Enterprise architecture: business and IT alignment.

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Enterprise Architecture: Business and IT Alignment

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ABSTRACT

Organizations have existing systems infrastructure that are the result of decades of one-by-one implementations of specific solutions. As organizations, products, customers and technologies continue to change at an increasingly rapid rate, managers have sought overviews that will allow them to understand how Business and IT within their organization fits together. Enterprise Architecture is a representation of the organization to enable the planning of the organization changes. It includes the current and future business objectives, goals, visions, strategies, informational entities, business processes, people, organization structures, application systems, technological infrastructures, and so on.
In this paper, we show how the alignment between Business and IT can be disaggregated into four different dimensions and we present some heuristics to ensure such alignment.

Keywords
Enterprise Architecture, Alignment, Alignment Heuristics.

1. INTRODUCTION

The alignment between Business and Information Systems is a key issue in every organization, given the impact it has in the overall organization. The need for repeated data insertions in different systems, the effort required to keep multiple replicas of the same information coherency and the lack of business information are common examples of such misalignment.

The concept of alignment is based on ideas commonly used in the Enterprise Architecture Frameworks (EAFs) [4, 7, 8, 9], where organization Business and IT are drawn. However, even though business and IT are commonly understood concepts, they are addressed differently in different frameworks. Therefore, in this work we try to express business and IT alignment in terms of well understood components, found in most EAFs, namely Business, Information, Application and Technology Architectures.

2. ARCHITECTURAL COMPONENTS ALIGNMENT

Although a formal definition of the alignments' concept is an on going work, we all face evidences of misalignments in everyday live. The concept firstly appeared in the 1970's [2, 3, 5] and its relevancy and actuality is unquestionable, given the level of dissatisfaction that exists in organizations regarding to their information systems.

We define Alignment among Business, Systems and Information

as a way to quantify the coherency level in relation to the business necessity, the systems offer and information management [6].

Attending to this definition, our understanding about alignment is the result of these possible misalignments: (1) between Business Process (BP) and Information; (2) between BP and Applications; (3) between Applications and Information; (4) between IT and Information; and (5) between Applications and IT. The scope of this work does not include IT architecture and emphasizes the first three alignments.

Therefore, alignment between Business Architecture (BA) and Application Architecture (AA) is a concern with the automation of work that employees actually need to do to use applications that run the business, for example: insert the same data in several systems; logging in several applications that support the same business process; and manually transform and process reports and data that are produced by the application systems.

A measure of such misalignment would be the time/effort business employees spend doing the work required for the use of the application systems. All work that has no direct link to business and it is only justified to interface with the Applications infrastructure is an evidence of misalignment between BA and AA. Let us give a parallel example with the purpose driving the car. The business purpose would be to move forward/backwards at a given speed, break and so on. In this sense, manual gears are less aligned than automatic gears, because it requires more work for the driver to use the car, with no impact on the business goals. An example of misalignment between BA and AA is when, each time, an employee is admitted in the organization and business people have to register him/her in several application systems. BA and AA alignment is most related with BP automation.

Alignment between AA and (Information Architecture) IA is mostly about the effort IT people spend to provide necessary information for applications and business operations running. It is a well known fact that the same information (example, customer address) is replicated several times in organization systems and that a significant portion of IT budget goes to maintain the code/procedures that keep replicas coherent and updated.

An ERP System (Enterprise Resource Planning) is a good example of AA and AI alignment. By having a single database, ERPs do achieve a highly aligned Application and Information Architectures because there are no information replicas within the ERP to keep it coherent and updated. However, this does not mean that ERP Workflows are aligned with the business processes.

Using the employee admission example, examples of misalignment between Application Information Architectures is the time IT people spend on:
- Running synchronization programs for updating the employee lists among different applications;
- Dealing with eventual errors during the synchronization process;

- Updating and maintaining the batch programs when new fields are necessary or when new applications are involved in the management of the list.

Alignment between BA and IA is constant concern with providing information required to perform non-automated actions:

- Implicit decisions in business processes;
- Controlling and managing the business;
- Decision making.

In a well aligned BA and IA, business managers spend no time searching for information that their systems could provide. An example of misalignment between BA and IA is when the client has to ask the supplier for things he is buying.

2.1 Alignment Heuristics

We have been using alignment heuristics as rules for achieving architectures' alignment. In most cases, heuristics are no more than an alert to a situation that requires further analyses and justification. For example, a process that is performed without accessing to any information entity or an information entity that is never created. In this section we list a set of heuristics that have been helping us to diagnosis the state of alignment, identifying several factors that represent most of the cases of misalignment.

2.1.1 Alignment between Business Architecture and Information Architecture

In this paper, alignment between BA and IA is restricted to the relationships between business processes and informational entities.

Information Entities must have a way of identification (from a business perspective), a description and a set of attributes. Attributes are related to business processes and to application systems.

The Heuristics to apply to this alignment are:

- All processes create, update and/or delete at least one entity;
- All entities attributes are read at least by one process;
- All processes assume the same entity description. This means that there is a single interpretation of the entity.

2.1.2 Alignment between Business Architecture and Application Architecture

In the alignment between BA and AA, we are restricted to the relationships between business processes and application systems.

Application properties are classified as availability (up time), scalability (ability to scale up performance), profile based accesses (ability to identify who does each task).

The heuristics to apply to this alignment are:

- Each business process should be supported by at least one application system;
- Business process tasks should be supported by a single application;
- Critical business process should depend on scalable and available applications;
- Each application system functionality should support at least one business process task.

2.1.3 Alignment between Application Architecture and Information Architecture

Alignment between AA and IA deals with the relationships between application systems and informational entities.

When applications use information entities, the attributes should be classified as security (public, private, confidential). Information Entities must have identification.

The heuristics to apply to this alignment are:

- An entity is managed by only one application. Managed means create, assign and have identification. Other applications may update entities fields;
- If an information entity's ID is recovered, then the corresponding information entity should be created and deleted by the same computational process;
- The data management should be automatic among the application systems;
- Private entities should depend on restricted access applications;
- Confidential entities should depend on restricted access applications;
- The rate of updates should be correlated with rate of reads.

3. FURTHER RESEARCH

The Alignment Heuristics has the goal of providing a measure to better formulate, understand, analyze and evaluate an organization from the Information Systems point of view and for that we use the Enterprise Architecture's concepts. We use it to achieve a superior alignment between business and IS, however, due to the constant changes in organization, business and technology, ensuring alignment must be perceived as a process not a static result. This dynamic aspect of the work is an issue to future research. In current research is not intentionally present in this work the alignment among TA and the other architectures, in which our approach to the IT issue follows the SOA paradigm.

It is also our aim in future research to have a cross view among some of the key issues that support the alignment, such as: list of evidences of misalignment; questions on specific roles in the targeted organization which answers reveal the nature and status of alignment [1]; and, of course, alignment heuristics.

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