Extended abstract

Nowadays with the aggressive competition, demanding customers, global market organizations have to be more competitive and adaptable to change. In addition developing architecture for an organization is a serious challenge because it needs to understand all the organizational aspects of the organization. In fact creating and developing an architecture for any organization can only thrive if it takes an organizational design and architecture analysis, into account to fully understand the organization alignment between structure, goals, strategy, information flow and business processes.

Organizational design and organizational architecture are two different essential concepts bound together by the same principle of understanding and capturing an organization as-is. Analyzing both concepts can improve an organizational architecture in terms of efficiency and effectiveness. The organizational design is a guided process to integrate information, people, technology and their relationships within an organization. It also uses approaches to capture each concept, such as, environment, strategy, goals, task design, information systems or people, in the organizational design process. The organizational architecture defines the relationship between the users of the system and the design of the system [1]. In fact architecture forms the basis for analysis, optimization, and validation and is the starting point for further design, implementation and construction of that system.

The motivation to further study in depth an organizational design and architecture analysis approach is the existence of diverse drivers needed by organizations. Such as having a clear understanding of its structure, strategies, goals and demanding more efficient communication.

The rhythm of organizations is changing with the boom in technology; everything is faster, communications, transactions which force fast decisions. However humans don't have the capacity to manage all these transactions and need applications to support their decisions. The Magalhães, Rodrigo and Tribolet [2] presents the organization as a flux in permanent transformation where there is a natural integration of organizational self-awareness and culture which helps to understand the necessity for better integration of both perspectives In reality many organizations have a misalignment between the organizational self-awareness and culture. The organizational culture is supported by the people, if employees of an organization have a common awareness of what is the organization and what their real capacities are then there is a necessity to represent this in the organization. Neither the organizational design nor the organizational architecture can reflect an organization as-is in all the aspects that cross an organization. The organizational design captures the behaviour and strategic aspects of an organization: social-relations, goals/meta-goals, strategy, organization
complexity, environment, and people, within an organization and its surroundings. However, organizational architecture captures the structure of an organization, its business processes, communication between processes/actors, information flow, applications behaviour and infrastructures.

One practical way to understand what is an organization is using metaphors; one of the most known metaphors is "Organizations as Organisms"[3]. Thinking about organizations as living systems, existing in a wider environment that they depend to satisfy their needs, makes it possible to identify different species of organizations in different kinds of environments, which gives us an overview that some organizations are better at adapting a specific environment than others, as an example a bureaucratic organization work most effectively in a stable and protected environment and a high-tech firm more in agonistic and riotous environment [3]. So we can realize that an organization as an organism assumes that organizational components will seek equilibrium among the forces pressing on them and their own responses to their forces [3].

One the one hand is necessary to study with some depth the organizational design process. Its essential to define the organization scope and understand two complementary problems which involve organizational design and are correlated with defining the scope: (1) how to partition a big task into smaller subunit tasks, and (2) how to coordinate these smaller subunit tasks so that they fit together to efficiently realise the bigger task and organizational goals"[4]. It will be studied the follow organizational design aspects:
- Strategy
- Environment
- Configuration
- Organizational complexity
- Structures for managing exchange
- Knowledge exchange
- Task design
- People
- Leadership style
- Organizational climate
- Coordination and control
- Information system

In addition is important to understand that each aspect design present in the next subsections represent the building block of the organization, each building block are mapped onto a series of two-dimensional graphs and are interlocking such that a specific quadrant in any one graph corresponds to the same quadrant in all other graphs. In this way, is easy to visualize the relationships among the organizational design components and identify where there are misfits in the organization design. [5]

On the other hand enterprise architecture captures the essentials of the business and its evolution, the most important characteristic of enterprise architecture is that it provides a holistic view of the organization. The business defines what part of the enterprise architecture is, and what only an implementation within that architecture is, so the architecture marks
the separation between what should not be tampered with and what can be changed more freely. Therefore exists a high demand for quality on the architecture; quality means that the architecture actually helps in achieving essential business objectives. [1]

My assumption is that the analysis of organizational design and architecture identifies an important set of characteristics of an organization that must assure the development of an information system for that particular organization. I think this set of characteristics could help the interaction between the organizational culture and self-awareness, which could lead to a better communication between carbon processors (humans) and silicon processors (machines) [2]. In order to test this assumption I will analyse a real organization, "Departamento de Investigação e Acção Penal" of Lisbon (DIAP) using a three step approach to demonstrate this assumption:

- Step one - Analyse DIAP in terms of organizational design and architecture
- Step two - Identify possible problems and requirements
- Step three - Identify a set of characteristics and possible improved architecture for DIAP

In order with this steps it’s necessary accomplish this objectives. The objectives which I want to accomplish when analysing DIAP are above mentioned in more detail:

- By analysing the organizational design aspects of the DIAP
- By analysing the organizational architecture of the DIAP
- Identify requirements and problems in DIAP organizational design analyses
- Identify requirements and problems in DIAP organizational architecture analysis
- Identify a set of characteristics and possible architecture solution for DIAP and how to resolve the problems identified.
- Demonstrate that the integration of organizational design and architecture analysis can contribute to a better interaction between organizational culture and self-awareness

I applied this approach in a real case: "Departamento de Investigação e Acção Penal" of Lisbon (DIAP) and found problems in its organizational architecture and design.

The organizational analysis shows many fragile and urgent problems that must be solved in the DIAP, in fact four issues should be consider understanding the complexity of the problems:

- Firstly communication - using paper as the main support for the communication is slow, expensive and unsafe;
- Secondly the numbers of services related with a process - the more services a process has the more complex a process can be in terms of access to the information;
- Thirdly the number of roles that can access a service - this reveals how many access levels there must be to
differentiate each role in the access to that service;

- Fourthly the number of actors related with more than one role - helps to understand if a specific actor is overloaded with responsibility and if is effective doing different things and not specialized only in a few;

In terms of organizational design analysis DIAP have do make some improvements in some design aspects such as the configuration design aspect, which could be improved to real correspond to the DIAP business processes and structures for knowledge exchange design aspect, in which DIAP hasn’t a process to sustain the knowledge and share it in the whole organization.

Therefore I proposed that a new architecture for the DIAP must support and adapt the organization strategy, for this matter it is important to understand two aspects: its environment which is turbulent and deals with unpredictable factors, such as evidences of crimes, and complex inquiry investigations which could lead to many changes in the strategy of the organization and the other factor is organization configuration which is an aggregation of sections with a rigid structure. A new architecture must have the capacity to support a flexible configuration enough to be adapted to any strategy which should extend to local changes, for example, changing a section strategy or configuration without disturbing the rest of the organization.

In fact a new architecture and information system for the DIAP would improve the overall efficiency and effectiveness of its business processes, the exchange of information, the communication within the organization and with external entities. Thus, the objective here is that this set of characteristic described above could help in an improvement of the DIAP architecture and a possible development of new information system. The interactions between carbon processes (humans) with the silicon processors (the machines) would also benefit.

In this dissertation I have made an organizational design and architecture analysis to a real organization. This analysis is complex requiring a good understanding of the concepts and the organization been analyzed. In fact the proposal and objectives of my dissertation were accomplished; I objectively analyse and have made my conclusions about the DIAP, although organizational design aspect analysis conclusions can differ from the person who is analyzing the organization.

For future work it would be very satisfying to see this analysis and solution implemented in the DIAP. I think the solution would have to be more detailed in terms of architecture specification using for example UML to describe all the architectures and Archimate to specify all the business relations, using as a support the characteristics and recommendations from the solution presented in chapter 6. However it is important to understand that
the DIAP is a very complex organization and a detailed analysis and implementation could take much time.

References
[2] Magalhães, Rodrigo, & Tribolet, José M. Engenharia Organizacional: das partes ao todo e do todo às partes na dialéctica entre pessoas e sistemas.