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DEFINING ENTERPRISE

A Systems View of Capability Management

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Foreword

About six months ago, I promised myself I would not read another book on enterprise architecture, or any other kind of architecture for that matter. What brought me to that decision was quite simple; I was positive there was simply nothing else left to slice, dice, and blend to come up with another way to describe architecture. Besides, I had enough books on my bookshelves to keep occupied reading for easily the next year.

Then I started to discuss the volume Marc Gewertz wanted to publish from his concepts and views presented on LinkedIn and other sites and started reading what he had to offer. I began to feel that he did have an approach different from some others, and more so, it provided a new perspective on how to really use architecture as part of a larger set of management understandings on how to really use some of what we had been producing to fill the bookshelves. The more I read, the more I became impressed with the possibilities here.

There is still a significant debate on what enterprise architecture actually is, what it is useful for, and why anyone in their right mind would take the time to create such complex sets of documents, as has been defined and described in the various 'architecture frameworks, which mostly sit right on the shelves with the other texts, get pulled out once in a while, and are culled to see what they offer for a particular project.

Marc has chosen a different approach, describing management mechanisms and roles as a means to understand how the actions described in an architecture work to create success. He starts with basic building blocks; an approach I truly appreciate. Defining what it is you expect to do to satisfy customer requirements makes eminent sense.

Viewing requirements as capabilities allows management to decide two things; first, if they actually want to make or

perform the products and services, or let that business go elsewhere. Looking to the outside—the external view, brings the customers, and all other stakeholders into the decision-making process from the beginning. The second perspective—looking inward to see how and if you can meet those capability requirements—also makes a lot of good sense. If you do not have, or cannot obtain the necessary qualified people and other resources to meet the need, then it certainly is wise not to make the offering.

Determining how you can satisfy requirements depends for the most part on the abilities of workers to perform activities and tasks which contribute to meeting the overall requirement. This insight determines the roles people play, and also facilitates determining what it will take to roll-up individual abilities into a more complex capability which will meet the customers' needs.

In aligning management mechanisms and roles, Marc has given the rest of us a reason for architecture development. He also gives us a better way to delineate what is an 'enterprise' function, from something which is down further at the operating activity level—which contributes to the overall success, but is at a much lower level of complexity.

In doing that, Marc also provides a rationale for team contributions to this same overall success. Using his approach, it is much easier to see the roles of the Enterprise Architect, the Systems Architect, the Data Architect, the Business Architect, etc., and how they contribute in an integrated, holistic way to creating and maintaining capabilities.

For years, I used an example of a Lego© set as a means of getting people to understand that many of the blocks are of the same size, different colors, but interlocking to make some project. In the case of an enterprise architecture, the small house or figure you might make is the 'enterprise', and the

various colored blocks contribute something to the overall design. At the conclusion of the project, you can put the finished project on a shelf and let others see it, or you break it back down, as you would a team, and put the blocks away for future use. Either way, you now know how to make your figure or house, and, if you want to change it, you will know how to do that with far less effort than your first effort.

Knowledge is a very powerful thing; it contributes to a person's abilities to perform a task well and repetitively to some level of quality. Assembling those individual knowledge bases, and understanding how that knowledge and ability fits together to achieve a goal, is an effective way of executing requirements that everyone all along the line understands both their role in, and those mechanisms needed for success.

Marc has given us a new view of the architectural world; one which I hope will elicit a lot of comment and discussion over the coming months.

We need some fresh eyes, and fresh minds in our community, and this effort is one of the new shining lights.

John V. Tieso, July 1, 2016

Author's Foreword

"Defining Enterprise" is the first in a series of knowledge-sharing eBooks resultant of my 'after-hours'-'pay-it-forward' mission to advance the communication and understanding of the practice of enterprise architecture (EA) by providing a handbook-type source of hyper-linked standard definitions and supporting information for executives, managers and architects to utilize in the design, development, operation, management, control and improvement of enterprises, organizations, programs and projects.

In the current void of specific industry standard definitions for the practice of EA, special care and attention has been taken to make best use of existing definitions established by industry standards (e.g., ISO-42010, "Systems and Software Engineering — Architecture Description"), to preclude the inclusion of organization-specific and industry-buzzword terminology and practices, and most especially, to preclude my personal terminology preferences and practices. These constraints were specifically invoked to allow, enable, assure and promote standard definition of the most basic and fundamental capabilities all businesses require to function regardless of the business domain, the size of the business, whether the business is for profit or non-profit, or the specific goods or services the business delivers.

Sensitivity for the autonomous needs of different organizations was considered in which capabilities to include so as not to preclude usability, while also taking care to not include definitions which are not useful to the majority of organizations. In this regard, it should be noted the scope, scale and levels of effort, detail and maturity to which the included capabilities are described and realized by an organization may vary from organization to organization, but in the 21st century, most businesses require an interconnected mix of people,

process, information and technology including startups, small businesses and sole proprietors.

The intention is for practitioners to be able to easily use the definition as an organized, integrated, logical and generic foundation on which to then further develop their organizational-specifics. This in turn promotes the vision of all organizations sharing the same generic foundational structure specifically designed and developed to promote and not interfere with the application of organization-specific and industry-specific terminology, tools and practices and to allow for common communication and understanding among practitioners of different organizations and industries.

The book is also intended to provide an economical and usable source of EA knowledge. As can be verified at all on-line sources of eBooks, there are a wide range of books on enterprise architecture, from text books to special-interest books, novels, studies and reports, with a high pricing model for material of quality and utility to the buyer, many options for material requiring membership in professional associations, and few options for material with the ability to mentor the lay-person and enable and assure understanding by readers with only a casual interest in EA. This prevents many practitioners from having affordable access to EA-specific common and basic knowledge, and ultimately results in limited public promotion and awareness of this relatively new profession, and its value and benefits in enabling and assuring survival in today's demanding, technologically-driven and constantly changing marketplace.

In closing, I hope through this book practitioners find themselves with a better understanding of and ability to communicate 'what an architecture of an enterprise is', and 'who has the responsibility for what', as they participate in, observe, or learn the complex practice of EA. In this way, I am

advocating for the need of industry standard definitions for EA, the predecessor to enabling and assuring the establishment of best practices through industry participation in EA standards generation, as knowing ‘who’, ‘what’ and ‘when’ may be critical to achieving team integration, but then knowing ‘how’ becomes critical to achieving team success.

Marc Gewertz, July 2016

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Preface

In today's world organizations utilize information technology (IT) to enhance business capabilities. Designing, developing and operating technology systems and services has transformed into designing, developing and operating technology enabled business capabilities. Systems engineering (SE) is a field of expertise virtually needed by all businesses, used to integrate business capabilities with technology capabilities, commonly utilizing enterprise architecture (EA) practices and methods as it's medium.

There is very little margin for error in today's world. The bigger and more complex the IT enabled business projects become, the more errors multiply, and the greater the need to employ a combination of systems engineering management and EA practices, not just to meet cost, schedule and performance commitments, but also to provide quality, value and satisfaction in successful projects.

Activities need to be fast, precise and adaptable, driving the need for a systematic way to analyze, plan, manage and control the activities of the enterprise as a whole, in order to eliminate waste and defects, and decrease schedule time. Business transformation projects require proper SE-based and technology-based project management practices and can no longer rely on business-based and IT-based practices alone.

Business operations as well are becoming increasingly technical, social and cultural, complex and in need of being agile and adaptable. In an operating environment with a rapidly and constantly changing mixture of interconnected people, process, information and technology, in the business and in the marketplace, business transformation projects now routinely span all business operations. These projects require a holistic and integrated approach, well beyond the span and

depth of traditional business architecture and IT architecture practices.

Many EA practices are primarily capability-based views emanating from inside the enterprise and looking outward to determine the abilities needed to provide customers with desired capabilities needed. This view is 'capability-centric' supporting 'doing' from the bottom up but does not fully support 'thinking' from the top down.

Designing, developing and operating technology-based business systems and services without understanding the needs of the business, customers, users, workers, managers and all other stakeholders results in ineffective efforts and creates waste. Conversely, 'needs-centric' views of the enterprise enable and facilitate this understanding.

We are in the cusp of entering the next generation of enterprise architecture practice where representation of the enterprise as-a-whole from the top-down is a necessity for successful EA efforts. Furthermore, there are new physical viewpoints needed to support this holistic perspective.

Holistic enterprise practices require external views of the enterprise on which to define and construct capabilities as well as internal views to identify abilities needed. Integration of these views, as presented later in this volume, enables a balanced and aligned view to address socio-technical abilities, adaptive human behavior and socio-cultural forces.

The combination of rapidly changing technology needs and socio-cultural forces on the socio-technical enterprise are driving a need for a philosophical view of an enterprise in the market environment, where analysis, planning and definition of needed capabilities is aligned to and balanced with abilities provided by the enterprise to satisfy the need.

Problem

The customers and stakeholders in the application of EA practices think “EA is Broken”; it does not deliver or have the ability or value advertised. But it is not enterprise architecture practices which are broken; rather it is the application of EA by the practitioners of EA that is more often deficient, causing often disastrous results.

The most important element (i.e., the weakest link) in any capability is people. The application of EA breaks when, within the workings, the wrong person, does the wrong thing, at the wrong time, and/or any combination of these errors.

Enterprise architecture in its entirety, is not the job of a single person. It is the job of a team. Each team member needs to know specifically what they need to do and when to do it, and in regard to their interdependencies with other team members, what the others do and when they do it. Without the knowledge of how everyone fits in, and an understanding of expectations and cooperation between team members, the team will not succeed, regardless of the talent of the individuals.

The ‘root cause’ then of the failure of EA as a management tool (i.e. the ‘EA is broken syndrome’) is usually poor communication and poor understanding of the field of enterprise architecture and its application. The root cause is not knowing or understanding how executives, managers, business strategists, enterprise architects, business architects, IT architects, data architects, information architects, application architects, solution architects, security architects and everyone else in the complex community of EA practitioners at all levels, need to participate and interact in the effort, as well as not knowing or understanding how the role of each member of the team contributes to the overall team effort/mission.

There are a number of reasons cited to justify the syndrome since the issue is complex, and frequently very hard to solve. However communication and understanding in EA discussions may sometimes seem much like an Abbott & Costello Who's On First comic routine. For this reason alone, it is critical that these issues be addressed first and resolved. With good communications and understanding in place, other potential candidates as barriers to success, can be similarly addressed and resolved efficiently and effectively.

Solution

Addressing the need for a philosophical view of an enterprise in the market environment requires an adjustment in architectural and managerial perspective. A new view of an enterprise is needed, one where capability requirements are balanced and aligned with the abilities needed to realize the capability requirements.

That realization may involve revision, reconfiguration, or reassignment/retraining of workers and changes to processes, information, technology and other resources to provide the configuration of abilities into capabilities in a consistent and integrated manner.

Achieving that realization also involves describing a perspective of the enterprise where the 'workings' (functionality) of the enterprise, adaptive human behavior and the effects of stimulatory influences can be visualized, identified, acknowledged, and used to advantage.

Capabilities and Abilities

Thus far, I have been using the terms “capability” and “ability” freely as I begin to describe change. In this section I will present more detail on these terms, how they ‘fit’ together, and their usefulness in EA development and execution for success.

Capabilities are aspirational, structured things to be expected, things which can be planned, things which are needed; in short, capabilities are requirements, a specification of what is desired.

Abilities exist on their own. They are actionable, functioning knowledge and experience-based proficiencies and competencies involving people, tools and equipment. Abilities are things which people and technology can do repetitively, have experience performing, and which are, in the context of an enterprise, desired by an organization or otherwise needed to realize a capability.

For example, in this complex world, people have many abilities, some of which they have learned through doing work, read about, and performed, or have received training for at some time. Not all abilities have immediate value in a given circumstance. A person working in a factory may also know how to write well, but it is their ability to utilize a drill press that adds value to the business.

In a project, there may be a requirement for a change in drill press setup and operation to create a new feature desired by a customer (a need for a new capability). In this instance, this may drive a need for a training manual change describing the new activity. Since the drill press operator has the writing skills and proficiencies, and the ‘know-how’ of the new activity and competencies, applying both abilities—drill press operator and technical writer, to the capability (creating the requirement for both abilities) makes sense.

What is shown by this simple example is that providing abilities intended to meet the needs for capabilities is a critical requirement. Where existing abilities can be brought to bear on the requirement, developing a capability is easier than if that particular ability has to be hired or trained.

Furthermore, there can be and often is a difference between capabilities needed as required and abilities available or working. For this reason, actual behaviors need to be constantly and routinely compared with expected behaviors, and decisions made by management to ensure that people, working activities, work products, information, technologies and other resources, considered for inclusion in a capability description, meet both the needs and constraints of the customer, program and enterprise.

As shown in Figure 1 –Viewing a Capability, the outside-inward view is used to analyze, plan, design, and deploy a capability (the common point-of-interest).

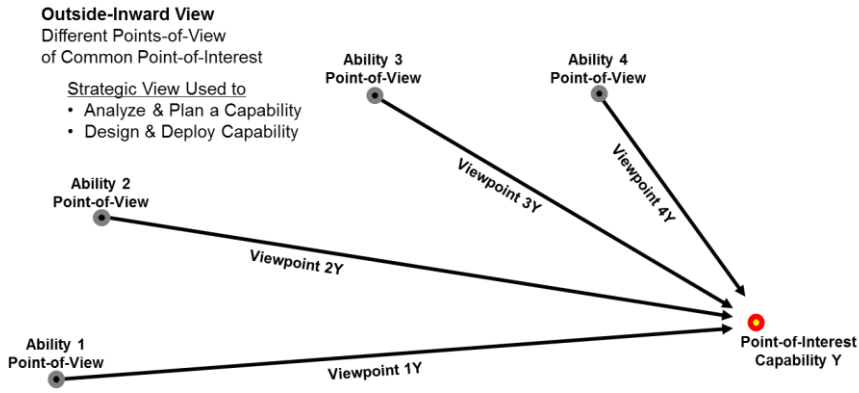

Figure 1 –Viewing a Capability

The outside inward view is strategic as it focuses multiple sets of needs for abilities on one set of requirements on a capability.

In this case, each point-of-view has a viewpoint of the capability which is both reflective and refractive of the associated ability. In other words different abilities 'see' the common capability differently.

Since there may be multiple stakeholders or even a single stakeholder needing multiple abilities, there are always multiple points-of-view and associated viewpoints of any capability.

Reciprocally, as shown in Figure 2 – Viewing Abilities, the inside-outward view is used to implement, provision, manage and control multiple abilities (the different points-of-interest).

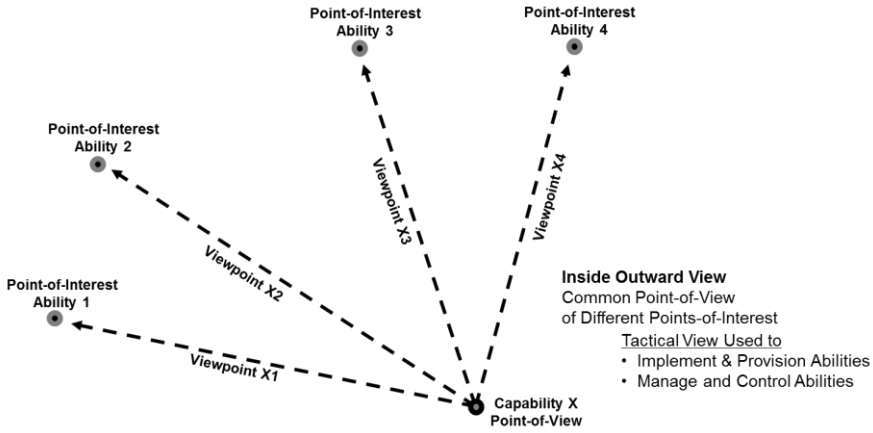

Figure 2 – Viewing Abilities

The inside outward view is tactical, as it diverges the actual abilities of a common capability out to different sets of needs for abilities, each with its own viewpoint.

In this case, the single point-of-view has a viewpoint of each ability which is both reflective and refractive of the associated capability. In other words, different capabilities will see common abilities differently which can be problematic if not properly addressed.

Furthermore, socialization and culture are influences, stimulatory things, things which affect the outcome of planned expectation, things which play an influential part in the difference between the planned capabilities needed and the actual abilities provided.

Socio-cultural forces are becoming more influential as socio-technical abilities increase, quickly making actual enterprise system behavior different than the expected behavior. For the system to be able to react quickly to the difference, the total system must be informative and the control system response and total system reaction needs to be immediate approaching instantaneous.

All of this drives the need to align and balance all capabilities with their related abilities. To accomplish this their relationships must be established (aligned) and abilities and/or requirements continuously adjusted until the abilities can meet the requirements and satisfy the need for the capabilities (balanced).

As shown in Figure 3 – Multi-View of Capabilities and Abilities, by integrating the outside-inward and inside-outward views into one 'multi-view', different capabilities and their associated abilities are aligned from a perspective which is strategically and tactically balanced and aligned, with the interests and views of all capabilities focused on all the abilities provided, and the interests and views of all abilities focused on all the capabilities needed, enabling and assuring a truly holistic perspective of any situation of interest.

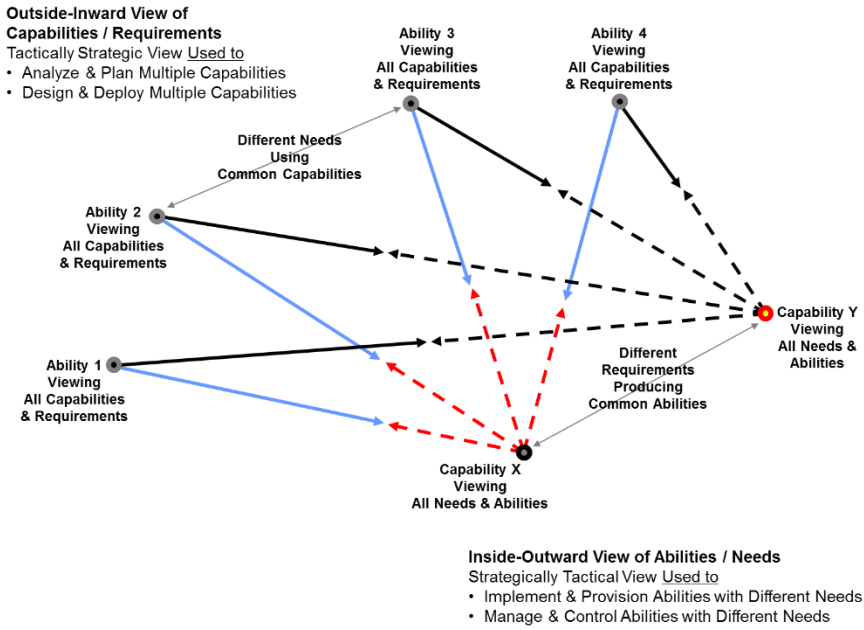

Figure 3 – Multi-View of Capabilities and Abilities

The outside inward view of multiple capabilities from the perspectives of multiple abilities is used to analyze, plan, design and deploy multiple capabilities that share multiple needs.

The inside outward view of multiple abilities from the perspectives of multiple capabilities is used to manage, control, implement and provision multiple abilities sharing multiple capabilities for multiple needs.

Similarly, the multi-view can be used to balance and align the top-down methods to analyze, plan, design and deploy capabilities with the bottom up methods to implement, provision, manage and control the abilities to provide capabilities.

A multi-view can be produced and used at any level of abstraction of capability or need and for as many capabilities and abilities as the situation needs to address. To further

explain the use of a multi-view of capabilities integrated with abilities it is best to give a range of examples covering the range of abstraction from a generic example to increasingly specific examples. To keep it simple, the examples will be limited to 2 capabilities for 4 abilities.

Beginning with Figure 4 - CRM Capabilities and Abilities, this example of a CRM capability is a view of the desired generic IT and business capabilities for CRM aligned to and balanced with the abilities needed to satisfy the different CRM-related needs of the various generic customers, partners, suppliers, users, executives and managers.

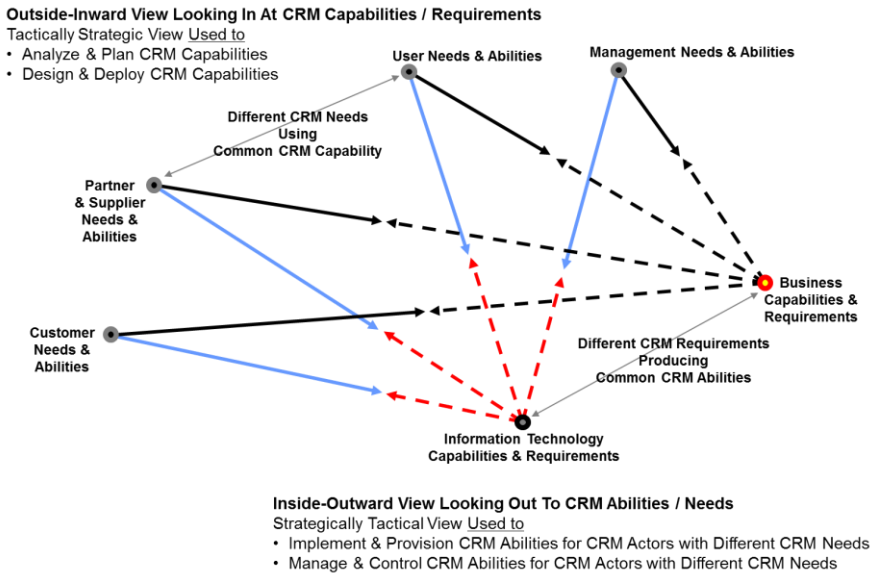

Figure 4 - CRM Capabilities and Abilities

Looking from the outside inward, each CRM need is unique, each driving different CRM requirements. All CRM needs are satisfied using unique IT and business capabilities, each meeting different CRM requirements producing common CRM abilities.