

# Enterprise Reference Architecture

Addressing key challenges facing EA and enterprise-wide adoption of SOA

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## Abstract

As a practitioner in the fields of Enterprise Architecture (EA) and Project-level Architecture, I have observed situations of great synergy and success between the two where IT delivered true business value. I have also seen situations full of tension and lost opportunities with poor business and IT alignment. Such contrast implies that although the importance of EA has been accepted by many organisations, many face huge challenges in realising the promised benefits of EA on a regular basis. I contend that a root cause is the wide gap/disconnect between EA and Project-level Architecture. This burdens the project architects with the interpretation of EA principles, policies, standards and guidelines to develop their project architecture. This is often difficult, time consuming and error prone. Similar burden is placed on the Enterprise Architects to police project-level architecture for conformance which is also difficult, time consuming and always controversial

This synopsis<sup>1</sup> relates my experience in developing and applying an approach that successfully uses Reference Architecture to address this problem and includes case studies. Although there is a huge amount of information about Reference Architectures, there is considerable confusion about what they are and how they can be used effectively. I have analysed and positioned various types of Reference Architectures within a simple classification scheme that tries to clear up some of the confusion. The classification scheme delineates a category of Reference Architecture which I refer to as Enterprise Reference Architecture (ERA) and is suitable for addressing some of the challenges facing EA including the enterprise-wide adoption of SOA.

## Reference Architecture (RA) classification scheme

One source of confusion about RAs is that some IT practitioners assume that all RAs are the same. Because of this, some form a negative impression about the value of RAs in general based on an encounter with a specific RA.

My thesis is based on the belief that Reference Architectures can be distinguished along two dimensions:

**Coverage:** which indicates the area where a RA can be usefully applied. Some RAs cover only presentation, integration or security aspects of solutions, whereas others cover an end-to-end enterprise solution. What would lie at the extreme ends of this dimension? At the low end, an Architecture Pattern consistent with the view that a RA is an aggregation of Architecture Patterns. At the other end, we should expect an end-to-end architecture that covers both business and IT aspects.

**Level of Abstraction:** which reflects how concrete or specific a given RA is. It ultimately indicates the gap between the RA and a *Solution Architecture* based on it. It is a qualitative measure but very valuable in assessing the usefulness of a given RA for the task of developing an implementable solution.

Figure 1 shows some examples of RAs and where they fit in this classification scheme.

The main target on my thesis is the right lower corner (intersection of *End-to-end* and *Enterprise bands*) which covers what I call Enterprise Reference Architecture (ERA).

Refer to the full paper<sup>1</sup> for further discussion of the classification scheme and an extended list of instances of RAs positioned within the scheme.

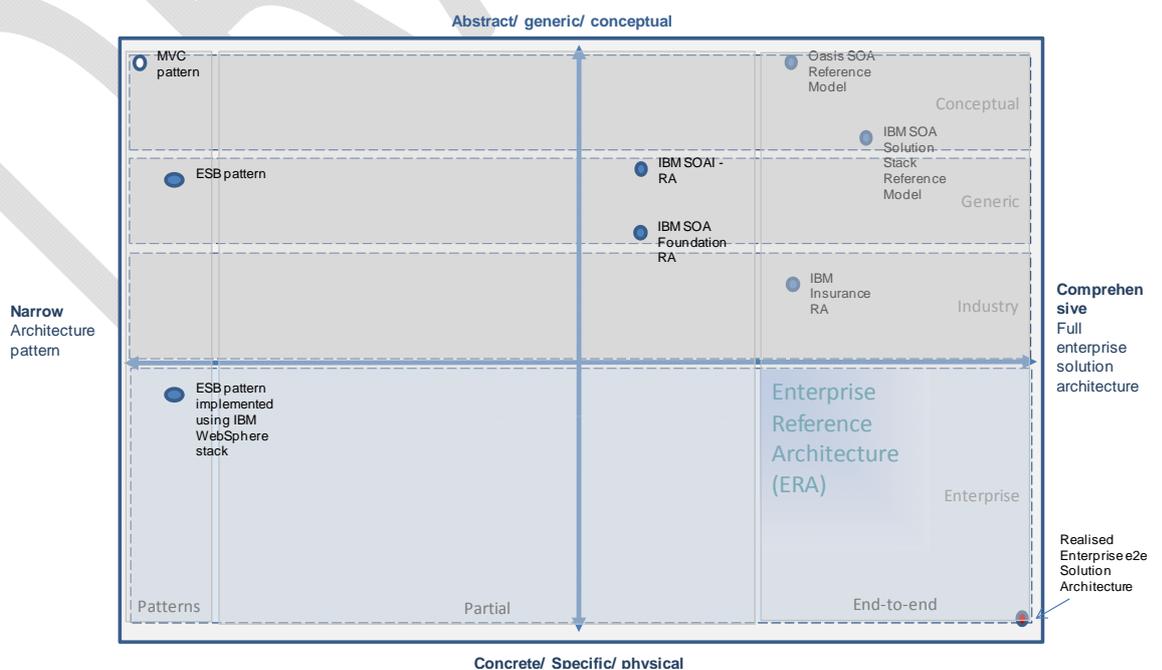


Figure 1: The Reference Architecture classification scheme positioning various instances of Reference Architectures according to their Coverage and Level of Abstraction

<sup>1</sup> This is a synopsis of a paper with the same title that includes expanded discussion of the concepts outlined here including two case studies.

## Enterprise Reference Architecture (ERA)

I contend that thanks to the versatility of Reference Architectures, they can better dovetail EA (abstract and generic) and the Project-level Business Solution Architecture for a given business problem (concrete and specific). The RA classification scheme above shows that there are many types of RAs. All (at least the good ones) are useful but based on my experience, when the RAs are made close enough to Solution Architectures their value to projects becomes enormous. There are a number of factors that determine the optimal closeness of a RA to an actual Solution Architecture. First, the more specific a RA is, the less flexible it becomes. Second, of course, there is cost associated with moving from the generic and abstract to the specific and concrete.

The ERA approach that I outline here in essence aims to alter the typical relationship between EA and the Project-level Architecture from that depicted on the left in **Figure 2** to what is shown on the right by introducing an intermediate level (the ERA).

Usually interpretation by projects and conformance policing by Enterprise Architects are the only means to shape business solutions. In the new proposed relationship (on the right) ERA embodies the EA guidance and is used to help projects develop their Project-level Architecture. In addition, funding the development of an ERA directly by the business for a specific business initiative (a program of projects) can profoundly transform the way architecture is practiced in the organisation. I refer to the ERA for a business initiative or a program of projects as Program-level Architecture. Refer to the full paper<sup>1</sup> for further discussion of Program-level Architecture and ERA life-cycle.

## Service Oriented ERA

Although the ERA approach outlined here applies to all architecture styles, it's more compelling and easier to apply with SOA because of SOA's emphasis on standardisation and reuse. One can actually should find that all (or at least the majority of) the operational applications within an enterprise can be covered with a single Service Oriented ERA. Another positive contribution by SOA is the expansion of ERAs to cover both business and IT. The business aspects of an ERA should cover business processes (and of course Business Services), organisation and business information architecture.

**Figure 3** shows the hierarchy of the SOA RAs that can be adopted and applied within an organisation culminating in a small number of ERAs that can be used to guide projects in creating SOA business solutions.

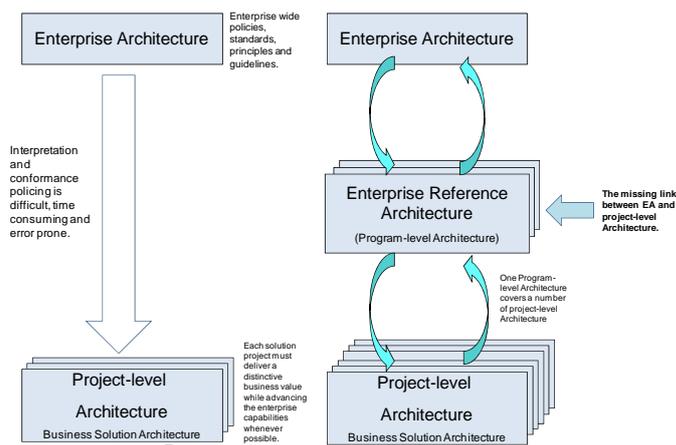
## Conclusions and next steps

This synopsis<sup>1</sup> outlined an approach for enhancing the effectiveness of EA practices with the use of Enterprise Reference Architecture (ERA).

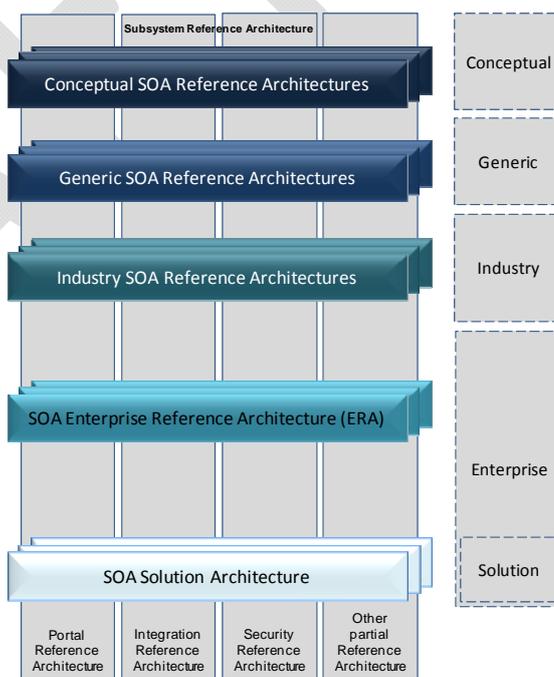
The approach outlined here was developed and has been applied successfully in a number of practical situations.

I hope that readers find the whole approach or some aspects of it useful for their organisations or clients. I welcome all feedback regarding the structure, contents or experiences related to applying the concepts discussed in the paper.

I am presently enhancing the approach and the concept of ERA based on a number of customer situations that I am currently involved in.



**Figure 2: Typical and new relationship between Enterprise Architecture and project-level architecture**



**Figure 3: Hierarchy of SOA RAs from conceptual to specific**