How to prioritize strategic IT Projects for your university

#1 Project X

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PROLOGUE

Although it may sound cliché, I will begin by expressing my gratitude for the trust the authors of this book have placed in me. I am aware of the effort they have put into this book, as well as the importance the authors give to the subject addressed, not for themselves but rather for their universities and universities throughout the world. I feel the same way. I've felt the excitement, even passion, they have put into their work and into writing it for others' benefit. For all these reasons, I am highly honored that they thought my words could further distinguish their effort.

Now I will tell you the story of a rector who assigned the responsibility for IT to a Vice rector's office with "infrastructure" in the title. This likely made the university community perceive IT as simply one more set of infrastructures. As a result of this, most of the governance of the institution did not include IT in its policies or in its strategies, and there were only team meetings when there was a problem to be solved. Even then, it was more because the problem was urgent than because it was important. In this scenario, the office of the vice rector was basically concerned with providing technical support to its users. Those responsible for the governance of the institution at its different levels each did things their own way, trying to fulfill their information technology or telecommunication needs on their own, without considering opportunities or seeing to what extent IT could contribute to achieving the university's mission of continuous improvement of society through knowledge. The absence of clear objectives, priorities and planning gave rise to cost overruns, results without sufficient technical quality, programs and information systems that were difficult to integrate and were not sustainable over time, unnecessary redundancy, very local solutions to frequently global problems, and a long etcetera of setbacks. Leadership, strategy and order were lacking, and the operations were carried out in a highly improvised manner. In general, what was important was not only put off in an attempt to deal with what was urgent; often, there was no clear understanding of what was important and what was not.

The Rector became aware of the true dimension of the problem when, in a meeting with center and department heads, there were divided opinions upon evaluation of the institution's IT policy. Excluding those who "don't know or don't answer" due to their lack of judgement or failure to express it when asked, as well as those who are experts at (supposedly) "making a good impression" on those who have *potestas*, whether or not they have *auctoritas*, those in attendance were basically divided into two groups. One was highly critical of the situation, pointing out the absence of governance of IT at the university. The other group, in contrast, was very pleased with the situation; they felt that a good job was being done on computer purchases, installation and repairs, and that the maintenance of services, software and other utilities supporting their daily activities was reasonably good.

In light of this dichotomy, the Rector analyzed the profiles of the members of both groups. The first group mainly consisted of people with a long-term perspective, who were entrepreneurial and dynamic in their academic activities. In contrast, the second was mostly made up of academics comfortable with their bureaucratic daily routine.

The Rector left the meeting with the conviction that it was necessary to introduce drastic changes at his university. The opinions of the dissatisfied and, moreover, the opinions of those who were satisfied, showed that the governance of the institution he headed was giving no significance, added value or visibility to IT. The story continues, but I'll leave the outcome for a better occasion and allow readers to draw their own conclusions.

When we talk about governance of IT, the best way to understand its importance is to consider that in its absence, disorder prevails. For this reason, I believe this is not just another book. The topic is highly relevant, the book is very well organized and written and, above all, it contributes lessons that readers can learn vicariously to avoid learning them on their own. In fact, let's look at the analysis of the causes of success of the examples analyzed in the book in relation to the implementation of an IT portfolio. Some words appear repeatedly: culture, strategy, protocol, procedure, structure, visibility, dissemination... It could not be otherwise. We need leadership, governance, strategy, professionalism and organization in our actions. We need to decide, act in a planned manner, and communicate what was decided and what has been done. We cannot succumb to not knowing what to do when there is so much to be done. It is easy to drown, even though we know how to swim, when we are far from the shore and the waves wash over us again and again. It is tempting to handle what is urgent, but in complex organizations such as universities, the urgent tends to have an unforeseeable, if not capricious, evolution. Leadership and strategy will enable us to focus on the important and on what will really make it possible to transform an organization in the medium and long term, according to its mission.

I recommend that presidents, rectors and other members of governing bodies read this book and then meet with heads of centers, departments and services and ask them about the IT policy at their universities. I advise others to read it as well, and then recommend that their president or rector read it. They will all win. We will all win.

Senén Barro Ameneiro

Former Rector of Universidad de Santiago de Compostela (2002-2010)

Chair of the Conference of Spanish University Rectors (CRUE) Comission on Information and Communication Technologies (2003-2005)

Vice Chair of CRUE (2008-2010)

CHAPTER 1

Introduction

Governance of any asset of a company or institution requires three essential mechanisms: structures, communication and strategic alignment (Weill and Ross, 2004). Structures are the people in the organization who either make decisions or inform other people who make decisions about an asset. In the case of the information technology (IT) asset, the office of the Chief Information Officer (CIO) could be one of those structures. At Spanish universities, the Governing Board is another example of governance structure. The communication of decisions—what, who, when and how decisions are communicated—is among the responsibilities of the people pertaining to those structures. For example, the newsletter on the institution's website is an informal communication channel, whereas a university's official newsletter is a formal channel.

The governance mechanism that is ordinarily the least tangible is strategic alignment. Alignment is understood to be optimized synchronization of business processes and objectives with the technological services provided, in a dynamic manner and in constant interaction between the organization's strategy and operations. Therefore, strategic alignment of IT comes about through several levels of structures in an organization and through different procedures and activities. In any organization, the institution's strategy and that of IT can be aligned through processes, such as the IT investment process, cost control, payment for the use of IT, quality management of technological services, etc. However, the selection and prioritization of the IT portfolio may be one of the most effective processes for the execution of the IT strategy in any organization. This is because IT projects are among the actions carried out by information technology services that have the most visibility and impact on public or private companies and, therefore, on universities as well.

The selection and prioritization of projects depend on the results expected by the organization selecting them. Delivering the results of an IT project on time and within the budget was the main concern of those responsible for projects practically until the nineteen-eighties. Over time, the focus has changed to other motivations, such as user satisfaction and the achievement of strategic objectives. However, the complexity and uncertainty of the results of a project make determining, a priori, the potential benefits of an IT project inherently difficult.

In addition, in terms of project management, project management maturity has a certain impact on project success but not on project investment success (Berssaneti and Carvalho, 2015). Moreover, when IT projects are used to transform an organization, the results may be frustrating if they do not include change management (Rameta L., 2013). In summary, the value of a project can be understood as the extent to which it satisfies customer needs, aligns with the organization's strategy, and yields a certain return on investment (Zwikael and Smyrk, 2012).

From the foregoing, it can be concluded that achievement of success in an IT project investment entails more risk for those who govern the organization than achievements in the management of the project. For example, Cserháti and Szabó (2014) conclude that the factors of success in IT projects—such as communication, cooperation and leadership—are more critical than factors of success geared toward project management tasks. Precisely, those factors of organizational behavior are more closely linked to the governance of IT than project management.

In any case, IT projects should provide some benefit, improving the current status of a part of the organization. For this purpose, it is necessary to establish measures for defining success criteria (Müller and Turner, 2007). In addition, the benefits should be owned and assigned to a certain person or department made responsible for their realization (Winch and Leiringer, 2016). Therefore, without a project owner or sponsor, the benefit will never accrue because nobody will be interested in using the project output (Peppard et al., 2007). Project benefits can be reflected by key performance indicators (KPI) (Kaplan and Norton, 1996), which may be financial or non-financial. However, if stakeholder expectations have not been met, it can be said that the benefit of the IT project has not been achieved.

This book is intended to explain briefly how to select and prioritize the IT portfolio as the basis of the future success of each of the projects composing it and as one of the strategic alignment processes of organizations, particularly universities, a mechanism included in the governance of IT. However, the selection, prioritization and execution of the projects included in a portfolio may be the actions that are most perplexing to university governance structures, mainly due to the low value perceived by the stakeholders—students, faculty, administrative staff and civil society—as well as the corresponding high costs and limited transparency in the communication of that prioritization. The effort universities' information technology services put into the management and execution of such projects is enormous, which lowers morale and motivation among their IT staff, at the same time increasing tensions between university governance, information technology services and stakeholders of the institution. That is the main reason this book about the selection and prioritization of a university's IT portfolio is geared toward all of them.

CHAPTER 2

Governance of Information Technology, Strategic Alignment and Portfolio

This chapter covers how responsibility for the IT portfolio has evolved in companies, organizations and, particularly, universities. This responsibility should not be exercised exclusively over the IT portfolio, but also other IT activities in an institution. In any case, IT portfolio direction and control at universities will serve to understand part of the accountability to which some university governance structures would be subject in response to stakeholder (students, faculty, administrative staff, civil society, etc.) requirements, thereby achieving an adequate selection and prioritization of projects and the corresponding investments.

1. IT Portfolio

According to PMBOK (Larson and Gray, 2015), there are three levels of organization of the work in an IT project: the project itself, the program or programs to which it pertains and, lastly, the portfolio containing them.

An IT project is a temporary effort to create a unique, sufficiently innovative, self-contained product

An IT project can be defined as a temporary effort to create a unique, sufficiently innovative, self-contained product, representing a set of development activities with start and end dates. Therefore, projects are generated when an organization detects needs, problems or opportunities related to business, IT infrastructure renewal, etc.

When we find a set of projects that can be linked to each other for some reason, objective, aspect or relationship, they can be grouped in a program. For example, the IT academic program could encompass all the IT projects related to the faculty at a university. Another example would be the digital management program, which would encompass projects related to that thematic initiative. Evidently, a project may pertain to several programs, although it tends to be more operative to manage separate programs. The direction of the program is centered on the dependencies existing between projects, economies of scale to reduce costs, and coordination of different projects to eliminate risks, taking advantage of synergies, as well as the relationship with other projects of a non-technological nature. A project portfolio is a higher-level grouping, which prioritizes individual projects as well as programs that have no reason to be related to each other, but that as a whole, help to achieve the strategic objectives of a business. Usually, there is only one project portfolio, although there may be several in a large organization. An example of a project portfolio would be the set of all the IT projects that a university will carry out within a given period of time, usually one year.

This book is not about how the projects in a portfolio are managed following standards and rules. This book centers on how IT projects are governed, inspired by the principles of ISO/IEC 38500 applied specifically to universities, although these principles may be perfectly valid and transferable to any private or public company.

As the project portfolio influences the scope of strategic objectives, it is evident that the governance of an organization, which would be the governing board in the case of a university, has a great deal to say about its content, as well as about the prioritization of projects and programs. In summary, university governance should also govern IT, and specifically the university's IT projects.

The governance of IT standard helps direct and control every action taken by IT services

The standard on the governance of IT known as ISO/IEC 38500 helps direct and control every action taken by IT services, under the responsibility of senior management. This international standard includes principles and activities that make it possible to build a framework for the governance of IT, encompassing the selection and prioritization of IT portfolios, among other matters.

The framework for the governance of IT should adapt to the needs and profile of the organization where it is implemented. In addition, the technical debt and projects in execution, which have an impact on the results of the current project portfolio and future investments in IT, should be taken into account.

2. Governance of Information Technology

A company's IT is well governed if it is producing value based on the company's investments in IT

Due to organizations' heavy dependence on IT, it is very difficult to find a business process that is not supported to a greater or lesser extent by these technologies. Therefore, IT is a key factor of development and competitiveness in an organization. Under these conditions, it could be said that a company's IT is well governed if, for example, it is producing value based on the company's past, present and future investments in IT.

That is, governance of IT, encompassed within an organization's corporate governance, should assume responsibility for IT investments as sources of IT value in the organization. IT projects, whether executed, acquired or subcontracted, are an essential investment for universities and determine not only their present, but also their future.

Governance of IT consists of the organizational capacity exercised by the governing body, the executive steering committee, or the executives appointed to oversee the formulation and implementation of the IT strategy and, in this manner, ensure the alignment of IT with strategic initiatives and with the objectives of the business units and departments. It can also be said that governance of IT consists of leadership, organizational structures and processes that ensure that the organization's IT sustains and extends its strategy and its objectives (Van Grembergen, 2003; Weill and Ross, 2004).

A governance of IT framework helps organizations implement a governance of IT standard. In the past, there were different organizations and associations that claimed ownership of the governance of IT standard, but currently, the only one considered to be endorsed internationally is ISO/IEC 38500. This standard defines a set of formal and informal relationships between the different actors (executives, middle managers, employees, staff, users, communities, etc.) and the way the organization's policies and plans interact. This standard also covers the set of rules and laws an organization must follow, as well as its operational performance. Therefore, implementation of the standard, through a governance of IT framework, must take into account all the previously mentioned aspects, including the governance of IT projects.

Unfortunately, a long evolution took place before governance structures in organizations became convinced that IT projects must not only be managed, but also governed, and it has yet to occur in many institutions.

3. Strategic Alignment

Because governance of IT consists of the organizational capacity exercised by the university's governing board to oversee the formulation and implementation of IT strategy and, in this manner, ensure its alignment with the rest of the university functions, first it is necessary to know how to approach strategic alignment of IT.

As strategic alignment is found at a number of organizational levels, the structures pertaining to those organizational levels are also part of the framework of governance of IT, which is the basis for understanding perspectives, values, beliefs, models, expectations and assumptions about the organization's strategy, tactics and operation with regard to IT.

The framework of governance of IT should foster mutual understanding between the business and IT

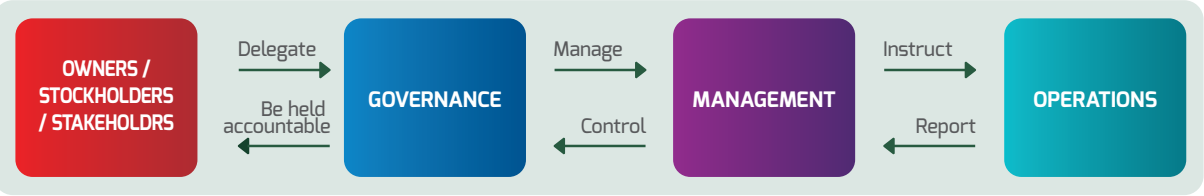
The framework of governance of IT should foster mutual understanding between the business (or core activity of the institution) and IT, as well as the domains of both to ensure, among other things, that IT projects and their results coincide with the governing board's strategy and the needs of the departments of the institution.

All IT activities should be aligned with the university's strategy, its objectives and expected results. In fact, strategic alignment should be a natural consequence of the bi-directional relations between the different hierarchical levels of the structures in an organization, as shown in Figure 2.1. The owners and stakeholders of the organization give the governing body the power and authority to signal a direction to the business managers (middle management) who, in turn, give instructions to the workers who execute the operations. In the opposite direction, the workers

report to the business managers who, in turn, are monitored by the governing body for the purpose of accountability to the owners and stakeholders.

In the case of a university, the stakeholders could be society, regulators (public administration) and the groups that elect the Rector (students, faculty and administration), among others; the governing board would be the governing body; and the business managers would be the middle management of units, sections, offices, services, departments, colleges, etc.

Figure 2.1. Hierarchical alignment processes (adapted from COBIT 5)

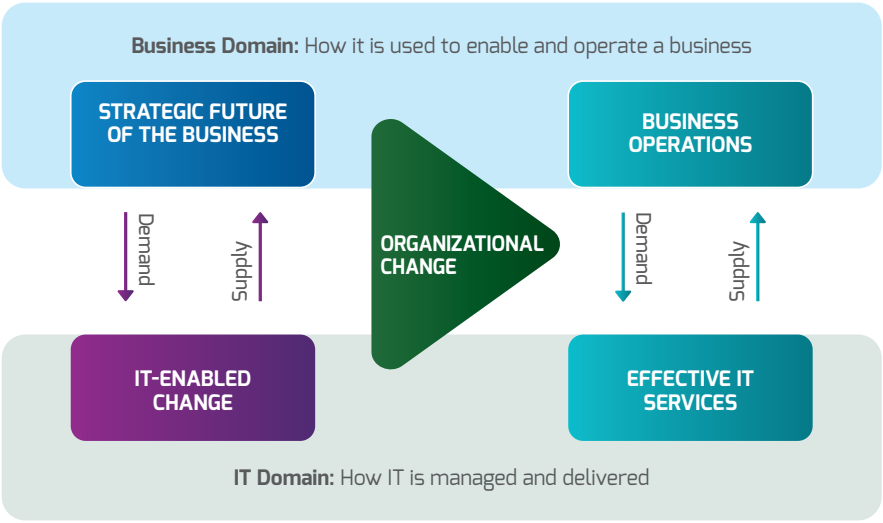


In principle, effective direction and monitoring by the governing board and IT services at the university, and more concretely of IT projects, would guarantee strategic alignment a *posteriori*, that is, following the execution of projects. Nevertheless, in this book we will also discuss alignment between objectives, initiatives and strategic projects a *priori*, that is, during the selection and prioritization of the portfolio. In addition, we will dedicate a part to evaluation a *posteriori* of the construction and execution of projects. In any case, to get to this basic governance activity which is evaluation, the relationship between the governance of organizations and their IT services has undergone a long evolution. In the following section, we will analyze this evolution.

4. Evolution of Governance of IT

Traditionally, in companies, the IT asset is becoming essential to many business activities. Therefore, it could be said that, from the point of view of an IT organization, there are two distinct domains: the domain of the business units and that of IT (see figure 2.2). The concern of business units is the execution of their operations, that is, how IT will make those activities possible through services. IT departments or organizations are concerned with how those services are managed and delivered. These two domains interact through IT supply and demand. Therefore, the IT organization only plays the part of a service provider and the business units assume a client role.

Figure 2.2. View of IT as a Service Provider, in Gómez, Bermejo and Juiz (2017) [adapted from Toomey (2009)]



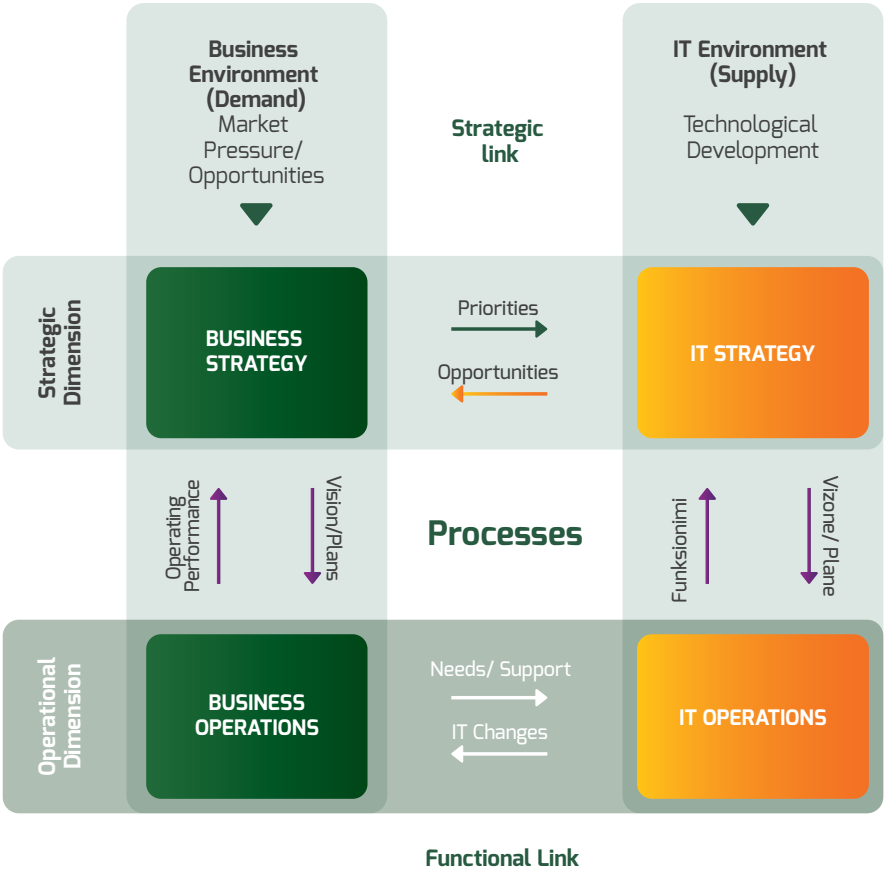
With this traditional view, IT acts as a provider or supplier that can easily be subcontracted or substituted. At the same time, this traditional view shows there is a lack of strategic alignment between the business units and IT within the institution, and that a supply and demand relationship exists in terms of management and operations (although the business domain knows the strategic future of the organization). Therefore, The IT portfolio arises from operational requirements of a business and, although portfolio management standards may be applied, there is no trace of strategic governance of that portfolio in this traditional provider/client domain model.

Universities tend to be in the phase of management of the supply and demand for IT projects, in a provider/client relationship

In a university that follows this traditional model, once the processes and procedures provided for organizational change have been deployed by the organization, the IT domain that has satisfied the demand from the business units must support and maintain the new IT services and operations, applying management standards for IT services. Many universities are in this traditional phase of management of the supply and demand for IT projects arising from the operational requirements of university services related to students, faculty and, mainly, university administration.

It is necessary to evolve from the traditional view of IT supply and demand in organizations, toward a more mature view where IT becomes an asset that creates value for the university. Figure 2.3 shows the following phase of IT evolution in a company (Mueller et al., 2008). Although the two previously mentioned domains— IT and business—continue to exist in this more evolved phase, each domain is in turn separated in two dimensions: the strategic dimension and the management/operation dimension.

Figure 2.3. Diagram of IT separated in two domains in Gómez, Bermejo and Juiz (2017) [adapted from Mueller et al. (2008)]



In this model, not only the IT organization supports the demand from business units; senior management also bears external stakeholder pressure. Therefore, when senior management has a strategic vision of the company, the business units perform their activities with the objective of achieving the results established in the strategic plans for the business domain. The same occurs in IT domains, so that IT strategic plans can be formulated based on senior management's vision of the business, which will be implemented by IT operations and administration, and their performance can be measured.

The IT portfolio arises from a business' operational demand, as well as senior management's strategic demand

In this manner, the IT portfolio arises from a business' operational demand, as well as senior management's strategic demand. Figure 2.3 shows how IT supply and demand are related in the two domains and the two dimensions.

Universities that manage the IT portfolio following this more evolved model tend to have processes for management of requirements in both the strategic and operational dimensions by the IT organization. Again, IT project management standards are usually applied, but there is still no specific portfolio governance activity by senior management.

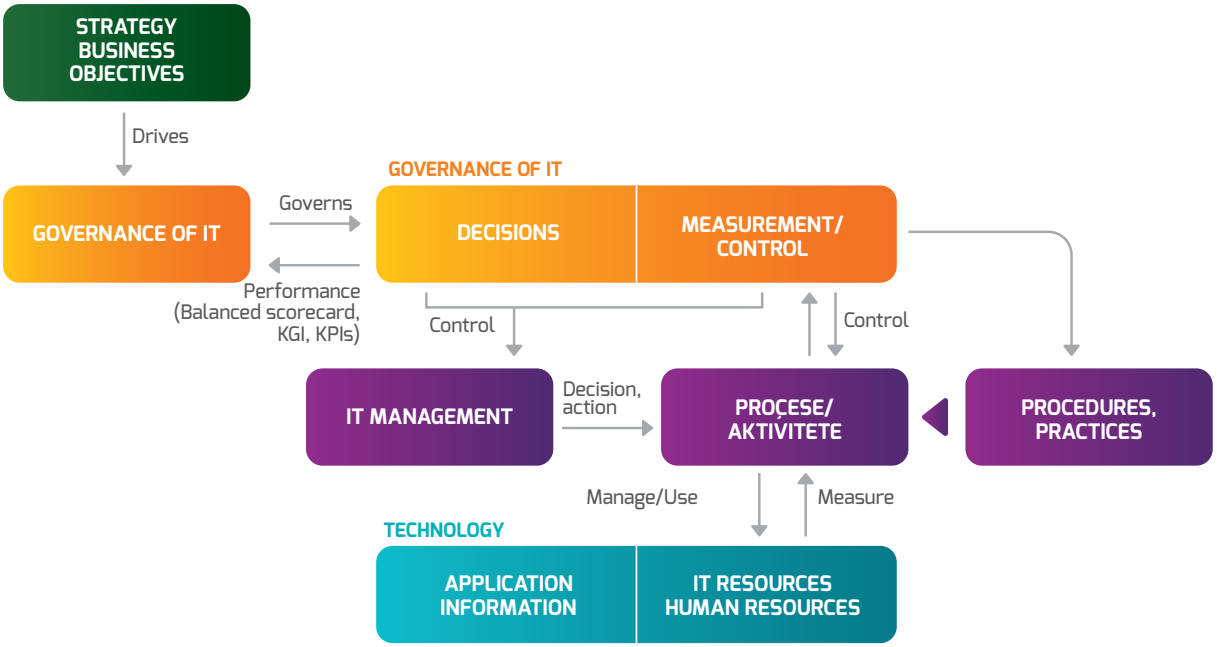
According to this second model, IT alignment with the business units occurs when senior management provides strategic business and IT plans that include the organization's mission and vision. In turn, IT responds with initiatives to carry out these plans. Therefore, the dialogue that takes place between these two domains is strategic, not simply operational. In the management/operation dimension, there is still dialogue between supply and demand, since services require IT support, as occurred in the first model. The evolution of this second model is based on communication between the strategy and operations, as well as between IT and the business units.

Although this second view is evidently more mature than the first, universities that have reached this phase still have difficulty integrating IT, since they are still divided in two distinct domains, despite their being increasingly connected. However, communication between the dimensions is as important as communication between the two domains.

The purpose of governance of IT should be to foster alignment between business goals and IT objectives

Figure 2.4 shows that communication flows are more important than the different dimensions. In fact, this new model introduces a new dimension: governance of IT. Senior management has a business strategy and objectives, and therefore should be at the forefront of governance of IT. The purpose of governance of IT should be to foster alignment between business goals and IT objectives. The implementation of governance of IT involves making decisions about this alignment and, at the same time, establishing control mechanisms to verify that IT management is implementing these decisions.

Figure 2.4. Governance of IT, Management and Operations in Gómez, Bermejo and Juiz (2017) [adapted from Mueller et al. (2008)]



Consequently, there are two communication flows in opposite directions within an organization: direction and control. Maintenance of the processes that ensure these flows must be among the activities of middle management and, particularly, of the directors of IT services who make decisions at the tactical level. Therefore, governance of IT is simply the transformation of strategic objectives in a viable direction for the company, and the company's senior management provides the decisions that must be executed in processes cascading to lower levels of the organization. Control goes in the opposite direction, questioning and monitoring the results obtained with the direction provided.

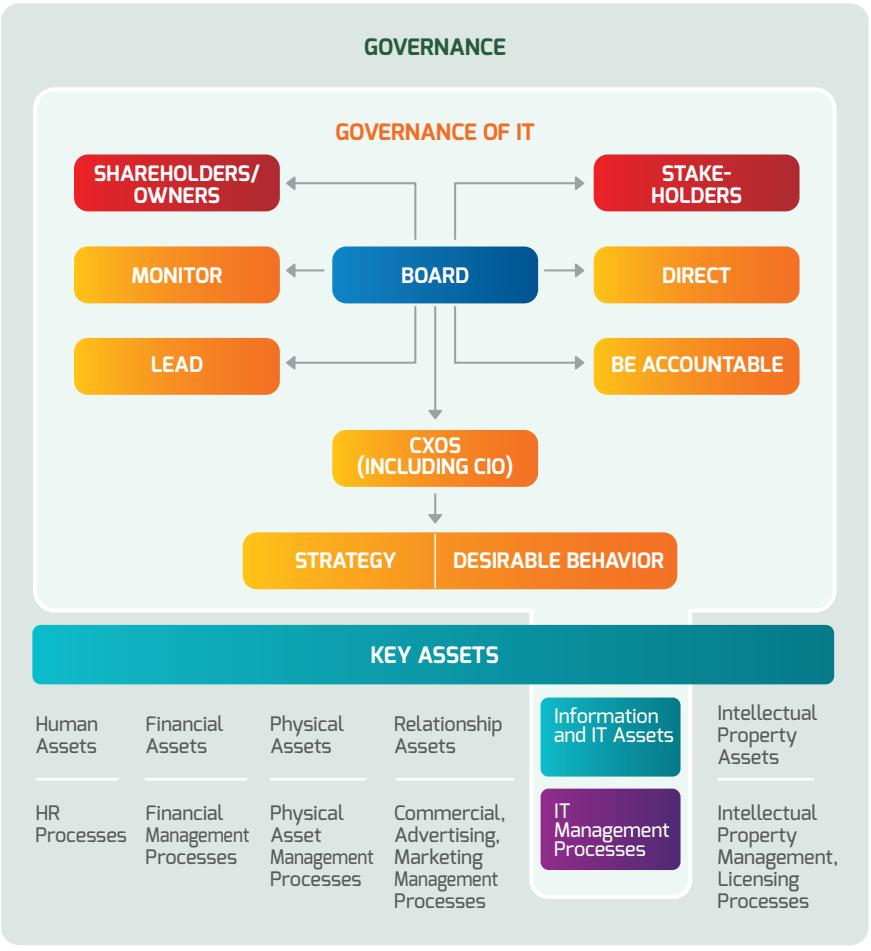
Universities that follow a model such as the one shown in Figure 2.4 already have 4 different organizational levels: university governance, governance of IT, IT management, and IT operations. In addition, they have somewhat formal alignment and communication processes for direction and control (these roles may be performed by different structures in different universities and countries). IT projects included in the portfolio are divided in programs pertaining to the offices of vice rectors, deans, departments or areas of a university. Business supply and demand is managed in the university's units and services with the owners of the corresponding program and IT at the same time.

In this model, the concept of separate business and IT domains is disappearing, which results in greater integration than in previous models. Similarly, the decision-making environments and the direction and control cascade are clear.

However, how these flows should be implemented is not so clear, that is, differentiated good practices for governance, management and operations that affect IT activities—for example, prioritizing the IT portfolio—are not specified.

Figure 2.5 shows a global perspective of the organization of corporate governance. According to this view, IT resources should be governed the same as physical assets, human resources, intellectual property resources, relations (marketing, commercial, advertising, etc.) and financial resources. They should be governed using the same tools used to govern other assets, that is, defining strategic plans and monitoring the desirable behavior of IT by means of measurable performance indicators. Responsibility for the implementation of these direction and control activities lies with the members of senior management that govern the organization, that is, those structures that have authority and accountability toward stakeholders. The governance structures will be held accountable for IT assets, which are increasingly important and are creating more value for organizations than other traditional assets.

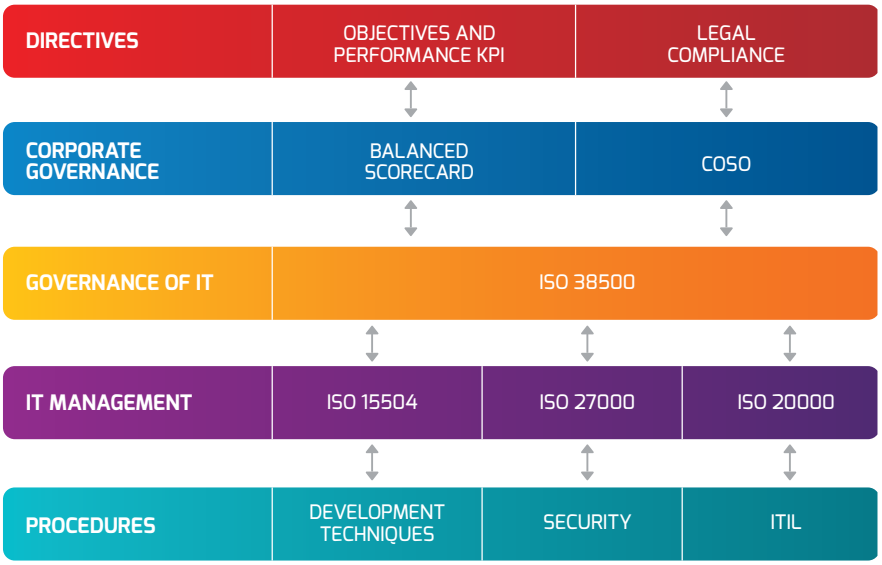
Figure 2.5. Framework that links corporate governance with governance of IT in Juiz and Toomey (2015) [adapted from Weil and Ross (2004)]



It is essential that the IT organization have the will to be governed before an attempt is made to implement techniques, tools, methods or frameworks to govern IT

One of the major challenges of evolving toward a more mature approach to governance of IT is resistance to change within organizations, particularly in public companies. Governance of IT involves structural and cultural changes in the daily life of universities. Therefore, it is essential that the IT organization have the will to be governed before an attempt is made to implement techniques, tools, methods or frameworks to govern IT. Figure 2.6 shows a layered view of the organization that governs IT (Fernández and Piattini, 2012). As in Figure 2.4, there are two vertical flows between the different layers: a direction flow and a control flow. To operate these communication flows, all of the stakeholders should be given a clear definition of these layers and their scope within the overall objectives of governance of IT.

Figure 2.6. ISO/IEC 38500 as the link between corporate governance and management [adapted from Fernández and Piattini (2012)]



In this layered model of organizational governance, each layer communicates with its adjacent lower and higher levels through direction (downward) and control (upward), but the final result of these processes, that is, what is delivered and what is received in response, is undefined. In fact, throughout the evolution of governance of IT within the company, communication within the layers of the organization has been considered more relevant than the methods for this communication. However, the method of communication between layers is crucial to proper alignment of IT, the business units, executive teams and the board.

Communication between the layers of a company should be represented precisely to determine the direction and control method

Communication between the layers of a company should be represented precisely to determine the direction and control method. The scope of governance of IT is closely related to strategic, tactical and operating alignment, as it is necessary to understand the extent to which the delegation of authority, functions or any type of activity pertains to a given layer rather than another. It is important to know the functional aspect of a given layer, as well as the services lower and higher layers provide it within the framework of governance of IT. Transparent and fluid communication is a key matter in the success or failure of governance of IT in a company.

All the topics mentioned in this section are applicable to private as well as public universities (Gómez, Bermejo and Juiz, 2017). However, governance of IT in the public sector tends to be considered as the provision of IT services to citizens. Elpez and Fink (2006) characterize governance of IT in the public sector as a service provided to citizens through the exercise of power by authorities, aimed at satisfying public needs and interests. There are several studies on public universities and governance of IT. For example, Juiz, Guerrero and Lera (2014) compared a general framework for good governance in the public sector with a governance of IT framework for a Spanish public university, while Hotzel, Wimmer, von der Heyde and Lang (2015) explained the role of the CIO at German universities. Fernández and Llorens (2011) propose a governance of IT model specially adapted for universities, and Fernández, Hontoria and Llorens (2014) analyze the results of the implementation of this model at ten Spanish universities. At the level of Spanish as well as Latin American universities, there are studies that analyze IT at such institutions and incorporate governance of IT indicators (Fernández and Llorens, 2014; Fernández and Llorens, 2017; Gómez, 2017; Padilla, Cadena, Enríquez, Córdova and Llorens, 2017; Ponce, 2017; Khouja, Rodríguez, Halima and Moalla, 2018).

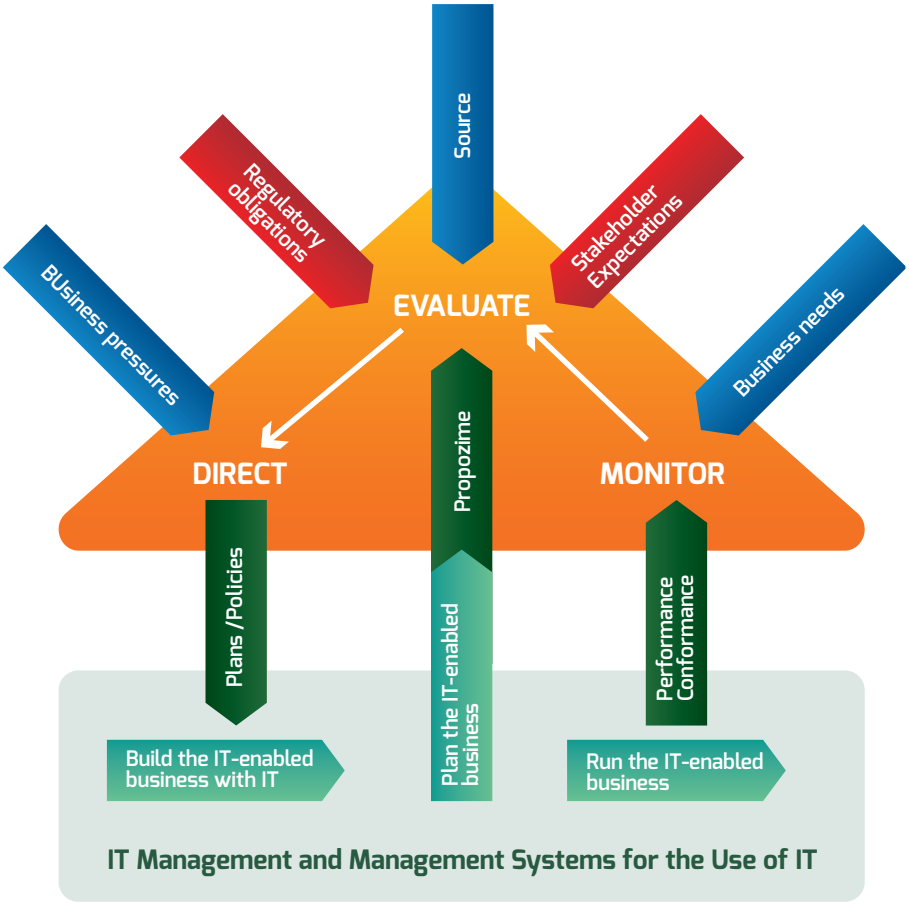
There are other works, such as those of Sethibe, Campbell and McDonald (2007) or Khalfan and Gough (2002), about the differences between the private and public sectors. Al Qassimi and Rusu (2015) include case studies on public governance and governance of IT in developing countries. Other authors such as Gomes et al. (2016) study matters related to governance of IT and some aspects of IT management such as IT risks and IT security. This book proposes a framework of governance of IT—which has already been tested in public universities—that connects public corporate governance, governance of IT, IT management and IT operation with the main stakeholders, that is, the students, faculty and administrative staff of the universities themselves.

5. Governance of IT Framework

For a long time, some organizations have confused governance of IT with IT management

ISO/IEC 38500 was the first standard to provide differentiated guidelines for governance of IT. Different organizations may adopt different approaches in line with ISO/IEC 38500, and governance frameworks may vary in design from one organization to another (Juiz, 2011). In fact, for a long time, some organizations have confused governance of IT with IT management. This error is believed to be because the line between governance and management is blurred. As a result, some de facto IT management standards have attempted to include some governance mechanisms (Toomey, 2009). Figure 2.7 shows the conceptual model of governance of IT.

Figure2.7. Model for Governance of IT, based on ISO/IEC38500 [adapted from Juiz and Toomey (2015)]



An informal interpretation of Figure 2.7 applied to the governance of IT projects might be the following:

- Governance structures—for example, the university's governing board—bear business pressures, regulatory obligations and stakeholder expectations, and are held accountable for the company (source of pertinent authority, public or private).

- IT management and staff—for example, the university's information technology areas—must ensure that projects are successful and that subsequent operations maintain the quality of service of business processes.

- These IT projects are guided by the strategic plan and policies issued by the governing board, of which the CIO or a vice rector with similar competencies should be a member, in order to improve communication between the business units and the IT staff.

- The business units and the IT staff should work together and propose new projects and improvements in the operations that the CIO and other governance of IT structures should evaluate for their inclusion, among others, in the project portfolio that implements the strategy, policies and IT operations.

- To close the virtuous cycle of Figure 2.7, once IT projects end, they become operations that serve to execute IT architecture, infrastructure or business processes. Performance indicators should be monitored; IT compliance with laws, rules and regulations in force should be verified, and technological surveillance of the market and evolution of the business should be conducted using IT.

- The CIO and other structures with governance of IT competencies should monitor the abovementioned indicators to know the current IT situation, in order to obtain evaluation criteria on new proposals received from the management level and redirect IT.

Additionally, ISO/IEC 38500 defines six general principles of good governance of IT, which state the desirable behavior that should guide decision-making on IT. These six principles can be summarized as follows:

1. **Responsibility:** clearly establish who does what in governance of IT and make it understood throughout the organization.

2. **Strategy:** plan IT that will best support the organization and its business processes.

3. **Acquisition:** acquire IT in a valid, responsible manner.

4. **Performance:** ensure that IT performs the activities it has been assigned.

5. **Conformance:** ensure that IT complies with the laws, rules and regulations in force.

6. **Human behavior:** ensure that human factors are considered in every IT activity.

The three governance of IT activities (direct, evaluate and monitor) must be carried out following the six principles (responsibility, strategy, acquisition, performance, conformance, and human behavior)

In this manner, the three main activities of governance of IT indicated in the standard—direct (direction), evaluate and monitor (control)—must be carried out following the six principles. These activities and principles guide governance of IT, as an improvement in behavior rather than something purely procedural or automatic:

- The stakeholders delegate responsibility and stewardship to the governing board and, in exchange, expect the board to assume responsibility for the activities necessary to meet stakeholder expectations.
- The board indicates a direction to the business managers throughout the organization and holds them accountable for the organization's performance through control processes.
- The governing board plays a governing role, in the traditional sense of assuming responsibility for the management of something entrusted to its care.

Specifically, for the acquisition principle of ISO/IEC38500, this should not be considered as only the concept of procurement. It should also be analyzed more broadly, from a more general perspective, including any decision that entails investment of financial or human resources in an IT activity. From a broad perspective of analysis, IT projects should be seen as an initiative for change in the organization.

ISO/IEC38500 establishes the relationship between the three governance of IT activities—direct, evaluate and monitor—and the principle of acquisition in the following manner:

- **Direct:** Corporate governance structures should ensure that IT assets are acquired adequately, inquiring about the preparation of contractual documents, licenses, etc. and how the capacities required will be provided. The governance structures should ensure that IT (owned or contracted) support the business needs of the organization. The governance structures should ensure that the organization and its IT suppliers develop a shared understanding about acquisitions.
- **Evaluate:** Corporate governance structures should evaluate options for the provision of IT assets for previously approved proposals, weighing the risks and value of the corresponding investments.
- **Monitor:** Corporate governance structures should monitor investments in IT to ensure that they really provide the capacities required. Governance structures should monitor the maintenance of a shared understanding between the organization and IT providers in acquisitions.

The key to corporate governance lies in investment in IT projects being aligned with strategic objectives, generating value for the business

Consequently, the role of acquisitions demands strategic importance; they should be considered as tools for gaining a competitive advantage rather than just as elements of spending. Therefore, the key question for corporate governance is whether your organization's investment in IT projects is aligned with its strategic objectives, thereby creating the necessary capacity to produce value for the business. Hence, it should not be possible that the IT portfolio is not aligned with the university's expectations and other investments (Earl, 1993), as they have a significant impact on its value

6. Main Governance Actions on the IT Portfolio

If the university's governance of IT framework is based on the standard, it would seem to be consistent that the selection and prioritization of the IT portfolio take place at high levels of the organization (Weill and Ross, 2004). The IT portfolio is a grouping of current and future projects selected and prioritized from among the candidates submitted by certain stakeholders of the organization or company (usually business units or departments). This definition leads us to important questions inherent to use of the IT portfolio as a tool for corporate governance:

1. Who proposes and who decides which projects to include in the portfolio?

2. How are IT projects in the portfolio prioritized?

3. How are project selection and prioritization publicized?

If we look closely, the three questions become the basis of the action of governing: have structures that propose projects and decide which ones to include in the portfolio (which could and should be different structures), strategically align coherent prioritization of the projects and, lastly, communicate the result transparently and consistently (Weill and Ross, 2004).

The IT portfolio is the set of current and future projects the university should undertake, and this tool contributes a very important perspective for the prioritization of investments and allocation of resources. Given its importance, it should be the responsibility of the university's governing board; that is, from the viewpoint of governance of IT, it is essential that selection processes and criteria, as well as management of the portfolio, be appropriate for the entire university. In large organizations with many stakeholders, there are different, coexisting projects from business units, departments, senior management and even IT staff (ordinarily infrastructure and/or architecture projects). For this reason, consideration should be given to processes and procedures (governance of projects and investments) that are governed by senior corporate management and managed by IT management, where the role of CIO is that of a direction and control bridge between the previously mentioned structures, alignment and communication.

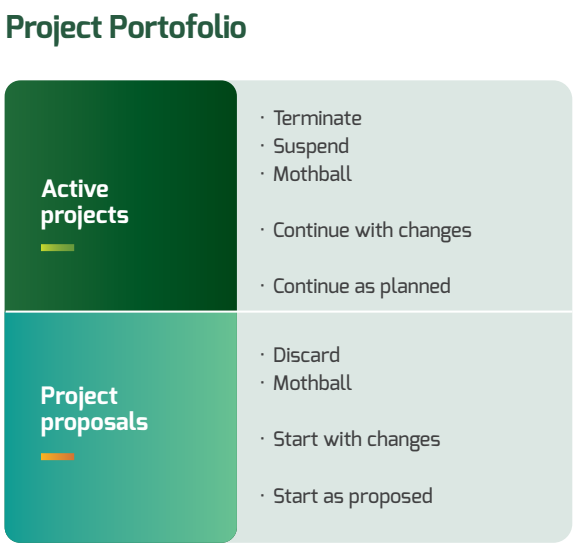
University governance should determine the selection criteria for IT projects, aligning the business strategy with the tactics and operations of the entire university

Therefore, university governance must determine in advance the selection criteria for projects and their prioritization, aligning the business strategy with the tactics and operations, not of IT but rather the entire university, using IT effectively. Consequently, for the structures that make decisions on the portfolio to maximize its value, they need criteria that include size, scope, risk and the investment necessary to determine the candidate projects to be executed in a given period.

Project selection is not only a matter of choosing those most likely to deliver value or the best rate of return. Many other factors, such as cost, impact, importance, sustainability and effort, should be considered in order for a project to be started.

Because stakeholder demand for IT projects nearly always far exceeds the possible investment, the first mission of selection and prioritization is to make sure that the most appropriate projects are undertaken at the right time. Unfortunately, this selection coexists with the projects being executed at the time. Therefore, a governance process is needed to know what to do with the resources available and the investments planned, for which the different IT governance structures that take actions on the portfolio should be given the tools to cancel, delete, pause or modify the current and future project portfolio (see figure 2.8).

Figure 2.8. Prioritization of Decisions on the Project Portfolio in Juiz (2016) [adapted from Heiskanen (2012)]

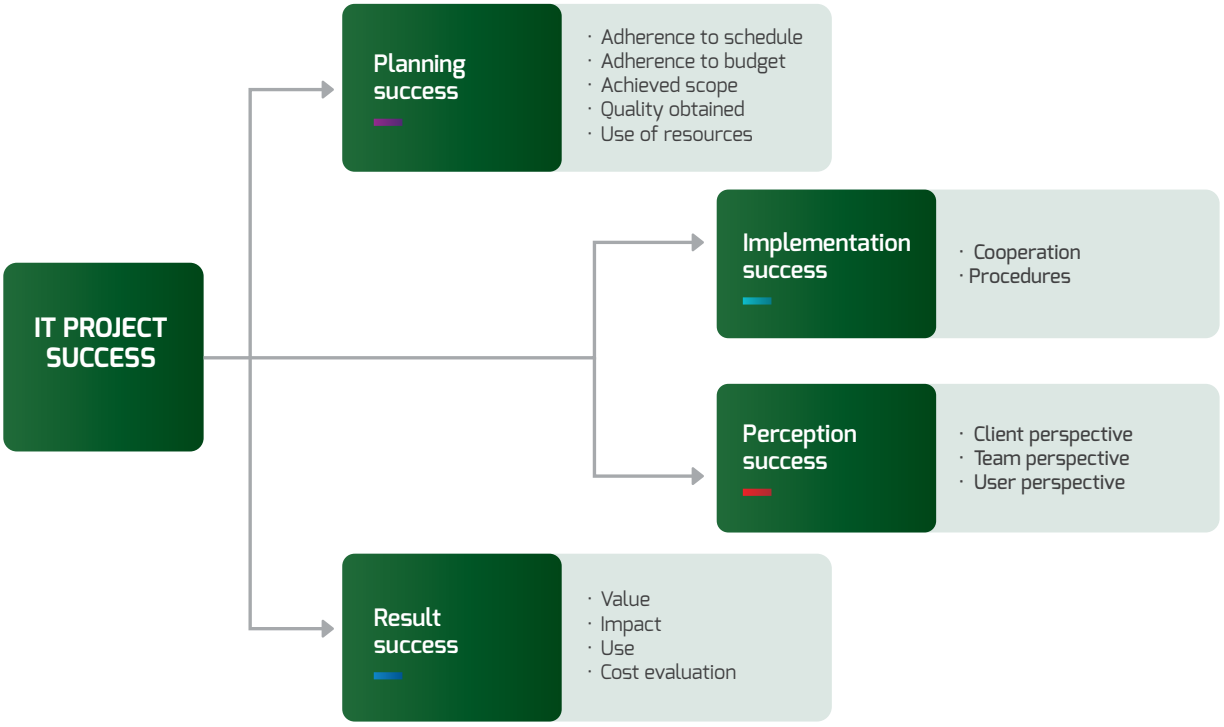


In this book, we will discuss how universities have dealt with the problem of governing IT and, specifically, the project portfolio. This means not only determining who configures the portfolio, but also the criteria to govern its content, that is, to make decisions on the two communication flows in relation to the portfolio: direction (strategic alignment of projects) and control (over project management).

IT governance of the project portfolio exists prior to, simultaneous with, and subsequent to portfolio management by university IT services

Therefore, IT governance of the project portfolio exists prior to, simultaneous with, and subsequent to management of the same by university IT services, and must establish the conditions for creation of the portfolio; criteria for selection and prioritization of the projects to be included, delayed or rejected; periodic verification of the validity of decisions made as a function of their execution by project management and their follow-up and, lastly, evaluation of the results as a function of the value and impact obtained, effective use and actual cost of IT projects (see figure 2.9).

Figure 2.9. Evaluation of the Success of IT Projects from the Perspective of Governance, Management and Operation (adapted from Harwardt (2016))



All these aspects of governance of the project portfolio are covered in the following chapters.

> "For a long time, some organizations have confused governance of IT with IT management"

> "The framework of governance of IT should foster mutual understanding between the business and IT"

> "It is essential that the IT organization have the will to be governed before an attempt is made to implement techniques, tools, methods or frameworks to govern IT"

> "The purpose of governance of IT should be to foster alignment between business goals and IT objectives"

> "The governance of IT standard helps direct and control every action taken by IT services"

> "Communication between the layers of a company should be represented precisely to determine the direction and control method"

> "The key to corporate governance lies in investment in IT projects being aligned with strategic objectives, generating value for the business"

“A company’s IT is well governed if it is producing value based on its investments in IT”

“The IT portfolio arises from a business’ operational demand, as well as senior management’s strategic demand”

“IT governance of the project portfolio exists prior to, simultaneous with and subsequent to management of the portfolio by university IT services”

“An IT project is a temporary effort to create a unique, sufficiently innovative, self-contained product”

“Universities tend to be in the phase of management of the supply and demand for IT projects, in a provider/client relationship”

“University governance should determine the selection criteria for IT projects, aligning the business strategy with the tactics and operations of the entire university”

“The three activities of governance of IT (direct, evaluate and monitor) must be carried out following the six principles (responsibility, strategy, acquisition, performance, conformance and human behavior)”

CHAPTER 3

Strategic IT Portfolio Model for Universities

In this chapter, our Strategic Information Technology Portfolio for Universities proposal will be presented. This concrete proposal has been consolidated thanks to our experience with its implementation in numerous Spanish univerisities.

The difference between the model presented and other project portfolios is that this proposal is strategic in nature and is a tool geared specifically toward the governing body of a university for the purpose of helping them determine which IT projects should be executed by means of their prioritization as a function of their alignment with the university's strategy.

Although this strategic approach to the project portfolio can be applied to any type of organization and to any type of project, this book focuses on universities and, more concretely, the prioritization of IT projects. A flexible model is proposed, and an explanation is given as to how it adapts easily to different university structures, without reducing its effectiveness.

The following sections describe the Strategic Information Technology Portfolio for Universities Model (hereinafter referred to as simply "Strategic IT Portfolio") and the advantages it brings. Subsequently, the roles related to the portfolio that are involved in informing or making decisions during some of the phases of execution of this portfolio are presented. The objective is to convince readers of the usefulness and viability of the Strategic IT Portfolio and for it to be helpful when they implement it at their universities.

1. Why Use a Strategic IT Portfolio?

1.1. What is an IT Portfolio?

An IT portfolio is a collection of projects and programs that are grouped together to facilitate their effective management in order to achieve an organization's strategic goals (Weill, Woerner and Rubin, 2008).

We should not limit the concept of a strategic IT project to projects whose main objective is to implement information technology or infrastructure and that are under the responsibility of the IT Department (for example, installing routers to support the campus wifi network). Instead, we should understand a strategic IT project (hereinafter referred to only as project or IT project) to be one whose implementation requires technologies for which different university areas are responsible and which serve to enhance different services offered by those areas. A good example of an IT project would be the "design and development of an application that manages international student mobility." This project is under the responsibility of the Internationalization Department.

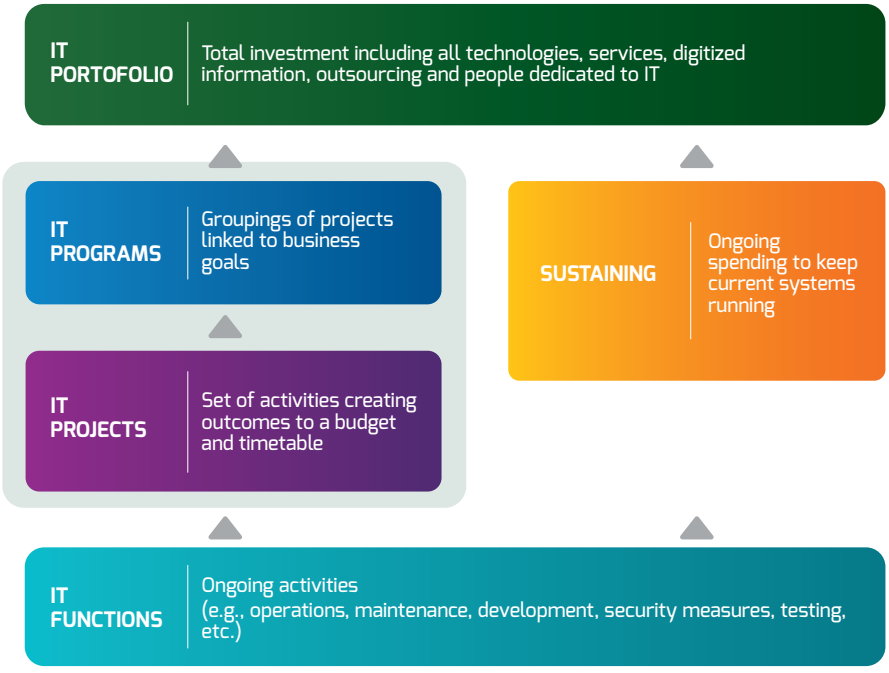
Its implementation will benefit the management of international mobility of the university's faculty, administrative staff and students, and adequate IT will be

needed to execute it. Therefore, it could be concluded that an IT project consists of the start-up or improvement of a university service that depends on information technology for its implementation.

The IT Portfolio should include all IT funding to sustain ongoing projects as well as new projects

According to Weill et al. (2008), an IT portfolio (Figure 3.1.) should include all the new IT projects intended for execution to improve the organization's competitiveness and, if applicable, several projects should be grouped in a program to concentrate the impact of projects in a given strategic area (for example, we could group all the projects aimed at fostering the university's internationalization in a program). However, we should not forget that the portfolio must include sustaining operations geared toward keeping current systems running. In fact, Weill estimates that this type of sustaining operations currently consumes two thirds of universities' IT investments, and only the remaining third is allocated to the launch of new projects.

Figure 3.1. Elements of an IT Portfolio (adapted from Weill et al. (2008))



Therefore, an IT portfolio should encompass all the funding for IT so that university mangers have a complete view of spending on sustaining IT, as well as investment in new projects. There is little university officials can do about maintenance expenses, as they are essential for sustaining operations that have already existed for some time, unless they decide to cancel some of them or there is a radical change of data architecture or processes (for example, migrating all IT to the cloud). However, they should pay closer attention to new projects, since they must decide which ones will be funded and, therefore, executed immediately, and which ones will be delayed due to their not being high priority from a strategic point of view.

1.2. Strategic IT Portfolio

The use of the proposed Strategic IT Portfolio is highly conditional on a university's decision to opt for good governance of IT, following the principles of the standard ISO 38500 (responsibility, strategy, acquisition, performance, conformance and human behavior) and, above all and ineludibly, centralized decision-making and allocation of resources. This does not mean that no part of the management of its IT resources is explicitly delegated, but rather that the decision as to which projects are most important from a strategic point of view must be made by the Rector and the governing body.

As shown in Figure 3.2, our Strategic IT Portfolio model basically consists of connecting two large processes that are closely related to the final success of a project: a first process called Strategic Alignment of IT Projects, and a second process called Execution and Monitoring of every IT Project.

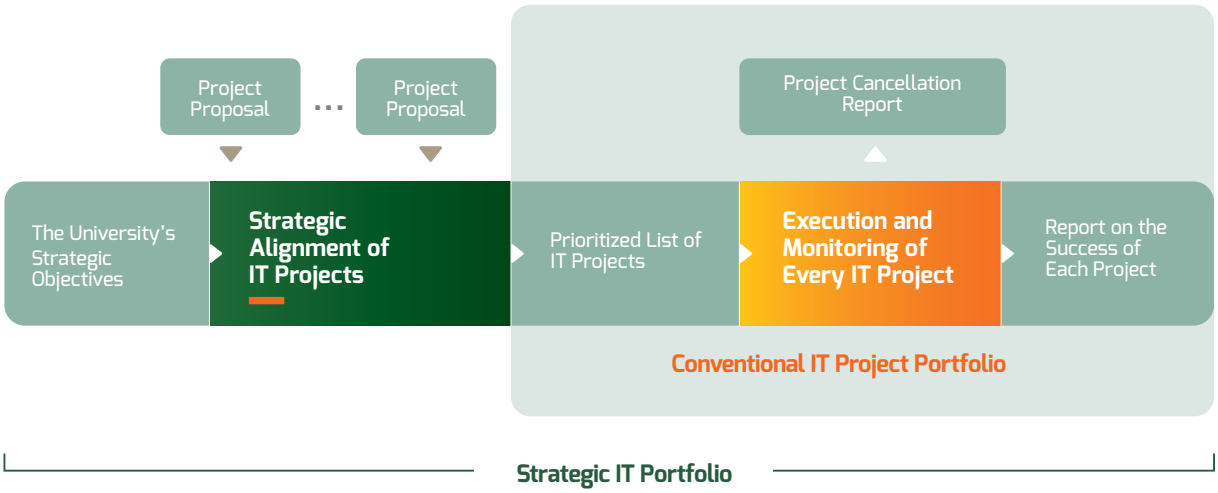
Approved projects in the portfolio are fundamentally prioritized by their degree of strategic alignment

The objective of the first process is to analyze each project proposal in relation to the university's strategic objectives in order to prepare a list of approved projects, prioritizing them in relation to each project's degree of strategic alignment. In this manner, the first project on the list will be the main one funded by the IT portfolio, as it will also be the one that will do the most to satisfy the university's strategy.

It is needless to emphasize a university's need for a well-defined business strategy as an indispensable prerequisite for implementing the Strategic IT Portfolio.

The second process consists of monitoring the execution of each project approved. Conventional IT portfolios tend to be concerned with monitoring from the point of view of IT management, ensuring that projects reach all the expected milestones and end adequately, that is, within the established timeframe and budget, with the expected results. This type of portfolio is designed to be used primarily by the organization's CIO, as it involves the execution phase more than the project selection phase.

Figure 3.2. Strategic IT Portfolio for Universities Model



This type of Strategic IT Portfolio is designed to be used by the university's governing body

However, our Strategic IT Portfolio model is geared toward governance of IT and is designed to be used by the governing body (Rector or CEO and Vice Rectors and CIO) to help them mainly during the strategic IT project selection and prioritization phase. It is not concerned with the execution phase except for milestones involving decision-making by university managers (essentially decisions related to the continuity or cancellation of a project and the analysis of the success of each project from a strategic point of view).

1.3. Advantages of the Strategic IT Portfolio

The benefits of our Strategic IT Portfolio are similar to those of any other type of conventional portfolio except for the advantages shown below, which are inherent to the strategic nature of the model being proposed:

- The implementation of the Strategic IT Portfolio obliges a university to have its main business strategies defined. If it does not have a strategic plan, the university will need to put a process in motion to design a set of strategic objectives as a basis for executing this type of portfolio.

The Strategic IT Portfolio will bring to light all the initiatives necessary to achieve the university's strategic objectives

- Discover the business areas that will need to start a new project to improve their competitiveness. The IT portfolio will bring to light all the initiatives necessary to achieve the university's strategic objectives. The IT portfolio will be responsible for selecting the most important projects among them—from a strategic point of view—to execute each year.
- It will centralize decision-making of the projects to be carried out, which will enhance the corporate strategy and limit isolated decision-making by units and departments more likely to ignore the overall strategy in favor of their own interests.
- The amount of funding necessary to execute all the projects that adhere to the business strategy will be determined, promoting centralized and, therefore, more efficient spending on IT.

Funding is allocated to the most strategic IT projects

- Every year, the available funding will go to the most important projects from a strategic point of view.
- Stakeholder participation in the start-up of a project will be fostered, establishing responsibilities in relation to the strategic success of the same.
- The strategic risk of projects will be reduced, as they will be adequately prioritized in relation to their strategic importance.
- It will be possible to measure the value that projects contribute to the university through evaluation of their success in strategic terms..

These advantages should encourage the university governing body to implement a Strategic IT Portfolio, since the implementation process is relatively simple in relation to the volume of benefits contributed by adequate execution of it.

The Strategic IT Portfolio is a tool made up of a set of elements that are fundamental to its successful execution:

- Roles and responsibilities. Before executing the IT portfolio, it is necessary to define the roles involved and the responsibilities assigned.

In this manner, each participant will know what he/she is responsible for and will act accordingly.

- Resources. The operation of the IT portfolio will largely depend on the financial and human resources available for each project. Therefore, before beginning to execute the IT portfolio, it is essential to make an analysis of the in-house resources to be invested over the life of the IT portfolio.

  Phases and flow of actions to be carried out during the execution of the IT portfolio. This execution is divided in several phases, each of which includes a series of input documents, a set of actions to be carried out by different responsible parties, and output reports that will be used by other responsible parties to make strategic decisions.

The following sections describe each of these elements in detail.

2 Roles and Responsibilities of the Strategic IT Portfolio

In the Strategic IT Portfolio, the first key element is the structure of roles involved in the process. Before discussing them, we will explain some roles that are inherent to university governance, which may vary according to the type of university. Understanding them clearly before assigning roles corresponding to the portfolio is essential. Although an attempt has been made to use gender-inclusive language, we have also tried to avoid the stylistically awkward overuse of "he/she" and "him/her."

2.1. Roles of university governance

With regard to roles related to university governance, the following stand out:

- **Rector or CEO.** At Spanish public universities, the highest-level director is the Rector, who oversees academic as well as business management (finance, human resources, etc.). However, at private universities, especially at universities similar to the British model, this responsibility is divided between a Rector with academic responsibility and a CEO in charge of business management. For this reason, reference will occasionally be made to the Rector or CEO to refer to the role of the person responsible for making business decisions, as academic decisions are less relevant to the matter being addressed. The person in this role will be ultimately responsible for the IT portfolio and will make the most important decisions..

- **The Governing Board.** Firstly, the Governing Board (or Governance Team or whatever the body may be called) is the group of directors that assist the Rector with decision-making and govern an area of management (In Spain, they are about half a dozen vice rectors, while in other structures, a group of directors of areas assists the CEO). In some way, the Governing Board is the group responsible for governance of business and, therefore, also IT, and it is headed by the Rector or CEO. In relation to the IT portfolio, the Governing Board will be in charge of establishing the funding allocated to the portfolio for the following year and defining the strategic criteria that will serve to establish project priority.

- **CIO (Vice Rector of IT).** At Spanish univerisities, the CIO is usually a vice rector, who may be assisted by the director of the IT area. In this type of organizational structure, the CIO is a member of the Governing Board, and it is his/her responsibility to govern IT. This role should not be confused with that of the director of the IT area, who is responsible for managing IT and is not a member of the Governing Board. In relation to the IT portfolio, the CIO will be in charge of promoting the implementation and adequate execution of the portfolio, overseeing the operation of the Portfolio Office, prioritizing the list of projects and submitting it to the Governing Board for its review and approval, and monitoring the execution of projects and informing the Governing Board on their success.

- **Dean.** At large universities, the colleges also tend to be large and may have considerable autonomy to govern their own resources. In these cases, the Strategic IT Portfolio tool can be applied to govern a college's IT, transferring ultimate responsibility to the Dean (who will assume all the responsibilities we will describe for the Rector or CEO) and his/her team (which will assume the responsibility of the Governing Board). These cases must be the exception and must be handled with care to avoid decentralizing decision making and losing sight of the university's strategic objectives.

2.2. Roles of the Strategic IT Portfolio

The preceding section lists a set of roles assigned to people or groups of people (structures) that have the responsibility of carrying out corporate governance, but there are other roles specific to the Strategic IT Portfolio:

- **Sponsor.** The person who proposes that a new project be included in the IT portfolio. It is the sponsor´s job to defend the need for it or the appropriateness of its execution to the Governing Board. This person must be a Vice Rector or some other member of the Governing Board, as he/she has the ultimate decision-making capacity. The sponsor should also be able to recognize a project's strategic importance and should reject projects that do not contribute to achievement of the strategic objectives.

The Sponsor will defend the appropriateness of the project before the Governing Board

- **Applicant.** The person who requests that the sponsor support the start-up of a new project. Therefore, this person is responsible for justifying the need and benefits, preparing the project proposal and defining the milestones. The applicant must be thoroughly familiar with the area in which the project is to be implemented; therefore, he/she should be in charge of that area (coordinator, head of unit, head of service, etc.), although this person will not necessarily have a functional reporting relationship with the sponsor. In the proposed IT portfolio model, the applicant may be anyone, regardless of his/her position in the structure of the entity, but this person must be capable of convincing a sponsor of the strategic importance of the project he/she is proposing. For example, if the applicant is in charge of the International Mobility Service, she must take her proposal to the Office of the Vice Rector of Internationalization, who will serve as the project sponsor, if he deems it appropriate.

- **IT Project Director.** The person appointed by the project sponsor to direct and subsequently execute the IT project, with responsibility for achieving the proposed objectives. It is recommended that the director be thoroughly familiar with the area in which the project is to be implemented, preferably the functional head of the area the start-up of the new project will benefit. Therefore, this person should be a coordinator, or the head of a unit or service, although he/she will not necessarily have a functional reporting relationship with the sponsor. In the preceding example, the IT project director would be the head of the International Mobility Service, who would be the applicant and also the IT project director.

- **Technical Support.** One person in IT Area is appointed to advise the sponsor on technological matters and the applicant on the drafting of the proposal.

The Portfolio Office is fundamental for advising applicants

- **Portfolio Office.** This office is headed by the CIO and is made up of tech staff specializing in project management who are thoroughly familiar with university processes. Sometimes, just one technician is able to perform the advisory work required. The office will be in charge of advising users of the IT portfolio on the different phases of the process, especially drafting project proposals in strategic terms, preparing a preliminary evaluation report on project proposals and submitting it to the Governing Board, and monitoring project execution.

Table 3.1 shows all the roles involved in the portfolio, grouped and summarized.

Table 3.1. Roles Involved in the portfolio process

ROLE	DEFINITION	RESPONSIBILITIES
Rector or CEO	Position ultimately responsible for governance of the business	As the person ultimately responsible for the IT portfolio, he/she should: · Establish strategic criteria for the IT portfolio · Allocate funds to the most strategic projects
Governing Board (GB)	Group of business managers that assist the Rector/CEO with decision-making	Advise the Rector/CEO on: · Definition of the business strategy · Configure the structure of the IT portfolio · Strategic project prioritization · Allocation of funds to the most strategic projects
CIO	Vice Rector of IT or holder of a similar position who is a member of the Governing Board	Should promote the implementation and adequate execution of the IT portfolio Also supervise the operation of the Portfolio Office and, from there: · Advise sponsors · Collaborate on the coordination of cross-cutting projects that involve several service areas or offices of vice rectors · Prepare the proposal for prioritization of the IT project list and submit it to the Governing Board · Monitor project execution and report to the Governing Board on the success of the same · Propose the cancellation of the project if deemed appropriate
Sponsor	Member of the Governing Board	· Analyze IT projects presented by Applicants and reject projects that are not strategic · Propose the inclusion of a project in the IT portfolio · Appoint the IT Project Director · Defend his/her project during the review by the Governing Board · Monitor the project to ensure an adequate conclusion
Applicant	Coordinator of Area, Director of the Secretariat, Head of Service or Unit, Dean, Department Director, etc.	Prepare the proposal for a new IT project and present it to a sponsor

IT Project Director	Coordinator of Area, Director of Department, Head of Service or Unit, etc. On occasion, the role of Applicant coincides with that of IT Project Director	Once the IT Project Director has been designated by the sponsor, he/she should: · Review the applicant's project proposal and make it his/her own · Supervise the execution of the project, ensuring adherence to project deadlines, budget and objectives · In the event of incidents or unforeseen events, coordinate the actions required to ensure continuity of the project or propose its cancellation to the sponsor
Technical Support	IT staff (from Information Technology Area)	· Review technological aspects of the applicant's project proposal · Supervise technological implementation during the execution of the IT project
Portfolio Office	Headed by the CIO, includes experts in project management with thorough knowledge of university processes	Coordinate and manage the IT portfolio by: · Advising users of the portfolio in the different phases of the process, especially when writing a project proposal in strategic terms · Preparing a preliminary evaluation report on the IT project proposals and submitting it to the Governing Board · Monitoring project execution

3. Resources of the Strategic IT Portfolio

Strategic objectives are needed to begin to execute the IT portfolio

Available resources are the second fundamental element of the Strategic IT Portfolio. The portfolio cannot be adequately deployed without an initial set of fundamental resources, grouped in three types: strategic, human and financial. Allocation of these resources to the portfolio will only be possible if all the university managers share the policy of centralized decision-making and resource management proposed by this portfolio model.

3.1. Strategic resources

The ideal starting situation for a portfolio is for the university to have designed a strategic plan (or the equivalent) that includes the strategic business objectives. If the university does not have one, it is necessary to hold some group dynamics (for example, a focus group that includes the members of the Governing Board) to prepare a catalog of business objectives to serve as a reference for strategically aligning new projects.

Under no circumstances can the portfolio be deployed without these strategic objectives, since without them the operation of the portfolio would be limited to technical matters that are secondary for governance of the university and would not be aligned with the corporate strategy.

3.2. Human Resources

Universities tend to have their own human resources that can participate in the execution of a new project, avoiding the need to hire these resources outside. Therefore, we should know how many human resources—for example, measured in hours—are available for new projects proposed by the portfolio. These resources may be assigned to the IT area or other functional areas involved in the start-up of each project.

3.3. Financial Resources

The Strategic IT Portfolio is based on a centralized decision-making model in relation to IT. Therefore, before deploying it, we must establish the amount with which IT will be centrally funded.

The portfolio will contain all the funding centrally allocated to IT (Weill et al., 2008); therefore, the CIO should budget all spending on IT, including the cost of human resources (those dedicated to IT plus those from other functional areas), the cost of sustaining projects and, lastly, the budget reserved for starting new projects.

Cost of the portfolio =
cost of HR + cost of sustaining projects + cost of new projects

In the preceding section, it was stated that the portfolio would use in-house human resources to execute new projects proposed. Therefore, we must know the cost of these human resources and take that into account in the portfolio.

The first part of the funding is to sustain IT services

Subsequently, it is necessary to estimate the cost of sustainability of IT services already in operation; this is what we call "IT sustainability." At this time, we need to clearly understand the difference between a project dedicated to an essential maintenance operation that cannot be postponed, and the start-up of a project that proposes an improvement in an ongoing service. The latter may or may not be carried out and, therefore, is not maintenance, but rather a new project that will compete with the rest of the projects in the portfolio. The CIO should make a list of IT operations (and their cost) to propose their indisputable funding to the Governing Board, as they are necessary services to date. Changes should only be made if the CIO proposes the cancellation of some of the operations.

Projects will compete for funding provided for new initiatives

Lastly, the Governing Board should agree on funding for starting up new services and initiatives. New project proposals will compete for this amount.

This financial analysis related to IT will serve the Governing Board to understand the university's total spending and relate it to average values in the sector—reference reports establish that adequate spending on IT to maintain an organization's competitiveness is 5% of its total budget.

Given that the portfolio depends on the funding allocated to it, and that once it is executed its result will be a certain financial allocation for each new project approved, it seems logical that the execution of the portfolio take place just before the preparation of the university's annual budget and that the budget should include in detail the financial allocation made by the portfolio as an investment commitment for the coming year.

4. Phases of the Strategic IT Portfolio

The execution phases of the Strategic IT Portfolio are the third element that characterizes our portfolio model. Execution is divided in five main phases, which are executed sequentially, as shown in Figure 3.3.

Figure 3.3. Phases of the execution of the Strategic IT Portfolio

In the configuration phase, the most important decisions in the process are made

- **Phase 1: Configuration.** In this phase, the most important decisions in the process are made, as the resources (human and financial) available for allocation among concurrent projects are established. The strategic criteria that will serve to determine whether the projects proposed are aligned with the university's business strategy are also determined.

- **Phase 2: Project proposals.** The objective of this phase is to discover which projects could improve existing university services or provide support for a new service that contributes to achievement of the university's strategic objectives through information technology. For this purpose, those in charge of university services, whether functionally or through governance, are asked to propose projects that contribute such improvments. The result will be a comprehensive catalog of strategic needs to be covered, along with the projects that need to be executed to satisfy them.

- **Phase 3: Prioritization.** Commonly, a university will not have the resources necessary to execute all the projects included in the preceding phase of the portfolio. Therefore, we need to evaluate all the proposals, arrange them through a strategic prioritization, and dedicate the resources available to the most important projects in strategic terms.

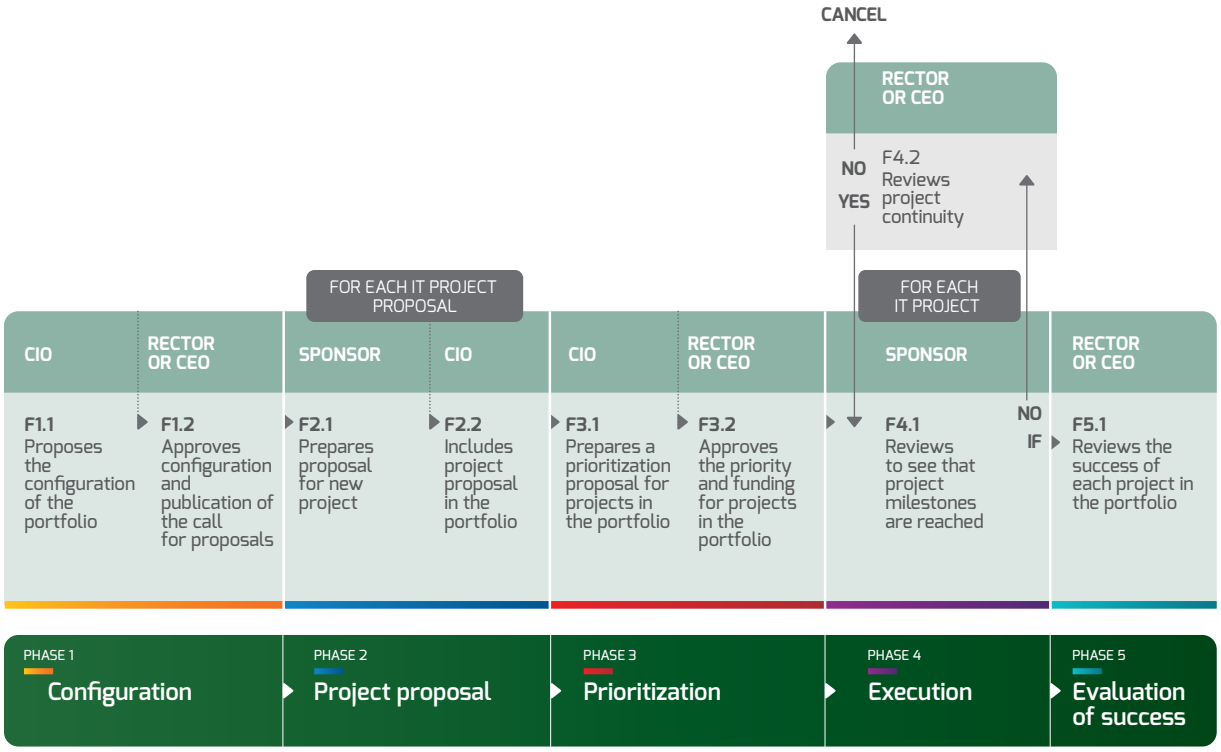
- **Phase 4: Execution.** In this phase, each of the projects approved in the preceding phase is executed. Therefore, this is where each project is monitored, ensuring that it concludes adequately. In any case, if a project does not achieve the established objectives, the decision should be made whether to cancel it to avoid further financial losses.

Evaluation of success is essential to determine the strategic impact of a project

- **Phase 5: Evaluation of success.** In this last phase, the idea is to establish the value the projects executed return to the university. A project's timely conclusion on budget does not ensure that it has achieved the strategic objectives expected. Therefore, it is necessary to do a strategic analysis of the results and inform the Rector and the rest of the members of the governing body of their value to the university.

This proposal of phases is a design by the authors that is not intended to become the only way to execute a portfolio. This process can be adapted with a degree of flexibility to each university or university system's situation. To avoid running unnecessary risks, it is recommended that this procedure be followed. Each of these phases is detailed in the following sections (Figure 3.4).

Figure 3.4. Persons Responsible for the Subphases of the Strategic IT Portfolio



PERSON RESPONSIBLE — Manager in charge of the phase

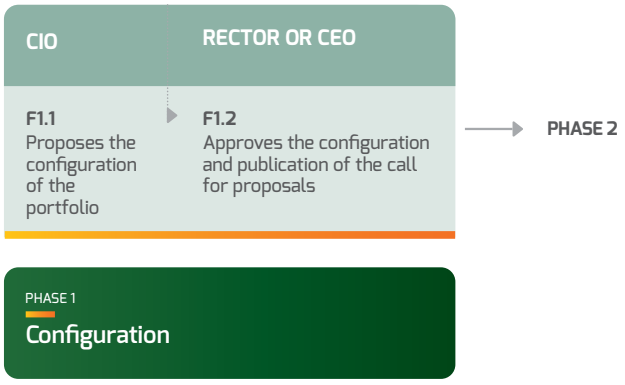
4.1. Phase 1: Configuration

The Governing Board establishes the resources available and proposes strategic criteria

In this phase, the Governing Board makes the most important decisions in the process, as it establishes the resources (human and financial) available for distribution in the portfolio and proposes the strategic criteria that will serve to determine whether projects are aligned with the university's business strategy.

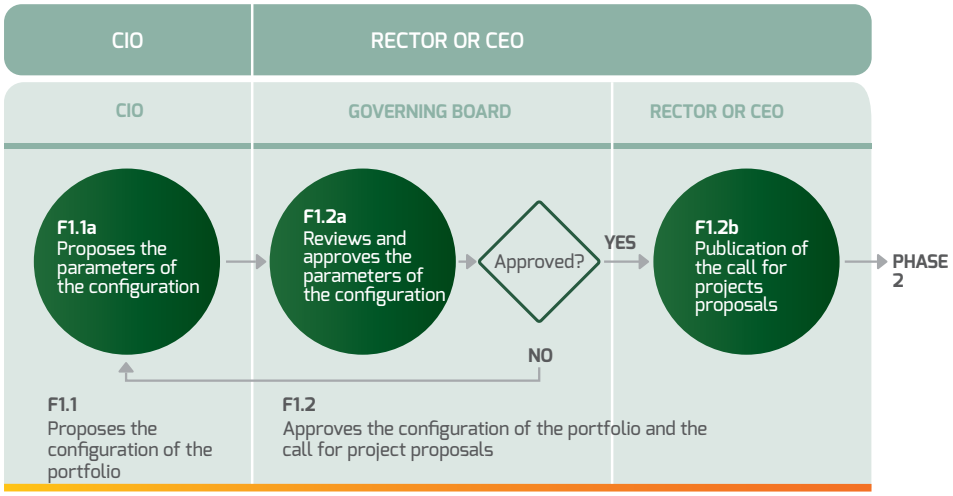
The phase begins with the configuration of the parameters of the portfolio and ends with the publication of an announcement of the opening of the call for proposals for new projects (Figure 3.5).

Figure 3.5. Phase 1: Configuration



The CIO should take the initiative in this phase and propose a portfolio configuration to the Governing Board. The Rector will be responsible for having the Governing Board review and his/her proposal, obtaining its approval and, lastly, having the call for proposals published. The Governing Board may return the proposal to the CIO to be reconfigured according to its indications and resubmitted for approval (Figure 3.6).

Figure 3.6. Subphases of Phase 1: Configuration



In this phase, the following parameters should be established: financial resources, human resources, evaluation criteria, schedule and documentation of the portfolio.

Financial resources of the portfolio

The IT portfolio should include the cost of in-house human resources that will participate in each project

The CIO should begin by determining the overall cost of the portfolio. For this purpose, he will calculate the cost of in-house human resources (from the IT area as well as other services) that will be working on the execution of new projects. The CIO should also review IT-enabled university processes and determine the overall cost of sustaining them. To conclude, the CIO will propose an amount for investment in new projects. This amount will subsequently be reviewed by the Governing Board and confirmed by the Rector. Proposed projects will compete for funding with part of that amount, so there should be a reasonable amount to ensure that an adequate number of projects can be carried out to largely satisfy the university's business objectives.

Human resources of the portfolio

The projects will also compete for in-house human resources

The CIO should determine how many human resources specializing in IT and from other areas he can dedicate to the execution of the portfolio. There is no real need for a technician's full-time dedication, as a technician's availability can be measured in hours per year. The total number of hours available will also be a resource for which projects in the portfolio compete. It should be taken into account that if few in-house resources are available, the projects will have to dedicate part of their funding to hiring external resources to work for them.

Criteria for evaluation of the portfolio

The evaluation of a project should include strategic alignment criteria

The CIO should propose a large and varied catalog of evaluation criteria, among which there should always be criteria that establish whether the proposal is aligned with the business objectives. It is appropriate to assign a weight to each criterion. It is also recommended that strategic alignment account for a significant percentage of the final value of the evaluation of the project.

Portfolio schedule

The CIO should propose a schedule that includes the main milestones of the portfolio. This schedule will be reviewed and, if applicable, approved by the Governing Board. The schedule should include:

- **Date of publication of the call for project proposals.** We have already commented on the appropriateness of including funding for the portfolio in the university's annual budgets. Therefore, it is appropriate to announce it with sufficient time to cover the first three phases of the portfolio before preparing the budget. This leads us to recommend that the call for project proposals be made some months (for example, three months) before the budget is prepared.

- **Period for submitting project proposals.** At least the first year that proposals are accepted for the portfolio, this period should be long (perhaps two months), as applicants will need considerable help from the Portfolio Office to complete their requests properly. Starting with the second edition of the portfolio, this period could be reduced, perhaps to a month. In some portfolio methods, this period is divided in two phases. Requests are submitted in the first phase and, during the second phase, the office reviews them and requests changes. The first procedure is recommended, but the final implementation is up to the CIO of each university.

- **Period for project evaluation and prioritization.** This period may be extended for two or three weeks, during which the office should evaluate the proposals and prepare a final list of projects prioritized according to the strategic criteria.

- **Date of publication of projects approved and, therefore, funded by the portfolio.** The CIO will send the Governing Board the prioritized project list for review and a decision on what portion of the portfolio funding each one will receive. These matters can be discussed in a meeting of the Governing Board, due to which the date of publication of the results should not be postponed much in relation to the preceding period.

Documentation of the Portfolio

It is appropriate that the CIO prepare a series of documents that facilitates the description of the portfolio and helps users understand it better:

- **Document with the description of the portfolio.** This document will essentially include a description of the roles involved in the process and the most important phases of the portfolio.

- **Rules on the operation of the portfolio.** To offer users maximum transparency, it is appropriate to state the operation of the portfolio in the form of rules. With this document, consideration may be given to doing without the preceding document.

- **Template for new project proposals.** To ensure that all proposals are evaluated considering the same information, a template with fields for strategic data, at least, should be used.

- **Text of the call for proposals.** It should include the funding available for the portfolio, main dates of interest and, above all, the strategic lines that will serve as a reference for aligning new projects. It is also appropriate to mention a website where the rest of the documentation mentioned is published and where the Portfolio Office helps users during the project proposal phase. The call for proposals should be signed by the Rector to highlight his support for this initiative and so that users understand the strategic importance of the portfolio and the projects it comprises. The call for proposals will be sent to the entire university community so that they understand

the economic effort being invested in starting up or improving new IT-enabled university services.

For a better understanding of how best to establish configuration parameters and the documentation that should be prepared to support the portfolio, this book has an appendix with an example of the implementation of a strategic portfolio at a university. All the documentation used for the case study can be found in section F1.1 of the appendix.

Although this configuration phase is very short with regard to the rest of the process, it is a fundamental and very critical phase, as it will lay the foundations that will guide the call for proposals. To adhere to principles of good governance as intended, all documentation generated in this phase, as well as all the decisions taken, will be made public along with the publication of the call for proposals.

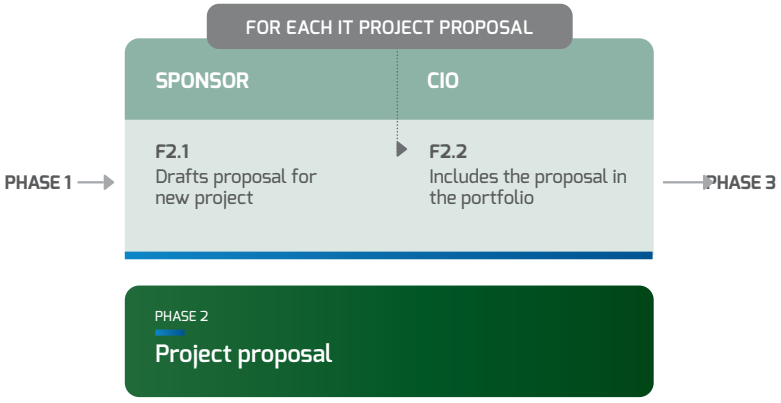
Phase 2: Project Proposals

The objective is to determine which projects best adhere to the university's strategy

Remember that the purpose of this phase is to discover which projects can help achieve the university's strategic objectives through information technology. For this purpose, managers of university services are asked to propose projects that contribute to that improvement for inclusion in the portfolio. This phase should conclude with a complete catalog of projects that need to be executed to satisfy the university's business needs.

The proposal submission phase begins once the call for proposals has been published and will last approximately one month (the timeframe will be stated on the portfolio schedule). During this phase, each sponsor will be responsible for the drafting of proposals for new projects, which will be sent to the CIO to be considered for inclusion in the portfolio (Figure 3.7). Once the submission period ends, the portfolio will contain all the projects proposed, drafted in strategic terms.

Figure 3.7. Phase 2: Submission of proposals



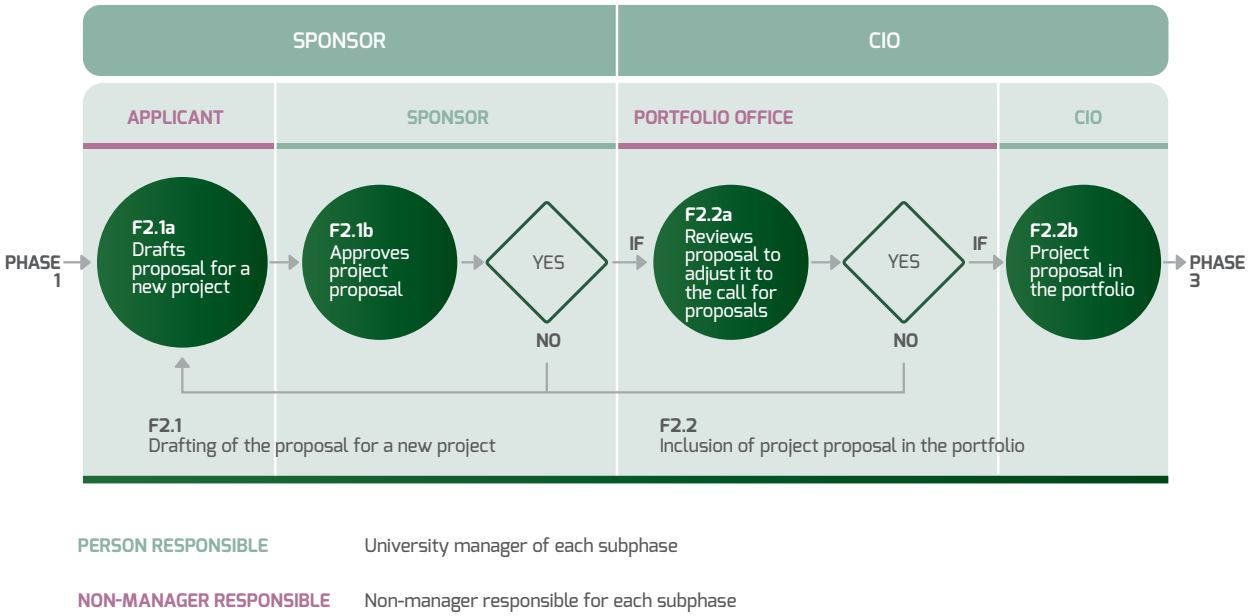
The applicant takes the initiative and proposes a new project

Each project applicant should take the initiative once he is aware the call for proposals has been announced (Figure 3.8). The applicant should complete a proposal template, using strategic arguments, and submit it to the sponsor that could benefit most from the start-up of this new project. In the example given previously, the head of the International Mobility Service sends a proposal for the "Design and development of an application to manage international student mobility" to the Office of the Vice Rector of Internationalization, the sponsor with the greatest interest in using this application in the management of the area under his responsibility.

The sponsor will only support the project if he is convinced of its appropriateness

The sponsor will evaluate the appropriateness of the project and, if he deems it appropriate to support the proposal, the first thing he should decide is who will be the project director. The director will be responsible for ensuring the success of the project and, therefore, the achievement of the strategic objectives. Subsequently, the sponsor will review the proposal with the applicant and the project director, agreeing on objectives, risks, goals and other strategic aspects of the project. The sponsor will only send the project proposal to the CIO if he is convinced of the advantages and appropriateness of executing the project immediately.

Figure 3.8. Subphases of Phase 2: Proposal submission



PERSON RESPONSIBLE	University manager of each subphase
NON-MANAGER RESPONSIBLE	Non-manager responsible for each subphase

The Portfolio Office verifies that the project proposal has been drafted strategically

The CIO will delegate reviewing the proposals to the Portfolio Office to verify that they have been drafted in strategic terms and that all the necessary information has been gathered for subsequent evaluation. The office should also verify that the project is sufficiently important and that it provides adequate arguments to be considered strategic. However, the office will not be involved in considering the strategic appropriateness of the project; it will only review formal aspects of the request. If the office finds room for improvment, it will contact the applicant and the project director to advise them on how it should be rewritten. Once corrected, the sponsor should be asked to resubmit it to the CIO, if he agrees with the changes made.

The CIO decides whether to include the project in the IT portfolio

Lastly, the CIO, the person ultimately responsible for this phase, will review each proposal to confirm that it is complete before including it in the portfolio. The CIO will not decide on the appropriateness of the new project either, but rather will include it in the portfolio for consideration by the Governing Board, during the following phase. At that point, the CIO, as a member of the Governing Board, will offer an opinion in that regard.

The result of this phase is that the portfolio contains a set of well-documented project proposals, thanks to the information on the proposal forms.

Phase 3: Prioritization

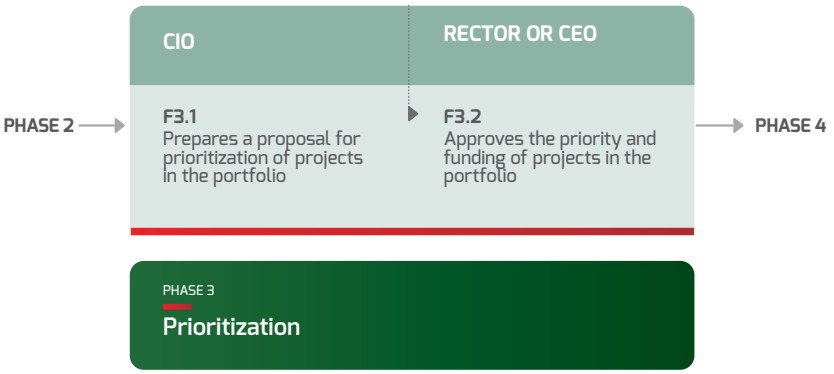
Prioritization serves to allocate resources to the most strategic IT projects

Universities do not usually have all the resources necessary to execute all the projects included in the IT portfolio during the request submission phase. Therefore, all the proposals should be evaluated and then put in order through strategic prioritization, and available resources should be allocated to the most important projects in strategic terms.

The prioritization phase is very brief, but it is of great strategic importance. It is important to make this point clear in the call for proposals, as it marks a turning point between all the preparation and alignment processes, as well as the beginning of the execution of IT projects.

In this phase, the CIO is responsible for the strategic evaluation of all the projects in the portfolio and the preparation of a prioritized list according to their strategic value. Subsequently, the Rector, together with the Governing Board, will review the list of projects arranged in order and allocate the available resources to the highest priority projects (Figure 3.9).

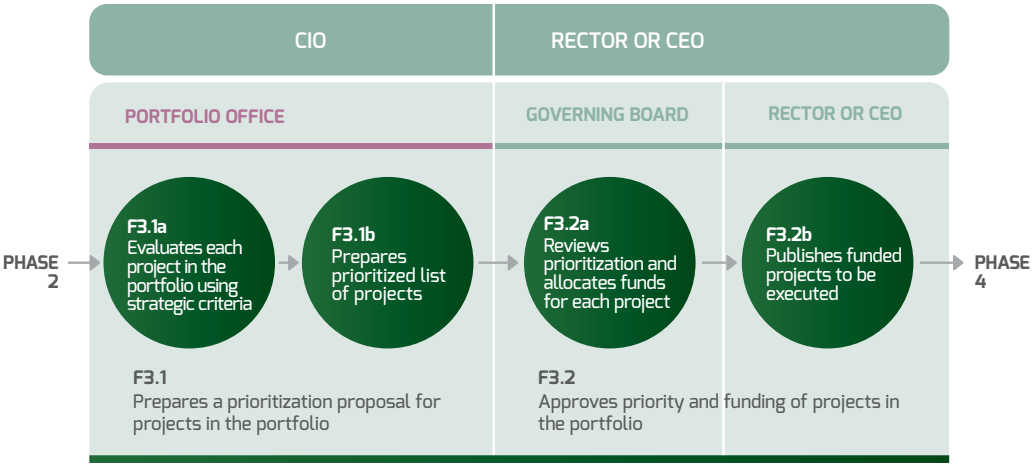
Figure 3.9. Phase 3: Prioritization



The Portfolio Office proposes a list of strategically prioritized IT projects to the Governing Board

In this phase, the Portfolio Office staff will begin preparing an evaluation template that brings together all the strategic criteria established during the configuration phase (Figure 3.10). This template will serve as a reference to evaluate every IT project in the portfolio. Section F 3.1 of the appendix includes a template. Based on his experience, the technician should make a valuation of each of the strategic criteria and add them up to obtain a total value for the IT project: This will be the value with which a project competes with others in the portfolio. Once the value of all the IT projects in the portfolio has been obtained, the office will make a prioritized list of projects, in order from the greatest to least strategic value, and propose it to the Governing Board.

Figure 3.10. Subphases of Phase 3: Prioritization



In the interest of adhering to the principle of accountability—based on the preliminary prioritization proposal sent by the Portfolio Office, respecting the rules proposed in the configuration phase, and based on its members' judgement and knowledge of the organization's interests and strategy—the Governing Board (or the equivalent body) will reach an agreement on a prioritized IT project list.

It is at this time that sponsors may try to defend the projects they have proposed, but—once again adhering to the principle of accountability—they should do so by proposing general changes in the evaluation criteria, avoiding acting so as to have the value of their project increased preferentially. For example, the Vice Rector of Internationalization may ask that the weight of the "improvement in internationalization" criterion be given more weight because he understands that it is more important than other strategic lines present in the evaluation criteria.

The Governing Board should allocate financial and human resources to each IT project

The Governing Board should also allocate financial and human resources to each IT project, starting with the most important one and distributing said resources according to the prioritization order until they are exhausted. Usually, this will mean that the IT portfolio will only have resources for the first ones on the list, and a good number of projects will remain unfunded. This should not be understood to mean the unfunded projects are not sufficiently strategic, but rather that, although they are good and feasible, the university should delay their execution until it has the resources. Applying this Srategic IT Portfolio model, this should not occur until the next edition of the portfolio.

Remember that economic resources had been allocated to the IT portfolio in the configuration phase. However, if at this time, the Governing Board discovers that the following projects on the list—for which there was insufficient funding—are particularly interesting, it may make the decision to increase the amount to be invested and include another project among those funded.

Another matter for the Portfolio Office, during the call for proposals, is planning the execution of each IT project over time. In this manner, it can prioritize the most urgent projects. In other words, the execution of the most strategic projects during the current call for proposals is ensured, but there is no assurance that a more strategic project is executed before a less strategic project.

All the members of the Governing Board should respect the decision agreed upon

Once the Governing Board has agreed on all these matters, its members should commit to respecting the decisions taken, at least for the period of validity of this edition of the portfolio (which is usually one year). With sufficient funding and the work plan already designed, now it is up to the project directors, functional managers and tech staff to execute each project. Thanks to this planning, it will be easy to assign work to participants in the projects and avoid work overload that could occur because of unforeseen projects.

Phase 4: Execution

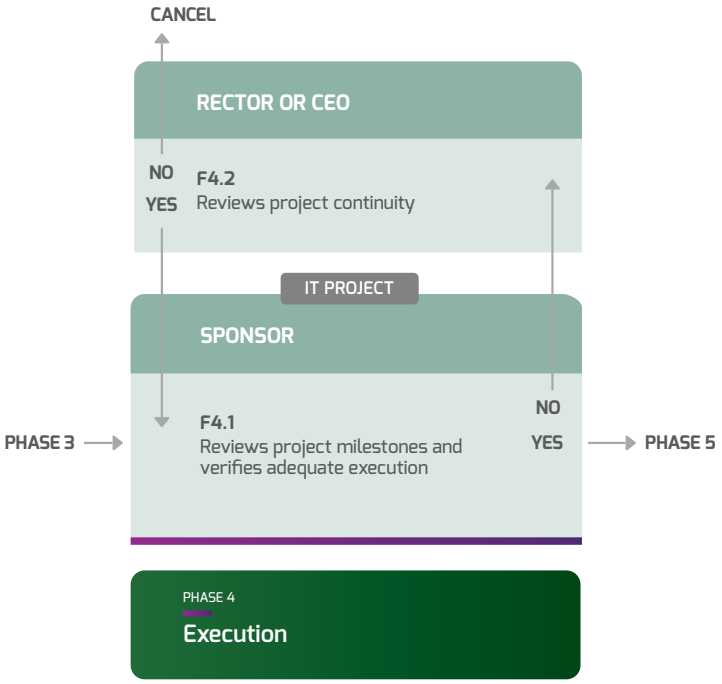
If during the execution of a project, it is detected that it does not achieve the objectives, its cancellation should be considered

In this phase, each project approved in the preceding phase is executed. It is essential that every project be monitored, ensuring that they are completed adequately. If at some point it is found that a project does not meet the established objectives, for whatever the reason, we should decide whether to cancel it rather than continue accumulating financial losses.

IT portfolio planning does not rule out very specific situations

Over the course of the execution period, new situations may appear, such as a change in strategic conditions, the passage of new regulations and laws, or simply the emergence of other projects that are more strategically important than ongoing projects. It also may occur that a project does not comply with planning and is accumulating delays and financial losses that lead the sponsor to reconsider its continuity. The Rector should be informed of all these situations, as he is ultimately responsible for the IT portfolio and the one who must give final approval on any significant change (Figure 3.11).

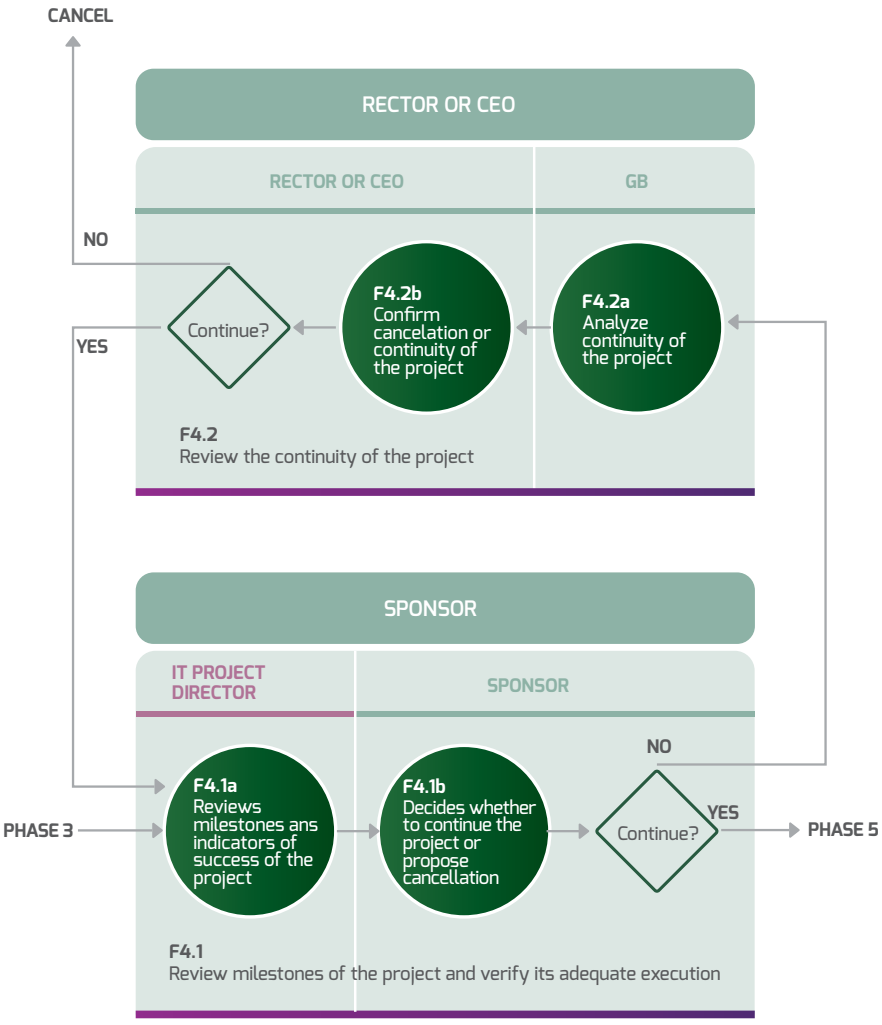
Figure 3.11.Phase 4:Execution



The IT project director is responsible for monitoring and informing the sponsor

The director of each IT project will be responsible for monitoring it and periodically informing the sponsor of the execution status of the project based on a review of the milestones planned and the values of established indicators of success. If the sponsor detects a concerning deviation from the objectives of the IT project or that conditions affecting the project (changes in the strategy or the passage of applicable laws) have changed, he should inform the Governing Board so that the continuity of the project can be analyzed (Figure 3.12).

Figure 3.12. Subphases of Phase 4: Execution



We are certain that the experience of the Governing Board will be sufficient for its members to decide whether is is profitable from every point of view (economic and strategic) to continue with the IT project until its conclusion or cancel it to avoid accumulating more delays or wasting money. When a project is canceled, the Governing Board may opt to start up the next project in the IT portfolio that remained unfunded and dedicate freed-up resources to it or reallocate these resources to an ongoing IT project.

Although IT portfolio planning should be unchangeable, varying only in the situations described previously, sometimes a university manager is tempted to start up another project during the period of validity of the IT portfolio. If the project that has arisen unexpectedly is really important, the manager should submit a proposal for a change in the IT portfolio. If the Governing Board deems the project to be of major interest, it should consider whether it has the extraordinary financial resources and external human resources to dedicate to it or whether an ongoing project should be canceled to free up resources that can be reallocated to this new project. This move may be complex and risky. Therefore, it is recommendable that the Governing Board avoid making a hasty decision and analyze whether the new project proposed is really that important or if it can wait until the next edition of the IT portfolio that should be opening within months.

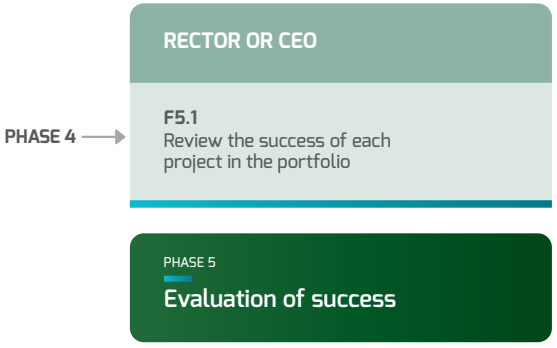
In summary, the objective of the execution phase is to follow up on governance of the projects in the IT portfolio, regulating the intervention of the Governing Board, competencies, and how the different people responsible for IT projects will communicate with management. All of this is to ensure alignment between strategic and technical decisions and organizational decisions, always progressing toward the university's strategic objectives.

4.5 Phase 5: Evaluation of success

The analysis of success phase establishes how much value each project in the IT portfolio contributes once it has been executed

In this last phase, the value completed projects in the IT portfolio contribute to the university should be established. Timely completion of an IT project on budget does not ensure that it has achieved the strategic objectives expected. Therefore, it is necessary to do a strategic analysis of the results and inform the Rector and the rest of the members of the Governing Board on its value to the university (Figure 3.13).

Figure 3.13. Phase 5: Evaluation of success

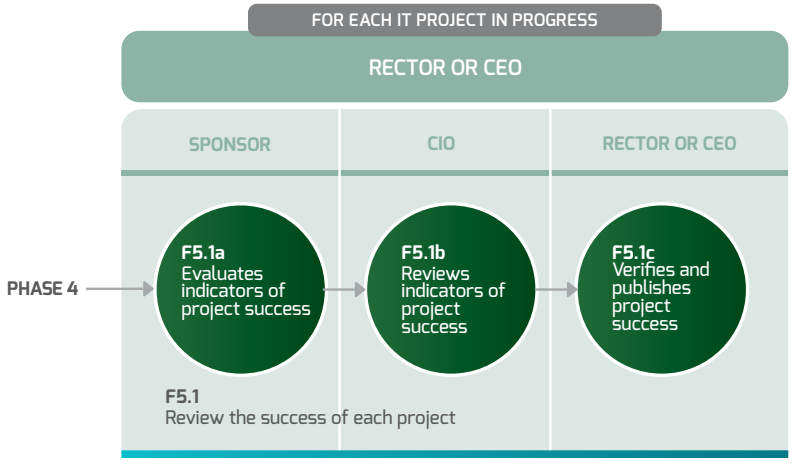


In this phase, there should be an evaluation of the results of the execution of each IT project, but also an overall evaluation of the execution of the IT portfolio. The latter evaluation process should take place subsequently in order to see the benefits of the IT portfolio with perspective and sufficient data.

This evaluation can be based on surveys taken among the applicants and sponsors and on the analysis of results. All the information generated in this evaluation of success phase will be crucial to decision making by the Governing Board.

The sponsor should be the one to evaluate the indicators of his IT project and send the CIO a report showing the level of success attained (Figure 3.14). The success of a project should not be established only as a function of whether it yields a high economic return, achieves significant savings, or notably streamlines a process. In addition to these indicators, when completing the proposal template, each IT project should establish a set of indicators related to its contribution to the achievement of certain strategic objectives. If strategic indicators of success, including base and target values, are established from the start, upon completion of the execution of the project, the Rector could easily determine whether the project has achieved the expected values, that is, values that achieve the university's strategic objectives and, therefore, success.

Figure 3.14. Subphases of Phase 5: Evaluation of success



In the example we have been using, the project titled "Design and development of an application to manageinternational student mobility," the following could be included as strategic indicators of success: *average time to complete the incorporation of an incoming student* (where it would be determined whether the process is streamlined in relation to the current situation and contributes to a business objective related to the quality of university services), *student satisfaction with the mobility process* (this could motivate the search for continuous improvement until the highest levels of satisfaction are reached, thereby contributing to a strategic objective related to user satisfaction), *number of countries of origin of incoming students who use the application* (this indicator is clearly related to the strategic objective of expansion of the internationalization of the university), *percentage of the university's students involved in outgoing mobility* (this shows whether efforts to disseminate mobility programs have been adequate, whether adequate tools have been placed at students' disposal, and whether they have been motivated to participate in international experiences, with an impact on the same objective of growing the internationalization of the university).

For a better understanding of how the success of an IT project can be evaluated, reading section F 5.1 of the appendix is recommended.

In this chapter, a Strategic IT Portfolio proposal has been described, sometimes with great conviction. The reason for this is that, after many years of implementing this tool at different universities, we are certain that this procedure is the best suited to the purpose and definitely contributes to the success of an IT portfolio. However, the reader should also perceive that this proposal is flexible and can be adapted to each university's situation. There are universities whose portfolio methodologies have certain variations on the proposal presented here that are working very well. However, it should be noted that changes to the proposed procedure should be made with care to avoid reducing the degree of involvement of those responsible for the IT portfolio. If this occurs, users will lose confidence in the IT portfolio and will not participate it in the end.

In summary, there are many ways to get to the same place, but we are convinced that what we propose in this chapter will be the easiest path to take for readers who decide to implement a Strategic IT Portfolio at their university.

> "The objective is to determine which IT projects contribute most to achieving the university's strategy"

> "This Strategic IT Portfolio is designed to be used by the university's high-level managers"

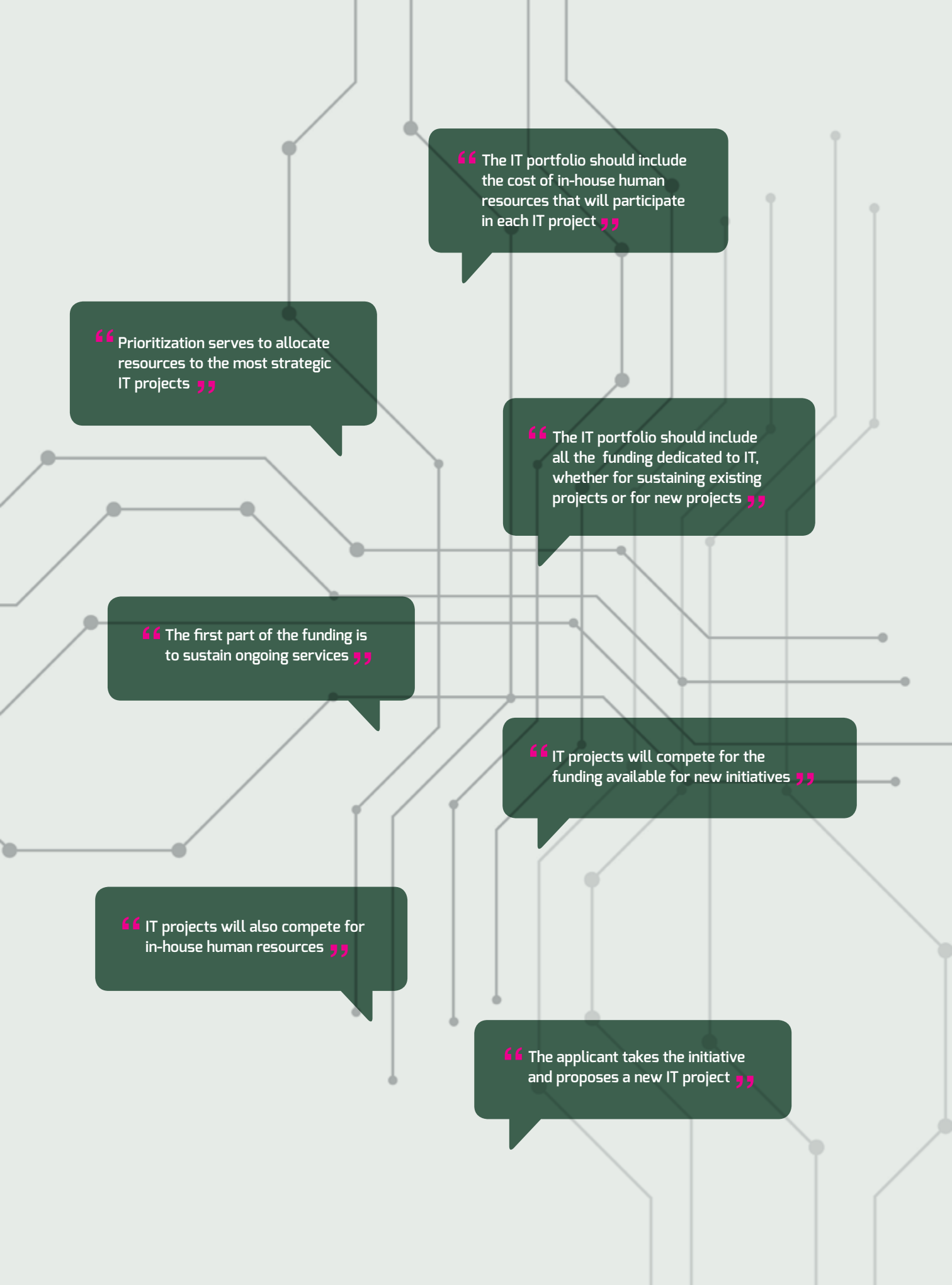
> "Strategic objectives are needed to begin to execute the IT portfolio"

> "The IT portfolio will bring to light all the initiatives necessary to achieve the university's strategic objectives"

> "The Governing Board establishes the available resources and proposes the strategic criteria"

> "The most important decisions in the process are taken in the configuration phase"

> "Approved projects in the IT portfolio are prioritized fundamentally by their degree of strategic alignment"


The IT portfolio should include the cost of in-house human resources that will participate in each IT project
Prioritization serves to allocate resources to the most strategic IT projects
The IT portfolio should include all the funding dedicated to IT, whether for sustaining existing projects or for new projects
The first part of the funding is to sustain ongoing services
IT projects will compete for the funding available for new initiatives
IT projects will also compete for in-house human resources
The applicant takes the initiative and proposes a new IT project

"The CIO decides if a project is to be included in the portfolio"

"The sponsor will only support the project when he is convinced of its appropriateness"

"The Governing Board should allocate financial and human resources to each project"

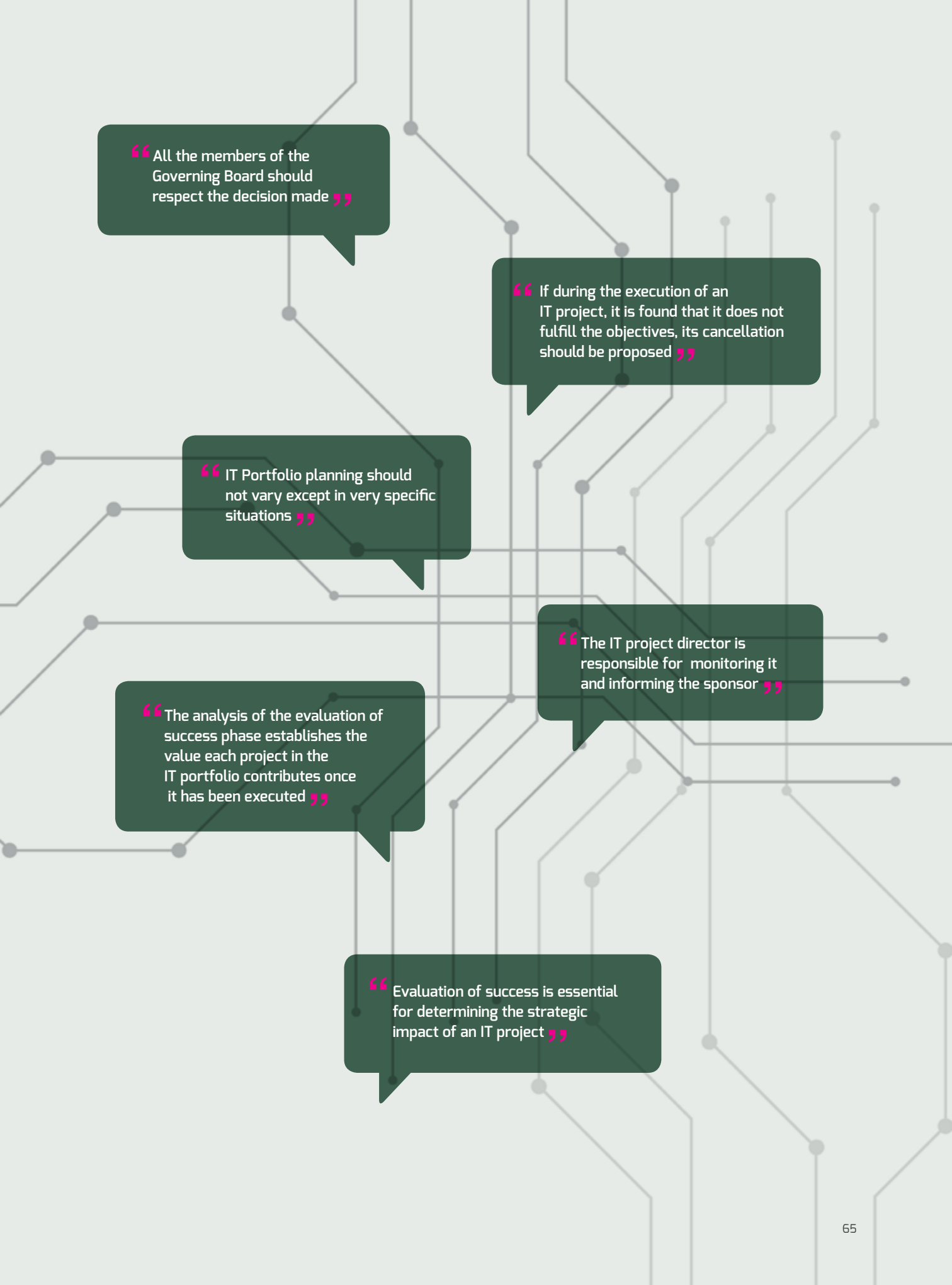
"The sponsor will defend the appropriateness of the project before the Governing Board"

"The Portfolio Office is essential for advising applicants"

"The evaluation of a project should include strategic alignment criteria"

"The Portfolio Office verifies that the project is drafted strategically"

"The Portfolio Office proposes a strategically prioritized project list to the Governing Board"


All the members of the Governing Board should respect the decision made
If during the execution of an IT project, it is found that it does not fulfill the objectives, its cancellation should be proposed
IT Portfolio planning should not vary except in very specific situations
The IT project director is responsible for monitoring it and informing the sponsor
The analysis of the evaluation of success phase establishes the value each project in the IT portfolio contributes once it has been executed
Evaluation of success is essential for determining the strategic impact of an IT project

CHAPTER 4

Keys for the Implementation and Continuity of Strategic IT Portfolios

This chapter suggests a series of keys for successful implementation of a Strategic IT Portfolio at a university. The project portfolio is a tool pertaining to good governance of IT. Therefore, there is a set of good governance practices that should be implemented for the portfolio to function adequately. In this chapter, elements that contribute to good governance will be recommended, as well as the best way to implement the portfolio.

The reader should understand the difficulty that changing the inertia of an organization entails when proposing new processes for good governance of IT. Universities that do not have good governance practices implemented do not tend to have a project portfolio either. They go through classic organizational processes, tending toward improvised decisions that are rarely centralized or aligned with their business strategy. It will be necessary to overcome resistance to change among those involved in the transformation and get new managers involved and put new people in charge. High-level university managers are essentially the ones who should lead this change, beginning by updating their role and responsibilities and fostering change in the rest of the organization.

The detailed description of the processes inherent to the Strategic IT Portfolio presented in the preceding chapter is the formal basis for the implementation of this strategic tool. However, there is a set of challenges or keys that we should put in practice if we want to make this implementation a success. Many of the recommendations in this chapter coincide with the approach of the preceding chapter but bringing them together in a specific chapter on implementation will aid in understanding their importance.

The recommendations presented are the fruit of the authors' experience during the implementation of this Strategic IT Portfolio model at different Spanish universities. Therefore, we hope it will become a good model for university managers who decide to start using this tool at their university.

1. Top-Down Approach

The first step in implementing a culture of governance is having a methodology or approach that involves all the necessary managers in governance of IT in general and in the IT portfolio specifically.

The main problem found in efforts to extend the culture of governance of IT to every type of organization is that there is no clear and defined implementation methodology. This leads to different consultants and experts on governance of IT designing their own processes.

There are two general types of approaches or methodologies for the implementation of good practices in the governance of IT, among which is the project portfolio:

- **Bottom-up approach.** IT consultants tend to resort to this type of strategy. They propose beginning by adopting management tools for IT services and direction that satisfy mid-level IT staff and IT managers in the organization. Once these management tools have been consolidated and the advantages they can bring is known, IT managers, starting at the bottom, will be the ones who try to promote taking the culture of governance of IT to the top, to senior management of the organization. We believe that with this strategy, consultants/suppliers are assured easy access to IT management and can obtain significant cooperation from them to implement the tools they recommend. The problem is that when the IT manager tries to involve senior management in processes related to governance of IT, he lacks adequate business arguments, mainly because managing and governing are complementary but different activities. In this case, it is possible that the culture of governance of IT has not reached senior management; therefore, it is very likely to fail.

- **Top-down approach.** The process would begin with training geared toward senior management, which must understand the advantages an IT governance system offers their business, as well as the need to implement good governance practices in their organization. When senior management is convinced, they will propose the actions necessary for their conviction to cascade to every level of the organization and facilitate the implementation of all the elements of good governance of IT. This would be the time to discuss the implementation of support tools such as the IT portfolio.

The top-down approach favors the implementation of the Strategic IT Portfolio

Our experience has shown us that a top-down approach increases the likelihood of success regarding the consolidation of governance of IT. Therefore, it is what we recommend using to implement our Strategic IT Portfolio model.

The Joint Information Systems Committee designed a model for governance of IT and implemented it at several British universities. From analysis of their experience, it can be concluded that despite all the attributes of the model, its implementation did not go beyond the first pilot projects. Therefore, it has not been extended to the rest of its university system. One of the reasons for this is that the pilot implementations only had support at the middle levels of the university hierarchy, which were the sponsors of the initiative (bottom-up approach). University rectors and other members of their governing boards were excluded. Consequently, they did not provide the necessary support.

In addition, numerous authors, among them the ones mentioned in the preceding chapters, agree that the success of the implementation of an IT governance system is essentially based on having strong support from the Governing Board.

Therefore, the step prior to the process of implementing a portfolio should be convincing the Rector and the vice rectors (the Governing Board) of the importance of having their full support. University managers will be convinced if they receive sufficient information and appropriate arguments through a necessary training process provided by experts.

This approach will only be successful if it has the support of technical and functional management

However, this top-down strategy will not be successful unless the involvement of IT management is obtained from the start. They should support all the processes involved in the implementation of an IT governance system and, concretely, the project portfolio. In a way, the top-down strategy is possible thanks to bottom-up support.

2. Centralized Decision-Making Structure

A university's organizational structure is usually based on a central governing body—fundamentally made up of the Rector and the vice rectors, grouped in a Governing Board or similar structure—and another decentralized body led by members of the offices of deans of colleges or education centers.

Ordinarily, the larger the university—and, therefore, its colleges and centers—the greater the degree of decentralization of decisions will be. However, governance of IT proposes that strategic decisions be centralized to the extent possible and that the Governing Board be held accountable. In this manner, it will be easier to align them with the university's business strategy, achieving maximum efficiency through the centralization of IT resources. Only decisions and resources related to the colleges' management would be delegated to them.

The responsibility for making strategic decisions on IT corresponds to the Governing Board

The Strategic IT Portfolio model inevitably relies on centralized decision-making and allocation of resources. This means that the decision as to which IT projects are most important from a strategic point of view must be made by the Rector and his Governing Board.

A large college may decide to implement an IT governance system only for itself, regardless of whether the rest of the university's colleges decide to or not. In this case, the autonomy of large colleges will work in their favor to make implementation a success. The Dean will assume the role of the Rector, and the Dean's Office will assume the responsibilities of the Governing Board in the Strategic IT Portfolio

model proposed. However, as mentioned previously, this should only occur in sufficiently justified, exceptional cases.

Before continuing, a brief aside about what decision-making structures are found at universities in different countries and how we will refer to them going forward. The governance structure at a Spanish public university is usually headed by a Rector, who has a Governing Board made up of several vice rectors (heads of different areas of the university such as research, teaching, students, internationalization, etc.), the CIO (Vice Rector of IT, if there is one), the CFO (head of finance) and the General Counsel (advisor on legal matters and custodian of governance agreements). Heads of technical areas—for example, the head of Human Resources or the director of Information Technology—report to each Vice Rector. The responsibility for strategic decisions and medium and long-term planning falls upon the Rector and the Governing Board, with the execution—that is, management—delegated to the technical level.

Other universities, especially private ones, usually have an academic decision-making structure led by the Rector, along with a business decision-making structure led by a CEO. The heads of technical areas report to the CEO. Both the CEO and the Rector are usually accountable to a governing body, which is ultimately responsible for medium-term planning and strategy.

There are other ways to organize centralized decision-making in a university, but what they all have in common is that there is a group of business managers and another for operations management. The main role of the business managers is to govern, and their duties include strategic planning for the university and deciding on the execution priority of the most strategic projects, among other matters. Among other responsibilities, the operations management group should manage the projects prioritized by the business managers and ensure that they are completed successfully through adequate organization of the resources allocated to them.

Before continuing, it would be appropriate for the reader to do the exercise of determining who your university's business managers—those who make up the strategic group that governs or should govern IT (which we have called the Governing Board, according to the Spanish model for public universities)—are, as well as who those that will only assume the responsibility of executing the decisions of the former are.

3. The Role of the CIO

The CIO should be the person ultimately responsible for IT at a university. He should know the university's strategic business objectives and major processes in depth and should be a member of its Governing Board along with other vice rectors or high-level managers.

If the person ultimately responsible for IT has ample technical knowledge but is not involved in making strategic decisions and is not a member of the Governing Board, we would not consider this person to be the CIO, but rather the director of the IT area.

It is essential to have a CIO who promotes the implementation of the IT portfolio

If at this point, your university does not have a CIO according to the definition above, the position should be created, or this role should be assigned to one of the members of the Governing Board before initiating the process of implementing the portfolio. The CIO is the key figure of the portfolio, since he is the one who should promote this initiative. Without a CIO, successful implementation of a portfolio will be difficult, and if it is achieved, its continuity over time will be difficult as well.

At some universities, the role of CIO is not a responsibility assigned to one person, but rather it is a role divided among several managers. For example, there is no reason why the Vice Rector of IT would be an expert in major university processes. He might not even be an expert in IT; he might only have experience in university management. To fulfill his responsibilities, he may collaborate with the director of the IT area. This person may have technical and managerial experience, but possibly not much experience related to business strategy; above all, he would not have a seat on the Governing Board. If the two work together, they can fulfill the role of CIO perfectly and jointly lead the execution of the Strategic IT Portfolio.

Determining who currently assumes the role of CIO at your university or, failing that, who should assume it, is an essential preliminary exercise for governing IT.

4. Obtaining the Support of the Rector or CEO

The Rector should be convinced of his role as leader of the IT portfolio

The implementation of the Strategic IT Portfolio should be top-down, as indicated previously. The leader of the initiative should be the Rector or the CEO (the former, if the organizational structure is similar to that of Spanish public universities, and the latter if it is closer to the British private university model). It is highly unlikely it will be successful without the conviction and full support of the leader.

Usually, it will be the Director of the IT area and the CIO who are familiar with the Strategic IT Portfolio tool. However, we recommend avoiding the temptation to try to implement it without first convincing your university's high-level managers. It is appropriate that these officials begin involving the Rector or CEO through a brief executive report that explains the benefits and a summary of the operation of the portfolio. This report can be written and submitted by the CIO, although sometimes it is more effective to have an external consultant explain the importance of this tool to the Rector from a strategic point of view.

In the authors' experience, it has been a former rector with experience in governance of IT, and therefore in strategic portfolios, who has met with the Rector of the interested university to tell him about his/her experience and, therefore, the advantages of the portfolio for his university.

It is important that the reader understand that the strategic portfolio has a significant impact on the entire organization. For this reason, in this preliminary phase, efforts should not be spared to involve the leaders regarding its implementation.

5. Obtaining the Support of the Governing Board

The Governing Board should know its responsibility and become involved in the portfolio

It is important that the executive report submitted to the Rector, to which reference is made in the preceding section, be shared with the rest of the Governing Board. It is also important that the CIO, or whoever provides the consulting support, hold a meeting with the entire Governing Board to tell them about the benefits of the strategic portfolio, explain their responsibility in relation to the portfolio, and involve them in the implementation and execution process.

Although the head of the IT area is fully convinced of the importance of the project portfolio, he should not give in to the temptation to lead its implementation. He should seek the involvement of the rest of the Governing Board, as they will be the main users of the portfolio. If they do not become involved, they will never participate in decision-making or assume the accountability that university governance should have.

6. Obtaining the Support of IT Management

The Governing Board should obtain the support of IT management for successful implementation of the IT portfolio

Nor would it be desirable for the Rector and the Governing Board to take the initiative to implement a strategic portfolio without the involvement of IT management. Although the responsibility for governance of IT rests solely with the Governing Board, the responsibility for management of IT corresponds to the head of the IT area, and each one has a well-defined role in the processes inherent to the portfolio. Therefore, everyone should be aware of its implementation and support it from the start.

It would be just as bad for IT management to attempt to implement the IT portfolio without the involvement of the Governing Board as it would be for the governance team to fail to obtain the necessary collaboration of IT management to carry out the implementation.

7. The Portfolio Office

Having a technical structure such as an office for the Strategic IT Portfolio, together with the leadership of the CIO, can be the most important element for achieving success in the implementation of the portfolio and, above all, its continuity over time, including dealing with changes of rectors and the governing body.

This office should be headed by the CIO and made up of a few experts on the university's business processes. Technical staff may come from the IT area or other areas (for example, the Quality area), provided they have thorough knowledge of university processes. Having a large number of people in the office is unnecessary, as the number of strategic IT projects will not be high, or at least it shouldn't be, and their work will be concentrated in only a few months of the year. Some universities dedicate few permanent resources to the office, increasing them during the project evaluation period as needed. Once this period ends, these people return to their departments of origin.

The Portfolio Office is essential for advising sponsors on how to align their IT projects strategically

The functions of the Portfolio Office are described in the preceding chapter; therefore, they will not be repeated here. In summary, the office is responsible for advising sponsors on the drafting of projects and for making a preliminary technical and strategic evaluation of the projects submitted. For example, it is essential that the sponsor understand that not only the strategic advantages of a project should be included, but also the costs and risks associated with it.

Sometimes sponsors are very aware of the technical or functional advantages of their proposal but have not stopped to consider the strategic impact of the project they propose for inclusion in the portfolio. The office should help them understand that they should submit a project strategically aligned with the university's business objectives. The opposite may also occur, and sometimes sponsors only know about the strategic aspect of their projects but do not have the technical capacity required to state it on a standardized project request template. Above all, during the first year of execution of the portfolio, sponsors are going to need help. In subsequent editions of the portfolio, they will know how it works, based on previous experience. Therefore, they will need less support in this process.

8. The Importance of Documentation in the Execution of the IT Portfolio

The documentation should be a clear reference for IT portfolio users

The Portfolio Office should draft several illustrative documents that serve as a clear reference for users of the portfolio. For example, they should draft rules on the operation of the portfolio, write the annual call for proposals to launch the portfolio (which includes the criteria for strategic prioritization of projects), and provide a proposal template with all the information that should be included in a project request. All of this must be approved by the Governing Board.

It is very important that these documents be made available during the execution of the IT portfolio, as they serve to guide users and make them understand the importance of the process. The better these documents are written; the fewer doubts users will have and the fewer questions they will ask the Portfolio Office. Skipping the drafting and publication of these documents is not a good idea and will contribute to confusion in the use of the portfolio and, therefore, an uncertain result. Several examples of this type of documentation are included in the appendix of this book.

9. Dissemination and Website

It is very important that all the university services, colleges and departments be familiar with the operation of the portfolio and understand whether they can or need to participate in it. It is also important that the individuals who make up the university community (students, faculty, and administrative staff), as well as civil society, know in which technologies the university invests and what strategic direction those initiatives have. Therefore, the portfolio is usually published on a website that contains a clear explanation of the operation of the portfolio, a repository of documents related to the portfolio and the most important events associated with it: opening of the call for proposals, the period for submitting proposals, the list of projects making up the portfolio, etc.

It is also important that university managers know that the IT portfolio has the most support possible. For this reason, it is recommendable that the Rector or CEO be the one to sign the announcement of the call for proposals and send it by email to all university managers.

Knowing how the IT portfolio works will help the university have confidence in it

If the entire university community knows how the IT portfolio works and the approved project list is adequately justified, it will be easier for everyone to respect and support the process, and the resistance to change among managers will be overcome.

10. Minimize and Plan Changes in the IT Portfolio

The result of the strategic portfolio is a list with the new IT projects to be executed during the following period (usually one year), which should be included in the budget. This list will be made up of projects that have higher strategic priority than others that will be funded but will not be executed for the time being.

All the members of the Governing Board should agree that these and no other projects will be executed. Explicit support for these prioritized projects is essential, and the members of the Governing Board, in their capacity as sponsors of strategic projects, should be committed to all of them. There cannot be dissenters who seek additional funding and unplanned resources to carry out other projects not included in the portfolio. Any attitude of this sort will mean breaking the rules of the structure of the IT portfolio and may encourage other members to imitate this behavior. In this manner, the necessary commitment to the strategically prioritized projects would be lost, in favor of other, less important projects.

This does not mean that there can be no change whatsoever in the approved project portfolio. If an unexpected opportunity to carry out some project other those in the IT portfolio because, for example, a government ministry or some other organization offers funding to encourage the implementation of some new project, it would seem reasonable to take advantage of the funding and plan the execution of the new project. It may even be a new law or legal requirement that necessitates including urgent new projects, to the detriment of others that will have to be removed from the portfolio. Bear in mind that in-house resources (both technical and financial) were already committed to different projects, so it would be impractical to take on a new project with the same resources available previously—although this is often done and means overloading IT staff and making other projects fall behind as a collateral effect. In response to the emergence of this new opportunity or obligation, it is appropriate for the CIO to plan a solution and propose it to the Governing Board, as an exception to the IT portfolio as planned. The solution will usually consist of delaying one of the projects planned and dedicating its resources to the new project. In any case, the decision to take on or put a hold on projects should not be made without approval

from the Governing Board, with all its members accepting the change, including the project sponsor affected. In this manner, all the responsible parties will be aware of the change, and it will be easier to maintain their involvement and unconditional support, respecting the new configuration of the portfolio.

To make a change in the IT portfolio, it is very important that the new project be either an opportunity that means an improvement that has higher priority than the projects that were already in the portfolio, or a legal obligation. If not, it is better to avoid changing the portfolio.

11. Avoid Overloading the IT Area

The strategic portfolio will fundamentally impact the direction and planning of the work of the IT area. When there is no management of the portfolio, the IT area cannot know what volume of work can wait until the following year, since IT projects arise spontaneously at any time. Every time a new project is implemented under these circumstances, it is necessary to reassign responsibilities and resources, and often a new project is taken on, overloading members of the IT area with more work than they can do. This not only delays the project in question, but also many other ongoing projects. When there is no governance of the strategic portfolio, projects are prioritized according to their management or according to the knowledge of the IT area. The result is prioritization of projects that have nothing to do with the university's strategy.

The IT portfolio contributes to planning the execution of IT projects and avoiding work overload

Therefore, if the portfolio is in operation and IT projects are approved before year end, financial commitments can be included in the budget for the following year. The IT area knows the projects to be executed during the following year and can plan them in advance and allocate adequate resources to each one, knowing that—barring an exceptional case—the IT portfolio will not vary.

Having any new IT project request made directly to the IT portfolio and not to IT management will relieve the pressure that these managers tend to face from other university managers and, therefore, improves their quality of life.

12. The Importance of Evaluating IT Project Success

The investment dedicated to implementing new IT projects may be large. For this reason, we need to know the value each project provides the institution in exchange for the resources (financial and human) we have dedicated to it.

Upon evaluation of the success of an IT project, the strategic contribution of IT to the university will be better understood

The first, but not very strategic, parameter for measuring the success of an IT project is that it is completed on time and on budget. However, these should not be the only indicators measured; we must also determine whether the project is being executed efficiently and offers the strategic results expected. To facilitate this evaluation, it is appropriate for each project to include a set of indicators of success, together with their target values (goals). Therefore, once an IT project has been implemented, after a reasonable execution time, the indicators should be measured to verify whether the strategic objectives for which it was designed have been achieved.

In the preceding chapter, it was proposed that the initial request for every IT project include the person responsible for monitoring the project and the timing of the report this person must write on the degree of success of the IT project. This report will be submitted to the Governing Board by the CIO, leaving a record as to whether expectations have been met in relation to the investment made in the project.

13. The Lasting Significance of the First Edition

The Strategic IT Portfolio is a very interesting tool. Once it is well established after several years of execution, everyone will know how it works and will start preparing their proposals while they wait for the next call for proposals. When the proposals submitted in the annual call have been analyzed, they will learn the results and tend to respect the fact that their projects have or have not been included in the portfolio.

However, in the first edition of the Strategic IT Portfolio, some very significant events will occur, which we will analyze further on.

If the process is transparent the first year, the results will be accepted and respected by all participants. This leads to consolidation of the tool so that it can be used in the following years with wide acceptance by users.

If the IT portfolio is not executed adequately the first time, its continuity will be placed at risk

However, if the first edition of the portfolio is not executed adequately, we run the risk of losing the trust of all the stakeholders of the university. Consequently, the second year there may be insufficient acceptance and the process may have to be canceled. Therefore, the university authorities and managers need to support this initiative fully the first time it is implemented and be very sure of all the steps that must be taken.

In the first edition, all the IT projects necessary to satisfy the university's strategy emerge

The first edition of the IT portfolio will encourage the university's administrative services to request all the projects they believe could improve the processes under their responsibility. Therefore, in this first edition, many projects will appear that serve to help the Governing Board understand the situation in which the university finds itself and what the overall needs of the institution are. In this manner, the Strategic IT Portfolio also contributes to an important analysis of needs and the establishment of a map of areas for improvement.

It is necessary to explain to the service areas why their proposals were not accepted and encourage them to participate in the following edition

When deciding upon the submissions received in response to the first edition of the call for proposals, the Governing Board must make its best effort to prioritize the truly important projects from the strategic point of view and fund them, to the detriment of others that cannot be executed, whether because of a lack of strategic alignment or a lack of funding. In these cases, the Governing Board should be able to explain the situation to the service areas affected—and perhaps offended—so that the sponsors of unfunded projects understand that their importance is recognized and that it is hoped they can be executed in upcoming calls for proposals. It is essential to find a way to keep from discouraging applicants and sponsors of these projects.

14. Continuity when the Governance Team Changes

A new Rector should understand the advantages of the IT portfolio and support it

Although the continuity of the strategic portfolio runs the greatest risk during its first edition, once this initial challenge is overcome, other threats and critical moments arise. We should be prepared to handle them adequately if we do not want this strategic alignment process at our university to be canceled.

Respecting the result and avoiding resentful criticism from sponsors, confidence in the process will be maintained

The greatest threat that may exist following implementation of the IT portfolio is a change of the Rector or CEO and, consequently, the members of the Governing Board. The Rector is the leader of the portfolio, and if the new Rector fails to understand its importance, he may be tempted to cancel it and return to a more traditional, faster and easier-to-understand but tremendously arbitrary system, where strategic alignment is not a priority. To avoid this situation, participants in previous editions of the portfolio should defend its advantages and request its continuity. To involve the new Rector, it should be sufficient to have an external expert present all the advantages of this process.

Another element that can jeopardize the portfolio, as well as diminish its credibility and support for it, is failure to respect the evaluation criteria related to strategic alignment when prioritizing projects. In this case, the allocation of funds may seem unjust or arbitrary. To avoid this situation, maximum transparency is recommended, and the members of the Governing Board, in their role sponsors, should defend their IT projects while at the same time being generous and attesting to the objectivity of the process rather than spreading resentful criticism of it.

Avoid having sponsors promote projects past the deadline rather than using the IT portfolio

There may also be abuse on the part of sponsors who do not take part in the call for proposals during the established timeframe and, months later, start an IT project unexpectedly. Although this type of exception is considered in the process of structuring the portfolio, an IT project that appears suddenly due to the unexpected availability of funding, a legislative change or any other factor that would suggest its start-up cannot be included frivolously in the portfolio and, much less, without approval from the Rector and the entire Governing Board. In addition, even with approval by all the actors, if this exception is abused, a path for inclusion other than prioritization of the portfolio will be created, funding projects at any time and breaking with plans for work on existing projects.

To conclude this chapter, we are convinced that if the Strategic IT Portfolio model presented in the preceding chapter is used and the keys provided throughout this one are considered, the reader should be able to implement the portfolio at his/her university and overcome any challenges that may arise along the way. Today, there are many universities using this tool satisfactorily. In fact, some of their experiences can be found in the following chapter.

"However, this approach will only be successful if it has the support of technical and functional management"

"The top-down approach favors the implementation of the Strategic IT Portfolio"

"It is essential to have a CIO who promotes the implementation of the IT portfolio"

"The Governing Board is responsible for making strategic decisions about IT"

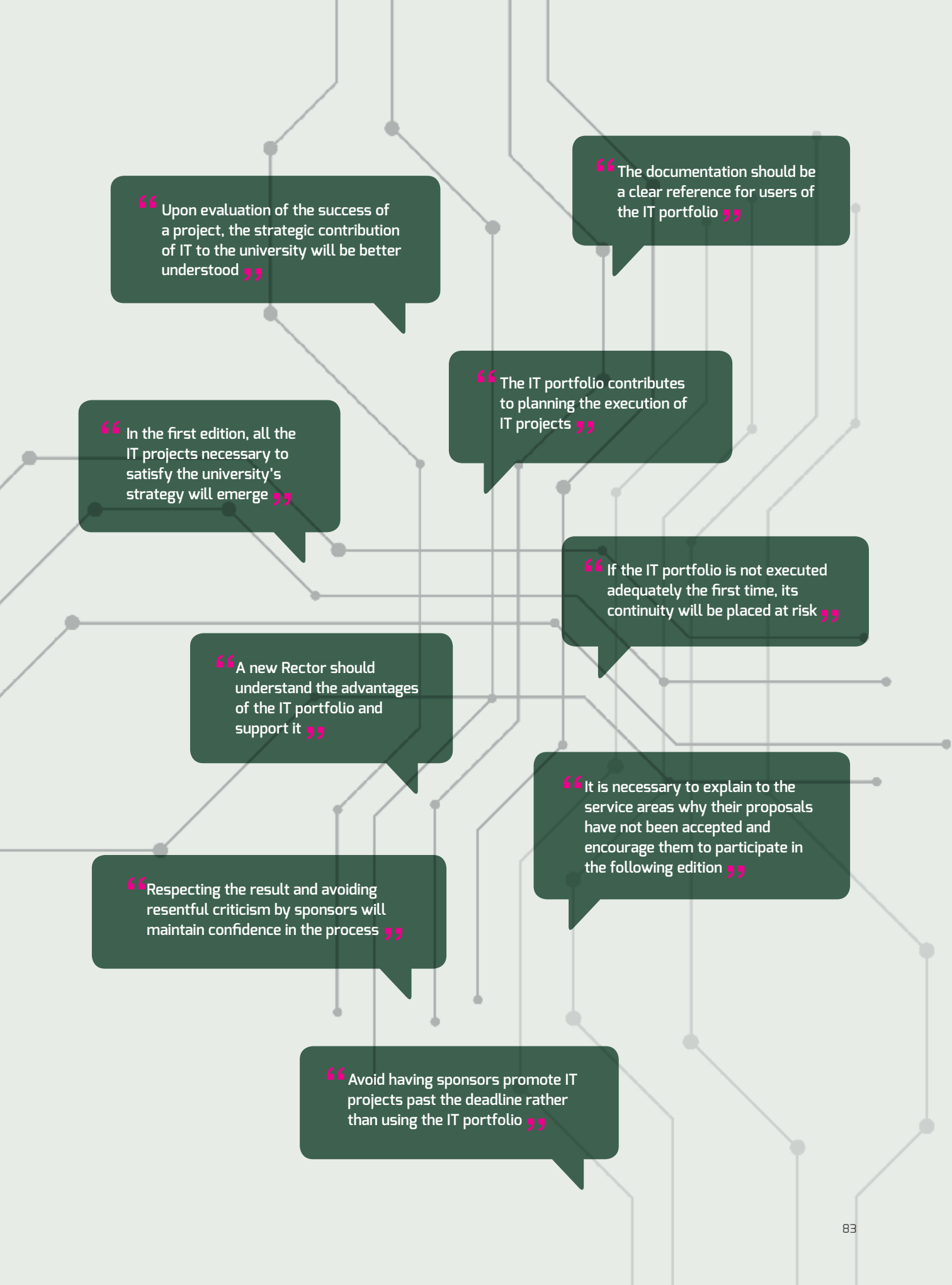
"The Governing Board should know its responsibility and involve itself in the IT portfolio"

"The Rector should be convinced of the appropriateness of his role as leader of the IT portfolio"

"The Governing Board should obtain the support of IT management to implement the IT portfolio successfully"

"The Portfolio Office is essential for advising sponsors on how to align their IT projects strategically"

"Knowing how the IT portfolio works will contribute to the university community's confidence in it"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CHAPTER 5

Lessons Learned

The annual report titled *UNIVERSITIC: Análisis de las TIC en las Universidades Españolas* (Analysis of ICT in Spanish Universities) published by Crue Universidades Españolas gathers information contributed by universities on the status of their information technologies (Gómez, 2017). This report includes "Develop a project portfolio aligned with the university's objectives" as an objective within Line of Action 2 – IT Projects, of the IT Management layer. To evaluate this objective, the following question is proposed: Is a well-defined IT project portfolio that is prioritized and approved by the university's governing team designed annually? In the most recent edition, UNIVERSITIC 2017, 49 universities participated, including 43 public and 6 private universities that serve 84% of Spanish university students between them. The indicator on the IT project portfolio was provided by 46 universities. Of these, 22 universities said they designed an annual IT project portfolio prioritized and approved by the governing team (48% of those that responded), and 24 universities said they did not (52%). Therefore, among Spanish universities, we have at least 22 experiences involving the design and implementation of an IT project portfolio.

In this chapter of the book, we have decided to gather the experiences of some of these universities to learn from those directly involved. An attempt has been made to find the broadest representation possible of the different types of universities: public and private, face-to-face and distance learning, large and small, old and new. Experiences that have not gone well have also been sought, since one learns not only from success but also from failure. Lastly, the role played in the leadership of this process has been considered, as the professional and personal profile of those interviewed is as important as the universities.

With all these conditions in mind, we have selected ten IT managers who have designed and implemented an IT project portfolio at their nine universities. Francisco Maciá was the Vice Rector for Information Technology at Universidad de Alicante (UA) from 2012 to 2016, and he and Juan Manuel Aparicio, Assistant Manager of Information Technology, implemented a Strategic IT Portfolio at the university. The first call for proposals was for the year 2014 (https://web.ua.es/es/vr-campus/convocatorias/cartera-de-proyectos/cartera-de-proyectos-ti-estrategica.html). Carlos Juiz was the Delegate of the Rector for New Technologies and the CIO (2007-2011) and Vice Rector of Information Technology (2011-2013) at Universitat de les Illes Balears (UIB). He implemented the Strategic IT Portfolio for the first time in 2011 and maintained it for three editions (2011, 2012 and 2013) (http://governti.uib.es/es/Cartera-de-projectes). Antonio Fernández is the Coordinator of Governance and Delegate of the Rector for Interaction with Society and Companies at Universidad de Almería and was the Director of the Information Systems Area from 1999 to 2007, where he oversaw the project portfolio during his last three years. Tomás Jiménez is the director of ATICA (Área de Tecnologías de la Información y las Comunicaciones Aplicadas/Applied Information and Communications Technologies Area) at Universidad de Murcia (UMU) where he started up the PORTICO project (IT project portfolio at Universidad de Murcia) as an action included in the UMU IT Governance Improvement Plan for 2012 (http://www.um.es/web/atica/plan-de-gobierno-ti). José Pascual Gumbau is the director of the Office of IT Innovation and

Auditing at Universitat Jaume I de Castellón (UJI), where there has been an annual self-evaluation of governance of IT and a project portfolio since 2011. Francisco Sampalo is the Head of the ICT Security Area and Security Manager at Universidad de Alcalá and was the Head of the Information Systems Unit at Universidad Politécnica de Cartagena (UPCT) from 1999 to 2014, during which time he implemented a project portfolio. Zulema Furones has been the director of the Information and Communications Technology Area at Universidad de Burgos (UBU) since 2008. Alberto Canals is the Director of the Department of Online Education at Universidad Internacional de la Rioja (UNIR) and was the CFO of Universitat Internacional de Catalunya (UIC) at the time the university implemented the IT project portfolio. Clara Beleña is the director of the Information Systems Master Plan Office at Universitat Oberta de Catalunya (UOC).

Nine questions were formulated and given to the respondents to serve as a script for the interview, but respondents were free to answer these questions directly or simply talk about their experience. The purpose of the questions was to gather the respondents' experiences in every phase of the process, from the time when the idea was first broached, through the operation of a stable Strategic IT Portfolio. The preliminary questions proposed were the following:

How did the idea or need to implement the portfolio arise?

What help could be counted on to start the process?

What challenges had to be overcome to start the project?

What problems arose during the implementation?

What problems arose during the launch and execution of the first call for proposals?

How would you assess the experience?

How do you think others would assess the experience?

What would you change, based on the experience and perspective obtained?

Has the experience led to a well-established portfolio? Why do you think that is?

After compiling and carefully analyzing the responses from the different interviews, the experience obtained will be presented, organizing the text in five time periods of the process: from the initial idea and the time leading up to the decision to implement the portfolio; the design of the portfolio and its implementation; the moment of truth with the launch of the first edition; evaluation of the experience; and lastly, the outlook for the future.

1. Inception of the Proposal

This section gathers aspects related to the phase preceding the decision to implement a Strategic IT Portfolio at the university, mainly derived from responses to the question about *How did the idea or need to implement the portfolio arise?*

The work carried out by Crue-TIC has been essential to the progress made on Governance of IT at universities
(Zulema Furones)

The role played by the Crue Universidades Españolas Committee on IT in the implementation of this good practice at Spanish universities is unquestionable. This is reflected in the testimonials of these nine experiences. In the words of Francisco Maciá and Juan Manuel Aparicio, "In the IT Resources area of the Office of the Manager of the university, work was being carried out in Crue-TIC groups and commissions, more precisely in the IT Analysis, Planning and Governance working group. This group promoted the benefits of governance of IT through courses and conferences. One of these conferences was about project portfolios." In addition to convincing and training people, Crue-TIC's main contribution was to make university managers see they were not alone, and that it could help them make this project a reality. According to Tomás Jiménez, "We had already had global project management in place for a couple of years, but following the experience of Crue-TIC action on IT strategy in universities and the first training courses, we saw how it could be formalized and how it could fit in a global IT strategy at the university." José Pascual Gumbau also highlights this. "In the Crue-TIC IT Analysis, Planning and Governance group, the possibility of launching the Implementation of Governance of IT pilot project was proposed, and universities were asked to volunteer. We accepted and a researcher, Antonio Fernández, came to the university. As a result of the project, the implementation of an annual project portfolio was proposed," he explained. In this regard, Francisco Sampalo tells us that the idea of establishing the project portfolio at his university "arose from the Implementation of Governance of IT project launched at UPCT in 2011 within the framework of the Crue-TIC Sectoral Commission's Governance of IT initiative." Zulema Furones corroborates this, saying, "The work carried out by Crue-TIC in these last years, advocating for the importance of governance of IT at universities, providing training, and getting the message out have been essential to progress in this direction."

The first challenge was to convince the governing team, and we achieved that in the self-evaluation process
(José Pascual Gumbau)

Most of the testimonials also coincide that over time, different, complementary parallel initiatives came together and resulted in the decision to implement the project portfolio at their universities. Some of these initiatives were external, but others were internal at the universities. Concretely, in the case of Universidad de Alicante, "The plan prepared for the election of the rector included a commitment to achieve good governance to be materialized in a first approach with the implementation of governance of IT at UA. Within this strategy, one of the measures was the creation of a Strategic IT Portfolio" (Maciá and Aparicio). At Universitat Jaume I, according to Gumbau, "The first challenge was to convince the governing team, and we achieved that in the self-evaluation process. In the analysis, we determined who could serve as internal facilitators, both technical and political, to promote the idea internally. The CFO and I were able to present the matter to the Governing Board and get them to understand the idea that arguing would accomplish nothing

and that it was necessary to maintain order and know at all times what was being done and what the university's needs were."

Complaints from service areas of the university were constant because their project requirements were not being met
(Carlos Juiz)

The initiative also arose in response to certain problems detected in the operation of the universities themselves. Some were of a technological nature, such as "technological obsolescence, or that was the perception that didn't allow us to implement process or organizational changes that could not keep up with the business. Especially architecture problems, with highly coupled legacy systems," says Clara Beleña. But fundamentally direction. According to Carlos Juiz, "There were constant complaints from different groups, mainly university services, that their project requirements were either not being met or that resources were lacking for the same. This was in addition to a certain disbelief on the part of these groups about the reasons the tech staff was giving them." Along the same line, Fernández and Furones agree that, "Handling all the project requests received by the IT department was an impossible task. All the vice rectors' offices and service areas believed their requests should be given the highest priority and were the most urgent. We felt overwhelmed and powerless, as it was impossible to serve all of them at once. This caused frustration among those making the requests, as well as the IT staff. Some users, displeased because their requests were not being fulfilled as quickly as they would have liked, wondered what we were doing and complained about the way the IT department was being run." Furones commented, "Initially, it was decided that a report on all the requests received would be prepared and published on the website so that, at least, others could see the work being done by the area and the volume of requests received."

Every year, there were problems and complaints related to the IT department: everybody wanted them to do something, and everything was urgent
(Alberto Canals)

In many cases, the Strategic IT Portfolio arose as an IT management need, so that they could do their job well. Alberto Canals' words clearly reflect this situation: "It arose out of pure need." He went on to say, "Every year, there were problems and complaints related to the IT department: Everybody wanted them to do something, and everything was urgent. The department couldn't keep up with the demand, since it continually had to change its priorities, taking care of whomever yelled the loudest." Likewise, transparency in management is one of the purposes of the portfolio, as Gumbau tells us. "We established several guidelines. One of the main guidelines was that the process had to be transparent, that is, everybody needed to be able to participate." In addition, it could not be managed blindly. Tools were needed to provide IT management the necessary information. Juiz says there was "an absolute lack of knowledge on the part of the Office of the Vice Rector/Delegate in charge of IT about those demands, the current or future portfolio, at least formally and documented," and an "absence of direction and control over the supply of resources and the previously mentioned demand on the part of the Vice Rector's Office, and by extension, the governing board and the Office of the Rector." At times, decisions were being made based only on managerial matters. Furones tells us, "The decision on which requests to handle first was almost always made by the IT department staff, depending on the human resources available and the importance we gave to the users making the requests and to the different requests. Usually, those related to academic management or regulatory changes were given priority.

Subsequently, the appropriateness of having the members of the governing team know all the IT needs firsthand and decide on the prioritization of projects with a more global perspective was considered, so a proposal was made to the Vice Rector in that regard."

Being able to move forward, evolve and take on new strategic challenges is another reason for the implementation of the Strategic IT Portfolio. UOC proposes a strategy "with much greater emphasis on growth and internationalization, as well as flexibility, personalization... to adapt to how people want to learn now, how our students will be in 5 or 10 years and how they will want to learn. The environment has also changed: UOC was created as a complement to the education offered by Catalonian in-person universities. Now UOC competes globally with other universities, as well as with companies that provide education and other learning formats. This strategy was limited by functionality and especially by the architecture of the most core systems, such as academic management, the campus or virtual classrooms" (Beleña).

The IT project portfolio was considered to be one of the key measures for advancing on aspects of governance of IT *(Francisco Sampalo)*

All this shows an awareness on the part of the universities' IT management of the appropriateness of instilling a culture of governance of IT in their institutions. UA began "with the implementation of governance of IT as a pioneering good governance initiative at UA" and "the creation of a Strategic IT Portfolio was proposed as the backbone of the initiative" (Maciá and Aparicio). UPCT came to the same conclusion: "Following the maturity analysis process, the IT project portfolio was considered one of the t for advancing on aspects of governance of IT" (Sampalo).

2. Design of the Experience

Once the decision had been made to implement the Strategic IT Portfolio at a university, the responses received to the following questions were gathered in this section: *What help could I count on to start the process?* and *What help could be counted on to start the process?*

We had the advice of the GTI4U research group *(Francisco Sampalo)*

If the role played by Crue-TIC was key in awareness-raising about the need to evolve toward governance of IT and the implementation of the IT project portfolio as a good practice, the help provided by Antonio Fernández from Universidad de Almería, the promoter and leader of the GTI4U (Governance of IT for Universities) group made up of researchers from different Spanish universities, was crucial for the design of the portfolio. This was expressed in the different testimonials. According to Maciá and Aparicio, "The help, advice, and guidance received from the Crue-TIC IT Analysis, Planning and Governance working group was fundamental. Through their research group, Paco Sampalo (UPCT) and Antonio Fernández (UAL) advised us on all the processes and the starting and implementation phases. An interview with Carlos Juiz (UIB) was vital for obtaining a pragmatic view of the entire process." Jiménez' words follow the same

line: "...with a first talk with the governing team of Antonio Fernández and Senén Barro (then the Rector of Universidad de Santiago de Compostela) followed by thorough training that gave an intense initial momentum to the Universidad de Murcia IT Strategy Plan, within which it was decided to configure a project portfolio as a necessity in the strategic plan." According to Sampalo, "Apart from the specific support from the then Vice Rector of IT at UPCT (and the entire governing team in general), we had the advice of the GTI4U research group from Universidad de Almería." Furones adds, "As a result of an IT project portfolio course for governing teams organized by Antonio Fernández and Javier Uceda (then the Rector of Universidad Politécnica de Madrid) at Universidad de Deusto in June 2014, some aspects improved, such as the information gathered on the request form and the initiative of launching calls for project proposals." Canals comments, "I went to a Crue-TIC meeting with the IT director, got to know GTI4U, and we decided to try it. Antonio, one of the key people behind the project, helped us a lot. He came to the university, explained it to the governing board, helped us form the governing team, and taught us as we went." According to Fernández, "It was key to have a rector with experience in governance of IT come at the outset of the project to advise our Rector to become involved and lead the implementation of the portfolio."

In addition to the collaboration of the GTI4U group (www.gti4u.es), support was also provided by other researchers. Beleña comments that they had "the collaboration of José Ramón Rodríguez, a professor of Information Technology Studies and of Economics and Business, as well as an independent consultant on digital transformation and IT strategy in organizations, who was placed in charge of overseeing the preparation of the Master Plan," and "There was some external collaboration from expert consultants on organizations and Gartner analysts." At this point, it is worth highlighting the positive synergies that can be created between technology managers at universities and researchers in this field. Unfortunately, collaboration of institutional IT managers with research groups at their universities is practically inexistent, since only 7% of IT projects are prepared with their participation, according to the UNIVERSITIC 2017 report. It is a wasted opportunity.

As one can see from some of the responses gathered previously, in addition to external help, internal support is fundamental. In every case, internal support received from the institution's top IT authority (usually a vice rector) was a determining factor. Fernández recalls, "My Vice Rector immediately understood that the portfolio was a necessary tool for making the rest of the Governing Board understand which IT projects were most important; he supported it—and on occasion, defended it—before other Vice Rectors." Maciá and Aparicio comment that, "From an internal point of view at Universidad de Alicante, something that helped considerably in starting the process was being able to easily take advantage of the great synergy generated from the start of the project as a result of having alignment between the political, strategic and administrative leadership," According to Beleña, "With the arrival of the new governing team, the university's Strategic Plan and the Master Plan (MP), which is a part of the strategic plan, were prepared. Therefore, the plan was sponsored by the UOC Governing Board."

My Vice Rector immediately understood that the portfolio was a necessary tool for making the rest of the Governing Board understand which IT projects were most important
(Antonio Fernández)

Only one of the experiences gathered took place without external support, with "only the efforts of the IT department staff, especially the area managers, the director, the Vice Rector's administrative assistant, and the Vice Rector" (Juiz).

It can also be noted from the testimonials that in many cases, it is a gradual process. Gumbau comments that the first challenge was internal, with the question of "How do we do it? We considered the development of applications to be an important asset of the university, and we saw that we could start by gearing the project portfolio toward applications and services, without getting into projects that had to do with infrastructure or communications." Furones comments, "In 2010, the first version of the prioritization and planning procedure was prepared, and in 2012, a simple application developed internally to gather and manage requests made through a web form was put in production."

Once you have political will and the advice of experts, a series of challenges arises and must be overcome before initiating the implementation of the project portfolio. The first and most significant one is understanding what a Strategic IT Portfolio is and is not. According to Maciá and Aparicio, "This was not at all easy, due to a number of factors. We had to deal with a very wide range of people, profiles, and interests. Each one required, or could require, a different approach in terms of explaining the usefulness or relevance of the portfolio, what they would be required to do, and the minimum involvement expected. As the project portfolio serves as a bridge between strategic and functional matters (i.e., between governance and management), it was necessary to explain the Strategic IT Portfolio in both the context of governance of IT and good governance, where it is an excellent tool for governance of IT, as well as its usefulness in more applied matters, as it is an aid and support for IT project management. It was definitely a long, complex chain of actors and processes where support, or belief, or confidence in the initiative, or at least having no direct opposition to it, was needed."

Another major challenge is breaking with the existing system of obtaining approval of an IT project. In this regard, Maciá and Aparicio comment that, "The responsibility for decision making, whether technical or strategic, usually falls upon the IT department. Now there are objective criteria and the full involvement of the Governing Board of UA. This new system, along with public exposure of the entire process, criteria and decisions, give it a high level of transparency that make it necessary to be absolutely meticulous and precise in each step." Furones delves deeper, saying, "It's odd, but I think the roles and responsibilities were reversed. At first, the work of the Technological Innovation and Planning Committee was not well understood by its own members. During committee meetings, there were long debates and conversations about minor details of some requests or IT matters of another nature, without delving into the strategic importance of prioritization or making decisions about it. In addition, the IT staff, which was used to deciding which projects to undertake, was very reluctant to accept that their role was not to make decisions, but rather that of project management, analysis, development, and implementation."

Convincing the managers of the functional areas of the need for a global perspective and strategic prioritization *(Tomás Jiménez)*

A third challenge derives from the need to convince the rest of the employees involved in IT projects—the members of the governing team, the managers of functional areas, and the IT staff— of the benefits of the portfolio. Jiménez expresses this when he says that the greatest challenge was "convincing the different managers of functional areas of the need for an overall perspective and strategic prioritization," as does Canals when he says that the main challenge was "resistance from other members of the Governing Board who saw that their development projects could be delayed if this system was implemented. Fortunately, they empathized with the problem, and with empathy all around, that challenge was overcome. Additionally, the lack of awareness that IT must be governed by the Governing Board, and that the CIO must be a member. Making the board aware that THEY needed to be the ones to decide on the prioritization criteria was not easy."

Lastly, we can discuss the impact on the structure of the organization. As we have seen, whether at the individual level on the part of the Vice Rector or through a specific IT committee, the creation of IT governance structures is fundamental in order to implement the Strategic IT Portfolio. Juiz comments, "The process began with a restructuring of the IT department to increase awareness of the portfolio, the selection process and project prioritization, doing it through the university's intranet." Beleña says, "The main challenge was adapting to the new organizational structure and UOC IT management. The Master Plan outlined the new structure, but it had to be defined in terms of people, functions and responsibilities." As Furones explains, "It was decided to create a Technological Innovation and Planning Committee (May 2009). On this committee, there were three vice rectors and three area heads, who held regular meetings. Subsequently, the CFO joined the committee." It is also worth noting that the CIO takes a leading role. According to Fernández, "The portfolio contributed to the establishment of new roles, but the one that stood out most was that of CIO, which fell upon the duo made up of my Vice Rector and myself (director of the Information Technology area)."

3. Implementation and Launch

However, we should not think the work is done once the decision has been made and the process has been designed. After explaining what the experience consists of and how it will be implemented, a series of issues arose during the implementation and throughout the first call for proposals for projects for the portfolio, mainly due to inexperience. This section analyzes responses to the following questions: *What problems arose during the implementation?*, and *What problems arose during the launch and execution of the first call for proposals?*

Some of the problems arose from not having approached the preceding phases properly and due to its being an innovative initiative with few experiences to serve as a reference. Resistance to change and a lack of knowledge of concepts related to the Strategic IT Portfolio are the two main problems that should be foreseen and addressed in the phases prior to implementation to mitigate their negative effects at the time of the launch.

Internal resistance in the IT department due to the supposed loss of a certain power of decision *(Carlos Juiz)*

Resistance to change is a key issue to consider before attempting any innovation. The implementation of many projects fails due to not knowing how to manage change. This matter was highlighted by all the respondents. Canals is emphatic responding to the question about problems that arose during the implementation: "I would say basically resistance to change." He adds, "The IT department had an undeserved bad reputation, and some thought the problem wasn't a matter of project management, but rather that the staff didn't work hard enough. In addition, some members of the IT department were also somewhat resistant to change. Considerable time was spent analyzing each project request, and the fact that the hours spent were quantified made it necessary to commit to proceeding as planned." Juiz also highlights "internal resistance in the IT department due to a supposed loss of a certain power of decision, especially among the middle ranks." Furones comments, "The members of the university community were very resistant to having to follow a procedure. We received criticism about how the new system supposedly involved an increase in rigid bureaucracy. Some users, including members of the Governing Team, skipped the procedure, approaching programmers directly and often managing to delay priority projects and have the limited IT staff dedicate their efforts to tasks with little added value or the type of projects that go in fits and starts and never materialize."

The main problem was resistance to change *(Francisco Maciá y Juan Manuel Aparicio)*

It is normal for any innovation to cause uncertainty. Furones explains, "Initially, there is the fear that it will have a call effect that will give rise to an excess of requests, generating false expectations among users and a new burden for the IT department staff. This may occur in the first calls for proposals, but it has the advantage that most of the needs of the members of the university community are gathered and identified, and then there is a gradual decline in subsequent calls for proposals." Maciá and Aparicio are also clear when they say, "The main problem, which was totally foreseeable, was resistance to change. Questions such as 'Why

do I have to request a project? Why do I need to write such a detailed description with the rationale, resources, functionality, etc.?' or simply, 'What is a strategic project?' require a change management plan, which is even more critical in large, complex organizations and, in the case of universities, with civil servant employees." However, they are also clear that resistance to change has a great deal to do with a lack of knowledge and a lack of training on the matter: "The problem of change management actually revealed a series of somewhat hidden problems" (Maciá and Aparicio). Let's take a look at some of these problems.

Applicants had trouble drafting IT project proposals in strategic terms *(Antonio Fernández)*

If, in the initial phase, it is of key importance to explain what a Strategic IT Portfolio is, in the execution phase it is essential to know what an IT project is. This matter is clearly expressed by Sampalo when he says one of the main problems is that "People don't know what an IT project is or isn't and, therefore, what actions should be included in the portfolio." Fernández indicates that the biggest problem was that "Applicants had trouble drafting IT project proposals in strategic terms and tended to adhere to a technical or functional point of view. We had to dedícate a lot of the Portfolio Office's time to reviewing their proposals and teaching them to express them strategically." Beleña comments, "At first, there was a certain lack of precision. We had a Master Plan, but no structured project plan, so we began to work with an annual project plan. Also, because of the dates: the last quarter of 2014 when we needed to submit the 2015 budget and had to specify in what we would invest." This and other problems that arose could be easily avoided by training university employees prior to the implementation of the portfolio, as well as by creating specialized structures with experts on the subject. As Sampalo says, "The functional managers encountered many problems filling in the information requested, and they didn't know how to interpret what they were being asked. It's an activity they don't tend to be familiar with. That's why it's necessary to have an office to support the Strategic IT Portfolio." Gumbau comments, "The challenge was never telling anyone no, and we've achieved that. In the past three years, nobody has been told no," because "We are going to talk to them and help them so that the proposals for the next portfolio arrive in a more acceptable form."

Continuing with problems that can be prevented with previous training, Sampalo says, "Functional managers aren't used to doing the follow-up on projects required of them. In addition, a change is introduced in the way IT staff work that they ordinarily accept as something necessary and positive but that implies that they have to dedicate less effort to support tasks and handling day-to-day requests; this causes tension and a certain amount of stress." He continues, emphasizing "the need for functional managers to realize that they (not the IT department) are the project owners; therefore, they need to take an active part from the start, with the most complete and precise definition possible of the key aspects of the project: definition, need, resources to be dedicated, risks, stakeholders, indicators of success, etc." Maciá and Aparicio also highlight problems that can be mitigated with specialized training, such as "the lack of culture and experience in project management. This has been seen from the start in project justifications whose deficiencies make them very difficult to evaluate in terms of their scope, as well as the resources required, the cost, the benefits they will bring, or how aligned they are with the university's strategy."

Focusing on concrete problems in the start-up of the project, the usual problems related to resources and other aspects of project management arise. These problems vary widely and are specific to each implementation. For example, Maciá and Aparicio comment, "We realized there would be no specific budget allocated to the development of projects in the portfolio. This meant that it was necessary to modify the initial idea of a totally competitive portfolio and replace it with a portfolio geared toward the sponsors." Juiz explains, "Except for some minor technical and organizational problems, in most cases the internal problems were how to allocate scarce resources to projects that have not yet been selected, while the external problems were explaining this new way of selecting a portfolio and negotiating with the stakeholders multilaterally." Beleña says, "The effect it would have on planning contracting matters hadn't been calculated. The magnitude and number of projects meant that we would dedícate a large part of the first semester to procurement, due to which more progress could be made on projects that were more mature and where the contracting process was more agile." Canals points out that, "The start-up process isn't fast: it's necessary to agree upon criteria, define processes, and determine the weight to be given to each aspect… All that is subjective, of course, but it's necessary to establish some criteria and adhere to them." Jiménez refers to "the difficulty of conveying to the managers the essential differences inherent to sustaining projects in progress on the one hand (which also consume resources) and new needs on the other, as well as the difficulty of prioritizing the human resources necessary for each project. Also, always including general infrastructure projects that aren't directly attributable to a specific vice rector's office but are absolutely essential to include, in order to have a complete picture of the IT resources used in the end."

The start-up process isn't fast: it's necessary to agree upon criteria, define processes, and determine the weight to be given to each aspect
(Alberto Canals)

The role of the sponsor is essential to the success of the project portfolio. Maciá and Aparicio comment, "The sponsors are the different vice rectors, the general counsel, and managers, who belong to the management team and have their own budget items along with some common budget items and, more specifically, IT budget items. The main objective of this decision is to be able to move forward in the implementation of the competitive project portfolio while creating and expanding the culture necessary for its success." In addition, they say, "Since there is no overall budget, the sponsors don't understand that they must be the ones to fund their part of the portfolio, which is divided by sponsors. Since it's necessary to divide the portfolio, a competition that is difficult to manage is generated. It takes a lot of time and effort, as it is not easy to gain access to the individuals in these positions."

To conclude this section, we should emphasize that in response to different questions during interviews, a matter that continually comes up is one we have already highlighted as being essential to success in the implementation of the Strategic IT Portfolio at a university: the involvement of the Governing Team. Zulema expresses this emphatically in her simple response to the question about the problems that arose: "I think that implementation is not overly difficult if you have the support and involvement of the governing team." Jiménez reinforces this idea when he says, "In the first call for proposals, there were fewer problems than in subsequent calls because the support of the governing team was stronger." Juiz corroborates this, pointing out

that the main problem in this phase was the "lack of leadership by other members of the university's governing team, other than the Vice Rector in charge of IT." In addition, that support needs to be maintained over time. Maciá and Aparicio comment that a major inconvenience they faced was "a change in the original support for the project: people who hadn't believed in the initiative were convinced little by little and decided to give it a chance. However, individuals and groups that had initially supported the project realized that it was not what they had expected and lost interest, changed their expectations, or stopped believing in its usefulness or viability. As an example of these changes, despite his initial support, it took considerable effort to get the Rector to issue a letter on the implementation of the portfolio. We should keep in mind that this step is fundamental, as it officially announces the launch of the call for proposals." Fernández explains, "The Vice Rector was able to involve the rest of the vice rectors. As a result, the portfolio was used adequately for three years, but when there was a sudden change of Rector, the new Governing Board decided not to continue using this tool and went back to using subjective criteria when launching new IT projects."

Implementing a project portfolio entails a significant cultural change in an organization *(Zulema Furones)*

In essence, the project portfolio assumes a ain the organization that involves everyone: the managing team that must make decisions, the functional managers with competencies in their areas, and the technical managers who must provide support for the university's operations. Regarding the responsibility of the governing team, Sampalo comments, "The selection and prioritization of the projects included in the portfolio should be agreed upon by the governing team, assuming there are projects that for whatever the (justified) reasons may be excluded." He also says, "Reaching a consensus is difficult when prioritizing projects as well as, fundamentally, when excluding those that cannot be executed. It is a matter of trying not to leave anybody dissatisfied and of being politically correct, and it's difficult for a proposal to be rejected." In summary, as Furones says, "Implementing a project portfolio entails a significant cultural change in an organization: assuming responsibilities and adopting a more organized way of working, an analysis and planning model rather than continuous improvisation. Therefore, it takes time."

4. Evaluation of the Experience

When asking about evaluations of the experience, we need to differentiate between the assessment of those involved in the design and implementation of the portfolio *(How would you assess the experience?)* and the assessment respondents believe other actors would make (*How do you think others would assess the experience?*).

The importance of IT has been highlighted *(Francisco Maciá y Juan Manuel Aparicio)*

The personal assessments of respondents directly involved in the implementation of the Strategic IT Portfolio at their universities were unanimously either positive or very positive. They also use other adjectives such as "essential" (Jiménez: "I see it as essential. It's the main tool we have for annual tactical planning") or "necessary" (Sampalo: "Very positive, of course, but above all necessary if we want to establish a little organization in the work of IT areas, align ourselves with the university's objectives, and improve the services we provide"). However, it has not only been a positive experience for IT managers, but also for their universities. As Canals says, it has been "very positive for the institution. I no longer received complaints about the department. Everybody knew what was going to be done every year and the estimated timeframe. We publicized the results, informing applicants of the position in which their projects had been listed." Maciá and Aparicio agree on the advantages for their institutions, saying, "The transparency the initiative brings has led to a very high degree of trust among all the participants. The importance of IT has been highlighted, and the IT department has been relieved of a burdensome decision-making responsibility that didn't correspond to the area and didn't benefit it either."

Evidently, not everything has been a bed of roses. Difficult circumstances have had to be overcome. As Sampalo reflects, "Of course, there have been difficult and tense moments that generated a certain bureaucratic load. In addition, our experience at UPCT was brief (2 years), and we weren't able to reach the desired state of maturity to see the advantages of a clearer way of working. However, everyone (policy makers, functional managers, and technical staff) came to see the advantages of this model." However, the implementation of the project portfolio is only the first step. Even at universities that have implemented it, there is still work to be done. Furones expresses this clearly: "I consider it to be very positive, although we still have much to do to improve."

Respondents report multiple advantages. According to Maciá and Aparicio, "IT projects have been aligned with the university strategy; annual seasonal planning of IT projects has been established; the resources employed in the development of this type of projects has been notably optimized; a culture of governance of IT has been progressively instilled; noteworthy synergies have been generated between units, projects, interests, and direction through the merger of projects of different units or sponsors from different areas with different sensitivities; and the appearance of what we call mushrooms—which refers to projects that are not controlled and that generate their own grantees, servers and services, information systems, hiring or outsourcing—has largely been avoided." Furones comments, "It

has helped us progress toward the achievement of the following objectives: align IT actions with the university's strategic objectives; optimize and rationalize the use of existing IT resources, both human and technological; make decisions in a manner that is reasoned, objective and transparent to the university community; apply standards and good governance of IT practices; contribute to the organizational culture, foresight vs. improvisation; adapt workloads to the human resources available; and increase the motivation of IT staff (reducing direct pressure from users and providing a clear picture of how their work is aligned with the university's objectives)."

With regard to how others assess the experience, it has also been generally positive. In Juiz's words, "During those years, it was very positive; at least, that's what I was told personally. Some people affected by the process and the satisfaction surveys that were taken ad hoc confirm this." However, it is appropriate to analyze the assessment according to specific profiles. We will group the responses by actors and groups of people associated with the project portfolio.

In relation to the governing team and managers of functional areas, its acceptance has been gradual. Maciá and Aparicio comment, "These actors have evolved from the initial stages in which some went from being sceptical, to being expectant, to the final stages where we can now find different degrees of persuasion and even collaboration, participation and involvement." In the same sense, Sampalo says, "Once you get past the initial reluctance, they begin perceiving the advantages. The initial impression is that it generates a workload in which flexibility and decision-making capacity are lost, generating delays...but at some point, everyone understands that, given the volume and variety of the work and the cross-cutting nature of IT, it is necessary to establish some type of planning and organization." Gumbau comments, "There are members of the Governing Board who still don't understand it, but when the call for proposals comes, most already have things prepared. During their annual activity, the working groups identify areas for improvement." Jiménez, in turn, says, "The rest of the functional areas have yet to fully understand the need for global IT planning. Everyone always thinks their needs are top priority. However, I think it has served to let the Governing Body and the entire university see the breadth, range and complexity of all the area's projects." Canals comments, "The Governing Board no longer saw the department as a group of people who didn't do much work, since they clearly understood the criteria, and follow-up was conducted on the hours dedicated to the problems that arose. When people know the problem, they're more empathetic."

Despite initial resistance on the part of the IT team, I think they were the primary beneficiaries *(Alberto Canals)*

In fact, all of those interviewed concurred in the advantages for the IT department. Maciá and Aparicio comment, "In general, the IT staff is much more motivated, despite the fact that the project portfolio also requires more rigorous accountability on their part, since there is increased pressure due to the creation of expectations that are difficult to satisfy completely." Along the same line, Furones says, "Within the IT area, planning has helped the staff work in a more organized way, with a clear understanding of the tasks at hand. Sudden urgencies have been reduced

considerably and, along with them, the level of stress." Fernández explains, "The IT staff has been able to plan their work in advance and avoid overloads (which occurred before). Their work is appreciated more by the vice rectors, who understand that they are contributing to the achievement of the university's objectives, as well as by the functional managers, who are familiar with the project prioritization procedure and respect it (previously, they were irritated because they didn't know why their requests weren't fulfilled)." Canals comments, "Despite initial resistance from the IT team, I think they were the primary beneficiaries." However, although the assessment was mostly positive, Maciá and Aparicio say there was some risk for the IT department: "There may be an attempt by strategic management to interfere in technical management." The assessment by the IT department can be summarized by Furones' conclusion: "I beieve this practice has contributed to the fact that, in recent years, nobody has directly questioned what we do in the IT department."

More proactive communication, not only about decisions taken, but also the status of the different requests and projects in progress *(Clara Beleña)*

However, satisfaction with the project portfolio should be measured more rigorously, beyond the perception of its sponsors. Procedures would have to be established for the purpose. As Furones says, "Now that we've been following this procedure for some years, we should launch a survey to know with certainty which aspects are most and least valued." Beleña also comments on some areas for improvement, concretely, the need for transparency and communication: "Greater transparency in the prioritization process" and "more proactive communication, not only about the decisions taken, but also the status of the different requests and projects in progress."

5. Consolidation and Improvements

Following the phase of introducing the idea of implementing a Strategic IT Portfolio at the university, and the design, start-up and launch, and assessment phases, the only thing left to do is analyze whether the project is to be continued and what should be done differently in light of the experience. Therefore, this next to last section gathers and organizes the answers to the following questions: *Has the experience led to a well-established portfolio? Why do you think that is?* and *What would you change now, based on the experience and perspective obtained?*

The first matter of interest is knowing whether the experience has been consolidated, and if so, what they believe to be the reasons. There are six experiences in which the portfolio has been consolidated. In contrast, in three of the nine experiences gathered, the portfolio project has not been consolidated and, at the time the interviews took place, it was no longer being carried out. As mentioned at the beginning of this chapter, both successful experiences and those that have been discontinued have been gathered, because by analyzing the causes of that lack of continuity, we can learn to approach implementation with greater assurance of success.

In the cases in which the portfolio has been consolidated, success has not been immediate or uniform; it has its ups and downs. Maciá and Aparicio comment, "It has been gradual, but in the end, a high level of consolidation has been achieved." Beleña says, "I think so, precisely now in the exhaustive work of revising the plan, we have reviewed the content and, although the focus of some strategic initiatives has been adjusted, few changes have been made to the portfolio of the plan." Jiménez is more explicit. Although he acknowledges the success and consolidation of the portfolio, he says, "It has been consolidated, although with uneven follow-up and direction through the different changes in the governing team and the vice rector in charge of the IT department. We have found vice rectors who wanted to define the project portfolio unilaterally, without the Strategy Committee. Others have delegated their responsibility, telling us to determine the prioritization. Still others have tried to find a mathematical formula based on some variables for each project requested, believing it is always necessary to include a discretionary and strategic variable. However, it has been consolidated, and we're close to the 10th edition. In general, all the governing teams use it, but they have no problem bypassing the project portfolio with excessive randomness when something they consider important arises... This may be normal if there are real urgencies, but it shows that the culture of strategic IT planning hasn't taken root sufficiently."

The reasons for this success are varied, as we can see from the following list:

- "A minimum culture was created following the first two calls for proposals, which made it possible to demonstrate the value of the Strategic IT Portfolio compared to the former situation" (Maciá and Aparicio).

- "The Portfolio Office was created as a catalyst of the entire process" (Maciá and Aparicio).

- "Having a protocol (call for proposals, criteria, schedule, application, online and quarterly follow-up, ...) for the portfolio process" (Maciá and Aparicio).

- "The portfolio was made known through reports and meetings" (Maciá and Aparicio).

- "Disseminating the information on the projects to be carried out during each period provides greater visibility for members of the university community" (Furones).

- "Classification of the requests in different categories—strategic, regulatory adaptations, or improvements of units/services—which helps show their relative importance within the set of actions to be carried out" (Furones).

- "Now we have a contracting system with well-defined, better-known procedures, and the entire organization—I'm talking about UOC—has sufficient knowledge of the plan" (Beleña).

- "Now we have a well-structured IT team, with established functions" (Beleña).

In summary, the IT portfolio is a good governance practice: "I think the IT portfolio is a good practice and provides a logic for doing things. IT investments have a high cost and require many resources, both IT and organizational. Everything cannot be taken on at once. To avoid putting the organization at risk, it is essential to reflect on the matter in advance, make an analysis based on a broad perspective of the university and the achievement of its strategic objectives. Governance of public institutions should be exercised by committees made up of several people with responsibility that justify and document their decisions, avoiding individual decisions made haphazardly, to the extent possible" (Furones).

Also, it is important to know why an implemented IT portfolio has lasted over time. In cases where the portfolio has not been consolidated, the main causes mentioned are:

- Lack of a culture of governance. "Limited training on governance of IT among the technical staff and, in general, the lack of a culture of public service in the university, based on accountability and assumption of responsibility. It seems simpler not to make available IT resources public, not to ask what projects to do, not to agree on a portfolio, and not to choose, decide or prioritize, communicating the result... In addition, a record of all the information and decisions remains on the intranet" (Juiz).

- Change of governing team or the top IT authority. "The cause is very clear: there was a change in the governing team and the person who needed to assume leadership to continue with its development was the first person interested in allowing it to fail. A Vice Rector of IT was named, but he didn't have the mínimum qualifications for the job and perceived the project portfolio as a threat to his ability to make decisions based on his own judgment and interests. Due to his lack of support and even his opposition, the IT portfolio gradually lost its relevance until it was abandoned" (Sampalo). Along the same line, Canals suggests that one of the reasons the portfolio was never consolidated was "the change of the CIO and the IT manager, without a good transfer of information."

- Abandonment of the project to take on another one. "Implementation of a new ERP: all the software had been developed in-house, and the need for a new ERP was obvious. In-house development was discontinued, and all the effort of the IT team was dedicated to transferring the data in the system to the new ERP, after adapting it to our needs" (Canals).

The importance of the governing team and the culture of governance of IT is such that, even in cases where there is consolidation, they have been indicated as a key to success, but at the same time, the danger of their being the weak link in the chain has also been noted. This is illustrated in Gumbau's words: "Based on university experience, we know that the governing team can change. This is a risk, and we can do a risk analysis. For a project portfolio to continue at the university, the new team must assume responsibility for it. It is systematized and is part of the culture, with which a link has been created. However, there may be a new rector or vice rector

who wants something else. That risk always exists due to the nature of university governance. What would the impact be in this case? I think the impact would be very low because the only thing you'd really lose would be the transparency of a public call for proposals. In the end, we'll always have a list of projects that have been prioritized, and the technical area already knows how they are to be managed. We shouldn't forget that this is a process of cultural change that has made the technicians, who are the ones who last, assimilate project work. I believe this is what we have really gained. The challenge of getting the managers to believe in it. Similarly, Furones says, "Despite their being established for several years, I think this type of procedures is still highly conditional on the sensitivity of the governing team regarding governance. It's easy to give in to the temptation to make decisions unilaterally without justification, based on the authority a given job position gives us, and that sometimes serve personal interests more than those of the organization. Mechanisms are needed to strengthen the procedure to make it independent of changes in governing teams."

Lastly, it is necessary to look to the future. What comes next? That is the question posed to the respondents. Here also, we separated the answers of respondents whose project portfolios are still in use from the answers of those whose portfolios have fallen by the wayside. Among the continuing experiences, proposals for improvement are varied:

- "Improve the culture of project management. Perhaps offering a course geared toward applicants would help them present their project justifications better, which would facilitate strategic assessment considerably. Also, courses geared toward management would help them to know and understand the real scope of the portfolio and how it fits into a more comprehensive strategy. Even courses on good governance and governance geared toward administrators, including rectors" (Maciá and Aparicio).

- "In most cases, the sponsors aren't familiar with the projects they authorize, so they can't make a strategic assessment. It is the Vice Rector of IT, through the Portfolio Office, who explains the scope of each project to them, although it should be the applicant who does it (a complicated matter, given the time the sponsors have and the little training the applicants have on the subject)" (Maciá and Aparicio).

- "Improve the closing phase. Clearly define the final milestone" (Maciá and Aparicio).

- "Post-closing phase. Conduct a follow-up on the ROI of the projects, measure the degree of satisfaction of the sponsor, the applicant and the end users" (Maciá and Aparicio).

- "Adjust expectations about the sphere and scope of the portfolio, so that it can expand progressively as all the parties acquire experience, training and awareness" (Maciá and Aparicio).

- I would move the request for the project portfolio ahead of the budgeting process, since the budgets of the IT area should be in accordance with the approved portfolio and not the other way around" (Jiménez).

- "The context has changed. Now universities are more mature and have a perspective they didn't have before. Previously, what was important was to manage the applications; now it's to manage what are known as assets, and an asset can be data, or it can be a system. This obliges us to consider the portfolio now. An impact analysis is made of any initiative from an auditing point of view: economic resources, effectiveness and efficiency" (Gumbau).

- "There is a certain difficulty in the a priori assessment of the human resources required, the timeframes and the cost of each project, since more time and resources than what we currently have would be needed to do this work. The creation of a Portfolio Office would be very useful and would make more professional management possible" (Furones).

- "Our university may now be mature enough to do the scheduling annually rather than twice a year, and the call for proposals could be open to all members of the university community, which would surely help us detect many opportunities for improvement" (Furones).

- "As I mentioned before, in designing governance of the plan, it's very important to adapt it to the organization and activate the committees that have been defined." (Beleña).

Among the aspects the respondents whose experiences have not achieved continuity would change, the following stand out:

- "I would regulate the obligation to govern IT, particularly the participation of the stakeholders in the selection and prioritization of IT projects and services. Failing to regulate it has made eliminating or undermining the administrative process much easier" (Juiz).

- "We'd need to make further progress to be able to answer this question. It's a process that is necessary to start and to keep improving with each edition, remedying the defects found and adapting it to the circumstances of the organization" (Sampalo).

- "The entire process and the underlying problems should have been given much more visibility, so that everyone was more aware of the improvement. Unfortunately, in an institution as large as a university, it's very easy for everybody to be so focused on their own work that they lose sight of the fact that it's a part of the whole" (Canals).

6. Lessons Learned

Here we reach the end of the chapter in which we have heard from ten IT managers from nine universities that have implemented a Strategic IT Portfolio with varying degrees of success. Of these nine experiences, at the time of the writing of this book, six are ongoing and three have been discontinued. The experiences correspond to Spanish universities, which have been selected to cover the widest possible range of situations. There are public and private, face-to-face and distance learning, large and small, old and new universities. In this chapter, and so far, the authors have limited our efforts to transcribing the words of the respondents (although some of the authors have also served as respondents). In this last chapter, based on the experiences the respondents have conveyed to us, we will extract what, in our opinion, are the lessons learned and that we consider may be useful to anyone wanting to implement a Strategic IT Portfolio at their university (and, in general, in any type of organization). Surely there are many more, as each experience is unique. Not every relevant lesson is included, but every lesson included is relevant. The following are our lessons learned.

1. **You are not alone.** If you want to implement an IT portfolio at your university, or if you want to revise the one you have in operation, there are experiences and experts on the matter that can help and advise you. At universities, there is an increasing number of researchers specializing in IT portfolios; there are even groups specializing in design and implementation at universities. You can turn to them because, as we have seen, training managers prior to the implementation of the portfolio is one of the keys to success of the portfolio. It is possible to take advantage of synergies and share experiences if there is a network of universities that supports this strategic initiative and generates resources, organizes events, and promotes training.

2. **You do not need to know everything beforehand.** You are not alone; nor do you have to do it by yourself. Convincing people that the IT portfolio is a good practice for your university is the first step. However, success will often depend on having trained people at your institution that can carry it out. You should train your university's employees, including all those who will be participating in it at their different levels. There are many concepts that will be new to them, or that simply are not inherent to their field, such as governance of IT, what a Strategic IT Portfolio is, what an IT project is, the difference between governance and management, etc. University managers are not necessarily knowledgeable about management. In addition, personnel specializing in project portfolio management are needed. It is appropriate to design training that makes it possible to undertake the project under the best conditions, not only for implementing the portfolio but also to ensure its continuity.

3. **It is about governance.** This must always be kept in mind. According to the RAE dictionary, governance is the "art or way of governing to achieve lasting economic, social, and institutional development, promoting a healthy balance between the state, civil society and economic market." Although we talk about governance of IT, it is inseparable from governance of the university, and its objective is lasting institutional development. As the interviews clearly show, the sustained involvement of the rector and the rest of the university's governing team over time is essential. This is even more complicated to attain following changes in the governing body. As its most obvious objective is the alignment of IT projects with the university's strategy, its beginnings may be in the rector's campaign platform, in the university's strategic plan, or in other, similar management tools. In some cases, achieving it may entail the creation of governance structures, such as strategic IT committees or a Portfolio Office. In any case, the Strategic IT Portfolio is a good practice that can signify a first step toward governance of IT at the university.

4. **But also good management.** Although it is a tool for governance of the university, it also enables IT management do things better. It has been noted that, in some cases, it arose as an IT management need that serves to solve problems detected in their area. It has become clear that the Strategic IT Portfolio improves the operation of the IT area, as well as the perception the rest of the university community has of it. The Strategic IT Portfolio is not only an information technology matter; it is the responsibility of the university as a whole. Therefore, it is essential to convince everyone involved, not only the IT area.

5. **The final objective is the university of the future.** It is a necessary tool if the university's digital transformation is to be undertaken. It represents a cultural change in the organization; therefore, it is necessary to overcome resistance to change and break with existing dynamics. It is a clear exercise of transparency and visibility.

The project portfolio has been assessed as essential and necessary, and the experiences as either positive or very positive, although it is clear there are difficulties along the way and many challenges to be overcome.

Nobody has said implementing a Strategic IT Portfolio at a university is easy, but what seems to be clear from the experiences gathered is that it is worthwhile and that we should ensure that its value is unquestionable.

> We had the advice of the GTI4U research group
>
> *(Francisco Sampalo)*

> The work carried out by Crue-ITC has been essential to the progress made on governance of IT at universities
>
> *(Zulema Furones)*

> Complaints from service areas of the university were constant because their project requirements were not being met
>
> *(Carlos Juiz)*

> The first challenge was to convince the governing team, and we achieved that in the self-evaluation process
>
> *(José Pascual Gumbau)*

> Every year, there were problems and complaints related to the IT department: everybody wanted them to do something, and everything was urgent
>
> *(Alberto Canals)*

> The IT project portfolio was considered to be one of the key measures for advancing on aspects of the governance of IT
>
> *(Francisco Sampalo)*

> My Vice Rector immediately understood that the portfolio was a necessary tool for making the rest of the Governing Board understand which IT projects were most important
>
> *(Antonio Fernández)*

> The main problem was resistance to change
>
> *(Francisco Maciá y Juan Manuel Aparicio)*

> Convincing the managers of the functional areas of the need for a global perspective and strategic prioritization
>
> *(Tomás Jiménez)*

> Internal resistance in the IT department due to the supposed loss of a certain power of decision
>
> *(Carlos Juiz)*

> The start-up process isn't fast: it's necessary to agree upon criteria, define processes and determine the weight to be given to each aspect
>
> *(Alberto Canals)*

> Applicants had trouble drafting IT project proposals in strategic terms
>
> *(Antonio Fernández)*

> Implementing a project portfolio entails a significant cultural change in an organization
>
> *(Zulema Furones)*

> Despite initial resistance on the part of the IT team, I think they were the primary beneficiaries
>
> *(Alberto Canals)*

> The importance of IT has been highlighted
>
> *(Francisco Maciá and Juan Manuel Aparicio)*

> More proactive communication, not only about decisions taken, but also the status of the different requests and projects in progress
>
> *(Clara Beleña)*

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APPENDIX

Case of the Implementation of the Strategic IT Portfolio at University X

The purpose of this appendix is to give a detailed description of the implementation of the Strategic IT Portfolio at a given university. University X could be any of the universities with which the authors have worked. This chapter provides detailed examples of the documents needed to execute each phase of the portfolio described in the preceding chapters. In this manner, we hope readers will have an easier time understanding the process and, above all, that the documents included as examples help them replicate it at their universities.

To begin with this case, we will assume that University X already has a certain level of maturity in relation to governance of IT and has made the following decisions in that regard:

- The Rector is aware of the importance of governance of IT and has decided to implement a Strategic IT Portfolio at his or her university for the first time.
- The rest of the members of the Governing Team (GT) support the initiative and perfectly understand what their responsibilities are in relation to the portfolio.
- A member of the GT (usually a vice rector) has assumed the role of CIO and is willing to coordinate the launch of the implementation of the portfolio.
- University X has strategic business objectives, whether because they are included in its strategic plan or have been defined recently to provide support for the portfolio, as having them prior to its implementation is essential.
- University X has a certain capacity for funding new IT projects (ITP) and has some human resources (HR) available to help execute the new projects in the portfolio.

On the following pages, we will explain how each phase of the portfolio (described in Chapter 3) should be executed for the concrete case of University X, so that this case may serve as a reference when implementing our portfolio model at your own university.

Phase 1: Configuration

P1.1	Propose the configuration of the Portfolio
Description	The CIO should take the initiative and propose a configuration of the portfolio to the GT that includes human and financial resources, evaluation criteria, and descriptive documentation of the portfolio.
PERSON RESPONSIBLE	**CIO**
Input	-
Output	A proposed Call for Project Proposals that includes: · D1: Proposal for budget allocated to the portfolio. · D2: Proposal for IT human resources assigned to the portfolio. · D3: Proposal for calendar for the call for project proposals. · D4: Proposal for assessment criteria that include the university's strategic objectives. · D5: Related documents (descriptions, regulations, phases, forms, etc.).
RECIPIENT	Governing Team (GT)

D1: Proposal for Budget Allocated to the Portfolio

The portfolio should start with all the funding allocated, in a centralized manner, to IT for the following year:

IT Portfolio funding = Cost of IT HR + Cost of sustaining + Cost of new ITP

In the case of University X, the total cost allocated for IT human resources (IT staff) is 3.87 million euros (M€). The cost of sustaining is 1.25 M€, and it is estimated that 0.78 M€ can be invested in new IT projects

Funding of the IT portfolio = 3.87 + 1.25 + 0.78 = 5.9 M€

This is the total amount, but the **budget we will allocate to the portfolio for which new IT projects will compete is 0.78 M€.**

D2: Proposal for Human Resources Assigned to the Portfolio

Let us assume that University X has 60 people dedicated to IT, which would mean 106,000 person-hours per year.

Time dedicated by these individuals during the past year

DEDICATION	PERCENTAGE	HOURS
Sustaining	44%	46,343
Incidents	33%	35,096
Training and Coordinación	7%	7,875
New projects	**16%**	**16,829**

The CIO proposes dedicating 16% of his IT human resources to **the next edition of the IT portfolio,** which is **equivalent to more than 9 people or 16,829 hours**

D3: Proposal for the Portfolio Schedule

Considering that the University X budget is prepared in November, the CIO proposes the following as the main dates related to the portfolio:

SCHEDULE FOR THE STRATEGIC IT PORTFOLIO		
Start	**End**	**Period**
8/1	**9/30**	Submission ot proposals for IT projects according to the rules approved
10/1	**10/15**	The Portfolio Office evaluates the proposals and proposes their priority
10/16	**10/31**	The Governing Team prioritizes and decides on funding for IT projects
11/1		**Rector publishes the resolution on the IT portfolio**

Before the IT portfolio is opened, it is appropriate to have a period to evaluate the success of the projects in the previous edition. In the preceding example, this should be before 8/1.

D4: Proposal for Assessment Criteria for the Portfolio

Based on the institution's strategy, the CIO proposes fostering the following strategic objectives of University X with the help of the IT portfolio.

STRATEGIC OBJECTIVES OF THE UNIVERSITY

1. Improve quality of teaching through innovation and technology in education.
2. Strengthen research based on new technologies.
3. Foster internationalization.
4. Promote paperless administration.
5. Increase the number of students.
6. Increase student satisfaction.

For strategic project prioritization, the following evaluation criteria (figure below) will be considered. (They will be assigned a weight.)

STRATEGIC EVALUATION CRITERIA FOR THE PORTFOLIO

1. Importance and urgency of the proposed solution: **20%**
   - Does the project attempt to fulfill an important need of the university?
   - How urgent is the need?
2. Alignment with the university's strategic objectives: **40%**

Does the project…

- "Improve quality of teaching through innovation and technology in education"?
- "Strengthen research based on new technologies"?
- "Foster internationalization"?
- "Promote paperless administration"?
- "Increase the number of students"?
- "Increase student satisfaction"?

3. Work plan and impact of the proposed solution: **20%**
   - Are the benefits wide-reaching (how many people or groups will benefit)?
   - Has a realistic analysis of business risks been conducted?
   - Is the work plan thorough and realistic?
   - What is the probability of success of the project?
   - Is it a project in collaboration with other areas/centers/universities?
4. Funding model and allocation of resources: **10%**
   - Is the funding plan realistic and viable?
   - Are all the costs included and identified in the proposal?
   - Does it include funding from different collaborators?
5. Evaluation and indicators of success: **10%**
   - Have clear and measurable indicators been designed?
   - Have realistic goals that reflect the success of the solution been defined?

D5A: Related Document: "How the Strategic IT Portfolio Works"

This document is usually published with the call for proposals to guide users on the operation of the portfolio.

HOW THE STRATEGIC IT PORTFOLIO WORKS

Introduction

Since 2016, University X has been immersed in a project to improve the governance of information technologies. Among the good practices recommended in this project was the implementation of a Strategic IT Portfolio. The intention was to create a portfolio that included all the IT projects to be carried out at the university during the next year. This process will enable us to know the university's overall needs regarding information technologies and to plan solutions far enough in advance.

The first call for proposals for the IT portfolio will be held this year, and we hope that with the collaboration of all the participants, it will be completed successfully.

Steps for creating the Strategic IT Portfolio

When creating a Strategic IT Portfolio, the following actions are carried out:

- **Establishment of criteria for evaluating IT projects.** The Governing Team prepares a set of criteria to be considered when evaluating IT project proposals. These criteria should reflect the main strategic lines of action the Governing Team wants to reinforce through the start-up of IT projects. These criteria are listed in the appendix to this document.
- **Opening of the period for submission of proposals.** The Rector sends a letter to senior university managers, announcing the start of a period for submission of IT project proposals and the rest of the portfolio schedule. In the letter, he will also inform them of the criteria established for the evaluation of proposals received.
- **Submission of proposals for IT projects.** University managers will have approximately two months to request that a Vice Rector or the CFO serve as their project sponsor and to prepare their proposals. It is recommended that the sponsor communicate with the Portfolio Office during this time to inform them of his/her intention to submit a project and seek their help in completing the project request, particulary in relation to drafting it strategically.
- **Establishment of the availability of IT human resources.** To design and execute IT projects, the necessary staff (especially from the IT area) must be available. Therefore, the Information Technology Unit needs to estimate the number of hours technicians from the IT department can dedicate to the execution of the projects in the portfolio during the next year.
- **Allocation of funding to the Strategic IT Portfolio.** The Governing Team determines the economic support with which the portfolio will be funded, considering budgets for the preceding years, the current financial situation, their intention to promote strategic initiatives, etc.
- **Preparation of proposed Strategic IT Portfolio.** Once all the proposals have been received, the Vice Rector of ICT will review their content, request changes or additional information if necessary, and then, based on the established criteria, prepare a list of prioritized IT projects. This proposal will be sent to the Governing Team.
- **Approval of the Strategic IT Portfolio.** Once the proposal is received from the Vice Rector of ICT, the Governing Team will hold a face-to-face meeting based on the detailed proposal, determine whether the established order is satisfactory and, if it deems appropriate, modify the proposed order. Lastly, it will approve the list—determined by consensus, if possible—of IT projects funded by the Strategic IT Portfolio to be executed the next year. This means that projects left out of the portfolio will not be executed in the immediate future.
- **Publication of the Strategic IT Portfolio.** Once the portfolio is approved, each sponsor will receive a letter announcing the approval of his/her project and indicating the amount granted for the purpose. The portfolio will also be posted on the university website for the entire university community's information.
- **Complaints.** As the project sponsors must be present for the meeting of the Governing Team in which the portfolio is approved, any complaints or disagreements must be expressed at that time. There is no provision for making a complaint once the results are published.

Parties Involved

The following parties are involved in preparing a Strategic IT Portfolio:

- **Sponsor.** The person who proposes the project and is responsible for defending the need for it or the appropriateness of its execution before the Governing Team. This person must be a member of the Governing Team, as a sponsor must have the highest level of decision-making authority.
- **Applicant.** The person who requests that the sponsor support the start-up of a new project. Therefore, the applicant must justify the need and benefits, prepare the project proposal, and define its benchmarks.
- **Project Director.** The person assigned by the project sponsor for the management and subsequent execution of the same; this person will be responsible for the achievement of the proposed objectives. It is recommended that the director be very familiar with the environment in which the IT project will be carried out. Therefore, the project director should be a coordinator or the head of a unit or service, although not necessarily with a functional reporting relationship with the sponsor.
- **Technical Support.** The IT Unit will appoint one or several people to advise the sponsor and the project director on the preparation of the proposal (technical aspects).
- **Vice Rector of IT (CIO).** The person responsible, through the Portfolio Office, for clarifying anything the sponsors need to know about the project portfolio. The CIO will receive the requests, evaluate them, and submit a prioritization proposal to the Governing Team.
- **Governing Team.** At first, the Governing Team will be responsible for establishing the funding allocated to the project portfolio for the next year, as well as the criteria for establishing project priority. Once the proposals have been received, the team will analyze the requests, determine their priority based on established criteria, prepare the final project portfolio that will serve for the preparation of the IT budget for the following year, and inform the university community.

IT Project Proposal

The period established by the Rector for submission of proposals is from August 1 to September 30.

Proposals should use the model published for the purpose at http://www.ux.es/victec/secciones.php?id_categoria=4

Proposals must be sent by email to victec@ux.es before September 30.

Evaluation of Proposals

The criteria for the evaluation of IT project proposals will be those established by the Governing Team (shown in the appendix to this document).

The Vice Rector of IT, seeking the advice he deems appropriate, will study all the proposals and evaluate them, taking established criteria into account. During this evaluation process, he may meet with the sponsors to clarify and complete aspects of each proposal.

The Vice Rector of IT will prepare a report to serve as a proposal that will include the prioritization or planning of the projects to be carried out during the next year, as well as a total cost summary. The requests submitted by the sponsors will be attached to this report. This proposal will be submitted before October 16 for review by the Governing Team.

A meeting of the Governing Team will be called for the sole purpose of discussing the proposal and coming to an agreement on relevant changes. This meeting will produce the Strategic IT Portfolio for the following year.

Changes in the Strategic IT Portfolio

All the members of the Governing Team make a commitment that this project portfolio will not be modified except in exceptional, justified cases approved by the Governing Team itself. Such changes mean that some planned projects will not be executed and will be removed from the portfolio, or more resources (human and economic) must be allocated to handle them.

D5B: Related Document: PROPOSAL FORM

To submit an IT project proposal, it is necessary to complete a standardized form (the same for all proposals) containing all the information necessary to evaluate the criteria established in the call for proposals for the IT portfolio. In addition to the information requested on this form, a more detailed description of the IT project may be included.

The form University X uses is shown below. It is usual to publish a blank proposal form that serves as a template to be completed for each IT project proposal. Attached to it are instructions on how to fill out the proposal form, with a detailed description of each field. Lastly, a completed sample form is provided to help portfolio users fill out a proposal form for the first time. To avoid showing the form several times, we will show the form completed for the example used throughout the book: "Design and development of an application that manages international student mobility."

IT PROJECT PROPOSAL FORM

CODE:

Title		
Design and development of an application that manages international student mobility		
SPONSOR		
Name	**Position**	**Signature**
XXXXX	Vice Rector of Internacionalization	X
PROJECT DIRECTOR		
Name	**Position**	**Signature**
XXXXX	Head of the Internationalization Area	X
TECHNICAL SUPPORT		
Name	**Position**	**Signature**
XXXXX	Director of the Software Development Area	X

TOTAL COST (HR+Investment+other)	180.000 €

BUDGET (€)				Investment:			
HR	%HR	Investment	% Invest.	Requested	% Requested	Co-funded	% Co-funded
90,000	50%	90,000	50%	36,000	40%	54,000	60%

CO-FUNDING

Name of entity	Amount
(If there is external co-funding to carry out the action, indicate the origin and amount.)	
Support for internationalization from the European Union	**54,000**
Total:	**54,000**

DURATION OF THE PROJECT	Start	End	Total Months
	01Jan2019	30Jun2019	7

BRIEF DESCRIPTION OF THE SOLUTION

We wish to acquire software to manage the international mobility of outgoing and incoming students. It must include student registration and offer access to students' files of origin. The project will entail software selection, the purchase of licenses, the cost of the consultants who will implement the software at the university, the training required, and cloud storage during the first year.

STRATEGIC BENEFITS FOR THE UNIVERSITY

The project will contribute to the achievement of the following strategic objectives of the university:

- Foster internationalization.
- Promote paperless administration.
- Increase the number of students.
- Increase student satisfaction.

In addition, the investment will be optimized, thanks to the aid granted by the European Union.

STRATEGIC RISKS FOR THE UNIVERSITY

Among the potential risks, the following should be noted:

- The software will be developed externally, which means the pace at which this takes place will depend on the supplier rather the university.
- The storage is also external, as internal storage is more costly, which means it is necessary to select a good supplier that offers all the security guarantees.
- If this project is not started at this time, we will lose the support offered by the European Union, which amounts to 60% of the investment.
- Other universities will compete for this aid and will have access to it in less than a year. If our university does not do the same, it will be at a competitive disvadvantage with these universities.

COST BREAKDOWN

Cost of In-house Human Resources	**Hours**	**Cost(€)**
Functional managers from the Internationalization Area	1200	50,000
Technician from the Software Development Department	800	40,000
Total:		**90,000**
Cost of investments	**Units**	**Cost(€)**
Software licenses		30,000
Cloud storage (first year)		5,000
Consultancy on implementation		55,000
Total:		**90,000**
Other costs	**Units**	**Cost (€)**
Annual Maintenance Cost	**Units**	**Cost (€)**
Maintenance of software licenses		3,000
Cloud storage (for one year)		5,000
Cost of consultancy on evolutive maintenance		20,000
Total Maintenance:		**28,000**

ESTIMATED REVENUE/SAVINGS						
Savings					**Amount (€)**	
Cost of a functional manager's time, per year					40,000	
				Total:	**40,000**	
Revenue					**Amount (€)**	
				Total:		

STAKE-HOLDERS	FASES					
	Design	**Training**	**Users**	**Communication**	**Satisfaction**	**Evaluation**
Functional Managers	2	4	4	4		4
Software Development Technicians	1	1	-	-		1
Software Users	10	1,000	1,000 500 Outgoing 500 Incoming	1,000	1,000	1,000
Other students				14,000		

PHASES OF THE PROJECT	Starting	Ending
Phase	**Week**	**Week**
Send RFP to suppliers to select software	1	8
Adaptation of the software to our processes	9	16
Pilot project to use it with a control group	17	20
Launch the software for all international students	21	25
Evaluate success and satisfaction	26	28

Project Results (Deliverables)

Upon conclusion of the project, the university should have:

- Software to manage student mobility available to all of the university's students and any international students wishing to attend our university.
- Software stored in the cloud for one year, with all the necessary security measures.
- A completed pilot project followed by a campaign to register outgoing and incoming students.
- A report prepared to determine the success of the project and the satisfaction of everyone involved.

EVALUATION OF SUCCESS OF THE IT PROJECT

INDICATOR OF SUCCESS	INITIAL VALUE	TARGET
Number of students in mobility using the software	0	100%
Student satisfaction with the software	-	4/5
Functional managers' satisfaction with the software	-	4.5/5
Percentage increase in international mobility	+2% annual	+3% annual

After one year of use

Projected evaluation date:	Upon conclusion of the project
Preparer of the report on evaluation of success:	Project Sponsor

INSTRUCTIONS FOR COMPLETING THE PROPOSAL

General project data

The first page should include general data on the project that states the people in charge of it, its purpose, and its cost. Concretely, the following data is requested:

- **Title of the project:** Sufficiently descriptive name that identifies it in business terms (avoid technical terms that will be unclear to university managers).
- **Individuals making the request:**
  - **Sponsor.** The person who proposes the project and is responsible for defending the need for it or the appropriateness of its execution before the Governing Team. The Sponsor must be a member of the Governing Team, as it has the highest decision-making authority.
  - **Applicant.** The person who requests that the Sponsor support the start-up of a new project. Therefore, he or she is responsible for justifying the need for the project and its benefits, preparing the project proposal, and defining the benchmarks.
  - **Project Director.** The person assigned by the Sponsor to manage and execute it. This person is responsible for achieving the proposed objectives. It is recommended that the Project Director be very familiar with the environment in which the IT project is to be implemented. Therefore, this person should be a coordinator or the head of a unit or area, although not necessarily with a functional reporting relationship with the Sponsor.
  - **Technical Support.** Technician from the IT Area who advises the Sponsor and the Project Director on the preparation of the proposal (on technical aspects).
- **Total cost of the project:** Sum of the projected personnel, investment, and other costs.
- **Economic summary for the budget:** We recommend completing this section once the "Cost breakdown" line item, which will be described further on, has been completed, as it is simply a summary of the same. Here, the costs that affect the budget for the following year should be indicated, that is, everything except personnel costs:
- **Total for the project:** Sum of the projected investment and other costs.
  - **Investment:** Budget allocated to investment and the percent of the total it represents.
  - **Requested:** Amount requested to make the aforementioned investment and the percent of the total it represents.
  - **Co-funded:** Amount that the requesting vice rector's office or unit will request to make the previously indicated investment and the percent of the total it represents.
  - **Co-funding:** If there is external co-funding to carry out the action, indicate the origin and the amount.
  - **Duration of the project:** Expected start and end dates and duration of the project in months. If there is no specific time limit for completing the project, a projected date should be indicated for the purpose of reviewing the status of the project.
  - **Brief description of the solution:** Prepare a brief summary of the proposed action (3 or 4 lines).

Strategic benefits for the university

Describe how the proposed action can help achieve the strategic objectives of the university, whether the action falls within the framework of some policy or regulation or whether it can bring benefits to the university as a whole. In any case, such objectives, policies, regulations, or benefits should be indicated.

Strategic risks for the university

Describe any negative effects or risks to the university if it is decided that the proposed action will not be executed or will be postponed, as well as those that appear upon execution of this project. It is very important to justify each point presented in this section.

Cost breakdown

This is a list of all the costs necessary to carry out the action, by item and amount.

Costs are divided in the following categories:

- **Cost of in-house human resources –** It is necessary to indicate the number of hours and people that will be dedicated to the execution of the project; this not only includes technical staff from the IT Unit, but also those from the applicant unit who will dedicate time to the analysis of requirements and specifications, tests, etc.

  As a guide, the following is proposed:

  - Functionaries group A (A1 and A2) from 35 to 40€/hour.
  - Functionaries group B from 25 to 30€/hour.
  - Functionaries group C (C1 and C2) 20€/hour.

- **Cost of investments:** This is the detail of expenses and investments and the amount budgeted; for example, for the purchase of equipment or software, external services, etc.
- **Other costs:** Indicate whether there are other costs.
- **Annual maintenance cost:** The initial investment is only part of the total cost of a service; ordinarily, all the services launched require subsequent maintenance, whether it has to do with the equipment or software acquired or services to correct hidden defects or to adapt to changes in the law or the environment. This cost must not remain hidden but rather must be included in this section

Estimated revenue or savings

An estimate of the annual revenue that the implementation of the action indicated can generate for the university or the cost savings associated with it.

Stakeholders

Indicate the different groups of people or stakeholders (students, employees of the university, staff from certain administrative units, staff from a center, etc.) that will be involved in the execution of the action or those whom the proposed solution will affect/benefit. Concretely, in each box, we should write the number of members of the group that will play an active part in each of the following roles (subject to change if deemed appropriate):

- Design: They will take an active part in the functional specification and requirements of the system.
- Training: They will receive training on the operation and use of the system.
- Users: The number of people in the group that will potentially use the system.
- Communication: They will be aware of the existence of the system, even if they are not users.
- Satisfaction: They may give their opinion of the system once they have used it.
- Evaluation: They will evaluate whether the system has achieved the established objectives.

Project benchmarks

Make a schedule with a detailed description of the distinct phases of the action and the estimated time (in weeks) for each one. Some phases may overlap or be carried out at the same time. Phases in which important benchmarks are reached should be reflected. These benchmarks should indicate the status of the project, and the GT should be aware of them.

Results of the project

Indicate concrete results or deliverables to be obtained once the project is completed.

Evaluation of success of the IT project

Every project should bring about some improvement for the university. This section should include a clear and measurable set of indicators of success and define the current value of the indicator and the target value that will measure the impact of implementation of the project.

The date on which the evaluation of success is expected to be made and the person responsible for writing the report and submitting it to the GT should be indicated.

Project report

In addition to the information requested above, a report containing a more detailed description of the project should be prepared. As a guideline, we propose the following sections:

- Scope of the project and objectives.
- Definition of the project: brief functional analysis and specification of requirements.
- Proposed solution and actions to be carried out (developments, purchases, installation, dissemination, etc.)
- Integration with other services and infrastructure.

P1.2: Preliminary Approval of the Configuration and Publication of the IT Portfolio

P1.2	Preliminary Approval of the Configuration and Publication of the IT Portfolio
Description	The Rector will be responsible for reviewing the proposal for the configuration of the IT portfolio made by the CIO to the GT, and she will give preliminary approval. Lastly, the Rector will announce the call for proposals.
RESPONSIBLE	**RECTOR**
Inputs	Proposal for the call for proposals for the IT portfolio that includes: · D1: Proposed budget allocated to the portfolio. · D2: Proposed IT human resources dedicated to the portfolio. · D3: Proposed calendar for the call for proposals. · D4: Proposed evaluation criteria that include the strategic objectives of the university. · D5: Related documents (descriptions, regulations, phases, proposal form, etc.).
Outputs	D6: Letter from the Rector announcing the opening of the call for proposals, which includes: · Budget allocated to the IT portfolio. · Calendar for the call for proposals. · Evaluation criteria that include the strategic objectives of the university. · Website where the rest of the related documents (descriptions, regulations, phases, proposal form, etc.) can be found.
RECIPIENT	THE ENTIRE UNIVERSITY COMMUNITY

D6: Letter from the Rector Announcing the Opening of the Call for Proposals for the Portfolio

The Rector will send this letter to all the Vice Rectors, Deans, Department Directors, Heads of Areas, and the Head of the Administrative Unit, and it will be published on the web and official means of communication for the entire university community's information.

Mr. XXX

Head of the XXX Unit/Area

City X, July 2, 2020

Continuing with the process of improving the governance of information technology in which University X is immersed, I am pleased to announce that a Strategic IT Portfolio will be created. This portfolio will include all the IT projects to be executed at University X during the next year. This process will allow us to know the university's overall needs in relation to information technology. To support its start-up, the portfolio will be allocated 780,000€ in initial funding, which will be distributed among the projects selected.

By means of this letter, I am announcing the opening of the call for proposals for projects that may be included in the 2021 Strategic IT Portfolio, which may be submitted from August 1 through September 30, 2020.

The procedure for submitting proposals, the request form, and the criteria for the evaluation of proposals can be found at http://www.ux.es/victec. If you would like to submit an IT project proposal and need additional information or clarification of this information, please contact the IT Project Office.

Once the period for submitting proposals has concluded, the Governing Team will evaluate and prioritize the projects based on their strategic importance and, lastly—before November 1—the list of projects to be included in the Strategic IT Portfolio for the coming year will be published.

XXXXXXX

Rector of University X

Phase 2: Project Proposals

During the time the portfolio remains open, each applicant will seek the support of a sponsor in order to request the inclusion of a new IT project in the portfolio. The following steps must be followed for each proposal.

P2.1: Drafting of an IT Project Proposal

P2.1	Drafting of an IT Project Proposal
Description	The applicant must complete a Proposal Form, using strategic arguments, and submit it to the Sponsor, who will review the ITP and will only send it the CIO when he is convinced of the advantages and appropriateness of executing the ITP immediately.
RESPONSIBLE	**SPONSOR**
Input	D6: Letter from the Rector announcing the opening of the call for project proposals that includes: · Budget allocated to the IT portfolio. · Calendar for the IT portfolio. · Evaluation criteria that include the university's strategic objectives. D5A: Description of the operation of the IT portfolio D5B: Blank Proposal Form and instructions on how to complete it. Need for improvement of a university service set forth by the applicant.
Output	D7: Proposal for a new IT project
RECIPIENT	CIO/PORTFOLIO OFFICE

D7: Proposal for a New IT Project

In Phase 1.1, document D5B was presented as a sample form completed with information on the project titled "Design and development of an application that manages international student mobility." To save us the effort of seeking another example, we are going to use this same completed form as document D7: Proposal for a New IT Project.

P2.2: Include the IT Project Proposal in the Portfolio

P2.2	Include the IT Project Proposal in the Portfolio
Description	The CIO will delegate the review of the proposal to the Portfolio Office to verify that it has been drafted in strategic terms and includes all the information necessary for its evaluation. Then the CIO will review the strategic appropriateness of the proposal to ensure that it is adequate and, if it is, it will be included in the portfolio.
PERSON RESPONSIBLE	**CIO**
Input	D7: Proposal for a new IT Project
Output	D8: List of proposals included in the updated portfolio with the new IT project D9: Set of Proposal Forms included in the updated portfolio with the new IT project
RECIPIENT	PORTFOLIO OFFICE

D8: List of Proposals Included in the Portfolio Updated with the New IT Project

We will assume that the CIO has included the following IT project proposals in the portfolio of University X, where the new IT project that was just included, "Design and development of an application that manages international student mobility," appears last. It should be noted that the list also shows the amount necessary to invest and the number of full-time employees who will be working on the project.

LIST OF PROPOSALS INCLUDED IN THE IT PORTFOLIO		
	Investment(M€)	**HR (No. People)**
Management of relationship with companies through CRM	**0.060**	**0.2**
Comprehensive security plan based on ISO 27000	**0.250**	**2.7**
Analysis of strategic information through a data warehouse	**0.120**	**1.2**
Start-up of Online Registration	**0.145**	**0.3**
Improve technologies in the classroom: Acquisition of tablets for all students	**1.2**	**1**
Improve technologies in the classroom: Acquisition of 20 smart boards	**0.6**	**1.5**
Improve curriculum management regarding student internships in companies and job placement through the development of an application	**0.05**	**4**
Strengthen job placement through the development of a web portal for employment opportunities	**0.03**	**3**
Improve interaction with university students and the management of their personalized university services through an institutional app	**0.07**	**3**
Strengthen alumni relations through a web portal, an intranet with personalized services, and social media management	**0.05**	**2**
Improve processes for the transfer of knowledge to companies through a web portal and an app	**0.1**	**2**
Design and deployment of an application that manages international student mobility	**0.09**	**1.3**

D9: Set of Forms for Proposals Included in the Portfolio Updated with the New IT Project

This is simply a folder containing all the forms for proposals included in document D8. In this manner, they will be available to the GT if any of its members wish to check the details of a proposal during the prioritization phase.

Phase 3: Prioritization

The objective of this phase is to obtain a prioritized list of IT projects for the Rector to review. Subsequently, she will allocate the funding available to the projects that are most important from a strategic point of view.

P3.1: Prepare a Proposal for Prioritization of the IT Projects in the Strategic IT Portfolio

P3.1	Prepare a Proposal for Prioritization of the IT Projects in the IT Portfolio
Description	The CIO and the Portfolio Office will evaluate each proposal based on strategic criteria, as well as the information on each form, and prepare a prioritized list of all the IT projects in the portfolio.
PERSON RESPONSIBLE	**CIO**
Input	D8: List of Proposals included in the IT Portfolio D9: Set of Proposal Forms included in the IT Portfolio
Output	D9: Set of Proposal Forms included in the IT Portfolio D10: Spreadsheet with the evaluation of each IT project D11: Prioritized list of IT projects in the portfolio
RECIPIENT	GOVERNING TEAM

D10: Spreadsheet with the Evaluation of Each IT Project

A spreadsheet can be used as a simple way to gather the evaluations of each IT project. In this section, the spreadsheet used to evaluate the project titled "Design and development of an application that manages international student mobility" is shown. One can see how weight has been assigned to major line items such as the criteria used. Then the Portfolio Office fills in the Value column based on their own assessment enriched by their experience or using objective reference tables. Lastly, the value of each criterion in the total column is obtained in order to obtain a final total score which, based on the weights established, must be within the 0 to 100 range. The project titled "Design and development of an application that manages international student mobility" has obtained a value of 84, with which it will compete with the other IT projects in the portfolio.

	Weight		Value (0-5)	Total	Points
1. Importance and urgency of the proposed solution	**20%**				**18**
Is the project intended to solve an important need for the university?		50%	4	8	
How urgent is the need to be met?		50%	5	10	
2. Alignment with the university's strategic objectives	**40%**				**28.8**
Alignment with "Improve quality of teaching through innovation and technology in education"		10%	0	0	
Alignment with "Strengthen research based on new technologies"		10%	0	0	
Alignment with "Foster internationalization"		40%	5	16	
Alignment with "Increase the number of students"		20%	4	6.4	
Alignment with "Increase student satisfaction"		20%	4	6.4	

	Weight		Value (0-5)	Total	Points
3. Work plan and impact of the proposed solution	**20%**				**18**
Are the benefits extensive (how many people or groups of people does it benefit)?		20%	5	4	
Has a realistic business risk analysis been conducted?		20%	5	4	
Is the work plan complete and realistic?		10%	5	2	
What is the probability of success of the project?		30%	4	4.8	
Is it a project in collaboration with other areas/ centers/ universities?		20%	4	3.2	
4. Funding model and allocation of resources	**10%**				**9.2**
Is the funding plan realistic and feasible?		40%	4	3.2	
Are all the costs included and specified in the proposal?		30%	5	3	
Does it include funding from different collaborators?		30%	5	3	
5. Evaluation and indicators of success	**10%**				**10**
Have clear and measurable indicators of success been designed?		40%	5	4	
Have realistic targets that reflect the success of the solution been defined?		60%	5	6	
OVERALL EVALUATION OF THE PROJECT (/100):					**84**

D11: Prioritized List of IT Projects in the Strategic IT Portfolio

The Portfolio Office should prepare a report similar to that shown below, which contains a list of all the IT projects in the portfolio in order, according to their strategic value. It also shows the investment and human resources required for each project and, in the last two columns, how they take up resources from the total amount available for the portfolio.

In this example, it is clear that the first five projects have strategic importance, funding, and the resources necessary for the CIO to propose their start-up to the GT.

It is also clear that the five least strategic projects will not have the resources necessary to execute them this year. Therefore, the CIO will propose their exclusion to the GT.

Lastly, there are two projects for which there are insufficient resources; however, with a redistribution of the remaining resources, some of them could be executed. Therefore, the CIO should mention this possibility to the GT.

		For Each Project			For the Entire Portfolio	
		Value	Invest.	HR	Funding Available 0.78	HR Available 9
1	Comprehensive security plan based on ISO 27000	**92**	0.25	1.5	**0.53**	**7.5**
2	Analysis of strategic information through a data warehouse	**90**	0.12	1	**0.41**	**6.5**
3	Design and deployment of an application that manages international student mobility	**84**	0.090	1.3	**0.32**	**5.2**
4	Improve curriculum management regarding student internships and job placement	**82**	0.05	3	**0.27**	**2.2**
5	Improve job placement through the development of a web portal for employment	**82**	0.03	2	**0.24**	**0.2**
6	Improve interaction with university students and the management of personalized university services through an institutional app	**76**	0.07	3	**0.17**	**-2.8**
7	Improve processes for the transfer of knowledge to companies through a web portal and an app	**73**	0.12	1.2	**0.05**	**-4**
8	Start-up of Online Registration	**68**	0.15	0.3	**-0.095**	**-4.3**
9	Management of relationship with companies through CRM	**67**	0.06	0.2	**-0.155**	**-4.5**
10	Strengthen alumni relations through a web portal. an intranet with personalized services. and social media management	**67**	0.05	2	**-0.205**	**-6.5**

11	Improve technologies in the classroom: Acquisition of tablets for all students	**63**	1.2	1	**-1.405**	**-7.5**
12	Improve technologies in the classroom: Acquisition of 20 smart boards	**62**	0.6	1.5	**-2.005**	**-9**

P3.2: Approve the Priority and Funding of Projects in the Strategic IT Portfolio

P3.2	Approve the Priority and Funding of Projects in the Strategic IT Portfolio
Description	The GT will review the prioritization proposal made by the CIO and may change a criterion or weight coefficient that results in a change in the order of the list. Subsequently, it will allocate funds to each IT project in the portfolio. On occasion, some projects will not obtain the funding necessary to be executed. Lastly, the Rector will publish the list of projects funded.
PERSON RESPONSIBLE	**RECTOR**
Input	D9: Set of Proposal Forms included in the IT Portfolio D10: Spreadsheet with the evaluation of each IT project D11: Prioritized list of IT projects in the portfolio
Output	D10: Prioritized list of IT projects in the revised portfolio D12: Report on allocation of funding to the IT projects in the Strategic IT Portfolio
RECIPIENT	UNIVERSITY COMMUNITY

D10: Prioritized List of IT Projects in the Revised Strategic IT Portfolio

The GT will review the prioritization proposal made by the CIO and, in addition to the considerations they deem appropriate—continuing with the preceding example—they must decide on the two projects for which there are insufficient resources.

		Per Project			For the Entire Portfolio	
		Value	Invest.	HR	Finan. Available 0.78	HR Available 9
1	Comprehensive security plan based on ISO 27000	**92**	0.25	1.5	**0.53**	**7.5**
...	....	**...**	...	...	**...**	**...**
6	Improve interaction with university students and management of their personalized university services through an institutional app	**76**	0.07	3	**0.17**	**-2.8**
7	7 Improve processes for the transfer of knowledge to companies through a web portal and an app.	**73**	0.12	1.2	**0.05**	**-4**
8	Start-up of Online Registration	**68**	0.15	0.3	**-0.095**	**-4.3**
...	....	**...**	...	...	**...**	**...**

Among the different possible solutions, we will assume that the GT decides to execute both projects (6 and 7). There would be no problem with funding because the portfolio still has sufficient financial resources, with 0.05M€ left over. However, to implement these two projects, human resources (4 people) will be needed. Therefore, the final decision of the GT is that the remaining 0.05M€ plus an additional 0.03M€ be used to hire 4 outsiders to assist with the execution of the projects.

D11: Report on the Allocation of Funding to IT Projects in the Strategic IT Portfolio

As a result of the GT's deliberations, the Rector should publish a resolution on the funding approved for each project included in the portfolio. Continuing with the example, the final configuration of the portfolio would include 0.81M€ in funding (the initial 0.78M€ plus the increase of 0.03M€). The in-house human resources would include 9 people. (The 4 people hired are external and are deducted from the funding available.)

The Rector should publish the results of the decision on the Strategic IT Portfolio.

City X, October 25, 2020

I am pleased to inform you that today a decision has been made on the call for proposals for the Strategic IT Portfolio. As a result of the analysis of the projects submitted, I have decided to increase the initial funding of the portfolio from 780,000€ to 810,000 €, which will be allocated to the projects selected, as indicated on the following table.

	Value	Invest.	HR
Comprehensive security plan based on ISO 27000	**92**	0.25	1.5
Analysis of strategic information through a data warehouse	**90**	0.12	1
Design and deployment of an application that manages international student mobility	**84**	0.090	1.3
Improve curriculum management regarding student internships in companies and job placement through the development of an application	**82**	0.05	3
Improve job placement through the development of a web portal for employment opportunities	**82**	0.03	2
Improve interaction with university students and the management of personalized university services through an institutional app	**76**	0.07	3
Improve processes for the transfer of knowledge to companies through a web portal and an app	**73**	0.12	1.2

If you have any questions or wish to make a complaint about this decision, you may contact the Portfolio Office before November 10, 2020.

In conclusión, I would like to express my satisfaction, because the IT projects selected have a high strategic impact and will improve our university's processes and make them more competitive.

XXXXXXX

Rector of University X

Phase 4: Execution

In this phase, each project in the Strategic IT Portfolio approved in the preceding phase is executed and follow-up is conducted.

P4.1: Review Phases of the Project and Verify that it is Executed Adequately to the End

P4.1	Review Phases of the Project and Verify that it is Executed Adequately to the End
Description	The Sponsor will review the execution of his IT project and verify that it is being carried out within the expected timeframe, on budget, and meeting the targets established for each phase of the project. If this is not the case, he should report the occurrence to the Governing Team.
PERSON RESPONSIBLE	**SPONSOR**
Input	D7: New IT project proposal Values of phase indicators and targets
Output	D13: Follow-up Report on the IT Project by the Sponsor
RECIPIENT	GOVERNING TEAM

D13: Follow-up Report on the IT Project by the Sponsor

For example, if the sponsor of the project titled "Design and development of an application that manages international student mobility" finds that the number of hours dedicated to the implementation of the software to date exceeds the estimated hours by 12% (at the halfway point) and estimates that figure will be 30% in the end, he should inform the CIO and the Rector immediately, as this will mean an increase of 0.027M€ over the 0.09M€ budgeted.

P4.2: Review the Continuity of the IT project

P4.2	Review the Continuity of the IT project
Description	The GT will review the report submitted by the Sponsor on any incidents that have occurred in relation to the IT project and decide whether to continue with it or cancel it.
PERSON RESPONSIBLE	**RECTOR**
Input	D13: Report on Follow-up on the IT Project by the Sponsor
Output	D14: Report on the Continuity of the IT Project by the Governing Team
RECIPIENT	SPONSOR

D14: Report on Continuity of the IT Project by the Governing Team

Continuing with the example, once the GT has received the report from the Sponsor, it can decide whether to halt the project because its members believe that completion of the implementation of this software does not justify the cost overrun, or to continue with the project to the end.

Phase 5: Analysis of Success

In this phase, an evaluation should be made of the results of the execution of each project based on the strategic indicators of success established for the project.

P5.1: Review the Success of Each Project in the Strategic IT Portfolio

P5.1	Review the Success of Each Project in the Strategic IT Portfolio
Description	Upon completion of the project, the Sponsor will evaluate the indicators of success of his/her IT project and send them to the CIO so that he can review them and include them in a Report on the Overall Success of the IT Portfolio for the Governing Team to review and the Rector to approve.
PERSON RESPONIBLE	**RECTOR**
Input	D15: Report on the success of each sponsor's IT project D16: Report on the success of the portfolio drafted by the CIO
Output	D16: Report on the success of the portfolio reviewed by the Governing Team
RECIPIENT	RECTOR

D15: Report on the Success of the Sponsor's IT Project

For example, upon completion of the project titled "Design and development of an application that manages international student mobility," the Vice Rector of Internationalization, in his role as the sponsor of the project, should obtain the values of the established indicators of success and send a report assessing the results of the project to the CIO and the Rector.

REPORT ON THE SUCCESS OF THE IT PROJECT

Design and development of an application that manages international student mobility

Following completion of the project, the final values of the indicators of success show the following:

- Of the students in mobility, 87% use the new software, which is a highly satisfactory outcome but does not meet the target. Therefore, we need to continue working to reach it as soon as possible.
- During this period, the number of students participating in mobility programs increased 2.8%, which significantly exceeds the results for the previous year but falls short of the target.
- Lastly, satisfaction among students who use the software, as well as that of the functional managers of the same, clearly exceeds expectations and reached very high values (4.3 and 4.6 out of 5, respectively.

INDICATOR OF SUCCESS	INITIAL VALUE	FINAL VALUE	TARGET
Number of students in mobility who use the software	0	87%	100%
Student satisfaction with the software	-	4.3	4/5
Functional managers' satisfaction with the software	-	4.6	4.5/5
Percentage increase in international mobility	+2% anual	+2.8	+3% anual

D16: Report on the Success of the Portfolio Reviewed by the Governing Team

Once the period of validity of the portfolio (usually one year) has concluded, the CIO will write a report on the overall success of the same, which will be reviewed and approved, if applicable, by the GT and the Rector.

This report will contain a brief description—just a couple of lines long—of each project, indicating the overall success of its completion or the reason it failed or was halted.

The results are usually very good. Therefore, we recommend that this report be published so that the rest of the university community is aware of and understands the value that IT contributes to the university.

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A strategic project portfolio is the main tool for the governance of information technology (IT) that a university can use to determine which projects are most strategic for its organization, and thereby optimize the use of IT and invest adequately in resources, even when they are limited.

This book presents a reflection on the importance of IT projects for reaching new levels of governance in universities through a Strategic IT Portfolio model. In the book, the authors not only explore the challenges universities face during the phases of achieving a strategic portfolio based on their own experience; they also share the testimonials of numerous IT managers who have implemented it in their organizations.

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