is a business architecture function and, if so, how mature is it? At the same time, there are other groups operating in this space, such as those designing business processes or creating advanced analytics. How enterprise architecture engages with and is perceived by these business partners is critical.
Equally, engagement with IT colleagues is a critical success factor. The digital business model is often supported by an architecture of two speeds, which may require different IT groups as in the case of Bimodal IT (postulated by Gartner). Type 1 is traditional centrally directed IT, focused on stability and efficiency, while Type 2 requires an agile organization focused on time-to-market through close alignment with business units. This raises questions about how enterprise architecture engages with the increasing move towards agile. Should it create an agile architecture? What is the role of multiple operating models and DevOps in this transformation? Achieving this goal of agility will be difficult if enterprise architecture is perceived as an ivory tower function not engaged with other parts of IT, rather than being directly engaged in delivery through solutions architecture.

So, what are the key drivers of a successful enterprise architecture strategy for the digital age? We believe that relatively little data exists regarding the performance of enterprise architecture in this context. Our aim with the McKinsey and Henley enterprise architecture survey is to create a sound fact base that can be used to tackle the challenges and opportunities that enterprise architecture faces with new disruptive events. This will enable identification of the right levers and development of a perspective on what works well and what doesn’t.

The enterprise architecture survey combines an external view of enterprise architecture capabilities and outcomes with an internal view of enterprise architecture methods and outputs. Building on the points made above, the survey investigates questions such as:

1. What business outcomes is enterprise architecture targeting and is it contributing to operating model development?
2. How is enterprise architecture perceived by both the business and IT stakeholders?
3. What is the scope covered by enterprise architecture – business, information, solutions, etc.?
4. What is the maturity of business architecture?
5. How involved is enterprise architecture in solutions architecture?
6. What external and internal resources are assigned to enterprise architecture?
7. To what extent is enterprise architecture equipped to deal with the challenges it faces?
8. How is enterprise architecture building its capability?
9. What artifacts does enterprise architecture produce and why?
10. What methods and tools does enterprise architecture use?

We invite all those interested to participate in this survey developed jointly by McKinsey & Company and Henley Business School, both strongly committed to developing enterprise architecture capability for business value. The target audience is primarily those leading enterprise architecture and their CIOs, although the survey has also been shaped to help enterprise architects engage with their business and IT stakeholders. The survey can be accessed via www.easurvey.org.

The results will be published in a future JEA article and used more widely to promote the role of enterprise architecture in creating a digital business. Most importantly we want to help fix the image portrayed by the Forbes article, ‘Is EA Completely Broken’, that states that:

“Misdirected EA initiatives vastly outnumber bona fide examples of EA efforts leading to measurable business value.”

To that end we intend to collect mini-cases and we welcome your contributions to demonstrate that enterprise architecture really does matter.

ABOUT THE AUTHORS

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Short Subject

The Architect Role – What Kind of Architect are You?

Roger Evernden

Abstract

Architects come from a variety of backgrounds and with diverse personalities. Does the profession attract certain personality types? How can we be more effective as architects? This article explores some of the issues.

Keywords

Enterprise architecture roles, personality types, enterprise architecture techniques, enterprise architecture skills

INTRODUCTION

What kind of architect are you? It’s a question with so many possible answers. But what really fascinates me is whether an enterprise is getting architects who can really address their needs effectively. I’ve been an independent enterprise architect for most of my career, and these days I focus mainly on coaching, mentoring, and training. Not surprisingly, I frequently get asked about criteria that can be used to choose a “good” architect.

It’s a subjective subject! I’ve searched for well-researched studies on the type of people who practice enterprise architecture, but it doesn’t appear to be a topic that has fired the academic imagination. There are studies of software engineers that examine areas such as personality types and motivation, and one might argue that there are some parallels between the two professions of software engineer and enterprise architect. But such a comparison might also unreasonably perpetuate a commonly held belief that architects tend more towards the introverted and analytical.

So, instead of writing a scholarly paper about types of architect, I’d like to outline some thoughts about criteria that you might want to consider about your personal propensity towards enterprise architecture. These criteria could also be used by an enterprise in selecting the “right” architect.

It’s useful to think about types of architect in three interrelated ways.

1 A good survey of this research can be found in H. Sharp, N. Baddoo, S. Beecham, T. Hall, and H. Robinson: Models of Motivation in Software Engineering, Information and Software Technology, 51(1) pp.219–233 (2009); refer to: http://oro.open.ac.uk/12948.
For example, data architects focus on the domain of data; security architects on security issues; and so on. While some architects have a narrow domain focus, others need to cover a much broader sphere. Clearly, one thing that differentiates one type of architect from another is what they know and what they know about! Solution architects may have a very detailed knowledge of specific products and types of architectural solutions; enterprise architects need the sort of extensive knowledge that can only be acquired through years of practice.

What we do – which is also part of our professional background – is surprisingly harder to pin down. This is partly because there is no single, standard professional qualification for enterprise architecture. Many fundamental enterprise architecture techniques are not even mentioned in the popular approaches, such as the TOGAF® standard. For example, although the TOGAF framework includes a taxonomy for each of its two reference models, it fails to adequately explain the indispensable role of taxonomies and classifications in modeling architectures. Consequently there are many TOGAF certified architects who have no idea about how to create or customize an effective taxonomy, or how to use it in their day-to-day work. Another principal tool is the architecture framework, but once again many practitioners see frameworks as theoretical or conceptual rather than a highly practical everyday device for managing and thinking about architectures.

So from a professional perspective there are architects ranging from those who are highly respected for their maturity, qualifications, and wide-ranging expertise, to those who have less experience and a domain-specific focus. In addition, architects vary from those who practice enterprise architecture using the full range of enterprise architecture techniques, to those who apply more limited methods. These different types are summarized in Figure 2. This makes the distinction between architects that focus on a broad or holistic knowledge as opposed to those with more deep or domain-specific experience; it also differentiates between those who use fairly generic enterprise analysis and management techniques rather than techniques that are better suited to architectural thinking.

We end up with four types. The novice is someone starting out as an architect, without any specific domain expertise, and with a simple understanding of what enterprise architecture is about. The domain expert is someone with knowledge of a specific area – such as data management or security – who moves towards a career in enterprise architecture, initially using generic techniques. These first two types are not experienced architects. The final two groups are either architects specializing in a specific domain area, or those with a broader focus: domain-specific architects, or enterprise architects.

Figure 2: Professional Types

These last two groups are, to some extent, a choice: I can choose to focus in a particular domain or I can aspire to a truly enterprise-wide perspective. The first two categories – novice and domain expert – are starting points for anyone entering the enterprise architecture profession and, as with any starting point, it determines what you need to learn or experience in order to move along your chosen career path.

Professional qualities are only part of what type of architect you are. Your character and approach can have a huge bearing on how you architect. And your beliefs, attitudes, and values often determine how you are perceived by others. As with professional competence, you can change your behavior and personality, but it is not always easy!

Let me emphasize again – there isn’t much formal analysis of how architects behave, so I can only provide some pointers to help you think about how you approach enterprise architecture, or how other members of the enterprise architecture team work. However, there are many studies of how people behave, and we can draw on this work for inspiration.

Much has been written about differences between right brain and left brain, and this has sometimes been related to differences between men and women. For our purposes, we will make a broad distinction between people who are quite analytical and systematic, and those who are more emotional and empathic. Of course, most people are a combination of the two extremes. What is best for enterprise architecture? I think a balanced approach is best. Architects need to be rational and logical when they analyze or produce architectural descriptions and plans. But they also need to be aware of how architectures are used, understand and deal with the politics of an enterprise, and be sensitive to stakeholder priorities, requirements, and feelings.
What is important is how we handle both the analytical and emotional sides as we architect. One behavioral approach groups people into promoters, supporters, controllers, and analyzers. Again, enterprise architecture probably needs all four types, but it is unlikely that one person excels in all behaviors. Promoters tend to be high energy people, who are fun to be around and initiate relationships; they are competitive and goal-oriented, and good at motivating others and getting things done. Supporters are dependable team players, patient and good at listening, and therefore good at reconciling factions and managing trade-offs or options. Controllers are disciplined, self-motivated task-driven individuals who take action and make decisions to achieve bottom-line results. And analyzers are conscientious and objective people who are great at defining, clarifying, and gathering accurate information.\(^2\)

None of these behaviors are directly about enterprise architecture, but they have a strong bearing on whether you are the right architect for a particular enterprise or project.

Finally, we come to who you are. This is about the person you are deep-down, so it is something we are born with that is often hard to change. There are many personality tests available – a quick search will find many examples, including some that can be taken online. These are based on years of research into different types of personalities.\(^3\) In preparation for writing this article I did a couple of online tests – with similar, but slightly different results! In one test I was an ENFP (extraverted, intuitive, feeling, perceiving): apparently I am both an ideas and a people person, who sees everyone and everything as part of a cosmic whole. In the second test I was an ENTJ (extravert, intuitive, thinking, judging): so I am a rationalist by nature, preferring to spend my time in the outer world of people and things, seeing the world with more emphasis on patterns and possibilities, making decisions based on objective principles and impersonal facts, and leading a generally structured and decided lifestyle.

Apart from the enjoyment of taking one of these online tests, they can help you think about how your personality affects the type of architect that you are. From my personal perspective it seems “right” to be able to develop future architectures in an objective and rational way, but it also makes sense that new architectures genuinely produce a sustaining and energizing environment for the people who use them.

So what type of architect are you? I hope that the ideas here will help you think about your profession, behavior, and personality and how they affect the way that you architect.

Oh, and in case you were wondering – on that last personality test my personality has the symbolic name of fieldmarshal! According to the same online test, an architect is an INTP.

ABOUT THE AUTHOR

Roger Evernden has been an Enterprise Architect since 1984, specializing in the highly practical use of enterprise architecture to manage enterprise transformation.

He acts as advisor, mentor, and coach on enterprise architecture initiatives, leads training workshops, and writes regularly about strategy and architecture.

His work has been the basis for more than 400 business and IT architecture initiatives worldwide.

As author of the Information FrameWork (IFW) – an architecture framework originally developed for the financial services sector – Roger pioneered many contemporary techniques, including the use of industry reference models, business capability analysis, and component-based architecture building blocks.

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\(^2\) See, for example: http://courses.cs.vt.edu/cs3604/support/Groups/First.Characteristics.html.

\(^3\) For some useful links try: https://en.wikipedia.org/wiki/Myers-Briggs_Type_Indicator#/media/File:MyersBriggsTypes.png, which summarizes the 16 Myers Briggs types; http://digitalcitizen.ca/2011/02/20/free-personality-assessment; or www.humanmetrics.com.
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Article

Clumping and Strategic Enterprise Planning

Mark P. Meyers

Abstract
The phenomenon known as clumping can be found everywhere in nature as most forms of animal and plant life here on earth naturally tend to cluster together for social or survival needs. This article will push that concept out towards a hypothesis under which clumping may also be a significant determining factor why some complex strategic plans are formed successfully while others fail to gain traction.

Keywords
Enterprise architecture, strategic planning, strategic roadmap, collaboration, complexity, clumping

INTRODUCTION
Biological organisms cluster together to survive. Algae and ants form their own communities. Mushrooms and trees drop seeds near their respective canopies to ensure their clustered survival against other species. We also recognize that most mammals and specifically humans choose to clump in close proximity to one another for multiple benefits. People in business settings tend to naturally clump as well without necessarily understanding all they gain by doing so.

Humans naturally cluster together for social and survival benefits. Cities and towns bring a core set of services together offering shelter, food, physical protection, education, employment, and social interaction. Charity groups clump together to more productively work towards common goals. Large tasks are completed more quickly when assigned to a clump of workers, and solutions to complex goals benefit from idea exchange and innovation in the clump.

Friends and families tend to stay physically co-located for social interaction and mutual support. This natural tendency to clump is more than just learned behavior as taught by our parents, something that has evolved with us. We have a preference for idea exchange and a productive approach for reaching consensus along with building trusted relationships. We can’t really explain why we behave this way but we do.

What about a corporate example? One might say that a corporation or a governmental department, or a large organization of any type, supports clumps within clumps. When large or complex issues or goals are on the organizational table, what would you expect to happen? Would people assigned to the issue naturally drift apart to work on pieces of that issue separately or are there benefits from the stickiness of a clump?

ORGANIZATIONAL CLUMPING
Organizations bring people together for a common purpose and a shared set of goals. We organize into volunteer groups, work teams, or informal collaborative clusters in order to align ideas and actions. Within the business environment, clumps exist as departments, working teams, and other more informal groups. While this article does not necessarily assert the need for physical collocation between members for all types of business activity, let us assume that any group must remain closely connected on goals and highly collaborative in order to successfully attain those goals.

Corporate leadership teams also come together periodically to document the future needs of the enterprise in a enterprise strategic plan. Successful enterprises will invest significant effort when defining a strategic plan before making significant investment in any part of the business. Whether measured in millions or billions of Dollars, Pounds, Pesos, Euros, or Yuan, no company agrees to invest in growth or complex transformation without a plan. Experience and case studies suggest that the effectiveness and efficiency of that plan, however, is closely linked to clumping.

We should accept a common observation from these examples that clumping is, for lack of a better Scrabble word; good. Apart from other examples in nature, clumping is a natural behavior that exists for the survival and enrichment of the human species. It also helps support the viability, cultural health, and communication effectiveness within the corporate enterprise.

Steve Jobs, a Clumping Advocate
As a means to promote the hypothesis that clumping in business is actually better for activities like strategic enterprise planning, take the perspectives of technology
leaders like Steve Jobs, Marissa Mayer of Yahoo, and of companies like Intel and Bell Labs.

Arguing her decision to remove most employee work-from-home options, Yahoo CEO Marissa Mayer conceded that employees could be productive working alone but added:

“They’re more collaborative and innovative when they’re together.”

Steve Jobs was also a supporter of the open workspace, collaborative environment, designing the Atrium at Pixar and even the bathroom locations specifically to foster chance meetings and group idea exchange. Apple’s new headquarters design includes rings of open collaboration workspaces all around the central courtyard, a Jobs design element intended to support clumping and collaboration.

Intel and Bell Labs pioneered the concept of wide open team collaboration areas for face-to-face idea exchange, an office design concept that became common across tech companies in the Silicon Valley. Predictions for a utopian future state that supported a telecommuting, digitally distributed work team, never fully came to fruition. For some business activity like status meetings, remote training and other routine communications, these remote conferencing tools work well. They do not, however, represent the natural preference and need for humans to clump and interact on larger scope, complex tasks.

A typical complex working meeting will spawn multiple short side conversations that happen simultaneously in the clump, head nods and smiles and occasional excitement on two separate ends of the same shared table over an ah-ha moment. None of that collaborative and often chaotic environment can be replicated on the single threaded voice feed in a teleconference.

Clumping as a natural human preference and successful collaboration method tends to conflict with advocates and purveyors of technology. A tech sales guy might say:

“Clearly if everyone owned a camera ready tablet with video conferencing capability, a team meeting can be just as effective.”

True for a simple team meeting, but we are not focused on that structured, repeatable format, single threaded information exchange. We are talking about tougher topics and complex discussions where the technology, in some ways, gets in the way of an effective outcome.

By extension to the remote teleconference example, consider a meeting room filled with people actually face-to-face, but where everyone in the room is actively entering or reading something on their laptops or smart phones. How productive was that meeting? These disengaged actions occur in meetings all too frequently.

If the readers of this article were honest, including the writer, we would say we are all guilty of the same offense.

**The Impact of a Non-Clumped Opinion: KODAK**

In 1989, despite limited recognition inside the company that the digital camera business could be a significant growth model for the future, two Kodak executives were asked to present one strategy each to the Board of Directors regarding the future strategic direction of the company. Kay Whitmore with more than 30 years of service stood behind the continued health and growth of the film business. Phil Samper recognized the industry transformational shift towards digital technology and pitched that long-term growth scenario for the company’s future.

The Kodak Board of Directors ultimately chose to stick with Whitmore’s singular perspective and decided to focus on film as their core, sustainable business model. The clumping of business leaders to exchange ideas and share insight about the future of the photography marketplace did not take place. In this example, the opinion of a single senior stakeholder was enough background for the Board to render a decision. That decision to stick with their core film business led to the company’s demise.

**ANTI-CLUMPING IN STRATEGIC ENTERPRISE PLANNING**

Strategic enterprise planning typically takes one of two approaches. The first and far too common is a distributed planning model that tends to approach business change and associated enterprise strategy independently by business unit or department. There will normally be guidance from the CEO regarding high-level goals, but each business unit is then charged with coming up with their own strategic plan to meet those goals.

The risk in this approach is that each business unit leader may interpret the corporate goal differently or approach the work to achieve those goals uniquely. Metrics may include growing customer satisfaction by a fixed percentage, or measuring product growth by distribution into a number of new states or countries, but each autonomous business leader would come up with their own plan to meet those goals.

Though this senior management team will meet periodically to discuss how each strategic plan is progressing, the conversation does not typically get down into project-level details. Two or more business units will start vendor and solution research for the same foundational solution investment. As highlighted in Figure1, though each business unit plans in their own
way to achieve corporate goals, they may look to solve common enterprise gaps in capability separately.

Please note that the following examples represent case studies from the writer’s personal experience, where key elements of the example detail have been changed for illustrative purposes.

Figure 1 depicts a common business approach for defining and managing an enterprise strategic plan. Where strategic goals may be formed and communicated by an executive leadership team, the definition of work and the approach for contributing to the attainment of those goals is left up to each individual business unit.

From the graphic we can see an example where Finance, Sales, and Information Technology business units each look to bridge a gap with improved integration solutions or tools, but each may pool requirements and perform solution evaluation without the other’s involvement. Each will form opinions and potentially take action on developing a narrow scope solution that cannot easily be reused or leveraged by another business area.

Solutions are purchased that do not take the broader enterprise needs into consideration. In the end each business unit solves the problem at hand, though long-term cost to the enterprise will be higher due to the creation of multiple approaches to a similar problem. In this extreme, worst-case example, the enterprise now has to support three different approaches to integration instead of one. There was an absence of meaningful clumping between these business leaders. This scenario becomes a natural side-effect if the organization in question is larger, and if the business units are empowered and budgeted to make their own investments.

The second example in Figure 1 targets analytical tools and models and again highlights the common distributed approach to solution building. One business unit looks towards externally hosted solutions for modeling, while another accumulates data into an unsupported tool to build their own analytics. Multiple business units begin to evaluate new tools and vendors for use within their own department, all due to the original guidance set forth by the CEO, his direct leadership team and a declared set of strategic goals.

Figure 1: Distributed Strategic Planning and Investment (Non-Clumping)
Overall success in the attainment of strategic goals is difficult under this approach, given the amount of rework and duplication of labor and investment that often occurs. With heroic effort in change management and check points between architects and front-line business leaders, this distributed approach to planning and execution can still work, but not without significant incremental cost.

CLUMPING IMPROVES STRATEGIC ENTERPRISE PLANNING

If our natural human inclination is to clump around a common need or a shared goal, then it should not be a stretch to envision that clumping is a better approach to building a strategic enterprise plan. Strategic enterprise goals can be set by the CEO or the Board of Directors or limited number of senior leaders, but that next step in enterprise planning needs to include representation from all business units.

In order to develop an effective strategic enterprise plan and roadmap, there must be open collaboration about “what” needs to be improved or invested in to meet strategic goals. There should be no discussion at this point about “how” we improve our people, processes, information, and technology, but they do need to agree on the major areas of the business that need investment.
This ideation and collaboration between senior leaders should also find that the group has similar needs and gaps in their own business areas and that a shared common investment would benefit all.

**Taking Action**

After creation of the agreed strategic goals, each business leader needs to provide feedback about what needs to change within their own business area to help achieve the centralized goals. The conversation should spark feedback and idea exchange from other business areas about the same general need for business change or new capabilities. There should be overlap in the need for certain future state capabilities and that recognition is fostered in the clump.

Figure 2 includes the same enterprise goals and example business units as Figure 1, but the human leadership element in this model has been brought together. Common business needs are more quickly identified in a collaborative discussion where, in this example, improved data quality and performance analytic capabilities are discovered to be common to the whole enterprise.

The difference in the clumping model is that the shared need for certain core, foundational capabilities is identified at the beginning of the strategic enterprise planning cycle. The process of getting to a high-level prioritized strategic plan is more efficient and costs far less than trying to reconcile capability overlap after independent investments by business unit are made. In a clumped strategic planning session, stakeholders will openly discuss the need for future state capabilities. Similar needs for the same capabilities are discovered at that moment and identified as a common need for investment. If we wait until each business unit defines their own needs, it takes additional effort and cost to discover those synergies across business unit lines. More cost is then added by needing to reconcile the synergies found against the working strategic plan.

The important dynamic in the clumping model is that enterprise leadership can offer informed opinions to each other, bounce ideas off one another, argue or agree or find middle ground with each other. The human inclination to clump and the natural forum for innovation and collaboration creates a positive environment for productive enterprise planning.

Referring to Figure 2, the discussion and collaboration around implementing change to achieve enterprise goals is centralized. Leaders representing each business unit clump around common needs for the same capabilities that help the whole enterprise achieve the strategic goal. From the center set of strategic goals and working outwards, those identified common needs become significant investment areas and major working themes on the strategic enterprise plan.

In the Figure 2 example, multiple business units agree on the need for improved IT hosting options, a more flexible integration framework and new analytic capabilities. Figure 2 shows seven major investment areas in the blue ring that the leadership clump has agreed. This core, foundational group of capabilities becomes the large-scale initiatives that reside in the enterprise plan.

The outer ring of Figure 2 represents needs that may be specific to each business unit. Not shared capabilities that are needed across business units, but important additional investments that support business unit-specific goals. They will be worked into business unit versions of their own strategic plans, in conjunction with the major efforts identified and prioritized from the enterprise-level clumping activity.

This approach has been found to work well, provided the leadership team keeps the discussion at a high enough level. Too much detail about what needs to be accomplished or how to accomplish the minutia takes that cross-functional leadership down the rabbit hole. Facilitated by an experienced enterprise architect, the collaborative plan stays in the blue ring of Figure 2, where more detailed initiatives would be identified as work plans under each major investment area.

Clumping for enterprise strategic planning also requires some form of centralized leadership governance after the plan/roadmap are defined. If business unit leaders retreat to their own areas to execute strategies independently, we fall back to the risks and costs associated with Figure 1, and that distributed approach to managing change. The clump that defines the plan must remain to manage the plan. This would be the executive steering committee and governance checkpoint to make sure the right investments are made at the right time.

**MEASURING THE SUCCESS OF CLUMPING**

As enterprise architects we should recognize that the concept of clumping for strategic planning fits neatly into most any enterprise architecture framework. Consider what each framework calls for at the beginning of their process; an understanding of business context including vision and strategic business drivers. It would be wonderful if defined strategies were enterprise in scope, well-formed, and strongly supported by the organization’s leadership. Clumping helps provide that solidified starting place.

In the Zachman enterprise architecture model, all perspectives of his contextual matrix should be considered before investing in major strategic change. In other words, every aspect of context about the
enterprise could potentially impact decisions and investments. Without complete contextual information about the enterprise, we might miss the “People” perspective, as an example from the Zachman model, and make less effective investment decisions when implementing change.

In order to capture the bigger picture of potential impacts to our future state architecture and not to miss one of the framework perspectives, we need all key strategic planning stakeholders to collaborate and contribute. That activity, that complete clump of business leaders, provides the holistic context we need to effectively move forward. Given the opportunity to contribute to the organization’s vision and strategy, the clump of business leaders will form quite naturally. They all have a vested interest and a business architecture perspective to bring to the table.

Using the TOGAF® standard as our enterprise architecture framework example and focused at the top of the model as our natural starting point, we can reasonably assert that the more holistic our inputs are to the Preliminary Phase of the TOGAF ADM, the better the quality of our future state enterprise architecture design. Without a firm understanding of the broadest possible business context, including a corporate vision and enterprise strategies, our understanding of future state architecture is incomplete.

Improved inputs lead to improved outputs or, in other words, the better the leadership clump, the better the outputs are from the framework. Using the TOGAF framework and Zachman or most any other enterprise architecture framework, we can hypothesize that the broader the business leadership participation is, the higher the quality of the strategic enterprise plan.

From this hypothesis and a strong leadership clump we might expect:

- Improved perspective for future state capabilities needed across business areas
- Agreed recognition of where maturity requires improvement in the organization
- Identification and agreement of investment priorities on the strategic plan
- Clear agreement about the progressive path towards company goals
- Strong basis for synchronized communications about change
- Willingness by employees to follow a clearly defined plan
- Recognition by stakeholders that leadership is strong

Measures

The size of the leadership team that crafts the strategic plan is not as important as the completeness of representation. If each business unit or department is represented well, and all business context areas are covered, the decision-making and planning clump is well formed. Chances for a holistic strategic plan are high since all business perspectives are discussed when determining strategic goals and prioritized areas of the business in which to invest.

1. Full participation in crafting the strategic enterprise plan becomes a measure.

Should the clump and the plan be missing even what looks like a non-revenue generating department like Finance; that critical perspective is missing in the strategic plan. Capabilities that the Marketing team might expect from Finance like profitability modeling and other analytics might not get recognized, prioritized, or invested in without Finance’s participation. Incomplete participation in the clump leads to changes in the plan after the fact.

2. The number of priority or goal changes made to the strategic enterprise plan after publication is also a measure.

Since a major benefit of bringing the executive clump together is the recognition that multiple business areas have similar needs for capabilities, we can measure the leveraging of that single capability investment.

3. The number of business units that leverage the new solution capability is a reuse measure.

Delivering new capabilities to the enterprise along with training and change management to introduce and foster use becomes a powerful measurement and tracking mechanism. Successful roll outs can be initially measured by repetitive usage.

4. Growth in usage of a new business or solution capability by users, partners, or customers is a measure.

These are just four examples of strategic enterprise capabilities delivered, but there can be other measures based on the type of capabilities released. Investment in business process mapping and automation, as an example, will yield reductions in overall process times, and a reduced cost of operations. New investment in big data collection and classification may provide better depth in analytical models that lead to better demographic information and improved sales, or better understanding of the marketplace for new product or service introduction. The list of measures by capability continues on.
CONCLUSION

In our current world of matrix organizations, technology-enabled distribution of the workspace, and empowered departmental autonomy, we sometimes miss the value and the natural dynamic of innovation and collaboration found in clumping. While this article concedes that certain permutations of distributed working teams or group meetings are enhanced by communications technology; the technology benefit wanes when the subject of the work is highly complex or extremely broad in scope.

When considering that the foundational component of business transformation or major architectural change is a well-formed strategic enterprise plan, we need to clump to be successful in defining the strategic plan and managing it.

Face-to-face innovative discussion and idea sharing stimulates a natural human inclination to help that group be successful in whatever they need to achieve. Important perspectives about cross-departmental impact, or shared needs for a common solution, are discovered more easily in the group over a Diet Mountain Dew and a sandwich. Technology industry leaders support that same perspective.

When tackling the complexity of defining strategic goals for the enterprise, the executive leadership team is really no different from an engineering team working on a complex technical hurdle. Both team examples benefit from clumping in order to deliver a better and faster outcome.

Next steps for the enterprise architect include:

- Align with executive business leadership before the next strategic planning cycle.
- Show how individual business unit planning and budgeting get more precise with the holistic guidance of an enterprise strategic plan.
- Provide examples from your own organization about how solutions have been duplicated across business boundaries, and that the application portfolio costs could be reduced if we all did a better job mapping our future state in a consolidated way.
- Describe the pitfalls associated with separate planning and execution of strategy by business unit or department with only the hope of alignment at end state.
- Lead the planning process so that all business perspectives are represented and that the major foundational investments that support the strategies are identified.

ABOUT THE AUTHOR

Mark Meyers is the Manager of Enterprise Architecture for a Michigan-based insurance firm. With more the 20 years of experience as an architect and 10 years as a consultant and senior management adviser, he has worked with numerous Fortune 500 companies in the definition and delivery of long-term strategic plans.

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The Open Group: TOGAF® Application Development Method (ADM), The Open Group, 2011; refer to: www.opengroup.org/togaf.

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Integrating Veterans Health Administration (VHA) Business Strategy, Function, Process, and Information

Tammy Talley, Donna Marcum, Linda Drummond, Jim McDearmon, and Ian Komorowski

Abstract
The Department of Veterans Affairs (VA), Veterans Health Administration’s (VHA) use of an innovative approach to integrate business strategy, function, process, and information is a success story of collaboration. VHA leverages architecture to foster strategic IT investment planning, requirements elaboration, impact analysis, solution decisions, and business architecture products that are aligned with VHA strategy, and allow for traceability. The VHA Business Architecture Alignment Model maps strategic goals to impacted business functions and links information concepts to business processes. The Business Function Framework (BFF) describes all of the business functions performed by VHA and provides a hub for integrating business architecture components. VHA’s innovative approach supports interoperability and data sharing with partners including joint DoD/VA initiatives and the Health IT Strategic Planning guides the development of the VHA Health Segment Architecture.

Keywords
Veteran, health, VA, VHA, business, enterprise, architecture, strategy, segment, alignment, assessment, integrated

INTRODUCTION

Veterans Today
More than 21.9 million living Veterans today live in the United States. The Department of Veterans Affairs (VA) provides benefits and services to military Veterans, their survivors, and families. VA is the second largest department in the federal government after the Department of Defense (DoD), with budget in excess of $169 billion, and approximately 323,900 full-time equivalent employees in fiscal year 2014.

VA Major Business Lines
VA encompasses three administrations: the National Cemetery Administration (NCA), the Veterans Benefits Administration (VBA), and the Veterans Health Administration (VHA). NCA maintains 3.31 million gravesites at 131 national cemeteries. VBA provides many benefits to Veterans including life insurance, home mortgages, education, compensation and pension, vocational rehabilitation, and employment services from 56 regional offices. VHA provides Veterans primary and specialty care, long-term care, rehabilitation care, health promotion, mental health services, and prosthetic services.

VHA by the Numbers
VHA operates the largest integrated health care system in the United States. With 9.11 million Veterans enrolled in fiscal year 2014 (ending September 30, 2014), VHA cared for 6.6 million Veterans at over 1,500 facilities including 167 medical centers, 1,018 outpatient clinics, and 300 Veteran Counseling Centers. VHA employs 298,000 people including 177,000 clinical staff and over 88,000 Veteran employees. In fiscal year 2014, VHA health care included 92.4 million outpatient visits, 312,000 outpatient surgeries, 907,400 inpatient admissions, 272.7 million lab tests, and 271.4 million prescriptions.

The VHA mission also includes research and education. Typically, VA hospitals have at least one medical school affiliation, contributing to VA being the largest provider of medical training in the United States. VHA is a major contributor to medical research, providing a large sample size of data sets to the research community. Arguably, VHA’s least known mission component is to provide back-up to the DoD in national emergencies.

VA Office of Information and Technology (OIT)
VA is unique in the federal government in that its IT budget and infrastructure is consolidated under the Chief

1 US Department of Veterans Affairs, National Center for Veterans Analysis and Statistics; refer to: www.va.gov/vetdata/index.asp.

2 Veterans Health Administration, Office of Informatics and Analytics, VHA Support Service Center, VHA Reports and Measures Portal.
Information Officer (CIO). The Office of Information and Technology (OIT) was established by VA senior management’s decision to adopt a federated model for IT. It was further supported by Congressional action\(^3\) in 2005:

The Department of Veterans Affairs Information Technology Management Improvement Act of 2005:

Directs the Secretary of Veterans Affairs to ensure that the Chief Information Officer (CIO) of the Department of Veterans Affairs has the authority and control necessary for the development, approval, implementation, integration, and oversight of policies, procedures, processes, activities, and systems relating to the management of Department information technology.

Requires the: (1) Secretary to develop, implement, and maintain a process for the selection and oversight of information technology for the Department, including a strategic plan that includes performance measurements and an integrated enterprise architecture; and (2) CIO to review and update on an ongoing basis the plan and architecture.

ENTERPRISE ARCHITECTURE AT VA

Accordingly, responsibility for the overarching VA Enterprise Architecture is aligned within OIT. However, each of the three administrations, which are funded under a separate appropriation, support and maintain their business architectures and federate them to the VA Enterprise Architecture; VA utilizes the Federal Enterprise Architecture Framework (FEAF) and the Common Approach to Federal Enterprise Architecture.\(^4\) The VA Enterprise Architecture is comprised of several architecture segments including the Health Segment Architecture. The Health Segment Architecture is comprised of two components: the Health Business Architecture – developed by VHA’s Strategic Investment Management (SIM) Business Architecture Service (BA); and the Technology Architecture – developed by the VA OIT Architecture Strategy and Design (ASD). In accordance with Federal CIO Council guidelines, the VHA Business Architecture is a contributor to the overall OneVA Enterprise Architecture. See Figure 1. Note that all figures are located after the Conclusion in this article.

VHA Business Architecture

This article focuses on the VHA Business Architecture (VHA BA) which describes the largest component of VA with the most complex business functions. The VHA BA is comprised of Strategic and Performance Architecture, Business Reference Architecture, Business Process Architecture, and Business Information Architecture. The strategy layer includes goals and objectives from both the department and the administration. The Business Reference Model (BRM) – made up of business functions – aligns to the strategy layer and is supported by the business process and information models. See Figure 2 for illustration of the layers of the VHA BA.

VHA Strategic and Performance Architecture

The Strategic and Performance Architecture (SPA) is comprised of the VHA Strategic Architecture Layer – goals and objectives of the Administration and the Department, and a Performance Reference Model (PRM). It describes WHY VHA performs its mission. Performance Architecture is a growing area of interest at VA and across the federal government, and Performance Improvement is the linkage between strategic planning and execution. The integration of Performance Architecture and the business architecture can provide a powerful tool for portfolio analysis, prioritization, and project success. Transformational investments should lead to measurable business performance improvements and improve business agility.

Health IT is a critical tool supporting health care delivery to Veterans. A key product of the strategy architecture is the Health Information Strategic Plan (HISP). The HISP consolidates VHA’s health IT strategy and is intended to inform IT investment decisions.

Performance Architecture is the least mature component of the VHA BA. VHA BA has drafted the top layer of the Performance Reference Model to categorize and structure existing VHA performance measures. VHA is subject to numerous performance measures with various authoritative sources, especially clinical performance measures. VHA BA is currently in a discovery phase to identify and analyze performance measures and usage, to determine appropriateness for inclusion of each in the business architecture. Potentially this could mean connecting performance directly to business functions, and thereby to the rest of the business architecture. Business performance improvements are foundational to assessing any project. If the desired or target business performance goal of a project is known, then the goal becomes the basis to discuss how to get there – alternatives with or without an IT component.

VHA Business Reference Architecture

The VHA Business Reference Architecture (BRA) comprises the business layer of the architecture and both contains the framework and provides the context for categorization and alignment of business processes,


information models, business requirements, and more, in order to assist in sound IT and business decision-making. The BRA content is published in the Business Architecture Repository (BAR) and its reports. This also provides the information necessary to ensure that the system modernization plans are directly linked to business outcomes.

**Business Function Framework (BFF) Hierarchy**

The main product of the BRA is the VHA Business Function Framework (BFF). The BFF is a BRM that describes the day-to-day operations of VHA. It describes WHAT the business does; it is a functional model – not organizational, not IT-centric, not programmatic, and not process-oriented. The VHA BFF is aligned to a wide range of VHA and partner agency architectures and key products.

The BFF is a hierarchy-based decomposition of VHA health care delivery functions. The BFF hierarchy has five levels: Segment, Line of Business, and Functions Level 2, 3, and 4. The first two levels (Segment, Line of Business) are based on the FEAF. Every BFF component represents a VHA business function. Additionally, a set of guiding principles (such as the BFF, in that it represents VHA business functions, not organizational structures) has been developed as a foundation for building and maintaining the VHA BFF. See Figure 3. Implementing business solutions that align with an organization’s business vision and strategic plans depends on a clear understanding of the entire business portfolio; and especially the business needs and investment potential. A key aspect of portfolio management is the alignment of the business needs to the BRM as a way of categorizing the projects and programs. The VHA SIM organization provides portfolio management support by maintaining business architecture information that provides a line of sight from business strategy to the processes, information, and applications that support the business; ultimately, linking the performance measures to reveal business value, as well as aligning other business components. The alignment of many of these components, including business needs, in the VHA portfolio to the VHA BFF is an initial step in organizing the business needs for analysis, prioritization, and sequencing and it assists in the allocating of resources to the highest business value opportunities.

**VHA Business Process Architecture**

The primary goal of the Business Process Architecture component of VHA BA is to model established clinical processes in VHA, although there is also a secondary goal: to help document internal and external VHA organizational process for working better as a team or with others in VA. This is a more tactical, production-level approach that is worked in concert with the Business Information Architecture efforts, as well being incorporated into a model-driven business requirements methodology with a partner organization within VHA. As such, in addition to developing process models utilizing the Business Process Modeling and Notation (BPMN™) format, the following services are provided:

- Oversee and establish business process modeling as a core business practice
- Identify, capture, and communicate business needs and process enhancements through the development of process models utilizing standard BPMN
- Provide Business Process Reengineering (BPR) expertise
- Assist in providing technical understanding and solution delivery
- Act as core members of project teams by providing leadership and execution support
- Support the development of governance strategy and processes for interagency initiatives
- Provide facilitation, training, and consultation services for model-led requirements elaboration
- Assist with formalizing processes, templates, and governance for integrated and internal VA efforts
- Map the Process Models to the BFF

Having an as-is model is a prerequisite to understand how processes are executed in the current workflow or system. The modeler who leads the effort must acknowledge and understand the business rules and policies that govern the current model-led requirements process in order to fully capture the process accurately and ensure the improvements or enhancements align with the business architecture framework. The model-led requirements development approach that is employed makes possible the capture of the current process inputs, outputs, functions, operations, conditions, and constraints.

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5 Veterans Health Administration, Office of Informatics and Analytics, Strategic Investment Management: BFF Guiding Principles, April 2013.

6 Business Process Model and Notation (BPMN™), Formal version 2.0.2, released December 2013; refer to: www.omg.org/spec/BPMN.

The outcome of the analysis, research, and recommendations are reflected in the to-be business process models, which represent the redesigned or enhanced business process. The to-be business process model captures the suggested solution to be implemented for the work effort. See Figure 4 for an example BPMN process model.

One of the internal (non-clinical) processes that the VHA BA team has developed is a model-led requirements methodology. It is a key contributor to requirements definition and process improvement within VHA. This method involves close collaboration of the process architects and requirements analysts with internal and external groups to effectively engage with Subject Matter Experts (SMEs). During the course of a modeling engagement, there is unified collaboration between BA teams and other analyst stakeholders (project managers, requirements analysts, etc.) to deliver consistent messages and ensure artifacts reflect a team perspective:

- The process modeling work effort supports and provides traceability to the VHA Strategic Planning Guidance (SPG) and OIA and other BA priorities to enable cross-coordination and a purpose that is consistent with the overall organization
- Ensures that funding and resourcing of service requests are aligned to the VHA SPG and OIA priorities
- Ensures that the modeling team resources are applied to efforts that contribute to realizing the SPG
- Ensures process modeling efforts align with SPG and SIM priorities (such as the BFF) so that business objectives and stakeholder needs drive IT development efforts
- Map to the BFF
- Traceability to the Normalized Data Objects (NDOs) and Information Models

Based on a variety of criteria and industry best practices, the BPMN Version 2.0 has been selected as the most effective object-oriented notation for decomposing business goals and objectives. A standardized notation promotes streamlined training, improved understanding, and effective change management. The team provides BPMN element overview describing the purpose and use of each symbol, updates when the Object Management Group (OMG) publishes a new BPMN version, and a template with a “select the core” set of BPMN elements. The benefit of this is that it controls differences in modeling among team members, offers effective asset and configuration management, and provides modeling products that are easily understood by internal and external stakeholders.

The models produced enable the functional architecture to be mapped from the high-level business requirements down to more detailed business requirements. The Business Process Architecture artifacts provide a vital linkage between the VA strategic goals, the BFF, and the information models that give the static information within the mapped processes.

**Processes and Activity Description Tables**

Since many of the business owners and SME consumers of the process models are not architects and do not have access to visual modeling tools, all of the process architecture artifacts are composed into Microsoft® Office consumable formats.

An Activity Description Table (ADT) accompanies each delivered process model diagram (as-is and to-be) and provides an explanation of the activity steps within the processes. Figure 5 provides an example of an ADT. Each activity in the process model is recorded in the column headings. The attributes that are listed in the left column should be discussed during the stakeholder meetings and workgroup sessions. The information to populate the fields for each activity should be captured during the development of as-is and to-be process models.

All Business Process Architecture work efforts conclude with a report of findings. The purpose of the final work product is to provide documentation of the process, supporting ADTs, and a summary that describes the process that led to the development of the to-be process models. The final report also includes the work effort purpose, the objectives sought, and the accomplishments achieved. The most common final work product produced by the Business Process Architecture Team is the Process Model Summary Report (PMSR).

**VHA Business Information Architecture**

The primary goal of the Business Information Architecture (BIA) component of the VHA BA is to analyze and document business information concepts and their usage, both within our organization and where shared with other agencies and business partners. This information is documented in Unified Modeling Language (UML®)8 class diagrams that show classifications of the business data and relationships between these data classes. These Business Information Models (BIMs) include data dictionaries that contain specific characteristics of the information with

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8 Unified Modeling Language (UML®), formal version 2.5, September 2013; refer to: www.omg.org/spec/UML.
business-centric descriptions of the data (definitions), data types, and constraints on the data, such as valid values. These models are not technical data models, but instead provide a logical view of existing business-information requirements in a shareable and organized structure. BIA models are intended to be at a level that can be easily consumed and understood by the business community. For this reason, BIMs and their respective artifacts must be:

- Understood and validated by business owners and SMEs
- Developed according to BIA guidelines and standards for consistency
- Integrated with related business process and reference models and other architectural artifacts and standards

The BIA includes both current state models that reflect where we are today and future state models to show where we want to be tomorrow; these are used to facilitate getting us there. The models and supporting artifacts are key components of the business requirements packages provided to the technical team for software development or acquisition. The BIMs are but one component of the overall VHA BA. To reflect a comprehensive picture of the VHA business landscape, all architectural models and artifacts must be integrated into a cohesive view of our business owners’ needs – showing traceability from each discreet business requirement to the corresponding business function, activity, and related information concept(s).

Consistent modeling and reporting standards, including notations and design patterns, allow information modelers to create standardized work products (models, diagrams, data dictionaries, technical reports) that are of value to the stakeholders. To ensure that all business information artifacts are consistent and understandable, BIA has developed modeling guidelines and a standardized methodology based on proven industry best practices, methods, and approaches.

Based on these criteria, the BIA Team has selected UML Version 2.0 class diagrams with corresponding data dictionaries as the most effective mechanism for communicating the information requirements of a work effort. Information analysts can use class diagrams to represent concepts at various levels of stratification and detail. This UML modeling standard is shared with BIA’s technical counterparts in the OIT, as well as a significant community of information and terminology standards modelers in the federal health information technology space. This allows for sharing of models and more rapid development of business-driven solutions. VA’s cohesive “roadmap” to development avoids redundant design and potential errors and ensures that the end product is traceable to business specifications.

**Logical Information Models**

Each BIM (a collection of classes, associations, data types, stereotypes, and other elements) can be graphically represented by a number of UML class diagrams. See Figure 6.

The specific types of class diagrams that are produced are:

- Conceptual Information Model (CIM) – The CIM is the condensed view of the logical information model. It is intended as a tool for higher-level audiences, showing key classes and relationships between those classes while filtering out information details.
- Business Information Model (BIM) – The BIM is the logical detailed view of the information. It is a representation of the business-information requirements of the targeted work effort. This includes all classes, associations, and their respective attributes, defined with their simple data types and characteristics. The BIM is constrained at a business level and therefore does not contain technical characteristics or health industry terminology standards required in the resultant “implementable” data model.
- Subject Area Diagrams – These are based on a constrained section of a BIM, intended to provide a tailored view that illustrates data relevant to a particular business function. This targeted diagram facilitates review of specific data concepts by the business SMEs that perform that particular business function (i.e., vitals measurement within care management). Some potential considerations that drive the need for a subject area diagram include:
  - Targeted business stakeholder input
  - Tracing to detailed process model activities
  - Alignment to reference model hierarchy BFF or BRM
  - Specialized need
- Normalized Data Object (NDO) Diagram – A Data Object represents information “inputs” and "outputs" to an activity in Business Process Modeling Notation (BPMN) models. NDO diagrams are intended to provide a consolidated subset of information concepts described in the process models and functional requirements. These NDOs are commonly reused in multiple business process model activities where information requirements

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8 Veterans Health Administration, Office of Informatics and Analytics, Strategic Investment Management: BIA Information Modeling Guiding Principles v8, February 2013.
are similar. NDOs serve as a starting place to design and scope the information model. Conversely, the NDOs and their definitions then are used to validate the BIM.

- Enumeration Diagram – This depicts the valid values used to populate specific attributes within a BIM. Enumerations are sets of discrete values that elaborate and constrain the information in these attributes. They can represent user-defined data types (e.g., days of the week), subsets of complex data types from the Federal Health Information Model (FHIM) or other frameworks, or UML primitive data types, such as Integer and Boolean types. Each Enumeration has a name that describes its role in the model, and a working definition that is provided in the data dictionary.

- Data Dictionary – This is a detailed listing of all known characteristics of the information elements within the BIM. A typical Data Dictionary contains the following sections: Classes (names and definitions), Attributes (names and definitions), Associative Classes (names and descriptions), and Enumerations (names, values, and descriptions) as identified in the BIM. Data Types, while shown for each attribute, are not otherwise documented in the Data Dictionary (i.e., the Data Dictionary does not contain detailed descriptions of the UML primitive or user-defined data types).

The key deliverable for BIA during a work effort is the Information Modeling Summary Report (IMSR). The IMSR includes all the models, diagrams, and the data dictionary that are produced within a work effort. Also, it includes:

- As-Is/To-Be Gap Analysis – This is created to identify and capture differences between the current state and future state information models of a work effort. Gaps between models can occur for many reasons including:
  - An attribute or class is considered out of scope for the project.
  - New information requirements are added.
  - Obsolete information is removed.
  - The information conveyed is captured elsewhere.

- Health Industry Standards Analysis – During the information modeling process, it is important to remember that the majority of the information concepts have been considered and reviewed previously by Standards Organizations (SDOs). The intent of the SDOs is to ensure that once a concept has been reviewed it can be adopted by all health care IT bodies, and allows for interoperability and data sharing. If discrepancies exist between the concepts prescribed by the SMEs and the identified standards, those are discussed and documented. They are then placed into a table that clearly identifies the discrepancy and the reason for the difference as shown below. If there is an active workgroup for development of the particular standard identified, it will be discussed at the next possible SDO meeting.

At completion of each BIA work effort/project, the final version of the BIM is released in model format to other architecture groups to proceed with technical review and elaboration of the requirements. This ensures a consistent understanding of the business requirements and avoids redundant analysis of information needs/definition.

**VHA Integrated Business Architecture**

While many of the individual modeling techniques described above may be familiar to different sets of VHA BA stakeholders, the true value that is generated comes from the integrated view. The development and implementation of the VHA BA enables the Administration to accomplish defined goals, functions, and priorities including enterprise analysis for long-term investment decision-making as well as production-level work on defining the business need for the first stages of the System Development Lifecycle (SDLC).

From the production-level perspective, all of the architecture components for a particular work effort can be collected into a Business Architecture Specification Report (BASR), which provides the traceability from the strategy and business functions in to the business process and BIA that is within the scope of the work effort. The BASR serves as a centralized report for the work effort.

From the enterprise analysis perspective, there are multiple approaches utilized, including the more traditional line of sight through the layers of the architecture (a FEAF approach) as well as others (“hub” and “horizontal”) that are facilitating better communication with business owners and other stakeholders.

**LINE OF SIGHT (“VERTICAL”) ASSESSMENT**

Prior to developing the BFF, no bridge existed between VHA’s strategy and its technology resources, making it challenging to align IT requirements to business functions, needs business performance, or other aspects of VHA. The lack of a standard methodology also made it difficult to identify IT funding redundancies and gaps or to organize disparate data from various organizations.

Figure 7 is an example Line of Sight (LOS) from the business strategy through the business function and
process down to the business information level, specific to Patient Assessment. This decomposition represents multiple points of view and depicts how business architecture units work together to meet our goal of the top-to-bottom integrated architecture.

The “line of sight” traceability (red line) of the business architecture components depicts an example of how all elements of architecture (i.e., business processes, information domains) are directly linked to strategic drivers (i.e., major initiatives, strategic goals, etc.).

**BUSINESS ARCHITECTURE ALIGNMENT MODEL**

While the traditional line of sight perspective is valuable, more recently a different perspective that uses the functions contained in the BFF taxonomy, called the BA Alignment Model, has resonated quite well with BA business stakeholders and other architects. The BFF (again, what VHA does) is a relative constant, and allows for both stability over time as well as a hub to which to connect various other artifacts. Over time, this has resulted in a value-add resource for BA stakeholders – if they connect their artifact or primitive to the business functions, they now inherit many other relationships and a large resource of information that helps to provide context for decision-making. Figure 8 demonstrates the Alignment Model. Starting at the 12 o’clock position and going in a counterclockwise direction are: VHA programs, VHA strategy (goals and objectives), Health IT applications, business requirements, process and information models, performance metrics, the DoD/VA Integrated Business Reference Model (IBRM), and the FEA BRM & VA Capabilities Model (based on the FEA BRM).

As a business intelligence tool, the Alignment Model supports decision analysis for IT funding prioritization and resource allocation, while also promoting collaboration between VA and other agencies.

The mapping of components of VHA and partner agency architectures supports many types of analysis, providing opportunities for integration and information sharing, visibility into gaps and overlaps in business operations, analysis of essential business capabilities, and identification and validation of VHA business requirements.

Additionally, the continued development and implementation of the VHA BA and Alignment Model will enable the Administration to identify and disseminate strategic guidance and direction to facilitate improved VHA information systems decision-making and improve and formalize business requirements structure, delivery, and dissemination.

**“Hub” Assessment – Through Business Function Relationships**

The alignment methodology enables the understanding of VHA, architecturally, from the business perspective. Take the example, from the business function “Perform Patient Encounter” reference, then extrapolate it; notice the multiple touch-points are aligned to this business function. There are many applications, but to name a few: VHA IT Applications, VHA IT Projects/Business Needs, VHA IT Requirements, VHA Programs, VHA Performance Measures, as well as other BRMs. One particular area VHA has focused on is the high-level requirements assessment on the front-end of an effective IT planning process. Requirements ultimately become funded IT Projects which are aligned to OMB investments; these requirements have a line of sight to a Business Functional Area within the BFF.

IT requirements and capital investments are linked. Also, the Applications are aligned to the BFF, giving another perspective or impact report. Figure 9 illustrates more alignments. These alignments yield impact reports that enable management, analysts to see redundancies and their impacts from a cross-functional, cross-disciplinary perspective. These impact reports do not reveal directly how to fix a problem nor do they inherently reveal what to do next; however, the analyses do reveal business “known” and the various relationships depending on the frame of reference sought. The methodology is highly organized and intelligently directed and has therefore proven vital to informing senior leadership for the most optimal strategic direction of the business.

**Answering Business Questions**

Business function relationships provide insight into strategic touch-points, impacts to the business, and assets associated with a specific business function. In our given example, we can glean various answers to questions, such as: Which strategic goals support a given business function? If we update an application, which business areas will be impacted? How many other unfulfilled requirements do we have for the patient encounter business area? Which processes do we have documented around the patient encounter? How many active funded IT projects are touching the patient encounter business function? What roles are involved in the patient encounter process? How does the investment that supports patient encounter align to overall VA?
“Horizontal” Assessment

Because multiple alignments of architectural artifacts yield drill-down lines of sight, we are able to perform a horizontal analysis across those lines of sight to locate patterns, repeats, and redundancies. For example, in Figure 10, looking at the one business process of Patient Assessments, we can see that it impacts multiple business functions within three lines of business. This identifies a potential service area, which could describe reusable process and/or information services that could be applied across business functions. Analysis of the architecture provides a story of the business, allowing the paralleled response to successfully surmise many facets of the business including the “tyranny of the urgent” to fix the broken, the wise discernment to plan for incremental improvement, as well as the opportunistic vision to capitalize and progressively transform. The story helps to answer future business-impacting questions. With these, leadership can make decisions prior to and throughout the lifecycle of any given business component or driver; its direct alignments and derived relationships.

CONCLUSION

While many of the techniques, concepts, and approaches described here are not new ideas in the enterprise architecture field, how and on what scale VHA integrates them to the business components of a Federal Enterprise (strategy, business function & process, and information) has not been well documented at very many Departments or Agencies so far. A significant amount of work still needs to be done in this space for an organization the size of VHA; still, the VHA BA is providing the foundation and has gained acceptance by numerous business owners and SMEs in the Administration as a key resource in enterprise-level decision-making.
Figure 2: A Representation of the Layers of the VHA Business Architecture

Figure 3: The Layers of VHA’s Business Reference Model, the VHA Business Function Framework (BFF)
Figure 4: VHA Business Process Models Utilize BPMN v2.0 for Ease of Business and Technical Understanding

<table>
<thead>
<tr>
<th>Activity Name</th>
<th>Identify Immunization Need by Clinical Assessment</th>
<th>Self-Identify Immunization Need</th>
<th>Communicate Vaccine Request to Provider</th>
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<td>Determine if the patient requires an immunization by working directly with the patient in person, or through clinical reminders/clinical reminder reports</td>
<td>Determine a need for an immunization either through receiving a reminder notice or through some other means of self-discovery</td>
<td>Send a request to the health care provider to receive a vaccination</td>
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<td>Patient self-identifies need</td>
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<td>Vaccine Reminder</td>
<td>Not Identified at This Time</td>
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<td>Outputs</td>
<td>Not identified at this time</td>
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<td>Patient Request for Vaccine</td>
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Eight Ways We Frame Our Concepts of Architecture

Leonard Fehskens, JEA Chief Editor

Abstract
Recent discussions about enterprise architecture have begun to distinguish between two frames or perspectives from which enterprise architecture may be considered. These two frames are typically referred to as the “verb” frame and the “noun” frame. The “verb” frame considers enterprise architecture as an activity (i.e., something we do), and the “noun” frame considers enterprise architecture as the result of such an activity (i.e., something we produce). Informal observations and analyses of a large number of conversations about enterprise architecture in many different contexts suggest that there are in fact eight distinct frames that people use when talking about enterprise architecture. These frames strongly influence our expectations and expressions of the characteristics of enterprise architecture. Different people seem to have different preferred frames, but we are often unaware of and thus rarely explicit about them, and we rarely adopt a single frame in its pure form, leading to misunderstanding and needless disagreement. This article explores these possible perspectives and uses an analogy with music to explain them.

Keywords
Architecture, enterprise architecture, meaning, frame, perspective, assumptions, ambiguity, overloading

INTRODUCTION
Discussions about the meaning of “enterprise architecture” are notorious for the frustration they create. This is more than just nitpicking about wordsmithing a definition; it becomes clear as the discussion moves beyond the superficial issues that there are fundamental differences in the ways people think about enterprise architecture.

These differences are of two kinds – differences in the concept of enterprise architecture, and differences in the way the concept is framed. Many of what appear to be instances of the former are actually instances of the latter.

People have begun to talk about “enterprise architecture as a noun” versus “enterprise architecture as a verb”, a simple way of distinguishing between enterprise architecture thought of as the result or outcome of an activity and enterprise architecture thought of as the activity that produces such a result. The existence of two different frames seems reasonable, but it is almost certainly the case that your initial reaction to the title of this piece was something like: “How can this be? How can there be eight meaningfully different ways to interpret the word ‘architecture’?” Observations and analysis of actual discussions suggest that there are in fact eight distinguishable ways of framing a concept of architecture in general and enterprise architecture in particular.

The existence of these related but different-in-the-details interpretations of enterprise architecture is somewhat like the concept of overloading in programming languages. The most common example of such overloading is operator overloading, where a single symbol (for example, the plus sign, “+”) is used to represent a variety of analogous operations (for example, integer addition, real addition, complex addition, logical (Boolean) union, set union, string concatenation). The actual operation performed depends on the data type of the operands to which the operator is applied. The selection of the appropriate interpretation is called disambiguation from context. In strongly typed languages the necessary contextual cues are readily available – the data types of variables have been explicitly declared and the data types of literals are syntactically encoded.

A single word having multiple meanings is not uncommon in English; it’s called polysemy. The Oxford English Dictionary cites words like “set” and “run” as the most spectacularly polysemous English words, with literally hundreds of meanings.

In our case, the compound noun “enterprise architecture” is overloaded with respect to the frame it represents – the same words are used to denote different frames.

Relying on people to correctly disambiguate possible multiple interpretations of enterprise architecture from context isn’t working. There are two reasons for this. First, there are usually no reliable contextual clues that
are locally available in space or time. Second, and more importantly, the participants in an information exchange are generally not aware of the diversity of possible interpretations, and specifically of the interpretations intended or assumed by the other parties to the conversation.

We need to be able to clearly distinguish between these different interpretations, because much of the truly futile debate about enterprise architecture arises from people thinking they’re talking about the same thing when they’re actually talking about different things; specifically, different framings of what they think of as the same concept.

To sort out this problem, we first need to consider some properties of English nouns. These conventions may not apply to other languages, so the problem becomes even knottier in discussions where some, if not many, of the participants are not native speakers of English. While the eight conceptual frames still apply, the ways they are denoted may differ from language to language.

One of the ways nouns are classified is as “count” or “countable” nouns and “non-count”, “uncountable”, or “mass” nouns.

A countable noun is one that can be modified by an integer, to express how many instances of the thing the noun denotes we are talking about. “Artifact”, for example, is a countable noun. We can meaningfully refer to one artifact, two artifacts, five artifacts, etc. Countable nouns can also be modified by words that can be used as if they were integers; for example, the indefinite articles “a” and “an”, or other indefinite modifiers like “a few”, “several”, or “many”.

An uncountable noun is one that denotes something that cannot be counted. Uncountable nouns denote things like materials or concepts. Materials or substances can be modified by a quantity in specific units, expressed as a real number. “Oxygen” is an example of a material uncountable noun. It does not make sense to say or write “one oxygen” or “many oxygens”. It does make sense to talk about “two gram molecular weights” of oxygen, or “44.8 liters of oxygen at standard temperature and pressure”.

“Design” and “architecture” have interpretations that are examples of concept uncountable nouns. It doesn’t make sense to talk about a quantity of design or architecture; there are no units that sensibly apply to these interpretations. Colloquially you may hear someone say something like “a lot of design went into that smartphone”, but that doesn’t mean it physically contains a lot of “design substance”; it means the development of the smartphone entailed a lot of design activity.

If you’re a Scrabble player, you are likely familiar with the idea that, for the purpose of the game, a word can denote itself, and thus all words can be used as countable nouns (for example, “there are several oxygens in this paragraph”). Or, a chemist might use “oxygen” as shorthand for “oxygen atom”, and say something like “the four oxygens in a perchlorate make it a powerful oxidizer”. Such usage is not relevant to this discussion.

A single word may have multiple denotations. We can often tell which specific thing a given use of such a word denotes by the grammatical clues that imply whether it is being used as a countable noun or an uncountable noun. But for some words it is even more complicated.

Consider, for example, the word “design”. “Design” can be used not only as a countable noun or an uncountable noun, it can also be used as a verb. When used as an uncountable noun, it denotes the discipline or activity of creating “a design”; i.e., the thing denoted by the word “design” used as a countable noun. An example of the uncountable usage is “Bryan Lawson has studied design for several decades.”. An example of the countable usage is “As part of my project, I studied several different designs for three-pronged blivets.”.

When used as a verb, “design” denotes the performance of the activity denoted by its use as an uncountable noun, to produce the thing denoted by its use as a countable noun. An example of such usage is “Based on those studies, I now have to design a four-pronged blivet.”.

The key thing here is that how you describe or define “design” will depend on which of these three different senses you are thinking of. If you share your definition with someone else who is thinking of “design” in a different sense, they will likely find your definition odd, and more importantly may not realize why this is the case. They may conclude that while your definition is “sort of” correct, it emphasizes certain things at the expense of other things that they consider more important. They may even conclude that you simply don’t understand what “design” is really about, or, in the worst case, that your idea of design is clearly wrong.

In caricature, the noun-ish perspective may be seen as inherently static, and thus unresponsive to change, by someone predisposed to a verb-ish perspective. Similarly, the verb-ish perspective may be seen as unfocused with respect to the need for specific outcomes, by someone predisposed to the noun-ish perspective. Rarely do people seem to be comfortable with the idea that these perspectives are duals of one another – desired outcomes are only the result of directed activities, and activities that do not produce desired outcomes are mere wheel-spinning.
When it comes to an idea like “architecture”, I have observed people frame the way they think and talk about architecture in eight ways.

My apologies in advance – what follows is going to get a bit wonkish.

First, there are four “noun-ish” frames, which consider architecture as a thing:

- As the “pure” abstraction, or Platonic Ideal; we would refer to this perspective as “architecture”, treating it as an uncountable noun, with the use of an article (definite or indefinite) inappropriate. I call this the Concept frame. This is the “idea” of architecture, the thing that is common to all architectures of all things.
- As the class of all possible realizations of this abstraction in the minds of practitioners; we would refer to this perspective as “an architecture”, treating it as a countable noun qualified by an indefinite article. I call this the Class frame.
- As a specific realization of this abstraction, in the mind(s) of a (specific set of) practitioner(s), applied to a particular situation or problem; we would refer to this perspective as “the architecture (of …)”, as a countable noun qualified by a definite article. I call this the Instance frame.
- As a representation of a specific realization of this abstraction. I call this the Representation frame. Many practitioners believe that an architecture (Class frame) only exists when it has been represented, and for them this frame obviates the Instance frame. Practitioners who accept the Instance frame acknowledge that an architecture (Class frame) must be represented to be used, but that a single instance of an architecture can be represented in multiple ways, and the Instance frame corresponds to whatever is being represented in common by any correct representation of the architecture. Representations are meaningful only to those skilled in the art of interpreting them, and as such are typically designed to serve a particular audience, taking account of their specific needs.

In addition, there are four “verb-ish” frames, which consider architecture as an activity or process:

- As the knowledge, skills, and practical experience that are necessary for a practitioner to be considered competent, which I call the Discipline frame.
- As the use of these skills, knowledge, and experience in actual practice, which I call the Practice frame.
- As the specific practice of representing an architecture, which I call the Representing frame.
- As actual practice performed within the strictures of a profession, which I call the Profession frame.

The “eight frames” of the title of this article comprise these four “noun-ish” framing perspectives and four “verb-ish” framing perspectives. In summary, I call these eight frames:

- Concept
- Class
- Instance
- Representation
- Discipline
- Practice
- Representing
- Profession

The differences between some of these frames can be subtle and difficult to describe clearly. Looking at how these frames apply to another discipline may be helpful in understanding how the perspectives they represent differ. Music is a good example, because like architecture it is an inherently abstract discipline.

The use of music as an analogy to help in understanding the different frames is not meant to imply, or depend on, the actual use of the frame as a denotation of the word “music”; i.e., another word may be used to denote the frame in the context of music.

- Concept – the “idea of music”. It is this Platonic Ideal that allows us to identify all kinds of music as “kinds of music”. “Composers write music, musicians play music.”
- Class – all the music that has ever been written or improvised, and that might ever be written or improvised; i.e., the class of all possible instantiations of the concept – not just the “idea” of music, but “actual” music, as “works” or “pieces”, that one can perform or listen to. “I listen to all kinds of music.” You can’t listen to the abstraction, you can only listen to instances of the abstraction.
- Instance – a specific member of the Class; a “work” or “piece” of music. “I like the music to ‘The Sound of Music’.”
- Representation – the “score” of a piece of music. Such representations can theoretically be reliably and faithfully transformed from one to another. Examples of different representations of music include traditional staff notation, a MIDI file, tablature, or pitch and duration bar graphs. This provides a good example of the legitimacy of the Instance frame – the Instance frame is the single thing that each of these different representations of the “the music” represents, in varying degrees of precision and completeness. Note that the
representation of music is distinct from its realization, accomplished by “performing” or executing the representation. “I bought the music to ‘The Sound of Music’.”

- Discipline – the set of skills and knowledge associated with, for example, theorizing about, composing, performing, criticizing, or studying music. “I am majoring in Music at the New England Conservatory.”

- Practice – the actual execution of the activities comprising the discipline; for example, actually theorizing about, composing, performing, criticizing, or studying music. Note that distinct from architecture, the performance of music (i.e., the execution of the representation, or improvisation in whole or in part) is often considered part of the discipline. The practice of architecture is not generally considered to include the realization of an architecture; i.e., the implementation of the “thing the architecture is of”. With respect to music, this is generally called “performance”.

- Representing – the act of “capturing” and representing an actual performance, or representing a piece of music as it is composed. With respect to music, this is generally called notating, transcribing, or transcription.

- Profession – a collegial ecosystem that maintains and enforces a set of constraints (usually implying mastery of a specific set of skills and knowledge to some minimal level of competence, and conformance to certain standards of behavior) on the practice of the discipline.

Actual definitions of enterprise architecture rarely represent the pure form of a frame, and though an individual typically has a preferred frame, it is often unrecognized as such, and is rarely espoused in its pure form. Despite this, sometimes the preference for a particular frame is so strong that it is the only way an individual can imagine framing the concept, and while the individual may acknowledge some aspects of other frames, the other frames themselves are unimaginable and thus effectively nonexistent. Groups, however, comprise multiple individuals, and these individuals may not share the same preferred frame. When groups collaborate to define enterprise architecture or various aspects of enterprise architecture, different individuals will contribute what they consider an important piece to the definition, and when these elements come from different frames, the assembled definition can as a result have a chimera-like quality.

In addition to the way the concept is framed, a formal definition will typically adopt a perspective with respect to how the concept is described. The most commonly understood perspectives are the ubiquitous “why”, “what”, and “how”, but each of them can comprise multiple variations as well:

- Why enterprise architecture is necessary
- What enterprise architecture is
- What enterprise architecture does
- How enterprise architecture is used
- How enterprise architecture does what it does
- The effect, or value, of enterprise architecture

CONCLUSION

It should be apparent that it is not possible to comprehensively address all the frames and descriptive perspectives in a concise definition; this would require something more like an essay. In a discussion, the combination of the possible ways of framing the concept and the possible ways of describing aspects of enterprise architecture from the perspective of that conceptual frame creates a veritable thicket of opportunities for misunderstanding and misinterpretation. Given this, it should not be surprising that conversations about enterprise architecture so often seem like everyone is talking past one another.

What can we do about this?
To address this challenge, the first thing we have to do is acknowledge that all of these different perspectives are equally legitimate. There is no one framing perspective and one descriptive perspective that are “right”, such that all the others are “wrong”. We cannot even argue that one is “better” than the rest. They all have value, and different people will find them to be differently comfortable to use and differently relevant to the way they think about enterprise architecture. What's more, it is likely that when addressing different concerns, different perspectives may be better suited to the particular issues involved. This means we can't make the problem “go away” by insisting that everyone adopt the same framing and descriptive perspectives. To do so would make it difficult if not impossible to discuss many important aspects of what we do, and why and how we do it.

The second thing we have to do is be more explicitly aware that these different perspectives may be “in play” in any given discussion, and be prepared to adopt whichever perspectives are appropriate for that discussion, and shift between them, as needed. This will not be easy, but there is a lot about enterprise architecture that is not easy, and every architect should understand that oversimplification; in particular the failure to distinguish things that are meaningfully different rarely leads to correct inferences and conclusions. We should bear in mind the aphorism generally attributed to Albert Einstein that “everything should be as simple as it can be but not simpler”. For a helpful discussion of this quotation, see: http://quoteinvestigator.com/2011/05/13/einstein-simple/#more-2363.

ABOUT THE AUTHOR
Leonard Fehskens is the Chief Editor of the Journal of Enterprise Architecture.
Book Review

Misbehaving – The Making of Behavioral Economics

By Richard H. Thaler

Reviewed by Leonard Fehskens

Keywords
Economics, decision-making, psychology, behavior, rational, value, gains and losses

INTRODUCTION

Lately, I and a few of my colleagues who share my concerns have been calling attention to three things that seem to us to be missing from too much discussion about enterprise architecture – the central role of people in enterprise, that people are autonomous and often nondeterministic, and the unavoidable conclusion that these two things pretty much preclude enterprise architecture from ever being a truly scientific or engineering discipline. It further suggests that perhaps the “secret” to making enterprise architecture work (in the sense of fulfilling its promises) is less about business and technology and more about psychology and sociology.

So it was that when I learned about this book, it went straight to the top of my “must read” list, and having read it, I feel very strongly it is well worth calling it to the attention of the enterprise architecture community.

PARTICULARS

“Misbehaving” comprises 415 pages, organized as 32 chapters grouped into eight major sections, each of which corresponds to an “era” in Thaler’s career. It includes 12 pages of notes that mostly identify sources, an 18-page bibliography, and an index. There are 25 figures distributed throughout the text.

This is not an academic book. It is, in reviewers’ parlance, a “very good read”. You won’t need any economics background to understand it. It’s written as a career retrospective, so you get to see how the author’s ideas develop over time, how his collaborations influenced his thinking, and how he and his colleagues “sold” their ideas to a generally hostile community of economists. There’s a valuable lesson here for the enterprise architecture community.

The basic idea is that the premise of much economic theory is simply false. That premise is that “economic man” is a rational actor – i.e., that people always act in their economic best interests, and that “supposedly irrelevant factors” (i.e., factors that the theory does not take into account) do not influence people’s economic behavior in any way that matters. More generally, economic theory assumes that people make decisions the way economists would prefer to believe they do. Usually that preference is, coincidentally, for ways that are easily modeled. Thaler’s book convincingly demonstrates that such assumptions are wrong.

The book is a series of stories about things that “did not make sense” to Thaler; i.e., that did not jive with the applicable economic theory. Many of the stories have a familiar feel – we’ve all been in similar situations, and the behaviors Thaler calls attention to are behaviors we’ve all seen at one time or another.

Thaler began collecting these “anomalies”, compiling what he called “the list”, and tried to reconcile what he was seeing with what economic theory predicted. Over time, Thaler’s concerns morphed from very narrowly focused economic considerations to the implications for national policy.

The book addresses the variety of factors other than purely rational self-interest that we take into account in making economic decisions, often because they “feel” right. These include things like the different ways we value gains and losses, how we think about fairness, how we judge something to be a bargain or a rip-off, how we think about “sunk cost”, how we evaluate risk, and how we assess short-term consequences differently from long-term consequences.

Thaler backs up his conclusions with experimental evidence. Some of the experiments are delightfully simple. For example, classic economic theory dictates that how you value something is independent of whether you own it or someone else owns it. With respect to its value, who owns it is a “supposedly irrelevant factor”. As such, what you would pay to buy something from someone else and what you would require someone to pay for you to give up something you own should be the same. But if you ask people these two questions (which
are, per classic economic theory, economically equivalent), you get different answers. This is called the endowment effect, and the difference between the value to you of something you own and the same thing somebody else owns can be surprisingly large.

THE RELEVANCE TO ENTERPRISE ARCHITECTURE
So, what does all this have to do with enterprise architecture? Well, while many of the decisions we must make as enterprise architects, and the decisions our stakeholders must make, have some economic aspect, even the ones that are not economic at all are almost certainly subject to the same kind of “non-rational” influences (“supposedly irrelevant factors”) that this book explores. Considerations like the differences in the ways we value gains and losses, fairness, etc., are not limited in their applicability to economic decisions.

For example, the heuristics Thaler developed for implementing policy (which are the subject of his earlier book “Nudge”) seem to me to have immediate applicability to the challenge of enterprise architecture governance.

What assumptions do we as enterprise architects make about how people behave, perhaps because these assumptions make it much easier to model people’s behaviors? What if these assumptions might, like economists’ assumptions about people’s rational decision-making, be demonstrably wrong?

Ultimately, this book is about understanding why people behave the way they do, especially when they behave in ways that do not seem to be in their best interests. What does this tell us about how we can influence people’s behaviors such that the outcomes leave them, both as individuals and groups, better off? Is this something we as enterprise architects could usefully bear in mind?

CONCLUSION
Had I been pressed about it, I probably would have cited “Fit” (see my review in the November 2013 issue of the JEA) as the most important “non-enterprise architecture” book of 2014 for enterprise architects to read. We’re only a bit more than halfway through 2015, but I’ll go out on a limb and say that “Misbehaving” is the most important “non-enterprise architecture” book of 2015 for enterprise architects to read.

If I haven’t convinced you, this book has been very well received everywhere; see, for example, the reviews from the New York Times:

the Guardian:
www.theguardian.com/books/2015/jul/04/misbehaving-making-behavioural-economics-richard-h-thaler-review-nudge

and especially this review by Cass Sunstein, with whom Thaler has collaborated:

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Leonard Fehskens is the Chief Editor of the Journal of Enterprise Architecture.