

AlineaTIC: A Tiny Tool for IT Governance Alignment at Universities

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1. EXECUTIVE SUMMARY

Top performing organisations succeed where others fail by implementing effective IT governance to support their business strategies. In contrast, enterprises that govern IT by default, more often improved satisfaction scores but did not lower IT or business process costs. Without a cohesive IT governance design, companies rely on their CIOs to ameliorate problems through operational or in the best case tactical solutions rather than position IT as a strategic asset (Weill, 2004). Poor IT government at many Universities is a special but not very different case of the general problems that companies suffered from last decade.

AlineaTIC is a simple tool to better know what IT decisions are made about this crucial asset, who made these decisions (government structures) and how they are aligned with University principles, strategic objectives, IT tactics and programs (including research, education and management). Even the application is simple, it may be completed by integrating the personnel database and IT project management software information. IT governance may be defined as specifying the decision rights framework to encourage desirable behavior in the use of IT. Thus, effective IT governance must address three main questions:

1. What decisions must be made to ensure effective management and use of IT?
2. Who should make these decisions?
3. How will these decisions be made and monitored?

The goal of AlineaTIC is to provide a tool to highlight the answers of these last questions. AlineaTIC is compatible with the ISO 38500 and AS 8015 standards and does not try to substitute the implementation of further management and governance de facto standards. It is just a new help for the CIO and the rest of the University board in order to improve their communication about IT decisions, to declare explicitly who is responsible of these decisions (govern structures, commissions, offices, services, committees...) and mainly, to align the University strategy with the IT deployment. The strength of using AlineaTIC resides on monitoring this IT alignment showing (among other features) the current IT projects and the corresponding IT principles, strategies, tactics and programs, explicitly claiming who made the corresponding decisions about project budget, project deadline, milestones, architecture, infrastructure, etc. and alarming when the implementation of the IT programs and projects do not implement the strategic principles and objectives defined by the board.

2. INTRODUCTION

When communication between the strategic direction (authorities, board, etc.) and IT management (IT staff) of an organization is not effective, the first ones think that IT solutions always arrive late, are expensive and not fully competent (AT Kearney, 2008). This statement appears exacerbated as it is often repeated at institutions in which there is no effective government of the Information and Communications Technology (ICT). Unfortunately, the repeated failures in communication between the leaders of the organization (board) and IT management, are merely a reflection of poor governance that is usually detected due the appearing of these symptoms (Weill, 2004):

- The board has the feeling that it gets little value from IT investment.
- IT is often a barrier or disincentive to implement new business strategies.
- The mechanisms to make decisions about IT are slow, contradictory or ambiguous.
- Even the board, management or staff (different from IT management) can not clearly explain how to govern ICT systems.
- IT projects are often out of budget or out of schedule.
- From the board viewpoint, outsourcing and subcontracting seem to be the easiest way to fix the problems of ICT.
- ICT management direction changes frequently and there is no justifiable discontinuation.
- The responsibilities of the CIO and IT staff (management) are overlapped so that their responsibilities are not clear to the rest of the organization.
- Etc.

Given some of these manifestations of an unsolved problem, organizations may be tempted to implement an IT governance standard in the illusion that communication problems will disappear. Unfortunately, before the implementation of an IT governance standard, first the board has to clarify the roles, responsibilities of government and management within the organization. In this paper, we are particularly referring to IT governance at Spanish Universities.

After clarifying these roles, the institution may go to the standard certification of management and / or government with greater guarantees of success. However, the alignment of IT with the strategic objectives, like any other asset of the organization, is crucial to the success of IT programs. This document aims to show an implementation of a simple software tool, AlineaTIC, which can help to improve the communication between the University authorities (board) and IT management through the CIO leadership. AlineaTIC does not prevent the adoption of any standard of government management of IT, on the contrary, it allows a leisurely adoption, overwhelming the symptoms of poor communication and implementing the standards selected by the organization at a later stage of maturity.

The paper is as follows: in section 3 we will remind the IT government, distinguishing what is governance and what is management. In the next section will recall what the key decisions on IT and how we can register their responsibility. Section 5 will stop at two of the most contentious decisions in any organization: the need of applications (or solutions through IT services), the prioritization of IT investments and their relation to the principles of the institution. In section 6 we will review the implementation mechanisms of IT government to finally present in Section 7, our software tool. For those readers having a general knowledge of governance and management, you can start by reading section 4. Hence to section 7, there has been a commented summary of most of the knowledge set out in (Weill, 2004), in order to justify the design of AlineaTIC. In case you have specific knowledge of IT governance can go directly to section 6 and then to 7, which constitute the original contribution of the article. The paper ends with our findings that show the problems that remain open and the future work to be done on AlineaTIC.

3. IT Governance

The governance of IT is to specify the decision rights and accountability framework to produce the desired behavior in the use of IT at the organization (Weill, 2004).

Also the governance has identified IT as the responsibility of executives and senior management, and consists of leadership, organizational structures and processes that ensure that IT supports and extends the company objectives and strategies of the organization (ITGI, 2003). There are other IT governance definitions, but all converge on the rights and decisions about IT at the institution.

After all, the definition of IT governance comes from the general definition of governance. Thus, the IT governance at Universities should not be very different of governing other assets, such as financial, personnel, intellectual property, students, administration,... However, the everyday work at many Universities seems to be quite different. It seems natural that the CIO to continuously justify each minor management decision, which is not true in other governance assets. For example, any manager would never demand information on specific payments and receipts to the CFO, because there is obviously a financial management structure beneath him/her, which administers (not governing) such payments and collections. The same happens with other traditional assets at University where is almost impossible to think about this continuous justification of simple projects, tactic goals, department strategy, etc. that CIO typically suffers.

Therefore, one of the basic mistakes in an organization (especially at the board) is to confuse the governance with the management of IT business assets, because their frontiers may be somewhat diluted (England, 2008). These differences between the governance and management, in the case of IT, do not want to define the exclusive role of the CIO versus the role of technical staff, on the contrary, IT governance is carried out in several structures of the organization, sometimes not joining the CIO. Similarly, managers and IT technical staff must belong to IT governance structures, as we shall see later. Indeed, this error has been widely promoted by some governance IT standards, which include management mechanisms (Van Bon, 2008). It is not the nature of this article on the debate about standards, but we may conclude that COBIT (ITGI, 2007) and ITIL (Taylor, 2007) are currently regarded management frameworks with some governance features. Both standards contain parts that refer to the governance, explicitly or implicitly, as a subset within the management exploitation of IT systems. The same applies to the standard ISO / IEC 20000 (ISO-1 ISO-2, 2005) which is also a management framework for the exploitation of ICT.

We may conclude that there was only one standard of IT governance until 2008, the Australian Standard AS8015 (SAI, 2005), on which the new ISO / IEC 38500 (ISO-3, 2008), which will begin to put into practice soon.

AlineaTIC tries to improve the communication between the CIO and the rest of the board and between the CIO and their IT management staff, implementing simple way to understand the roles and responsibilities governing the IT assets at Universities. The model proposed by the tool AlineaTIC, considers only a minimal part of IT governance that, it could be summarized to answer the following questions (Weill, 2004):

- What decisions must be taken to ensure the effective management and use of ICT?
- Who should make these decisions?
- How are these decisions made?
- How will these decisions be tracked?

The following section answers the first question, the answer to the second and third corresponds to the scope of each organization. AlineaTIC, presented in Section 7, aims to articulate a standard tool to respond to follow up the decisions of IT governance, i.e. AlineaTIC attempts to answer the last question.

4. IT Governance decisions

According to (Weill, 2004), the five types of decisions to be taken by the government of ICT are as follows:

- IT principles: that is to clarify the role of ICT business.
- IT architecture: that tries to define the requirements of integration and standardization.
- ICT Infrastructure: determining shared services and allowed.
- Need for business applications: specifying the business needs to acquire or develop them internally.

- Investment and prioritization of IT: to select which initiatives are funded and how much is spent on them.

These types of decisions are informed / made by government structures (individuals, committees, commissions, interest groups ...) which establishes the University for such purposes.

Among the types of decisions, the IT principles are crucial to align organizational goals, the company policy (understood as designed to achieve a specific behavior of the organization) and the Information Technology and Communications. IT principles should be few but well-articulated, and typically is a set of sentences related high level of abstraction about how to use ICT in the business of the company. Once IT principles are constructed, they become the lexicon of management and can be discussed, debated, supported, developed, etc.

The architecture relies on the integration from a technological perspective; it comprises the standardization of the corporate data, providing a single definition and a unique set of characteristics that are caught with an item. In turn, the key to the integration of processes is the discipline, adherence to a single way to make things consistent. Standardization of data and processes are the defining features of the IT architecture in business. The elections on standardizing data, processes and technology, strongly influenced the design of the IT architecture. The distinction between infrastructure and applications, allows companies to promote the economies of scale without sacrificing the flexibility needed to respond to change. Architectures are often expressed through modular components that tend to be viewed as services for business units.

IT infrastructure is the foundation of technical and human capacity planned ICT, available for all parts of the company as a shared service and reliable, used by multiple applications. In some Universities, the infrastructure may exceed 50% of total investment in IT.

Integrated IT infrastructure combines all the capabilities of the company to drive the business. It is believed that an integrated infrastructure is a set (catalog) services, with each one connecting the external world of customers, suppliers, users, etc. For example, one can distinguish the following sets of channels (web, e-mail, and mobile applications), security (firewalls, redundancy), communications (networks, intranet), data management (databases, middleware) systems (servers, operating systems, etc.). The infrastructure should also include other services such as training management and staff training, technical standardization, innovation, planning, etc.

The needs of business applications and IT services often have two conflicting objectives, creativity and discipline:

- The creativity to identify new and more effective ways to develop value for customers through IT.
- Discipline is about the integrity of the architecture, ensuring that applications are not made outside of the principles underlying the infrastructure. .

Universities, as other organizations, collect more valuable success of ICT by focusing its investments in strategic priorities, distinguishing between "must have it" and "would be nice to have it." Therefore, IT investment decisions leading to the problem of spending money accurately and to reconcile the different needs in the organization.

The latter two types of IT decisions, application requirements and investments, are the most controversial and divisive at organizations even they are aligned with principles.

5. Principles, Needs and Investment

Within the five types of decisions, the first (principles) and the last two (applications and investments) should be less governed by IT managers, or at least not exclusively. In fact, many of the conflicts that occur in organizations with the technical staff (with the consequent deterioration of their image) often arise because the board involuntary circumvents the IT governance and left on the shoulders of IT staff these three types of decisions. Let's see why these conflicts are produced.

5.1. Principles

A set of effective IT systems is clear evidence of the connection between the principles of business and IT. The principles of business and IT combined provide a clear direction for the use of IT to

enable a business strategy. In section 7 we will see his relationship with the objectives of management and IT projects. The IT principles are specific to the IT strategies of each organization, but need to clarify at least three expectations of IT:

- What is the operational model of the organization?
- How to support this model with IT?
- How can IT be funded?

Unfortunately, few Universities provide such IT principles. Since the IT principles provide guidance for all IT decisions, no principles, or wrong in them, limiting the effectiveness of the other four remaining types of decisions. Therefore when the board avoids these principles, or does not attempt to link them with the organization business, it causes the aforementioned problems of governance

5.2. Applications and services needs

In most Universities, strategic applications focus on the essential processes (core) like academic management, financial services, accounting, personnel applications, etc., which often share multiple functions or business units. In addition to strengthening the core business, decisions on new applications need to respond to market changes to avoid obsolescence. Obviously, the IT staff should observe the market for ICT to propose new solutions; however this does not mean they are the only people governing what should be developed and what not to do in the University. Similarly, the board may detect business opportunities that challenge the strategic architecture and even infrastructure, and often forced to rethink a new design. IT managers must recognize when IT architecture and significantly limits the options are changing technological standards.

However, the University portfolio of applications typically has a large overlap in the requirements of its users. If IT governance does not address this situation, a set of disparate applications solutions for the same problem will emerge.

Additionally, changes to systems are tough: the employees who must implement the changes have to understand the new processes. To ensure that staff can absorb change, many companies organize their projects into programs that are coordinated by management (implementation, training, schedule...) ensuring the new systems combine the desired effect with the use of investments. Examples of programs at Universities can be e-administration, intranet deployment, academic resources, digital library, etc.

Therefore, decisions about the needs of new applications require reconciling the management of change. Managers responsible for departments or business units have to define the requirements and processes and should distinguish what is not essential and the core applications. Additionally, they have to live within the constraints of architecture and understand the necessary alignment of new applications (projects) and services and the strategy of the University.

Decisions on new applications require creative thinkers and disciplined project management, which is traditionally the least mature of the five IT decisions. However, the IT investment implements the IT strategy of the University producing continuous conflicts among different unit managers and the board as we will see in next subsection.

5.3. IT investment portfolio

One of the most conflictive decisions at many organizations is the selection process to ensure that investments generate adequate returns for the company in relation to other alternative investment opportunities. Many companies use application forms for investment in IT to estimate metrics such as ROI, or the risk of the project. Without standard forms, policy makers (board) have a more complicated task comparing IT projects. However, the forms can not explain how a given project contributes to the strategic objectives of the company. Some organizations let their business units set their priorities, so that the investment committee has to determine the set of projects that provide the greatest strategic benefits, which is very difficult to do without an explicit alignment among principles, strategy, tactics, programs and projects.

Without an approval process for effective IT investment, the money always goes to local solutions rather than strategic objectives. This would overstate the benefits because it fails to consider jointly the impact of the combined projects. This selection process is critical for determining whether IT

systems are enabling the strategy or simply producing a cost (or even worse, an expense) for the University.

The investments need for success some indicators of the portfolio, like any other investment. The investment portfolio may change if business or legal conditions change. Implement a management portfolio of IT investments requires a classification in categories that reflect business goals.

6. Implementing IT Governance

There are three different types of governance arrangements for the deployment of IT:

- Structures of decision-making roles: they are responsible for IT decisions through committees, executive teams, managers, commissions, etc.
- Process alignment: they are formal processes to ensure that daily behaviors are consistent with IT policies and provide input for decisions.
- Communications: they are adverts, channels, and educational efforts to disseminate the principles of governance, IT policies and decisions taken.

The decision-making structures are the first step in designing the governance of IT, but the governance is not only making effective decisions. Alignment processes are management techniques to ensure that IT will involve the entire organization on the effective use of it. The alignment need to bring everybody on board, while providing information (input) for making decisions as to disseminate the results (output) of the decisions. To align business objectives and IT, communication is used to disseminate the decisions and processes related to behavior occurring in the company.

It is not the purpose of this document, nor how they should be conformed the structures or committees, nor the manner in which decisions are communicated. In fact, the two mechanisms are more natural implementation of all the bureaucratic processes in any University. The simplest of IT governance is to appoint committees to inform / communicate decisions. However, the difficulty remains on tracking the processes of formal alignment between IT and the principles that really make IT projects happen through these decisions.

In the next section we present a simple tool, namely AlineaTIC, which can be used to implement a monitoring and follow up decisions about IT governance. In particular, AlineaTIC serves to monitor and communicate those decisions that are more confrontational and less technical: the project portfolio and investment portfolio related to the principles and the strategy of the organization (Weill 2004).

7. Implementing AlineaTIC

The five types of decisions: principles, architecture, infrastructure, application needs and investment needs can not be isolated from each other. If the IT governance is well designed, decisions reinforce one to another ensuring that business goals. Each of the five decisions requires individual attention but nothing can be done in isolation.

The same may be applied for IT governance mechanisms (structures, communication and alignment), they are not operating in isolation because their impact depends on the interactions between them. In the particular design of the IT governance of a University must take into account some features:

- Choose the three types of mechanisms: decision structures, alignment and communication.
- Limit the number of decision-making structures: avoid contradictions and disconnections.
- Provide members of overlap between structures.
- Implement mechanisms at multiple levels within the organization.
- Clarify responsibilities, goals and metrics.

AlineaTIC provides the way to explicitly declare the process of alignment, the governing structures (and their members) and communicates the decisions that they made. Additionally, AlineaTIC provide the communication of the objectives (strategic and tactic) guided by IT principles and the corresponding projects that deploy them grouped by programs.

An approach to the governance distributes the IT decision-making process on those people best positioned to understand the requirements and their implications. AlineaTIC partially formalizes the processes of governance to ensure communication and feedback from these key decisions.

This paper proposes a simple model of implementation processes and alignment of IT governance structures with the goals, projects and investments. This model, not exhaustive, is not intended to replace standards or good practices identified in the literature of the state of the art, it is a pragmatic effort to construct a tracking tool that serves both the CIO and the rest of the authorities of a University to answer the fourth question in section 1: how will the decisions on IT be tracked? In fact, the model indirectly replied to other questions, such information allows about who is making decisions (governance structures and members) and which programs are being invested and deployed through IT projects.

AlineaTIC provides a framework where you can record and identify all decisions related to the governance of IT.

7.1. Scope

AlineaTIC allows defining IT principles, IT strategic goals, IT tactical objectives and programs. All these elements can be aligned to link projects with them. It also allows both the principles, objectives and projects as may be linked to the decisions made by organizational structures. Thus, AlineaTIC preserves the relationship between governance decisions and IT strategy.

In addition, AlineaTIC also incorporates a simple browser of project management. That is, incorporating data on the project status every time the user performs a follow-up, the budget associated with each of these projects, etc.

Specifically AlineaTIC can:

- Assign members to various governance structures (e.g., the CTO in an architectural committee)
- Align projects with objectives and principles
- Assign projects to programs
- Create the meeting minutes of decisions taken in each session about a project, program, objective, etc., so that a record of documents of each decision and who is on charge of it (for example, the diagram of the architecture at a committee cited above).
- Store all project documentation generated in the meetings, the decisions related to principles, objectives, projects and budgets.
- Show alerts highlighting projects without a budget or in a state of near completion.
- Show alarms when there are inconsistent data, for example, budgets are not linked to any decision, objectives not aligned with a principle, projects not aligned with tactical objectives etc.

7.2. Design

AlineaTIC has been implemented as J2EE Web application architecture. It has been divided into several layers separating presentation, business logic and data. This suggests these layers can be distributed across multiple servers so that they can be integrated with other applications, such as human resources database (structure membership) or web page news (University communications). AlineaTIC language is Spanish even though there will be an English version in next releases. Therefore, the examples shown in next figures are in Spanish although we depict the functionality of them.

7.3. Examples

Figure 1 shows a list of tactical objectives. This type of list is similar to the principles, programs and strategic objectives lists. The main fields that appear are the goal description, the date from which each objective is in effect, links to projects associated with it and their details, where you can also be edited or deleted.



Figure 1. List of current tactical objectives

Figure 2 shows a list of projects. This list contains the starting and ending of a project, the budget available and a "traffic light" that highlights information about project status. This alarm is red when the project did not have funds, amber when the project is nearing its ending date and/or needs special attention and green in other situations.

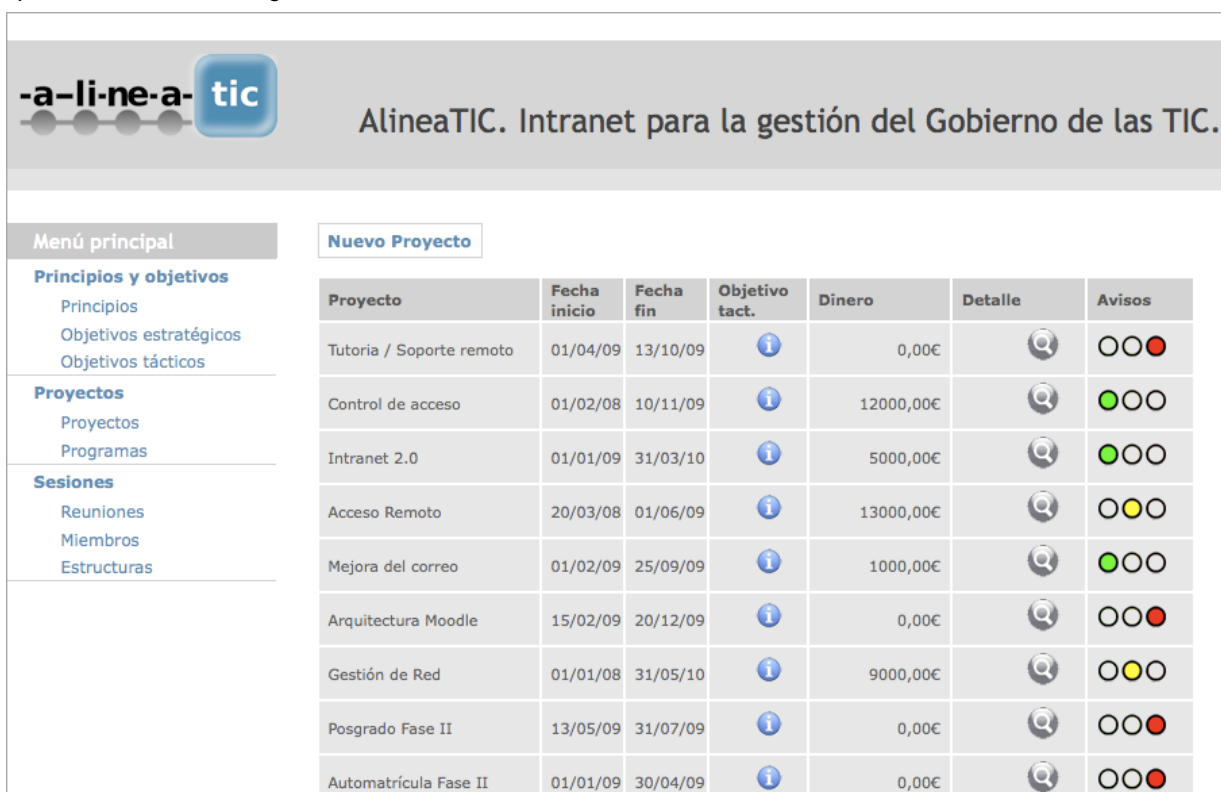


Figure 2. List of current IT projects

Figure 3 shows the procedure of documenting a new decision, it allows to write down a description of the decision, i.e. to select what type of decision is and what element (principles, objectives, budget or project) is linked to the decision.

Figure 3. Documenting a business decision about a IT project budget

In Figure 4 we can see the initial screen of the application in which alarms are shown. In this particular case some goals and projects are not aligned with other IT objectives of the organization, respectively, or projects that are not covered by the under any predefined program.

Figure 4. Alarms about objectives and projects that are not aligned with principles and tactics

8. CONCLUSIONS AND FUTURE WORK

The present document has presented, briefly, the basics about IT governance and the deficiencies that may be observable in their application in some organizations, particularly in Spanish Universities. These shortcomings are due, mainly, because of the activities of governance and improper management are overlapped or misunderstood. This introduction to IT governance was included in order to better understand the design of AlineaTIC.

The main contribution of this paper, in addition to a few sections summarize the basics of governance of IT is to present the implementation of a tiny tool AlineaTIC, which can be integrated with other University databases to manage the information about the University organization, particularly its IT governance. AlineaTIC design does not suggest, even remotely, to replace the implementation of any of the standards that are emerging now for the IT governance (and IT management), but it may be a first approach to the implementation of IT project alignment. Thus facilitating the passage of a non-governance situation, to one oriented to the principles and objectives of the organization, explicitly. Such monitoring is done in the most troubled IT governance issue: prioritization of investment in IT projects, according to sound principles with the strategic objectives of the Board and implementing tactical objectives of the technology staff.

Future features to include in AlineaTIC would be:

- Improving the historical data of previous governance decisions
- Defining new Import/Export modules for project management and personnel applications
- Improving the document database
- Customizing the language of the tool automatically

AlineaTIC is proving its utility at University of the Balearic Islands during its test and validation phases. The first public version of AlineaTIC will be released in Fall 2009.

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