



EVALUATING ENTERPRISE ARCHITECTURE COMPLIANCE

AISA Project Report

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Summary

This report describes the results of a study focusing on Enterprise Architecture (EA) compliance. Many companies are currently interested in finding ways to ensure EA compliance. However, existing literature on the subject is rare, consisting mostly of standards (such as TOGAF) and US Government sources. Hence, we consider EA compliance as an important area of further research.

The objective of this research, carried out in the AISA project, was to define and chart approaches and practices for EA compliance and its evaluation. This report addresses the concept of EA compliance by presenting its various aspects and discussing EA compliance evaluation issues, such as evaluation goals and objectives, evaluation targets and evaluators.

In general, compliance seems to have various meanings; it may indicate conformance with laws and regulations, organization's internal plans, policies, and standards, organization's internal practices (e.g. project procedures and guidelines), partners' practices and policies, as well as public standards.

Similarly, compliance has also several meanings in the context of EA. In this study, the concept of EA compliance is suggested to have both internal and external aspect: 1) internal EA compliance refers to ensuring that investments (as well as projects implementing the investments) are conformant with EA and its policies and guidelines, and 2) external EA compliance refers to ensuring that EA is conformant with the business objectives and strategies.

One of the main goals of EA compliance evaluation is to ensure that the organization is moving towards the target architecture. Basically, this can be done in two ways: 1) By directing a project or investment to comply with EA – the proactive approach, or 2) by assuring the compliance between the actual impacts of investment or project and EA – the reactive approach. Additional benefits are that EA compliance evaluation helps to ensure the usability and appropriateness of EA policies, EA frameworks, EA descriptions and so forth and provides valuable feedback to the architecture group.

A set of evaluation objects between which the EA compliance may be evaluated are suggested. These objects include: business, investments, EA, projects, external directions, partners, customers, and the actual impacts of investment or project. The compliance evaluation target can therefore be defined as the relationship between the objects. Stakeholders conducting or assisting the compliance evaluation are those dealing with or in charge of the above mentioned objects. Usually, the EA compliance evaluation is carried out with the help of documents related to each object.

In this study, the practitioners brought also out that the focus of the concept of EA compliance may vary according to the EA maturity level. Furthermore, EA compliance seems to have a dynamic nature; it can currently be on an acceptable level, but while the organization's operating environment is constantly changing, non-compliance may be reality in the next moment.

Finally, examples of evaluation practices are given to stimulate the organization-specific planning of EA compliance evaluation.



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1 Introduction

Currently, many companies actively develop their Enterprise Architecture (EA) processes, and EA compliance activities are part of these processes. However, the meaning of the concept of EA compliance does not seem to be clear. In addition, there does not seem to be a clear understanding on how to evaluate EA compliance. Also, the existing literature on EA compliance is rare, consisting mostly of standards, such as TOGAF (The Open Group 2006), and various US Government sources (see e.g. CIO Council 2001; GAO 2003; NIH 2006). Hence, we consider EA compliance as an important area of further research.

This report considers features of EA compliance: what it is and how it can be evaluated. Specifically, we are interested in finding answers to questions, such as 1) what are the aspects of EA compliance?, 2) what are the meaning and goals of EA compliance evaluation?, 3) what are benefits of EA compliance evaluation?, and 4) how can EA compliance evaluation be carried out?

The remainder of this report is organized as follows. In the next section, we shortly present the research phases of the study. In section 3, we discuss the concept of compliance both on a general level and in the context of EA. In section 4, the goals and benefits of EA compliance evaluation are described. Following this, in section 5, EA compliance evaluation issues, such as the evaluators, more specific evaluation targets, timing of evaluation, and some examples of the evaluation practices, are described. The last section summarizes the report and highlights the main conclusions for practitioners.



2 Research Method

The study consisted of the following steps (Figure 1):

1. **Literature review** of scientific articles, organizations' public EA compliance method descriptions (mostly various US Government sources), and standards (such as TOGAF) was conducted to chart the area of EA compliance.
2. **A focus group interview** (Krueger and Casey 2000) of seven practitioners representing the participating organizations, was arranged in December 14, 2006 in order to review, discuss and validate the literature review results. In Table 1, the participants are described.

Table 1. Participants of the focus group interview.

Case company	Number of employees (year 2005)	Industry	Number of interviewees
Company 1	28 000	Retail and service	1
Company 2	14	IT consultation and service	2
Company 3	1 000	Business & IT consulting and development, part of a large international company with over 300 000 employees	2
Company 4	12 000	Banking, finance and insurance	1
Company 5	5 000	Telecommunications	1

3. **An analysis and consolidation of the results** of both the focus group interview and the literature review was carried out.

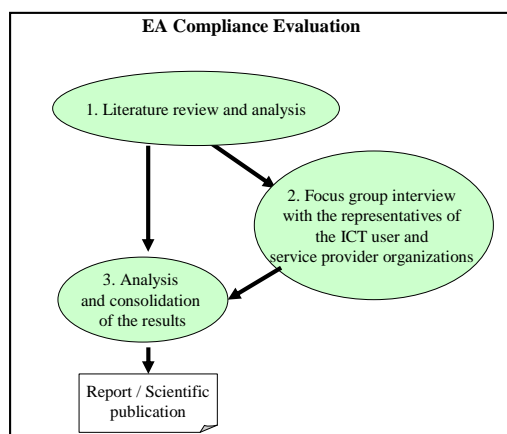


Figure 1. The steps of determining the aspects of EA compliance and its evaluation.



3 The Concept of Compliance

In this section, the concept of compliance is discussed both on a general level, as well as in the context of EA.

3.1 Compliance on a General Level

The concept of compliance does not seem to have a single all-encompassing definition in general. Compliance has, for example, been defined as

- “the act of complying; acquiescence”, or “a disposition to yield to or comply with others” (Collins English Dictionary)
- “performance according to standards” (Quality Assurance Project 2006)
- “the ability to reasonably ensure conformity and adherence to organization policies, plans, procedures, law, regulations, and contracts” (Internal Auditing Standards Board 1995)
- “in management, the act of adhering to, and demonstrating adherence to, a standard or regulation.” (Wikipedia; <http://en.wikipedia.org/wiki/Compliance>)
- “an affirmative indication or judgment that the supplier of a product or service has met the requirements of the relevant specifications, contract, or regulation; also, the state of meeting the requirements. In ISO terms, compliance to regulations.” (PEER Center 2006)
- a way to ensure “that business processes are executed as expected” (Cannon and Byers 2006)
- “Compliance is about [...] laws and regulations” (Allman 2006).

Compliance seems thus to be a multifaceted concept: it may indicate conformance of an object’s (e.g. a product, process, service etc.) characteristics’ (e.g. documentation and models) with at least one or more of the following:

- business requirements
- organization’s internal plans, policies, and standards
- organization’s internal practices (e.g. project procedures and guidelines)
- standards
- regulations and laws, and
- partners’ practices and policies.



3.2 Enterprise Architecture Compliance – the Many Faces of the Concept

In this section, the concept of compliance in the context of EA is briefly addressed, and a suggestion of a definition for EA compliance is presented.

Like we pointed out in the previous section, compliance is currently a multifaceted concept with no well-defined description. When it comes to EA compliance, the concept seems to be even vaguer for the time being.

Based on the various definitions of compliance, an initial definition for the concept of EA compliance was generated to be discussed in the focus group interview. We suggested that **Enterprise Architecture Compliance** is

an affirmative indication or judgment that individual projects and investments will meet or have met the Enterprise Architecture related requirements, i.e. comply with the relevant specifications, such as established or approved enterprise architecture descriptions, policies, compliance criteria, and business objectives.

Processes related to EA compliance are, for example, architecture compliance review process and project impact assessment. These can be defined, for instance, as follows.

Architecture Compliance Review Process evaluates a single project against the agreed “architectural criteria, spirit, and business objectives” (The Open Group 2006). This definition is based on the aim to ensure the compliance of individual projects with the technical architecture (The Open Group 2006). On the other hand, Architecture Compliance Process has also been described as a “process by which the Enterprise Architecture will be used and enforced in the day to day decision making by the Enterprise” (Spurway and Patterson 2005).

Project Impact Assessment evaluates the “project-specific views of the enterprise architecture that illustrate how the enterprise architecture impacts on the major projects within the organization” (The Open Group 2006).

In the proceeding sections, the EA compliance is discussed in the sense of its evaluation.



4 Goals and Benefits of EA Compliance Evaluation

In this section, the key goals and benefits of EA compliance evaluation are briefly discussed.

4.1 Key Goals of EA Compliance Evaluation

There seem to be two major goals for EA compliance evaluation:

1. **Directing a project or investment to comply with EA – the proactive approach** (Spurway and Patterson 2005) (see also CIO Council 2001; Paras 2005; Aziz, Obitz et al. 2006; NIH 2006; The Open Group 2006):
 - Direction and guidance of investments and projects to ensure that the organization is moving towards the target architecture,
 - Supporting projects and investments by defining how and when the EA assets are to be used with the IT solution delivery process and IT investment decision making, and
 - Encouraging the organization, especially IT projects, to utilize the EA specifications and guidelines
2. **Assuring the compliance between the impacts of investment or project and EA – the reactive approach** (Spurway and Patterson 2005) (see also GAO 2003; NIH 2006):
 - EA assessment of IT projects and investments,
 - Definition of EA reviews and assessments conducted within the IT solution delivery process, and
 - Investment follow-up with regard to EA descriptions.

These main goals were also mentioned to be essential by the practitioners in the focus group interview.

In addition, on the basis of the previous focus group interviews and discussions with EA practitioners in the AISA project, we suggest the following additional goal. The idea has also been disclosed in the context of non-compliance by TOGAF (The Open Group 2006).

3. **Ensuring the usability and appropriateness of EA policies, EA frameworks, EA descriptions, business objectives and so forth:**
 - Evaluation through experience-based feedback from projects and investment processes,
 - Basis for improvement, and
 - Identifying where e.g. the EA standards, policies and principles themselves may require modification.



4.2 Benefits of EA Compliance Evaluation

In addition to the three major goals of EA compliance evaluation briefly described above, TOGAF provides a rather extensive list of goals of architecture compliance review. We consider them as project-related benefits of EA compliance evaluation. These benefits of EA compliance evaluation include, for instance, the following issues (see The Open Group 2006 for more information):

- Enables to catch errors in the project architecture early.
- Ensures the application of best practices to architecture work.
- Supports the architecture development to
 - o Identify services that are currently application-specific but might be provided as part of the enterprise infrastructure.
 - o Decide between architectural alternatives, since the business decision-makers typically involved in the review can guide decisions in terms of what is best for the business, as opposed to what is technically more pleasing or elegant.
 - o Identify risks: an Architecture Compliance review tends to look primarily at the critical risk areas of a system, it often highlights the main risks for system owners.
 - o Identify and communicate significant architectural gaps to product and service providers.
 - o Take advantage of advances in technology.
- Supports the development and improvement of processes and practices to
 - o Document strategies for collaboration, resource sharing, and other synergies across multiple architecture teams.
 - o Identify key criteria for procurement activities.
- Supports the management, for instance, in the following ways:
 - o The output of the architecture compliance review is one of the few measurable deliverables to the CIO to assist in decision-making.
 - o Communicate to management the status of technical readiness of the project.
- Increases communication between business, IT and management personnel:
 - o Architecture reviews can serve as a way for the architecture organization to engage with development projects that might otherwise proceed without involvement of the architecture function.
 - o Architecture reviews can demonstrate rapid and positive support to the enterprise business community: The enterprise architecture and architecture compliance helps ensure the alignment of IT projects with business objectives.



5 Aspects of EA Compliance Evaluation

In this section, EA compliance evaluation is discussed in terms of

- More precise evaluation targets of compliance: what is evaluated, which objects are compared with each other?
- Evaluators: who does the evaluation?
- Levels of compliance: what is the “amount” of compliance?
- Timing of evaluation: when the evaluation is done? and
- Evaluation practices: how the evaluation can be carried out?

5.1 Evaluation Targets

According to the literature reviewed, EA compliance evaluation usually deals with the following three high-level objects: the EA itself, project or investment process, and the output of a project or investment process (CIO Council 2001; GAO 2003; Spurway and Patterson 2005; Aziz, Obitz et al. 2006; NIH 2006; The Open Group 2006). The EA compliance evaluation target can therefore be defined as the relationship between these objects. The high-level objects are displayed in Table 2 together with the potential low-level items, mentioned by the literature, to be utilized in evaluating the relationship between these objects (i.e. in evaluating EA compliance).

Table 2. Examples of EA compliance evaluation objects.

Evaluation object	Items to be evaluated	References
Enterprise Architecture	<ul style="list-style-type: none">- Architectural descriptions (target architecture)- Transition plan- Principles	(CIO Council 2001; GAO 2003; Spurway and Patterson 2005; Aziz, Obitz et al. 2006; NIH 2006; The Open Group 2006)
Project / investment process	<ul style="list-style-type: none">- Architectural descriptions (project or system architecture)- Business case- Acquisition plan- Project plan	(CIO Council 2001; GAO 2003; Aziz, Obitz et al. 2006; NIH 2006)
Project / investment process output	<ul style="list-style-type: none">- Architectural descriptions (project or system architecture)	(GAO 2003; Spurway and Patterson 2005; NIH 2006)



Based on the literature review and the focus group interview, the following high-level objects between which possible EA compliance evaluation targets can be determined, were suggested:

- **Business**; including e.g. vision, mission, strategies, and plans of actions.
- **Investment** that is needed to fulfill the business vision and mission.
- **Project**; the tool to implement the investment.
- **Enterprise Architecture**; a holistic view to the entire enterprise or organization aiming at better business-IT alignment.
- **External Directions**; including e.g. regulations, standards, or reference architectures that need to be taken into consideration in the business operations or IT development.
- **Partners**; they may provide their own procedures, guidelines or constraints in out-sourcing engagements or when an organization purchases COTS products.
- **Customers**; in some cases the organization's customer's EA, practices or guidelines need also to be taken into consideration when evaluating EA compliance.
- **Actual Impacts of the Project or Investment** indicating whether and how long a step, a transition, has been taken towards the target architecture state.

Moreover, the practitioners in the focus group interview brought out that initial definition of EA compliance seems to give too limited a view of the concept. Hence, it was suggested that **EA compliance could be divided into internal and external compliance**:

- **Internal compliance** basically refers to the compliance between investments – as well as the projects that implement the investments – and EA and its policies and guidelines. In addition, it may refer to the compliance between the impacts of the investments and projects and EA in order to ensure that expected results and affects have actually been achieved.
- **External compliance** is about the compliance between the EA and the business objectives or strategies of the organization; are the EA guidelines, framework, target state, and so forth, in line with the business requirements. External compliance is suggested also to refer to the organization's ability, with the help of its EA, to react to the changing environment of the organization, as well as to the conformance with the laws and regulations the organization needs to obey.

The evaluation objects, as well as the evaluation targets of internal and external compliance, are described in Figure 2. Compliance between the objects is depicted with arrows. Block arrows depict either internal or external compliance, and small dotted arrows other possible connections between the objects of compliance evaluation. Additionally, examples of lower-level items belonging to each object are included in the figure to illustrate the possible documents or descriptions that can be utilized in the compliance evaluation, based on the focus group interview and the literature displayed in Table 2.



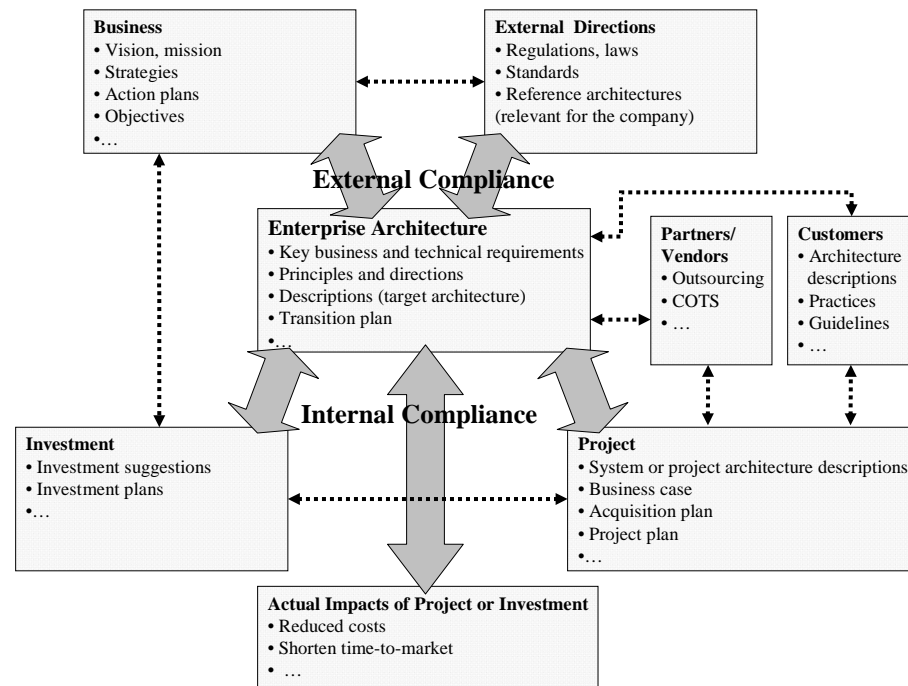


Figure 2. Internal and external EA compliance evaluation targets (blow arrows), as well as several other possible EA compliance evaluation targets (dotted arrows), can be defined between the various objects of EA compliance evaluation (the figure is derived from the focus group interview results).

According to the discussion about the concept of EA compliance there are internal and external compliance, and both should be evaluated. In addition, there is a set of other possible evaluation targets (i.e. relationships between the evaluation objects) that may require consideration in the organizations as well.

External compliance evaluation targets

First of all, compliance (on an acceptable level) is required between Business and EA. It should be evaluated especially in the case of top management or strategy change, helping to assure that EA stays compliant with the altered business strategy, objectives, or other business requirements. Another external compliance evaluation target is the compliance between External Directions and EA. Evaluation of this relationship is required especially if a reference architecture (such as eTOM¹ or TOGAF) is applied in the organization.

Internal EA compliance evaluation targets

Similarly, compliance evaluation is required between EA and Investment, Project and the actual impacts of both investment and project. In the focus group interview, it was stressed that it is possible that a project may succeed and fulfill its objectives, but the investment the project implemented fails – the impacts of the investment were not as expected. Additionally, compliance between project and EA may include two levels

¹ The enhanced Telecom Operations Map; URL: <http://www.tmforum.org/>



(adapted from The Open Group 2006): (design) process compliance (are we doing things right?) and content compliance (are we doing the right things?). In a project, EA compliance could be used as a project metric to ensure that projects stay compliant with EA even when people change. EA compliance should also be assessed throughout the project's lifecycle. (Paras 2005)

Other possible compliance evaluation targets

There are several other possible compliance evaluation targets depicted in Figure 2 that may require attention in the organizations. First, compliance could be assured between External Directions and Business to ensure that all necessary regulations, laws, standards, and so forth, are conformed to. Second, it may be assured that there is compliance between Business and Investment.

Third, compliance is also required between EA and partners and vendors, especially in mergers and outsourcing cases. The merger or outsourcing partner may have their own EA policies and guidelines, and the organization needs to be compliant with them. If a project utilizes COTS products, the products characteristics may affect the compliance between EA, the project, and its impacts. In addition to COTS products, IT vendors and other service providers may provide practices, methods and architecture documents to projects, affecting EA compliance. Fourth, in close customerships, compliance may also be required between an organization's and its customer's EA, practices and guidelines. Moreover, EA compliance in projects carried out to customers could be addressed as well, helping to assure that the project is compliant with the customer's EA, practices and guidelines. Finally, it should be assured that a project is compliant with the investment it is supposed to implement.

5.2 Evaluators

Literature does not state precisely which stakeholders should carry out EA compliance evaluation. However, Spurway and Patterson (Spurway and Patterson 2005) provide examples on two classes of EA compliance evaluation roles:

1. *Project roles*, which provide necessary project documentation needed in EA compliance evaluation, and
2. *Architecture roles*, which carry out the actual compliance evaluation and support Project roles in the identification and creation of necessary documentation.

Hence, we initially suggested that the architecture group and a project or investment representative are the two primary stakeholders that perform the EA compliance evaluation (adapted from Spurway and Patterson 2005; NIH 2006). The architecture group is in a key role in EA compliance evaluation by providing guidance and direction to projects and possibly by conducting formal compliance reviews as part of EA governance processes/practices. Usually, there are two types of EA compliance related guidance (adapted from NIH 2006): 1) guidance provided to projects and investments automatically (push), or 2) guidance asked by project or investment representatives (ad hoc or pull).



This viewpoint of two major evaluators was, however, considered too limited by the focus group participants. Instead, it was suggested that the possible EA compliance evaluators are those stakeholders (or roles) that have the responsibility in the area of the evaluation targets presented in Figure 2. These possible evaluators are listed in Table 3.

Table 3. Possible evaluators of EA compliance based on the focus group interview results.

Evaluator	Description	Responsibility Area
Business Developer Process Owner Business Architect	Stakeholder that has the responsibility of business (process) development, or business architecture, performs or assists in evaluating the compliance between Business and EA (i.e. external compliance). In addition, this stakeholder may perform or assist the compliance evaluation between Business and External Directions or between Business and Investment.	Business
EA Team Enterprise Architect	Stakeholder that provides direction and guidance (push or pull/ad hoc) for projects and performs or assists in evaluating both the external compliance between EA and Business or External Directions, and the internal compliance between EA and Investment, Project or the impacts these have in the organization. In addition, this stakeholder may evaluate the compliance between EA and Partners or Customers (their policies and guidelines). Evaluation is possibly conducted with the help of (formal) compliance reviews.	Enterprise Architecture
Investment Representative e.g. Controller	Stakeholder that participates in evaluating whether the planned investment is in line with the organization's strategies and goals.	Investment
Project Representative e.g. Project Manager, Technical Architect	Stakeholder that is responsible for a project management or project content may carry out self-evaluation of the compliance between the project and EA. However, the focus group stated that a project manager may not be aware enough about EA to be able to do self-evaluation. In addition, this stakeholder may participate in conducting compliance evaluation between Project and Partners, Customers or Investments.	Project



Evaluator	Description	Responsibility Area
Representative(s) of Out-sourcing or IT/Service Provider Partner(s)	Stakeholder that assists in evaluating whether Partner's policies and guidelines, even Partner's EA, are taken into account in organization's EA work and projects.	Partners

In addition to the stakeholders mentioned in the table above, there may be another stakeholder who could be regarded as a possible evaluator of EA compliance: an EA governance board, also referred to as an architecture board (see e.g. The Open Group 2006) or an EA steering committee (see e.g. CIO Council 2001). If an EA governance board exists in an organization (including representatives from various stakeholder groups), it may have – among many other things – the responsibility of evaluating the compliance between business and EA. Thus, the problematic situation where the EA team evaluates its own work can be avoided. In addition, EA governance board may conduct or assist in conducting (formal) compliance reviews regarding other EA compliance evaluation targets as well.

5.3 Levels of Compliance

Definition of the levels of compliance is more or less an organization specific decision. In this section, we present two examples of how these levels can be defined. First, TOGAF (The Open Group 2006) defines six levels and they are illustrated in Figure 3.

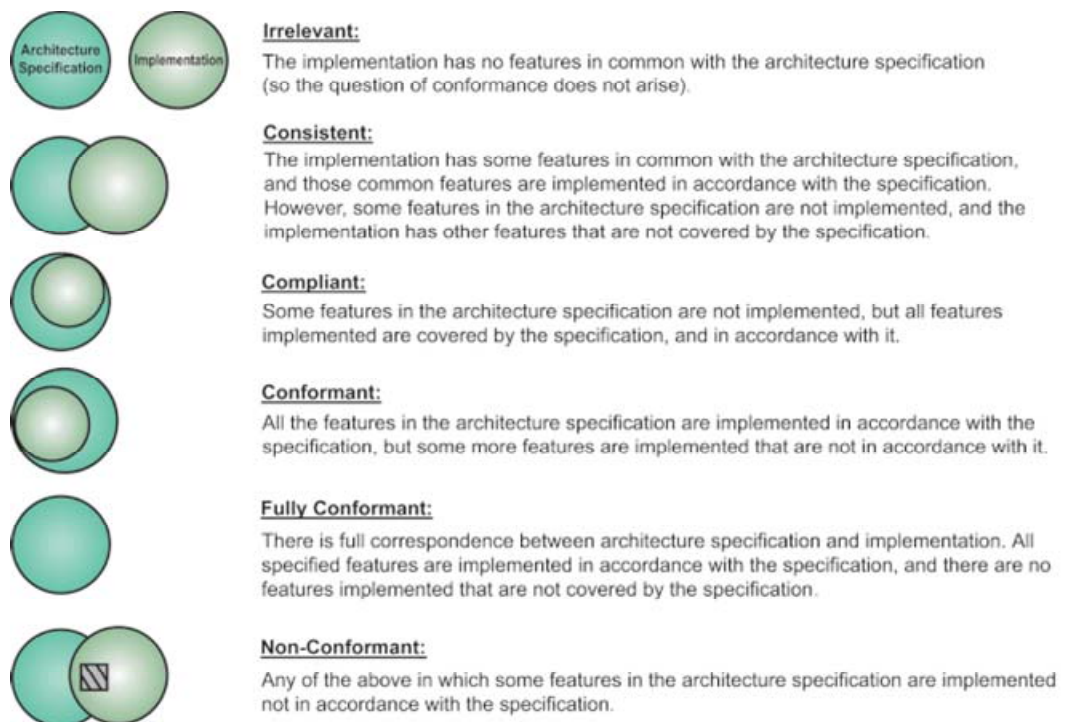


Figure 3. The levels of Architecture Compliance in TOGAF (The Open Group 2006).



Second, Department of Defence (BTA 2006) defines only three levels of compliance:

- Compliant
 - o Compliant with the requirements/EA, or
 - o Compliant with conditions.
- Compliant – non conflicting (system is not associated with EA)
 - o Supports no EA capabilities, OR
 - o Premature in system's lifecycle to assess against EA capabilities.
- Non-compliant
 - o Does not meet the requirements
 - o Justification for not fulfilling the requirements is needed
 - o May induce a request for change

Also non-compliance can be a positive situation: “While compliance to architecture is required for development and implementation, non-compliance also provides a mechanism for highlighting areas to be addressed for realignment or areas for consideration for integration into the architectures as they are uncovered by the compliance processes” (The Open Group 2006). This aspect was also pointed out by the focus group participants: compliance evaluation is an important means of receiving feedback, especially about how usable has the EA been, is there a need to change something about the EA and its specifications or processes, or should even the business requirements be reconsidered?

5.4 Timing of Compliance Evaluation

In this section, we will briefly discuss at which points the EA compliance should be evaluated. TOGAF (The Open Group 2006) suggests that “timing of compliance activities should be considered with regard to the development of the architectures themselves” and that compliance reviews should be held “at appropriate project milestones or checkpoints in the project's lifecycle”. These checkpoints may include the following:

- Project initiation
- Initial design
- Major design changes
- Ad hoc (when needed).

In the focus group discussion, the following milestones were added to the list by the practitioners:

- End of the project
- Evaluation of the actual impacts afterwards
- Evaluation of the compliance later in the system life-cycle (e.g. when the next release of the system is published).



In addition, TOGAF (The Open Group 2006) advises to take the architecture compliance review at “a point in time when business requirements and the enterprise architecture are reasonably firm, and the project architecture is taking shape, well before its completion. The aim is to hold the review as soon as practical, at a stage when there is still time to correct any major errors or shortcomings, with the obvious proviso that there needs to have been some significant development of the project architecture in order for there to be something to review.”

Furthermore, the practitioners presented some business change situations where compliance evaluations may be needed. These are, for example:

- **Mergers:** Alignment is needed between two or more different businesses as well as different Enterprise Architectures.
- **Out-sourcing:** Partners may provide their own visions, practices, and so forth that need to be considered.
- **Top-management or strategy changes:** The impacts are usually extensive, and change management becomes an important issue.

5.5 Practices for Compliance Evaluation

In this section, we will shortly list some examples of tools or procedures to support carrying out EA compliance evaluation.

Examples of Validation Processes:

- Architecture Compliance Assessment Process (Eurocontrol 2006)
- TOGAF 8 Architecture Compliance Review Process (The Open Group 2006)
- Federal Enterprise Architecture Investment Process and Architecture Project Assessment Framework (CIO Council 2001)
- National Institutes of Health Enterprise Architecture Compliance Process (NIH 2006)

Examples of Compliance Checklists:

- USIGS Architecture Compliance Checklist (NIMA 1998). The checklist is intended to be used when reviewing requirements documents (e.g. mission needs), acquisition documents (e.g. system specifications), requests for changes and engineering change proposals related to any of the above.
- TOGAF 8 Architecture Compliance Review Checklists (The Open Group 2006)

An example of an Architecture Compliance Plan (BTA 2006): “A document required for systems that are not fully compliant and provides

- a detailed assessment of the system’s current degree of compliance,
- the required actions to achieve full compliance,
- the key milestones and proposed deadline to achieve full compliance, and
- any risks and dependencies that are associated with achieving full EA compliance.”



6 Conclusions

In this report, we presented the study which considered the various aspects of the concept of EA compliance. This section summarizes the report, and highlights the main conclusions of this study for practitioners.

The concept of compliance has many facets. It may indicate an object's characteristics' conformance with laws and regulations, organization's internal plans, policies, and standards, organization's internal practices (e.g. project procedures and guidelines), partners' practices and policies, as well as public standards. However, in the focus group interview, the practitioners brought out that compliance on a general level mainly refers to conformance with laws and regulations.

In this report, the concept of EA compliance was suggested to have both internal and external aspect. Internal EA compliance refers to ensuring that investments (as well as the projects implementing the investments) are conformant with EA and its policies and guidelines. Furthermore, it may refer to the compliance between the impacts of the investments and projects and EA in order to ensure that expected results and affects have actually been achieved. External EA compliance refers to ensuring that EA is conformant with the business objectives and strategies. In addition, it may refer to the organization's ability, with the help of its EA, to react to the changing environment of the organization, as well as to the conformance with the laws and regulations the organization needs to obey.

EA compliance evaluation can be regarded as a part of EA governance. The architecture group is in a key role in EA compliance evaluation by providing guidance and direction to projects and possibly by conducting formal compliance reviews. The main goal of EA compliance evaluation is to ensure that the organization is moving towards the target architecture. Basically, this can be done in two ways: 1) By directing a project or investment to comply with EA – the proactive approach, or 2) by assuring the compliance between the actual impacts of investment or project and EA – the reactive approach. Additionally, EA compliance evaluation helps ensure the usability and appropriateness of EA policies, EA frameworks, EA descriptions and so forth and provides valuable feedback to the architecture group.

This report introduced a group of evaluation objects between which the EA compliance, internal or external, can be evaluated (i.e. EA compliance evaluation targets are the relationships between the objects). The objects include: business, investment, EA, project, external directions, partners, customers, and the actual impacts of investment or project. Stakeholders conducting or assisting the compliance evaluation are those dealing with or in charge of the above mentioned objects. Usually, the EA compliance evaluation is conducted with the help of documents related to each object.



Examples for practices for EA compliance evaluation can be found; nevertheless, each organization needs to make its own decisions on various issues, such as

- Audience/stakeholders: Who is interested in the EA compliance evaluation results? Whom the results are presented to?
- Responsibilities: Who conducts the evaluation?
- Timing: When the evaluation is conducted, at which milestones?
- Process and practices:
 - o How the evaluation is conducted? Which processes and tasks are needed?
 - o Which project or investment related artifacts are compared to which EA related artifacts?
 - o Compliance levels: How many levels of compliance need to be defined? Is there a need to define specific levels of compliance?

In this report, we briefly discussed the evaluators and timing issues, as well as presented some examples of evaluation practices to stimulate the organization-specific planning of EA compliance evaluation.

Finally, the practitioners in the focus group interview brought out that also the following aspects should be kept in mind when planning the EA compliance evaluation:

- **EA compliance has a dynamic nature:** The environment of the organization is constantly changing, and so is its architecture. Therefore, compliance – internal or external – can be evaluated to be on an appropriate and acceptable level at the moment, but it does not guarantee that this is the case next week, or next month.
- **EA compliance depends on the EA maturity level:** Both the meaning and content of EA compliance may vary according to the EA maturity level. It was suggested that in the lower levels of maturity (i.e. in the beginning of the EA development work), EA compliance and its evaluation actually equals quality assurance, and especially the impacts of architecture development and architecture work are a focal issue. After the architecture work has become a more established process in the organization, the various aspects of EA compliance (internal and external compliance) will become more current.

Further research could provide more generic practices and reference models for systematic EA compliance evaluation. Especially, the process of compliance evaluation as a part of EA governance practices should be further clarified to determine the possible triggers for starting a compliance evaluation.



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