A Model of Information Technology Strategic Plan for the Government Sector

Wagner N. Silva¹, Marco A. Vaz², and Jano M. Souza³

¹, ², ³ COPPE: Computer Science Department, Graduate School of Engineering
¹, ² UFRJ: Federal University of Rio de Janeiro Rio de Janeiro, Brazil
³ DCC-IM/ - Computer Science Department, Mathematics Institute

Abstract - Information Technology (IT) is strategic for organization management, although many companies lack IT governance and planning, skilled people, defined and institutionalized methods and procedures, internal controls and indicators, as well as agreements service levels and information security, legality, and economy. In this scenario, one needs a minimum of organization and control in the use of resources to boost technical and administrative efficiency, with a focus on IT governance. An Information Technology Strategic Plan (ITSP) aims at discovering the resources and IT in an organization, to direct the technological and information architecture to its strategic objectives. The Brazilian Government issued a Normative Instruction (NI04) for public organizations to develop IT Strategic Plans so that they can purchase products and services. In order to help organizations develop, control and manage their ITSPs, a model was created that defines a set of auxiliary steps in the construction of the ITSP. Throughout this article we present a ITSP development and management model, its evaluation, and our conclusions after that.

Keywords: Government, Strategic Planning, Information Technology Strategic Plan (ITSP)

1 Introduction

Over the years, many public and private organizations have had their areas of Information Technology undervalued, generally confined to the supporting role. [1]

Typically, organizations use their technological resources on a very poor level of planning where IT decisions are taken in an isolated way, for different reasons and by different people in their structures. [2] [9]

Still, according to [2], as a consequence of this scenario, we experience the following situations: Discontinuity of projects by constantly changing priorities and objectives, or need to attend to emergency situations, especially those arising from decisions by individual managers; Bad design of computational and human resources for the Information Technology unit; Information systems deployed without adequate regard to compliance requirements, creating more problems than solutions; Lack of motivation of the professionals involved in the process and leaders who often decide to reduce investments in technology.

Nevertheless, IT strategic planning is still placed in the background and, to reverse this, it is necessary to develop a plan that allows the combination of strategic guidelines and organizational intelligence with IT actions. [10][11]

There are several models for the development of ITSP, including the model proposed by the Microsoft called Microsoft Methodology Consulting Service (MCS) which is based on technical recommendations of COBIT, and developed jointly with partners who specialize in this practice. 5 This model is divided into five phases where each phase has activities related to its responsibility. The first phase deals with the generation of the IT strategic plan, the second includes a survey of IT necessity, the third phase consists in mapping the desired situation, the fourth is responsible for preparing the strategic plan for IT, already the fifth stage is the implementation and monitoring of ITSP.5

The proposed model by 5, considers that the development of ITSP consists on three steps. The first step is the preparation which is elaborated throughout the framework to create a ITSP, the second step is to diagnose the current situation, where the organ has an exact notion of your stage, and the necessity are raised The final step is the planning of the desired situation which is the time of elaborating the ITSP. 5

In Brazil, the Department of Planning, Budget and Management (MPBM) issued a Normative Instruction (NI04) stating that the acquisition of IT (Products and Services) is preceded by an Information Technology Strategic Plan (ITSP). [3] [8]

The Information Technology Strategic Plan - ITSP provides a complete view of the current environment and
Information Technology, according to current and future needs, and allows direct information architecture and technology aligned with the strategic objectives of the institution. [4]

The Information Technology Strategic Plan consists primarily of knowledge of its resources (services, Business Processes, Information Systems, Infrastructure, and Technology) from an analysis based on the purpose of the organization, definition and planning of a strategy to IT evolution. An administration concerned about the ITSP is a company that uses modern principles of rationality, consistency and quality, creating a policy for success. [5] [7]

Looking to improve the construction process and its monitoring of the ITSP, an idea rose to develop a model to provide direction, control and monitor the development of ITSPs and after their production, to allow an effective management and monitoring.

2 Model

The objective of this model is to define a set of steps that can help IT managers in the Federal Administration in the construction, monitoring, and management of its Information Technology Strategic Plan - ITSP. In the following sections we will detail the development and management of ITSP. [6]

The model of design and construction of an ITSP was split into two parts:

1. Preparation, comprising the steps of Preparation, Diagnosis, and Planning (Actions and Risks);

2.1 ITSP Construction Model

The Model for the Development of the Information and Technology Strategic Plan aims at establishing a simple and succinct ITSPs construction, serving as a tool to aid in the diagnosis, planning and management of IT resources and processes in an agency or entity. Below we detail the steps that make up the development model for the ITSP. [6]

![Figure 2 - ITSP Preparation Model](image)

Figure 2 - ITSP Preparation Model

2.1.1 Preparation Stage

Before starting the actual development of the ITSP, one should observe the following tasks that make up the first stage of developing the ITSP, which is the preparation stage:

- Defining a validity period for the ITSP;
- Defining the scope;
- Defining the construction team and participants in the ITSP;
- Defining the methodology;
- Defining the mission and vision of the institution;
- Defining the documents used as references;
- Aligning the ITSP with the documents of the agency.

The alignment of the ITSP with other planning instruments is to make them compatible, listing requirements already contained in them to prevent inconsistencies and unnecessary expenses, and to boost efficiency.

2.1.2 Diagnostic Stage

The next stage of the ITSP Construction Model is the diagnostic stage, in which the current situation of the body and IT Needs to be attended to are identified. Please note that in the previous stage only the needs that were included in these documents rise to the fore. It is at the stage of diagnosis that we raised all the needs or demands that must be attended to.
The diagnostic stage seeks to identify internal or external needs that the IT area has to meet. One should remember to include the needs raised during the alignment. The assessment of the needs can be done through questionnaires, interviews, appraisals, a history of the inventories, amongst others.

The following tasks comprise the diagnostic stage of IT:

- Raising the current IT situation in the body;
- Identifying the requirements to be met;
- Evaluating the services provided;
- Inventories;
- Filling of evaluation forms and interviews with deadlines for replies;
- Evaluating the services provided.

The evaluation of services aims at contributing to the improvement of services and giving the IT manager a management tool to make decisions. It is suggested to evaluate both contracted services such as those performed by its own IT area; Diagnosing people. Diagnosing people is to identify HR needs and IT training.

2.1.3 Planning Stage

Planning should be done from the diagnosis. The planning stage is the most important. It is the time of defining what will be done and what the priorities are. For this it is important to have at hand objective criteria on which to base decisions and never fail to record the reasons for divergent decisions on such criteria.

At this stage, for each requirement a priority has to be set and one or more actions for meeting it. These actions may involve the contracting of services, acquisition of equipment or the use of one’s own resources, including human, for its development.

The following tasks comprise the diagnostic stage of IT:

- Defining actions to be taken to meet the needs;
- Defining the mode execution for the actions;
- Action planning. Identify, for each requirement listed in the previous stage, your priority goals and actions needed to achieve the goals;
- People planning. Identifying HR needs arising from activities not addressed in the planning of execution;
- Execution Planning. Seeks to identify the human and budgetary resources necessary to carry out the planned action to meet the needs, and estimate the deadlines for start and completion of the actions.

2.2 ITSP Management Model

The management model has three stages, Actions Management, Risk Management, and Monitoring, the latter being responsible for managing the other stages. The management of an ITSP should be planned so as to facilitate its monitoring and execution.

![ITSP Management Model](image)

Figure 3 - ITSP Management Model

2.2.1 Action Management

In the Actions Management Stage one needs to identify, for each action, its guardian, its replacement guardian, the terms, and the risks. At this stage the planning is done for the monitoring and implementing the actions set out in the ITSP. The preparation of the action management plan can be made by observing the following tasks:

- For each action, identify a person responsible and a substitute;
- For each action, set out start and completion deadlines the Execution Plan;
- For each action, a plan can be made separately, a document of which will be referred to as "detailing" of the action;
- For each action, list the estimated budget resources for its development.
2.2.2 Risk Management

Planning Risk Management is the identification of each action, the main risks that could result from their full or partial non-performance. For each risk identified, one should set one or more preventive measures and contingency plan, as well as their caretakers. For an effective monitoring identification of action, time, responsible human resources involved, type, and value budget. It is necessary to create control points through indicators.

2.2.3 Monitoring Stage

The ITSP establishes a set of Strategic Objectives and Strategic Guidelines aimed at directing IT management. To achieve this new IT management position, we established a set of actions to be conducted by the Strategic Guidelines and by the associated Strategic Objectives.

ITSP monitoring is based on the execution of these actions, to establish a relationship with the Objectives and Strategic Guidelines. The advice from Action Planning monitors the progress of actions in which the information is obtained from the actual start and finish projects.

2.2.3.1 Metrics to monitor the ITSP actions

The metrics of the actions will be used to evaluate the progress of the ITSP. The goal is to guide ITSP development to achieve the goals set by the institution in adapting their strategies for IT.

The metrics are defined based on the following schedule parameters:

- Percent Complete (%) = Display value after completion of the project or values calculated from actual start date and Actual End of project;
- Variation of Completion (Days) = Conclusion - Conclusion Baseline;
- Variation of Begin (Days) = Begin - Begin Baseline;
- Variation of Duration (Days) = Duration - Baseline Duration.

The analysis of Variation in Start and End can be done with the following parameters:

- If Variation of Completion and Variation of Begin is larger than zero it means that there were delays in projects that make up the guidelines;
- If the Variation of Completion is greater than zero and Variation of Begin is less than zero it means that more time has been spent for projects that make up the guidelines;
- If the Variation of Completion is less than zero and Variation of Begin is larger than zero, it means that less time was spent for projects that make up the guidelines.
- If the dispersion is concentrated in the quadrant in which the variation of completion is less than zero, it indicates better performance in project development;
- Variation of the Duration indicates how much time was spent, whether more or less, in the development of a project.

It is information that supplements the Variation of Completion and Begin.

Analyses of length variation can be:

- If the Variation of Duration is greater than zero, it indicates that more time was spent developing the project;
- If the Variation of Duration is less than zero, it indicates that less time was spent developing the project.

The metric is defined for this Percent Complete (%) that indicates how a strategic direction has been met, and the execution of the guidelines indicates how a Strategic Objective is met.

3 Evaluation (Case Study)

This section presents a brief assessment to demonstrate how the model can provide improvements in the process to create and manage an Information Technology Strategic Plan in government institutions. The example used in this paper is adapted from a Brazilian Government organization which we call institution X.

3.1 Strengths

Employees engaged in work, tech staff with high degree of technological expertise, interest of the institution in
adapting its technology direction to facilitate goals, experienced employees, strong technological structure very good work environment, reference in technology, despite the loss of professionals, employees who believe in the company, training for professionals, expertise in the business of government, ability to overcome challenges and win.

3.2 Weaknesses (needs)

Lack of uniformity in IT standards, failure to plan mid and long-term technology in government changes, lack of staff to meet IT demands, insufficient processes, documentation, and workflows, dispersion of resources at the front desk, making it difficult, lack of technological forecasting, no ownership and no project cost estimate to allow a comparison between doing the work internally or outsourcing it, lack of tools for more productive work (hardware and software).

4 Conclusions

The Information Technology Strategic Plan (ITSP) aims to guide an organization in the use of their information technology resources, leading to focus on continuous improvement processes of governance. An institution that has prepared her ITSP is based on principles of rationality, economy, uniformity and standardization, creating the technological basis for the deployment with enhanced efficiency and effectiveness of public policies.

The lack of planning for IT can cause an insufficient understanding of the external and internal environment of the organization and emerging technologies that can add value to customer services. This situation can drive to inadequate investment in IT, considering meeting the necessity of the organization to overcome its challenges. In fact, ITSP is a strategic tool to direct and manage information technology resources in alignment with the strategic priorities of the organization's business.

It’s important highlight the dynamism of strategic planning due to the fact of the instability of technology environments, which are constantly evolving. Thus, the ITSP should be reviewed annually in order to the strategies are aligned with organizational mission, considering the action of the organ, as well as issues relating to the evolution of technology.

The development of an ITSP brings many benefits, such as a complete view of the Information Technology environment, more accurate decision-making, focus on the needs of end-affairs of the institution, amongst others. In addition, the work done in evaluating the model allowed the following benefits:

- A set of information that allows a consistent view of the IT environment in the institution;
- Enabling interaction between different areas in the institution and other units in aligning objectives and efforts to IT development;
- Creation of an initial portfolio of programs (projects) to guide consolidated investments in IT, and therefore its growth and evolution.

With the implementation of this model, government institutions will have a foundation to start if one does not have it, the construction of an enterprise architecture that will boost the accomplishment of its mission to attain specific goals. As such, enterprise architecture increasingly makes investments in IT reliable and compliant with the strategic needs of the institution.

4.1 Acknowledgement

We should like to thank institution X for allowing us to evaluate the proposed model and provide support for possible evolution and improvement.

5 References


