

White Paper

Is Enterprise Architecture a Discipline or a Practice?

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As a professional person specializing in providing Enterprise Architecture consulting and training services to organizations, I am increasingly confronted by clients and other professionals who are debating the position and status of Enterprise Architecture as a profession. I did a bit of “Google” research and quickly found that the positions within the community are divided into those that view Enterprise Architecture (EA) as a **discipline** and those that view EA as an organizational **practice**.



“The Guide to the Enterprise Architecture Body of Knowledge (EABOK) organizes and characterizes the knowledge content of the Enterprise Architecture (EA) discipline. This organization and characterization promotes a consistent view of EA, establishes the scope and bounds of the EA discipline, and places the discipline in the context of related disciplines.”
<http://www.enterprise-advocate.com/2012/02/enterprise-architecture-body-of-knowledge-eabok/>



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The JISC Enterprise Architecture Practice Group (EAPG) is a network for practitioners and managers from higher and further education institutions who are using, adopting or are interested in the Enterprise Architecture (EA) approach to support strategic change and improvement.
<http://jisc-ea.ning.com/>



I believe both sides have a valid point and that there is enough evidence to refer to Enterprise Architecture as both a discipline (actually a sub-discipline) and a practice.

In this white paper I will highlight the key criteria for a discipline and a practice. I will also provide evidence on why I believe Enterprise Architecture is both a discipline and a practice, but first I will define the context of what I believe is the scope of work for Enterprise Architects in organizations.

Demand-side Enterprise Architects

James Lapalme proposed 3 Schools of Enterprise Architecture in an article with the same name published by the IEEE [<http://doi.ieeeecomputersociety.org/10.1109/MITP.2011.109>]. In his article he distinguishes between the **Enterprise IT Architecting School**, the **Enterprise Integrating School** and the **Enterprise Ecological Adaptation School**. I believe that the bulk of the current EA practitioners belong to the first group, with the provision that the challenge is not business/IT alignment, but rather business/information alignment within organizations.

Technology and traditional IT suppliers do still provide supply-side Enterprise IT architects, but the bulk of the work in 21st century organizations is about supporting the organization within its business operations. Business models like co-sourcing, business process outsourcing and strategic product co-development are blurring the organizational boundaries between an organization and its suppliers and customers. This is placing extra pressure on architects to ensure that the organization is designed to operate in these kinds of environments.

The traditional approach of classifying architectures according to the BIDAT domains (Business, Information, Data, Application, and Technology) and assigning architects to each domain is outdated and does not reflect the changing landscape of 21st century organizations.

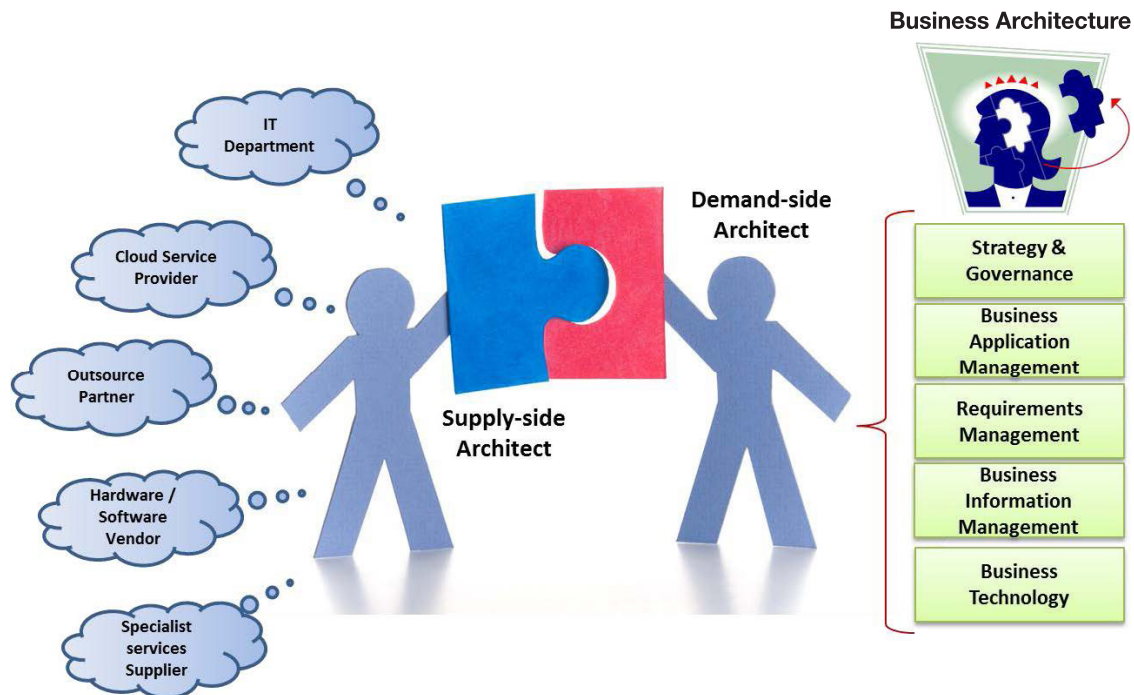


Figure 1: Demand-side vs. Supply-side Architecture

The rapid adoption of business technology within organizational business units (e.g. the use of iPads for business) and the need to distribute information faster across organizational boundaries is requiring Enterprise Architecture professionals to specialise as either **demand-side architects** with in-depth knowledge of the organization or **supply-side architects** with specialist knowledge in providing enterprise-class services to clients (e.g. architects for cloud providers or integration service switching providers). The question that needs to be answered now is what is the scope of work of demand-side Enterprise Architects?

Translate strategy into operations

Demand-side Enterprise Architects need to understand the strategy of the enterprise and be able to translate it into business concepts that can be verified with business management before the logical systems models are created. The transformation of business strategy to implemented capabilities requires the creation of a range of models at different levels of abstraction by architects.

The Zachman Framework for Enterprise Architecture™

The Enterprise Ontology™

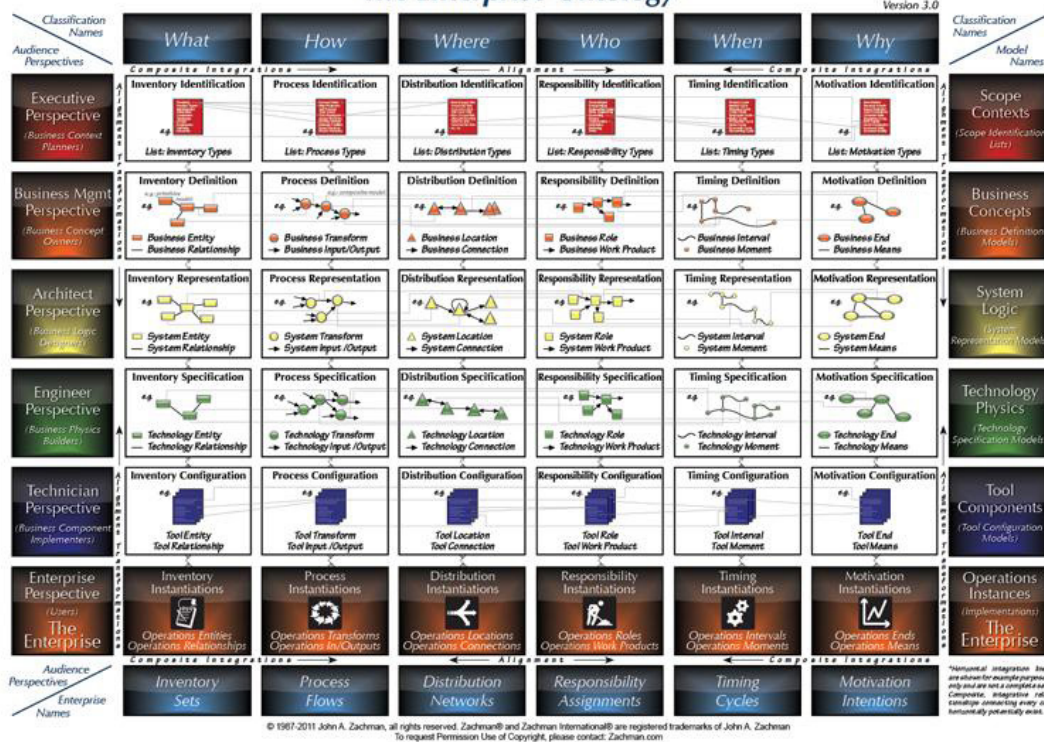


Figure 2: Zachman framework

The architects are not responsible for designing technical models, but need to have oversight over the engineering teams to ensure that the business requirements are implemented in the physical and components models.

The Framework for Enterprise Architecture created by John Zachman¹ is a perfect thinking tool available to architects when checking the consistency of transformations between model perspectives (transformation across rows) and for ensuring the completeness of models (integration across columns) Management Information (Information Resource Management)

Peter Drucker, the father of modern management science stated that managers must decide how to use organizational resources to accomplish goals and give direction to their organizations. These managers, in turn, now rely on demand-side architects to provide them with insight into the organization and help define capabilities.

A capability is defined as an **ability** with **capacity** in the organization and is expressed in terms of:

- Human resources (quality, skills, and experience)
- Physical and material resources (machines, land, buildings)
- Financial Resources (money and credit)
- Information resources(knowledge, databases)
- Intellectual resources (copyrights, designs, patents, etc.)

Architects need to work with conceptual and logical abstractions of the real world that allow management to simulate and envision changes to the organization without affecting operations. Only once a final target state with changes is agreed will the proposed changes be captured into project and operational plans for execution.

Enterprise Architecture Entity (Type 2)

ISO 15704 (Requirements for Enterprise Reference Architecture and Methodologies) is a standard that is used to align professionals from different disciplines (engineering, business, change management, ICT) during large organizational changes. The diagram overleaf highlights the standard lifecycle of an operational entity in an organization. It also identifies the rest of the entity types and their interaction with the main manufacturing entity.

The Strategic Enterprise Management Entity (Type 1) defines the need and scope for any enterprise engineering / integration project.

The demand-side Enterprise Architecture team is a Type 2 Entity (Enterprise Architecture /Engineering/Integration Entity) that provides the means to carry out the enterprise architecture efforts defined by enterprise Entity Type 1. It employs a methodology (Entity Type 5) to define and design the operation of the enterprise entity (Entity Type 3).

Enterprise engineering / Construction is also a Type 2 Entity that provides the means to carry out the engineering efforts defined by enterprise Entity Type 1. It employs a methodology (Entity Type 5) to define, design, implement and build the operation of the enterprise entity (Entity Type 3).

The Enterprise Entity (Entity Type 3) is the result of the operation of Entity Type 2. It uses a methodology (Entity Type 5) and the operational system provided by Entity Type 2 to define, design, implement and build the products and customer services of the enterprise (Entity Type 4).

The Product Entity (Entity Type 4) is the result of the operation of Entity Type 3. It represents all products and customer services of the enterprise.

The Methodology (Entity Type 5) used by the demand-side EA Team (Entity Type 2) is a set of standard best practices available in the industry.

¹ For more information about John Zachman and his framework you can visit: <http://zachman.com/about-the-zachman-framework>

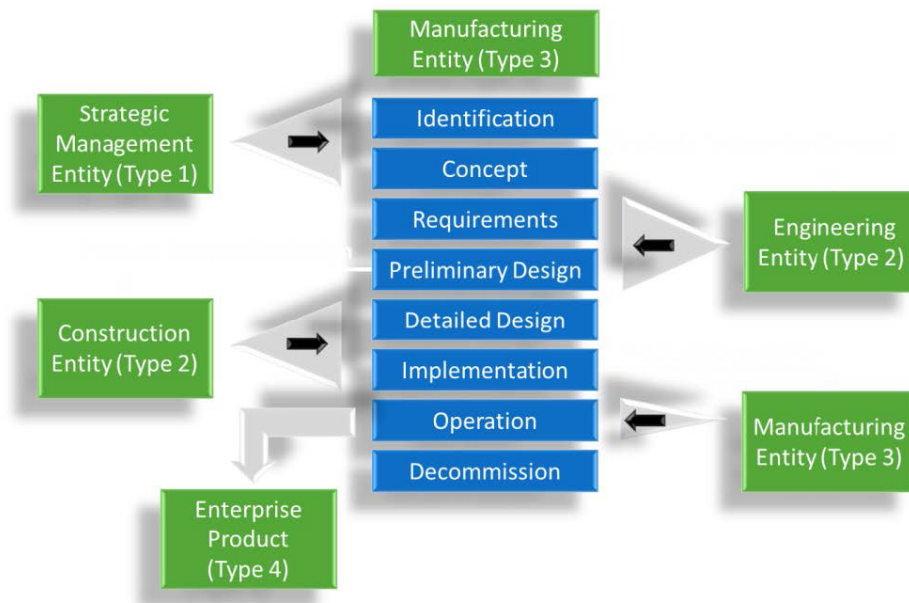


Figure 3: Relationships between GERA Entity Types (ISO 15704 Standard)

Demand-side EA scope of work (summary)

1. **Demand-side Enterprise Architects** are based within the organization and are not outsourced or side-lined into a support function
2. **Architects** translate strategy into required capabilities and changed capabilities
3. **Demand-side EA's** use Information Resources to assist the organizational Management Teams
4. The **architects** work at different levels of abstraction
5. **Architects** are grouped into a Type 2 Enterprise Architecture Entity with an explicit requirement to use an Methodology Entity (Type 5) (e.g. TOGAF 9.1) when creating an Operational (Type 3) Entity

Based on the summary points above, the question now is do we have architects that consider themselves part of a community of practice that support the scope of work?

Enterprise Architecture as a Practice

Jean Lave and Etienne Wenger [http://www.infed.org/biblio/communities_of_practice.htm], (theorists) first defined the term Community of Practice in 1991 as:

“Communities of practice are groups of people who share a concern or a passion for something they do and learn how to do it better as they interact regularly.”

A community of practice must exhibit the following features, to be considered a proper community:

1. There needs to be a domain.

The community need to share a common domain of interest defined by the community. Enterprise Architecture is a recognised domain with several vendors, practitioners, authors, academic institutions and government agencies across the globe recognising the field.

2. There needs to be a community.

A necessary component is that members of a specific domain interact and engage in shared activities, help each other, and share information with each other.

There are several communities within the Enterprise Architecture community, but I believe there is only 1 significant community that has an international reach large enough to be considered a representative organization for EA.

The Open Group is a vendor-neutral consortium with a specific Architecture forum where members can collaborate during weekly web-based meetings, quarterly face-to-face meetings and conferences.

3. Members of the community must actually be practitioners.

The architecture forum packaged their combined experience and best practices as an Architecture framework and TOGAF 9.1 is now an industry standard. Linked to the Open Group, but still independent is the Association of Enterprise Architectures, which represents the largest association of EA practitioners in the world after the amalgamation of several independent EA communities.

There are several smaller communities of practice around the globe that are either promoting or using vendor specific methodologies or tools or who have a region foot print.

The 800 pound gorilla on the block is the Open Group Architecture forum [<http://www.opengroup.org>] with its best practices packaged in the TOGAF 9.1 architecture framework. From a practitioner perspective I am fairly confident that the Open Group and Association of Enterprise Architects will continue to evolve the best-practices, but it still does not mean that Enterprise Architecture is a discipline.

Although the Open Group is creating standards for curriculums and accreditation, it cannot create the discipline of Enterprise Architecture from the practitioner community, it needs to be evolved from within the academic community.

Enterprise Architecture as a Discipline

“**Discipline: A branch of learning or scholarly instruction**” - *Oxford English Dictionary*

A discipline is the building of a knowledgebase through systematic and ordered academic research. This base is enhanced and developed through research and provides direction for practice.

Enterprise Engineering Discipline

D. H. Liles, M. E. Johnson, et.al in their research report, enterprise engineering: A discipline? [<http://webs.twsu.edu/enteng/enteng1.html>] used 6 characteristics to determine if Enterprise Engineering is a discipline.

Focus of Study
Paradigm
Reference Disciplines
Principles & Practices
Research Agenda
Education & Professionalism

Figure 4: 6 Basic characteristics of a discipline

The researchers concluded that based on the characteristics listed above, enterprise engineering partially fulfil the characteristics required by a discipline. In their study the researchers found that universities are already formalised relationships between different reference disciplines and the potential Enterprise Engineering discipline. As part of the research the team also found the following Enterprise Engineering Curricula implemented at a university.

- Enterprise Engineering Methods - A survey of enterprise engineering methods.
- Enterprise Analysis and Design - An in-depth study of techniques useful for the analysis and design of the manufacturing enterprise.
- **Enterprise Architecture and Frameworks** - A survey of enterprise architectures and analysis frameworks that have been proposed for the integration of large complex enterprise systems. Emphasis is placed on state-of-the-art approaches.
- Systems Concepts - Intellectual foundations, primary concepts, theoretical frameworks for systems applied to fields such as system development, systems management, and decision making.

From the research findings it is clear that the potential Enterprise Engineering discipline is positioning Enterprise Architecture as a sub-discipline, but currently there is no clear path of formalising the EA discipline.

Information Systems (IS) Discipline

Information Systems as a field of academic study contains the concepts, principles, and processes for two broad areas of activity within organizations; acquisition, deployment, management, and strategy for information technology resources and services (the information systems function; IS strategy, management, and acquisition; IT infrastructure; **enterprise architecture**; data and information) and packaged system acquisition or system development, operation, and evolution of infrastructure and systems for use in organizational processes (project management, system acquisition, system development, system operation, and system maintenance). [www.acm.org/education/curricula/IS%202010%20ACM%20final.pdf]

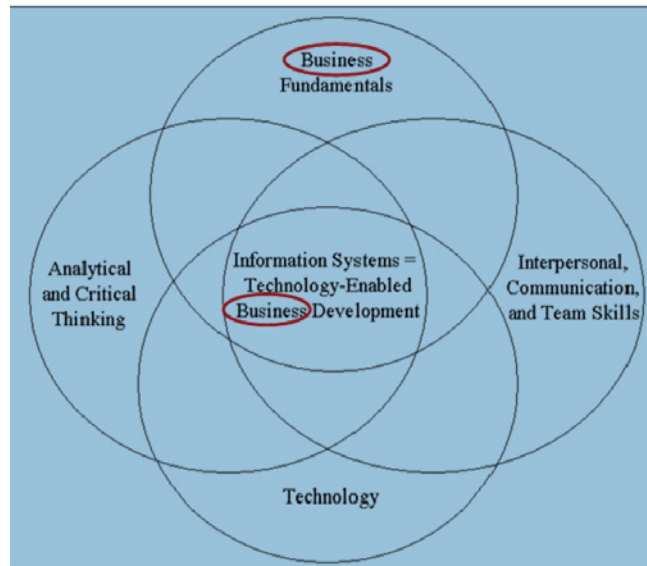


Figure 5: The close linkage between Information Systems and Business

The Information Systems Discipline contains a sub-discipline of enterprise architecture with a strong focus on linking business with Information systems. The ACM published an undergraduate curriculum for the Information Systems Discipline in 2010 that contains a core course IS 2010.3 Enterprise Architecture indicating the importance of Enterprise Architecture within the IS Discipline. [www.acm.org/education/curricula/IS%202010%20ACM%20final.pdf]

Conclusion

In this white paper I defined the role of a demand-side architect as the de-facto architect within 21st century organizations and highlighted the fact that the Open Group (together with the Association of Enterprise Architects) is the largest Enterprise Architecture community of practice in the world.

Although no Enterprise Architecture Discipline currently exists, the developments within the Enterprise Engineering and Information Systems disciplines are forming the basis for new academic research in the future. In my opinion, the current Information Systems Discipline is well positioned to grow the research within the Enterprise Architecture sub-discipline.

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