Preface

An enterprise architecture (EA) establishes the organization-wide roadmap to achieve an organization’s mission through optimal performance of its core business processes within an efficient information technology (IT) environment. Simply stated, enterprise architectures are “blueprints” for systematically and completely defining an organization’s current (baseline) or desired (target) environment. Enterprise architectures are essential for evolving information systems and developing new systems that optimize their mission value. This is accomplished in logical or business terms (e.g., mission, business functions, information flows, and systems environments) and technical terms (e.g., software, hardware, communications), and includes a transition plan for transitioning from the baseline environment to the target environment.

If defined, maintained, and implemented effectively, these blueprints assist in optimizing the interdependencies and interrelationships among the business operations of the enterprise and the underlying IT that support these operations. It has shown that without a complete and enforced EA (Strategic) Business Units of the enterprise run the risk of buying and building systems that are duplicative, incompatible, and unnecessarily costly to maintain and interface.

For EAs to be useful and provide business value, their development, maintenance, and implementation should be managed effectively and supported by tools. This step-by-step process guide is intended to assist in defining, maintaining, and implementing EAs by providing a disciplined and rigorous approach to EA life cycle management. It describes major EA program management areas, beginning with:

1. suggested organizational structure and management controls
2. a process for development of a baseline and target architecture,
3. development of a transition plan.

The guide is especially focusing on the Assessment of Enterprise Architecture's.

Conclusion

The items described in this guide addresses the Enterprise Architecture Score Card approach.

An electronic version of this guide can be ordered at the following Internet address: http://www/enterprise-architecture.info

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1. Introduction

Today the area of (enterprise) architecture in the virtual digital world will become more and more full-grown. So the focus is changing to the quality of the work of enterprise architects. How can we review the results of the work of (enterprise) architects and how can we review their process. Can we define quality criteria to validate the products and results from other architects?

This document describes the main line of a methodology / approach in use by several organizations to review the activities and results of enterprise architects.

This document is version 2.2 of this approach and will be continuously refined based on practical experience.

The effect of knowing that the results will be reviewed is that enterprise architects are taking more time and effort to implement and manage their enterprise architecture processes effectively as well as the take more attention to the quality of their results and decision-making.

The approach developed by Jaap Schekkerman is called the “Enterprise Architecture Score Card ™”

The attention for the quality of architecture work is growing, by the fact that the impact of enterprise architecture on organizations and technology is growing.

So how to measure that an enterprise architecture is ‘good’ given a certain situation and supporting well described goals and objectives.

So the question is when is an Enterprise Architecture Good Enough?

An Enterprise Architect knows he has achieved the perfect solution not when there is nothing left to add, but when there is, nothing left to take away. [Saint-Exupery]¹

‘Good’ in this context is a relative idea.

Before we can review an enterprise architecture, we have to define the Criteria how to review the enterprise architecture. These Criteria have a strong dependency of the goals and objectives of what has to be achieved with that enterprise architecture. So the first activity before starting an enterprise architecture study is to define these criteria.

The term enterprise architecture products used in the context of this document means all results produced by enterprise architects as a result of their activities, supporting the goals and objectives of that architecture study.

¹ From the Book, 'How to survive in the jungle of Enterprise Architecture Frameworks'; Publisher Trafford; ISBN 141201606-X; Author: J. Schekkerman; http://www.enterprise-architecture.info
2. **Goals and objectives of the Enterprise Architecture**

To support an organization’s goals and objectives, the EA program model can help us to understand the relations and elements that influence the decision-making about the adoption of enterprise architecture concepts in several ways.

### 2.1. Enterprise Architecture Program

Enterprise Architecture provides a mechanism that enables communication about the essential elements and functioning of the enterprise.

It yields centralized, stable, and consistent information about the enterprise environment. In an insurance company, for example, an EA would help executives pinpoint the company’s more lucrative markets, understand how well the company's current resources are meeting customer needs in those locations, and determine what kind of systems might be needed to improve services.

This EA program addresses at a holistic way the elements of strategy, frameworks, the overall EA process, methods & techniques, standards and tools.

This model is focused on the goals & objectives and shows the influencing elements of an enterprise in such a way that the mission of an organization is the major driving force and the environment and the stakeholders are the influencing variables of the system. The enterprise architecture lifecycle show the different elements compassing the life cycle.

There are tremendous rewards for organizations that are able to harness the vast array of available options into a holistic EA framework of flexible domains and supportive technology that meet the rapidly evolving needs of their stakeholder
communities. Enterprise Architecture process and framework must effectively align business & IT resources and processes that they enable.

Developing a system based on the EA results is asking modeling methods that comply with the system development environment. Supporting decision-making is asking other type of modeling methods and techniques.

So, besides the choices for an EA framework at the same time choices for supporting methods and techniques has to be made.

The decisions related to strategy, business goals, information needs, data mapping, selection of product- independent systems, and selection of specific hardware and software need to be guided by this framework to ensure maximal effectiveness and efficiency.

Unfortunately, while most Enterprise Architecture frameworks and processes are able to generate reasonably good descriptive enterprise architecture models, they do not create actionable, extended enterprise architectures that address today’s rapidly evolving complex collaborative environments.
3. Enterprise Architecture Score Card™

The Enterprise Architecture Score Card is based on a methodological approach for the different enterprise architecture results of different enterprise architecture process steps.

Based on predefined criteria for all aspect areas, the process steps and results can be reviewed. Before explaining more in detail the Enterprise Architecture Score Card approach, the enterprise architecture approach will be explained.

The Extended Enterprise Architecture Framework (E2A™) is a clear concept with powerful implications. By understanding any particular aspect of an organisation at any point in its evolution, enterprise architects construct results that can be very useful in making decisions about changes or extensions.

The framework contains 4 rows and 6 columns yielding 24 unique cells or aspect levels.

3.1. Separation of Concerns

'Separation of concerns' allow us to deal with conflict of interest between these concerns. We distinguish six main levels of concern within extended enterprise architecture studies often called levels of abstraction:

**Extended Enterprise Architecture Framework (E2AF)™**

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2 The Enterprise Architecture Score Card™ is a trademark of the Institute For Enterprise Architecture Developments.
3 The Extended Enterprise Architecture Framework (E2AF)™ is a trademark of the Institute For Enterprise Architecture Developments.
3.2. Decomposition of the Enterprise

The 4 rows represent the different aspect areas of the Enterprise:

- **Business or Organization**; starting point and expressing all business elements and structures in scope.
- **Information**; extracted from the business an explicit expression of information needs, flows and relations is necessary to identify the functions that can be automated.
- **Information - Systems**; the automated support of specific functions.
- **Technology - Infrastructure**; the supporting technology environment for the information systems.

All these aspect areas have to be related to each other in such a way that a coherent set of relations can be identified. Integration of these aspect areas is a necessity for an Enterprise Architectural design.

3.3. Enterprise Architectural Viewpoints

Besides the aspect areas of the enterprise architecture, specific views can be created, based on specific viewpoints or themes. Examples of viewpoints are ‘Security’ and ‘Governance’. The impact of viewpoints should be incorporated in the extended enterprise architecture results at all levels.
3.4. Enterprise Architecture Approach

Extracted from the E2A framework an Extended Enterprise Architecture approach can be defined to deal with the goals & objectives of the organization.

An example of such an approach is reflected in the above picture.
4. **Enterprise Architecture Score Card Methodology**

The Enterprise Architecture Score Card is using a methodology related to the earlier mentioned enterprise architecture aspect areas and abstraction levels by the fact that during an enterprise architecture process all these elements have to be addressed and described depending on the goals & objectives.

Based on these elements a methodology is developed to get insight and overview of the status of the addressed topics related to the quality of the enterprise architecture in scope.

Based on questionnaires per aspect area and abstraction level and over aspect areas, facts can be established to check the quality of the enterprise architecture efforts.
### Enterprise Architecture Score Card

**ASC** (Alignment / Integration Score Card)

<table>
<thead>
<tr>
<th>Sub-Score</th>
<th>Contextual Level</th>
<th>Physical Level</th>
<th>Logical Level</th>
<th>Transformational Level</th>
<th>Total Score</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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<td></td>
<td></td>
<td></td>
<td>39</td>
</tr>
</tbody>
</table>

**Questions to the enterprise architecture result**

- **Business Information Information Systems Technology Infrastructure Integration Factor 0-2; 0=Insufficient 1=Average 2=Full**

<table>
<thead>
<tr>
<th>Question</th>
<th>Status</th>
<th>Total Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Are the Mission, Vision, Goals &amp; Objectives of the enterprise architecture?</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Is the Scope of the enterprise architecture program?</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Is the Form &amp; Function Level of deliverables?</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Is the Business &amp; IT Strategy?</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Are the Guiding Principles &amp; Drivers?</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Are the Key Performance Indicators?</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Are the Critical Success Factors?</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Are the Critical Stakeholders?</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Are the Collaborative Parties involved?</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Are the Contractual Agreements?</td>
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<td>0</td>
</tr>
<tr>
<td>Are the Interoperability Standards?</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Are the related Law &amp; Regulations?</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Is the Ownership of Information?</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Are the Functional Requirements?</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Are the Non-Functional Requirements?</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Are the Concepts in use?</td>
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<td>2</td>
</tr>
<tr>
<td>Are the Security Requirements?</td>
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<tr>
<td>Are the Governance Requirements?</td>
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</tr>
<tr>
<td>Are the deliverables at logical level?</td>
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<td>1</td>
</tr>
<tr>
<td>Are the critical logical design decisions?</td>
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<td>1</td>
</tr>
<tr>
<td>Are the critical logical design decisions not visible?</td>
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</tr>
<tr>
<td>Are the Logical Description Methods &amp; Techniques?</td>
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<td>Are the Logical Standards?</td>
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<tr>
<td>Are the deliverables at physical level?</td>
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</tr>
<tr>
<td>Are the Physical Standards?</td>
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<td>0</td>
</tr>
</tbody>
</table>

**Total Score**

- Total Score 35
- Total Score 32
- Total Score 36
- Total Score 39
5. **Explanation of the used criteria & terminology**

Using the Enterprise Architecture Score Card as a measurement instrument to check the quality of the EA efforts, can be done by answering the questions based on the assessed status with the goals and objectives of the enterprise architecture program in mind.

Every Question has to be assessed for the Business, Information, Information-Systems and Technology Infrastructure areas. A special item is focusing at the level of Alignment / Integration between these areas or How Holistic was the approach and How Holistic was this documented?

For each of these areas the result of each question can be assessed from 3 different situations.

- **Status 0** = Unknown and not documented (red);
- **Status 1** = Partly known and partly documented (yellow);
- **Status 2** = Fully known and well documented (green).

Besides these 3 values, the level of alignment / integrated for each question is assessed.

So the answer of each question encompasses the elements of **knowledge** and **documentation**.

Having the knowledge, but this knowledge is not documented, means maintenance cannot be done and the knowledge is not transferable to other people.

5.1. **Calculation**

Sub-totals and totals reflect the valuation for the quality of the assessed enterprise architecture results as well for the addressed completeness of the enterprise architecture process phases.

A more in-depth insight en overview of the quality of the enterprise architecture effort can be derived, based on this approach and steering can be done in areas with to less quality.

**Questions with status 1** must be examined more in depth, to get more information about the availability, dependency, quality and level of documentation. Important is to get the **rationales of decisions** made during the enterprise architecture process.
5.2. **Maintainability**

Besides the assessment of the quality, **maintainability** is even so a very important issue to address during the assessment process.

Are the enterprise architecture results in such a way documented that in a later stage other enterprise architects can easily understand and maintain that enterprise architecture? The topic of maintainability has to be explicitly addressed in the overall review report. Enterprise Architecture Modeling & Documentation Tools can be very helpful in maintaining Enterprise Architectures.

Best practices within organizations will constantly update and refine this methodology. So if you have any experience with reviewing enterprise architecture projects and results, please share your experiences so that we can refine the Enterprise Architecture Score Card.

5.3. **Project set up**

Experiences within organizations show that enterprise architecture projects that will be reviewed, are better planned, better managed and better documented. So let your enterprise architecture team know up front that there processes and results will be reviewed. That will directly influence the overall quality of the enterprise architecture program.