

Fake and Real Tools for Enterprise Architecture

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Introduction

The discipline of enterprise architecture (EA) is closely associated with numerous tools including various frameworks, approaches, techniques and modeling notations intended to help architects plan organizations and their information systems. However, for a very long time we have been observing a rather curious situation which can be characterized as absurd, paradoxical or even schizophrenic. In particular, one set of tools is declared as fundamental to the EA discipline, consistently promoted as global EA standards and widely taught in various EA courses, but in reality these tools are largely, if not totally, useless for all practical purposes. At the same time, other set of tools constitutes the actual body of established EA best practices that work in organizations, but these tools are barely discussed and lacking sensible descriptions for newbie architects and students to learn from.

Moreover, the set of *famous* EA tools and the set of *useful* EA tools hardly overlap with each other. The existence of these two disparate toolsets should be very clearly understood and acknowledged by the EA community for the normal progression and further professionalization of the EA discipline¹. In order to illustrate the critical difference and sharp contrast between these toolsets, below I will discuss in detail two EA tools representing arguably the most extreme opposite examples of fake and real tools: the Zachman Framework as a prominent fake tool and the Business Capability Model as a prominent real tool.

The Zachman Framework – A Fake Tool

The Zachman Framework published in 1987² is arguably the most famous model related to EA. This framework is well known to all architects and, as many people firmly believe, even created the entire EA discipline. For instance, Simon et al.³ expressed this view rather poetically: “The discipline of enterprise architecture (EA) has evolved enormously since John Zachman ignited its flame in 1987”. The Zachman Framework allegedly provides the necessary foundation for EA and is considered by many to be very influential. Currently it has almost 4000 citations in Google Scholar and entire 750-page-long books have been written wholly dedicated to it⁴. For his renowned framework John Zachman received several international awards, including a lifetime achievement award for “his long term impact and contribution to how people think and practice Enterprise Architecture today”⁵ (page 1).

The reality around the Zachman Framework is, however, not that bright. First, contrary to the widespread opinion, from the historical perspective the Zachman Framework did not introduce any novel ideas, i.e. did not pioneer the general concept of architecture, was not the first taxonomy, or “framework”, for architecture and did not even coin the term “enterprise architecture”. Specifically, the idea of purposefully designing organizations was popular at least since the early 1970s⁶. Multiple world-famous comprehensive architecture planning approaches existed long before the Zachman Framework including BSP⁷, Method/1⁸, Information Engineering⁹ and Strategic Data Planning¹⁰. The architectural

taxonomy of Wardle¹¹ and the PRISM framework¹² were also published before the Zachman Framework. Finally, the framework used the term “information systems architecture”, rather than “enterprise architecture”¹³. Interestingly, even John Zachman himself admitted that the concept of architecture appeared long before his framework and actually originates from IBM’s BSP: “I acknowledge Dewey Walker, [...], as the “grandfather” of architecture methodologies. It was his internal IBM experience in Information Architecture that later became known as Business Systems Planning (BSP)”¹⁴ (page xv).

Second, the original justification behind the Zachman Framework was entirely speculative: “Equivalency [between the architectural representations in manufacturing and construction industries] would strengthen the argument that an analogous set of architectural representations is likely to be produced during the process of building any complex engineering product, including an information system”² (page 281). However, all people acquainted with the practical realities know that organizations and their information systems have a very significant social component and cannot be designed and built like other engineering products, e.g. buildings or airplanes, as suggested by the framework. It was also argued that “seven thousand years of human history would establish that the key to complexity and change is architecture”¹⁵ (page 2), but the problem is that all the complex objects provided as a historical justification for comprehensive architecture, e.g. Roman Coliseum, stood completely unchanged for centuries and never evolved like information systems in organizations. These conceptual flaws have been noticed by many practicing architects long ago. For example, Doug McDavid argued that the “flawed concept [promoted by John Zachman] is that building enterprise information systems is just like building airplanes. In fact, an enterprise information system is much more like the nervous system of a living organism”¹⁶ (page 9). Likewise, Stanley Gaver argued that “the analogy to classical architecture first made by John Zachman is faulty and incomplete. [...] We need to reexamine the analogy and correct it”¹⁷ (page 72).

Third, the value of the Zachman Framework was promoted with purely fictional promises: “Early numbers indicate that conservatively, taking Enterprise Architecture based approaches [...] produces implementations 10 times cheaper and 6 times faster”¹⁵ (page 3). Every manager acquainted with the complexities of organizational problems knows that order-of-magnitude productivity improvements cannot be achieved from any single managerial innovation, while such statements can be considered, to say mildly, only as an evident exaggeration typical for unsubstantiated marketing claims. Interestingly, even more impressive and unbelievable productivity gains have been already promised earlier from once widely advertised, but now long forgotten Information Engineering, the previous “breakthrough” approach to architecture that quickly vanished without a trace: “Effective productivity gains 10-20 times greater than software engineering are today being regularly achieved [by using Information Engineering]”¹⁸ (page vii).

Finally and most importantly, it was never clearly explained how exactly the Zachman Framework should be used, e.g. whether its cells need to be actually filled with EA artifacts and if not, then what particular implications this taxonomy entails for practice. Despite having thousands of citations, the framework has zero documented examples of its practical application in organizations^{19, 20}. Though it can be populated, for example, with baseball models²¹, the most common EA artifacts that proved useful in practice^{22, 23} simply cannot be mapped to the cells of the framework in any real sense and cannot be unambiguously classified according its rows or columns. Moreover, even the very idea of developing comprehensive architecture, as suggested by the Zachman Framework, proved impractical long ago^{24, 25, 26}. Unsurprisingly, evidence from organizations suggests that the framework was found useful only for “selling” EA efforts to management, but then was “pinned on walls in many rooms without far-reaching consequences”²⁷ (page 15). Again, even

John Zachman himself after 15 years since the publication of the framework admitted that it was never ever implemented: “If you ask who is successfully implementing the whole framework, the answer is nobody that we know of yet”²⁸ (page 2). Later after being asked to “tell us about two or three major success stories in applying the Zachman Framework”, he replied that “this is another hard question for me to answer because I am not a methodologist”²⁹ (page 9). Naturally, after three decades since the emergence of the framework his presentations^{30, 31} include only shadowy speculations and even “a story about how the Director of Intelligence for the India (national) Police Service used the Zachman Framework to solve a high visibility murder/kidnapping case”³² (page 1), but not a single story about how anybody actually used the framework to plan information systems.

Ironically, but the evidence-based analysis shows that all the most deeply seated beliefs about the Zachman Framework are nothing more than unsubstantiated fallacies. The framework appeared completely “out of the blue”, did not introduce any new noticeable ideas absent before, was based on inappropriate assumptions, not supported by any empirical evidence, promoted based only on empty promises and appeals to 7000-years-old timeless truths and did not provide any specific practically valuable recommendations, but yet still became widely known as the seminal EA model. The fame and “success” of the Zachman Framework seemingly can be attributed solely to its excellent promotion to the masses and to the outstanding marketing talent of its author who, by the way, was always a marketing specialist, never a practicing architect, researcher or analyst.

Unsurprisingly, the value of the Zachman Framework for the EA discipline is always explained by enlightened gurus using sophisticated, intentionally elusive and obscure language, e.g. the framework provides some very important “fundamental basis”, “universal classification scheme”, “non-discussable eternal structure”, “periodic table”, “enterprise physics” or even “ontology” for EA (the word “ontology” denotes something related to philosophy, metaphysics and the nature of being). From the practical perspective, such explanations imply no consequences whatsoever, bring no real value and essentially mean only that the framework is utterly useless for down-to-earth EA practitioners working in industry. Although the framework caused general exultation, excitement and admiration, provoked stunning applause and spectacular fireworks, acquired widespread recognition and worldwide fame, it has no tangible substance and did not help any organizations solve their problems with business and IT alignment. After more than 30 years since the “breakthrough that created EA”, the Zachman Framework has absolutely nothing to demonstrate, the king is naked. Therefore, despite its astonishing popularity the framework has only a purely symbolic value for the EA discipline and actually did not influence current EA best practices in any real sense, let alone defined them.

Strictly speaking, due to its evident conceptual superficiality and disconnection from the empirical realities of information systems planning, the Zachman Framework arguably deserves neither practical nor scientific attention in the context of the EA discipline. However, it still represents an extremely curious historical phenomenon to be analyzed with an utmost care in the marketing departments of business schools. For instance, the case of the Zachman Framework can be discussed in detail as part of marketing courses as an awesome case study of the effective promotion of a useless trinket, but not as part of the EA curriculum intended to prepare future EA practitioners.

Similarly to the Zachman Framework, other well-known and aggressively promoted EA tools including, among others, TOGAF, FEAF and ArchiMate represent mostly fake tools (though with some caveats). They are also characterized by the very same set of attributes as the Zachman Framework: continuous marketing hype, intentional vagueness, empty promises, elusive explanations and the lack of real-life practical examples. These tools are

largely useless and provide little or no practical value, but only create considerable informational noise and distort the discourse in the EA discipline.

The Business Capability Model – A Real Tool

Unlike the entirely “metaphysical” Zachman Framework with inexplicable practical value, the usage and benefits of the Business Capability Model (or map, BCM) can be explained very clearly in simple words even to “mere mortals”. A business capability is a general capacity of an organization to perform a specific business activity. Business capabilities represent high-level abstractions encompassing all underlying business processes, roles, information systems and physical facilities fulfilling these capabilities. Due to their multifaceted nature, business capabilities are relevant to both business and IT stakeholders.

The BCM shows the hierarchy of all business capabilities of an organization on a single page providing a simple but overarching view of the business and facilitating the strategic dialog between business and IT. In particular, via using the BCM business executives can decide which capabilities should become the primary focus of future IT investments in order to execute their business strategy, whereas enterprise architects can determine which IT systems may be installed to enhance the required capabilities. Put it bluntly, business leaders can point to specific capabilities and say “we need to improve these capabilities”, while architects can reply “then we can launch the following IT initiatives to do that”. Senior business stakeholders may also specify what types of improvement are necessary for these strategic capabilities, e.g. perform the capability better or at a lower cost.

The achieved agreements between business and IT on the set of business capabilities to be uplifted with IT are color-coded, or “heatmapped”, in the BCM and then used as the basis for prioritizing and initiating corresponding IT projects. Thereby, the BCM helps convert an abstract business strategy and goals into a rather specific IT investment portfolio, improve strategic business and IT alignment and increase the long-term effectiveness of IT investments. Moreover, the BCM also has a number of other useful applications in the context of an EA practice including evaluating the strategic value of bottom-up IT initiatives, determining the scope and stakeholders of IT projects and providing a common vocabulary to all decision-makers. Unlike the Zachman Framework, the BCM is a real EA tool with a widely acknowledged, immediate and intuitively understandable practical value. It is ubiquitously used and arguably represents one of the most essential tools in the toolkit of genuine EA best practices available to enterprise architects^{22, 23}.

The origins of the BCM in its current form are unclear. For instance, the BCM is not even mentioned in any existing “definitive” EA frameworks. Some of the earliest articles with a sensible description of the BCM and its usage that I was able to find date back to 2009^{33, 34}, but these articles describe the BCM as an already existing industry phenomenon, rather than propose it as something new. While the Zachman Framework was generously bestowed to us by the wise award-winning “father” on one happy sunny day in 1987 as a profound eye-opening revelation instantly shocking all IT planners in the world like an unexpected strike of lightning, the concept of BCM was seemingly developed some time ago inconspicuously by unknown, “nameless” architects in organizations with no pomposity, proved useful and then rapidly spread across the industry due to its evident effectiveness without any deliberate promotion eventually becoming one of the most recognizable EA artifacts. Nobody proposed the BCM, nobody triumphantly “ignited its flame” and nobody received any lifetime achievement awards for its creation. This genuine EA best practice emerged quietly from the practical experience, not from the works of “thought leaders”, gurus or consultants.

Unlike the Zachman Framework, which is thoroughly described in numerous articles and thick books, the BCM is barely mentioned in the mainstream EA literature, no

standardized templates are available for it. At the present moment there are arguably no comprehensive sources describing the BCM and its usage in detail where newbie architects can learn this best practice from.

Similarly to the BCM, many other EA artifacts and associated techniques constituting the core of established EA best practices are barely discussed in the available EA sources and never promoted. These practices include, among others, creating solution overviews and business cases for IT initiatives, managing the lifecycle of deployed technologies via color-coding technology reference models (TRMs) and estimating the technical debt for architectural deviations. The CSVLOD model I introduced earlier^{22, 23, 35, 36} may also become a useful evidence-based tool for thinking about EA and understanding proven industry best practices. All these approaches, techniques and models represent real EA tools that help architects deliver tangible business value. Taken together these tools compose what is currently understood as a successful EA practice.

What Does It Mean?

The situation illustrated above based on the two opposite distinctive examples indicates the existence of a dramatic gap between what is actively promoted and what really works in an EA practice. This situation results from the simple fact that the discourse in the EA discipline is “owned” and dictated by consultants, trainers, gurus and tool vendors. These parties lead their own game and have their own shortsighted, purely commercial interests unrelated to the genuine interests of EA practitioners and organizations. They drive the artificial creation of new and new flawed “best practices” with an intention only to sell more certifications, trainings and consulting services to fill their pockets.

Put it simply, fake EA tools are persistently promoted only because somebody profits from them, not because they benefit the EA community. Consultants and gurus do not care how much money is wasted in organizations in the attempts to fill recommended cells, follow prescribed steps or explain inscrutable technical diagrams to business executives hoping to improve business and IT alignment³⁷. The criticism of fake EA tools is typically dodged with the same one-size-fits-all shallow explanation too often heard in EA-related discussions: “These tools certainly cannot be used out-of-the-box and always need to be adapted to the needs of organizations”. Of course, people giving such explanations cannot specify even approximately how it should be done. Often they are simply bluffing and have no idea what successful EA practices look like. As a result, instead of having a systematic, consistent and evidence-based body of knowledge on EA, the EA community still has to enjoy only a “garbage can” full of random EA-related prescriptions invented by gurus and self-proclaimed thought leaders.

The excessive focus on fake tools, e.g. popular EA frameworks, currently occupying the whole EA discourse essentially blocks the healthy development of the entire EA discipline, while the slow progress in this direction is often attributed by crafty EA gurus to the fact that “unlike mathematics, EA is only 25 years old and needs more time to mature”. This argument is deceptive, but still partly true: with the endless irresponsible promotion of fake tools it may indeed take centuries for the EA discipline to develop into something systematic. However, if the progress of the EA discipline is to be measured in years, rather than in centuries, then the flagrant corruption of the EA discourse with fake tools should be decisively stopped and their harmful impact on the EA profession should be widely recognized and acknowledged. In other words, the EA discipline should change the course and switch the focus from fake tools to real tools.

In the current uneasy situation in the EA discipline, I argue that the following actions are necessary and should be taken sooner or later to advance the EA profession and theory forward:

- Instead of trying to align their practices to unrealistic EA frameworks, architects should trust their own judgment, focus on developing practices that work well for their organizations and then share these best practices with the broader EA community
- Instead of comparing existing EA frameworks and modeling notations, EA academics should “wake up” from the slumber, acknowledge their evident faddish nature and focus on studying and codifying genuine EA best practices that proved effective in organizations
- Current EA frameworks and standards, as well as the gurus who promoted them, sooner or later should be forgotten due to their obvious disconnection from reality and replaced with more adequate, evidence-based descriptions of established EA best practices existing in industry

The analysis of fake and real EA tools provided above is briefly summarized in Figure 1.

Fake Tools	Real Tools																																										
Origin: Created artificially “top-down” by consultancies and gurus without any empirical justifications	Origin: Emerged naturally in industry “bottom-up” out of the real-life experience of multiple practicing architects																																										
Motivation: Purely commercial, used to sell trainings, certifications, software tools and consulting services	Motivation: Purely practical, used to solve organizational problems and not distributed on a commercial basis																																										
Promotion: Very actively promoted and discussed, positioned as industry standards and proven instruments	Promotion: Never promoted, disseminated quietly from architects to architects mostly through collaboration																																										
Description: Described in detail, many comprehensive sources, courses and trainings available	Description: Barely described and codified, no comprehensive information sources available																																										
Notable Example: The Zachman Framework	Notable Example: The Business Capability Model																																										
<table border="1"> <thead> <tr> <th></th> <th>What? (Data)</th> <th>How? (Function)</th> <th>Where? (Network)</th> <th>Who? (People)</th> <th>When? (Time)</th> <th>Why? (Motivation)</th> </tr> </thead> <tbody> <tr> <td>Scope (Contextual)</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Business Model (Conceptual)</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>System Model (Logical)</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Technology Model (Physical)</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Detailed Representation (Out-of-Context)</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>		What? (Data)	How? (Function)	Where? (Network)	Who? (People)	When? (Time)	Why? (Motivation)	Scope (Contextual)							Business Model (Conceptual)							System Model (Logical)							Technology Model (Physical)							Detailed Representation (Out-of-Context)							
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Other Examples: TOGAF, FEAF, ArchiMate, etc.	Other Examples: Solution overviews and business cases, color-coded TRMs, architecture debt, etc.																																										
Metaphor: “Pampered, lazy and unemployed noblemen of aristocratic origin”	Metaphor: “Talented, hard-working and self-made orphans”																																										
Role: Purely symbolic, hardly influence actual EA best practices, let alone define these practices	Role: Represent true best practices constituting the genuine body of knowledge on EA																																										
Attitude: Ignore these tools or learn them carefully, do not try to implement their advice in organizations	Attitude: Learn, describe and share these tools with other members of the broader EA community																																										
Future: Sooner or later will fade away and be forgotten as all the previous once-famous management fads	Future: Sooner or later will be studied in detail, codified and included in “EA 101” courses and textbooks																																										

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Figure 1. Fake and Real Enterprise Architecture Tools

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