Near Real Time Steering: the Organizational Cockpit

Carlos Páscoa\textsuperscript{a,c,*}, Ricardo Horta\textsuperscript{a}, José Trbolet\textsuperscript{b,c}

\textsuperscript{a}Department of University Education, Portuguese Air Force Academy, Sintra, Portugal
\textsuperscript{b}Department of Information Systems and Computer Science, Technical University of Lisbon, Portugal
\textsuperscript{c}CODE – Center for Organizational Design & Engineering, INOV, Rua Alves Redol 9, Lisbon, Portugal

Abstract

As human history has shown, organizations suffer constant changes and adaptations to the environment. Organizations have to be flexible, adaptable and agile, so they can face an increasing inconstant future. Technology has undergone many changes and information has taken a higher level of importance for the evolution of the organizations as competing entities. The Portuguese Air Force Operations Division possesses an established Strategy. The Organizational Cockpit, derived from the metaphor “Flying the Organization”, is a new concept that aims to provides strategic near real time steering in organizations. Strategy representation is made in a map, having all the detailed actions entered into a Balanced Scorecard. Action details, relating to the “Time” dimension, are inserted in the Flight Plan. Like in an aircraft the crucial organizational information is monitored in an organizational cockpit allowing for constant situational-awareness and near real time steering adding flexibility, agility, adaptability and self-awareness to the organizational context.

Keywords: Strategy Map; Balanced Scorecard; Flight Plan; Organizational Cockpit; Organizational Self-Awareness.

* Corresponding author. Tel.: +351-214 726 129
E-mail address: cjpascoa@gmail.com.
1. Introduction

All organizations have survivability as primary objective. Globalization has determined higher competition standards between companies implying improved near real time situation awareness that can foster flexibility and agility to allow quick reaction and adaptation to new daily basis challenges.

Kaplan and Norton have developed the Strategy Map (SMap) [1] and the Balanced Scorecard (BsC) [2] concepts that allow mapping strategic management objectives. However, although the SMap and the BsC effectively translate strategy into action, monitoring needs to be constant.

To provide near real time steering to the organization we used the Metaphor “Flying the Organization” [3] that compares the concepts used by aircrews while operating aircraft to the concepts used by decision while managing organizations. According to the metaphor organizational management needs the same set of artifacts available within the aircraft world that allows answering to 3 questions: “Where are we now?”, “Where are we going?”, and “What is our route?”. Answering to these questions entails, in addition to the SMap and the BsC, the need of a complete time-based plan (the flight plan), that provides intermediate objectives that the organization has to reach while moving to the big objective, an insightful set of Key Performance Indicators (KPI), grouped in an cockpit, and adjustment mechanisms. The overall concept is called the Organizational Cockpit [3].

To develop and apply this concept to the Portuguese Air Force (PRT AF), the PRT AF Academy, in a joint venture with the Technical University of Lisbon and the Center for Organizational Design and Engineering, conducted a research, materialized by 2 master thesis, intended to analyze and propose the logic for the Organizational Cockpit and apply it in: i) the strategic steering of the PRT AF itself [4]; ii) the steering of the Air Staff Operations Division (OPSDIV) [5]. The project was divided in 2 phases. The first is the development of the Model and the setup in the different areas of application; the second entails using and comparing vantages and disadvantages and establishing lessons learned. Upon project success a third phase can be initiated comprehending the extension of the model to other organizational units. This document outlines the research conducted, in the first phase, at the Operations Division level. The research problem was taken from [3] as “Organizations do not possess near real time steering mechanisms”. The research question was: “Development of an Organizational Cockpit for OPSDIV can create benefits and added value for the entire organization?” [5].

This document is divided into the following sections: concepts and application, in section 2, provides the relevant literature review; section 3, organizational cockpit development, presents the research model’s construction and validation; section 4 concludes and presents future work.

2. Concepts and Application

This paragraph describes the scientific theories, principles and models that support the Organizational Cockpit model. We use Organizational Engineering (OE) as the base framework to define the self-aware, flexible, agile and adaptable organization. Taking in consideration that the PRT AF is a governmental organization we characterize the nature of Non-Profit Organizations (NPO) justifying why they also need to measure performance. We describe in general the importance of the SMap, BsC and KPI as essential to discuss and approach the Organizational Cockpit model and we characterize the flight plan and near real time notions in the organizational context.

The OE concept comprises two dimensions [6]: individual and organizational. Dimensions alignment means that the organization is fully aware of what its members are doing and the members are, in turn, fully aware of what is going on in the organization. This state of organizational self-awareness (OSA) tends to increase flexibility as “the capability of reaching success in different ways”, agility as the ability to
continuously monitor the market demands, rapidly answering those needs with new products and quickly monitor business processes, and adaptability as the “capability to change an organization’s strengths and way of working when needed in accordance with changes in its current situation or external environment” [7].

The competitive organization strives to be in a permanent self-aware where these concepts co-exist in an interrelated and dynamic form increasing both personal and social dimensions. With the development of these concepts inside the Division, it is expected that the Division can boost and improve the daily processes, always having in mind two main assumptions for any given organization: “Operate with effectiveness” and “Manage with efficiency”.

NPO, strongly driven by mission [5], are formed by volunteer people. The main objective is to fulfill social and personal needs that cannot be totally filled by other organizations from other sectors. In the private sector, management exists to generate profit because “money is the strength that moves these organizations” [5]. The main objective is to use its often limited resources efficiently in order to boost performance to fulfill the mission. This logic demands for a constant performance review in order to assess if it is still possible “to do more with less” [6]. Finally, management of these organizations, also serves the objective of creating trust within stakeholders. The Air Force cannot be considered as a pure and totally non-profit organization, since it is a structural governmental institution of the State. Nevertheless, we will consider it as a Non-Profit Organization.

A SMap can be defined as the “visual representation of the strategy on a single page, showing how it is articulated to create value and what are the objectives and cause-effect relationships that motivates it” [1]. The BsC is “a set of measures that gives a fast but comprehensive view of business to the top managers materializing the vision and the strategy of the organization through a map that has all the objectives and performance indicators organized and connected in order to communicate a small number of broad strategic topics, such as organization growing, risk reduction or productivity increase” [2]. In order to be used in NPO, BsC has suffered some changes when compared to its original design. As the notion of Stakeholder surfaced (as not being direct clients in terms of goods and services produced, they have multiple interests and can influence the decisions made in public services), it became necessary for the customer perspective to take the leading role. Consequently, there was a switch between the customer and the financial perspectives. The financial perspective took place over the customer perspective, acting simultaneously as a resource and a constraint, associated with budget limits and governance rules that exist in the public sector.

Aircraft cockpits enable situational awareness that is essential for a correct steering. The metaphor “Flying the Organization” [10] defends that, like aircraft, organizations need to have a mission order with the objectives well defined; a Flight Plan that can relate the full set of objectives with time, a cockpit where the state of execution can be immediately seen and adjustment mechanisms to enable steer corrections. The metaphor proposes that the organization should have identical artifacts to steer its “flight”. In consequence, the Organizational Flight Plan appears as a way to allocate the time dimension to the annual activities of an organization allowing decisors, in any particular time of the year, to be able to measure progress and performance of all the planned activities.

Naturally, the Near Real Time (NRT) notion is different between aircraft and organizations as it measures the time that passes between awareness of an event that needs to initiate some reaction and the completion of the same reaction. Aircraft NRT is measured in minutes or even seconds while organization NRT is measured in days, weeks or even months. As such, “near real time is very important for the organizations, as it allows (almost) immediate access to new data and information and as such promoting self-awareness, global awareness and decision support.” [10]. The Organizational Cockpit fosters OSA. In order to improve the efficiency and the effectiveness of an organization, their workers must have the knowledge about the organization’s heading and track, they must be self-aware.
3. The Organizational Cockpit

The logic for the Organizational Cockpit Construction is presented in the next paragraphs. A generic model, applicable to all organizations, will be built and explained from the particular to the general aspects. After this step is completed, an example will be given in order to: i) verify if it works; ii) verify if it is adjusted to the organization’s reality. As stated before, the Organizational Cockpit concept comprises the SMap, the BsC, the Flight Plan and the Cockpit.

The Strategy Map explains, visually and in a single page, the strategy of the Division, setting its Strategic Objectives (OE) and developing Operational Objectives (OB). The Balanced Scorecard “keeps organization with an eye into the future”. BsC inclusion is intended to transform, both at a global and individual levels, existing partial OSA to a full situational awareness, which allows a much more fast response to all the changes in the surrounding environment. Although the SMap and BsC have many advantages, making it possible to know the level of implementation of the different activities and actions in order to achieve the outlined goals, it does not comprise the “time” dimension. Although it is an important and useful tool, the BsC is a picture of the organizational situation in a defined period of time. The Organizational Flight Plan overcomes this obstacle and inserts the variable “time”, making possible to monitor which targets have been effectively met within the initially agreed time frame. That way, with a set of indicators for each initiative and targets, one can get a set of tools that allow building a performance dashboard in real-time. As the cockpit of an aircraft is intended to provide the crew with the needed OSA, the Cockpit, with a set of indicators that give the crew the possibility to monitor the aircraft’s instruments and a set of adjustment mechanisms, is intended to provide the same to the organization. The Cockpit will handle the indicators, making possible to monitor, in real time, all activity and therefore analyze and manage in the best way available. Having reviewed the theory, it is clear that an Organizational Cockpit is a dashboard that measures performance, providing instant results instead of results from defined periods of time. Bottom line, it really allows the existence of a Situational Awareness that could not be possible to achieve without this same Organizational Cockpit.

With the development of this model, it is expected that the answer to our starting question is near. This model will change the present condition of the Division (AS IS) into the condition that the author claims to be better (TO BE). This model will contribute to a complete notion of the activities because they are located and "on demand". It will add an important element in the strategy which is the ability to add "best practices" to the initial planning. With this, one can obtain important concepts such as flexibility, adaptability and agility, all contributing to the existence of a complete situational awareness on the part of the employees.

The development rationale for this model is shrouded of tools like the Strategy Map, the Balanced Scorecard, the organizational Flight Plan and the Cockpit.

First of all, one must build a strategy map. This map explains, visually and in a single page, the strategy of the Division, setting its Strategic Objectives (OE) and developing Operational Objectives (OB) as a function of these same Strategic Objectives. Later it resorts to a distribution of Operational Objectives by four different perspectives (P) as advocated by Kaplan and Norton. These same objectives must have a numerical weighting. Once this distribution is made, there must be compulsorily a cause-effect relationship between the Operational Objectives, in order to contribute to the achievement of Strategic Objectives. The four different perspectives should also have an individual weighting in order to define performance indicators for the Strategic Objectives and determine their level of achievement. This is only possible with the variables values from the performance indicators of the Operational Objectives achieved through the Balanced Scorecard. So, the sum of the Perspectives translates the strategy for the Division. It is also possible to calculate the strategy by adding the weight of each Strategic Objective.

$$ P_1 = \delta_{11} OB_1 + \delta_{12} OB_2 $$ (I)
In formula 1 the variable $\delta$ must be a value between 0 and 1 (according to the weight of each operational objective for the Perspective) and the sum must be 1.

$$OE_x = \beta_1OB_1 + \beta_2OB_2 + \beta_3OB_3$$  \hspace{1cm} (2)

In formula 2 the variable $\beta$ must be a value between 0 and 1 (according to the weight of each operational objective for the Perspective) and the sum must be 1.

$$Strategy = \alpha_1P_1 + \alpha_2P_2 + \alpha_3P_3 + \alpha_4P_4$$  \hspace{1cm} (3)

In formula 3 the variable $\alpha$ must be a value between 0 and 1 (according to the weight of each operational objective for the Perspective) and the sum must be 1.

$$Strategy = \mu_1OE_1 + \mu_2OE_2$$  \hspace{1cm} (4)

In formula 4 the variable $\mu$ must be a value between 0 and 1 (according to the weight of each operational objective for the Perspective) and the sum must be 1.

After building the strategy map, one must proceed to the realization of a Balanced Scorecard. To do so, one must transfer the perspectives used in the strategy map for the Balanced Scorecard. It is only after this step is done, that one can define performance indicators for the Operational Objectives. After the performance indicators defined, the next step is to set the targets to achieve according to the defined planning. Lastly, one needs to define activities within each target. To every one of these activities, weights must be assigned depending on the level of importance for the realization of the respective goal, as it was done for the strategy map. Finally, to make goals SMART (specific, measurable, attainable, realistic and time-based) one has to define an Organizational Flight Plan. This is the tool that will allow understanding the defined period for the beginning and end of each activity. One should use an information system that integrates and articulates all of these tools, in order to perform well, as the employees themselves will update the information on information systems, so that the system is always updated in real time.

For this tool to work properly, updated by different employees in different activities throughout the year, it is necessary to resort to a table with the percentage of completion of activities, so that all employees are aligned on the scale used. The referred table includes ten different levels from “Action initiated” to “Completed and Submitted”. The Flight Plan provides, related to a reference date, information about: all the actions related to the planned activities, the planned timeframe, the percentage of concretization, deviance in number of days, who is responsible, number of planned actions, number of completed actions, number of actions remaining and, finally, number of actions due to be completed by the reference date.

An important aspect to this proposed solution is to understand if its structure has a logical sense and is applicable. That is to say, it is necessary to validate it. However, the concept is being implemented by OPSDIV at this time. Therefore, only a theoretical validation can be made at this time considering the SMap, the BsC and the Flight Plan. Assuming that in mid-year a business strategy is planned to be at 50% of its conclusion, but it only appears in the Cockpit at 45%, one can easily find out where the gap occurs. To do so, this must be supported by the organizational Flight Plan in order to find out which are the activities in delay at that moment. To perform this search on the tool, one uses a filter relating to “overdue activities”. Then uses a second filter, called “responsible”, to understand in near real time which activities are overdue and those responsible for them. With this small example, we can conclude that the organizational cockpit is able to change the present condition of the Division (AS IS) into a future condition, argued to be the best for the Division (TO BE).
4. Conclusion

It is essential that every organization gives capital importance to strategy. Without it, problems may arise that create barriers to communication and create gaps in relation to its mission, vision, goal, targets and values, often deforming the individual role and its importance within organizations. Having a clearly outlined strategy, it is possible to draw up a Strategy Map that can guide employees in their field of action. The Organizational Cockpit will add value in generating focus and alignment between people and the organization, generating motivation. A full interconnection between the Strategy Map (describes the strategy), the Balanced Scorecard (details and measures strategy), the Flight Plan (adds the time component) and the Cockpit (reflects the organization’s state) provides OSA, in near real time. The concept contributes to a complete notion of the activities because they are located and “on demand” and adds the notions of “best practices” and controlled work to the initial planning, adding flexibility, adaptability and agility that increases efficiency, effectiveness and accountability.

The answer to the research question and the subsequent questions is: i) “Where are we now?” The Flight Plan details each activity to the “time” level and allows for understanding at a given time what was done, what exists to be done, and what should have been done, allowing for constant situational-awareness; ii) “Where are we going?” The SMap has all the strategic and operational objectives defined and, therefore, the organization knows its destination at all times; iii) “What is our route?” The BsC defines the first level of detail linked to the accomplishment of each objective by establishing activities and correspondent KPI outlining the detail for the route. The answer to the research question is affirmative because the model indeed creates a transversal visibility to the activities planned and establishes a direct link between strategic objectives, objectives, activities, KPI and time thus providing organization’s near real time steering.

Future work, presented in the project’s second phase, entails using and comparing vantages and disadvantages and establishing lessons learned. Upon project success a third phase can be initiated comprehending the extension of the model to other organizational units.

References