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Near Real Time System for Operational Management

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Abstract

Current organizations integrate different social realities which result in a complex intersection of people, processes and technologies. Since people are the only agents endowed with the necessary autonomy to make decisions, and considering that the timeliness of information affects, overwhelmingly, the effectiveness of decision making, it is necessary to provide these same people a robust Self-Awareness. Indeed, in the current constantly changing environment, it is a great advantage for organizations to recognize uncertainty as an important factor to consider in its operation. Thus, like the aircrafts, the organizations require *Near Real Time mechanisms* that allow them to be ahead of the organizational environment, i.e., to know, at any given moment, the real status of its means and resources. Based on the principles of Organizational Engineering, this paper proposes a *Near Real Time* Model for the Portuguese Air Force. Considering its core business, the air defense of the Republic, the main objective of this investigation is to provide the Air Force's operational component with the necessary Near Real Time mechanisms. Although this model is based on a particular set of requirements, its conclusions and principles might be considered a reference for the entire organization and, furthermore, for modern enterprises.

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Keywords: Organizational Self-Awareness; Operational Management; Near Real Time; Information; Operational Management Module; Portuguese Air Force.

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1. Introduction

Organizations face, nowadays, new paradigms at various levels, in a hostile and fast changing environment. Such reality requires a new approach to the organizational structure as an open system in constant communication, not only with external entities, but also, internally. In fact, in the current constantly changing environment, the greatest advantage for organizations is to recognize "*that uncertainty itself is a basic feature of organizational environments*" [1]. Therefore, similarly to aircrafts, the organizations require management tools in Near Real Time which allow them to improve their performance through constant monitoring. It has been witnessed, over the last few years, an astronomical technological development that allowed companies to abolish physical barriers. Therefore, it is possible for organizational actors placed in different geographical positions, to know "where" the different others actors are, and "what they are doing". However, in order to accomplish such goal, it is mandatory that the information system is fed with information that, at any given moment, is representative of the reality of the organization. Such state of Self-Awareness will allow a convenient alignment between the organization's goals and the organizational actors' decisions, resulting in an improvement of effectiveness and efficiency.

The Portuguese Air Force (PRT AF), despite being a military organization, is currently facing a complex situation arising from technological developments and new paradigms in the field of national defense. Having as its prime mission, the air defense of the republic, embodied in the projection of its airpower, it must have an information system that is able to represent the reality of its means and operational resources. During this investigation, it was detected that the Near Real Time mechanisms within the Information System responsible for the Operational Management of PRT AF, the Operational Management Module (MGO), where insufficient. This problem is characterized by several aspects, namely:

- Organizational Self-Awareness: the operational information is concentrated in a particular set of organizational units, that do not share it with the different hierarchical levels;
- Squadron's Internal Management: the current MGO does not allow, in an automatic and proactive way, the allocation of available resources to fulfill a mission;
- Integration and correction of information: existence of operational information replicated in several information systems, leading to different realities for different entities;
- Command and Control (C2): the different organs of C2 do not have access to the actualized planning of air activities in Near Real Time through MGO, not knowing which resources are involved on the missions;
- Support to Operations: impossibility from the Air Base (AB) to provide an effective support to the crew in mission, as for example, medical assistance, food, based on the information registered in the system.

Considering the items identified, the authors developed a model that could solve the problem presented. Having in mind the specificities of a military organization, such as the PRT AF, when compared with similar civilian Institutions, a comparison with other models was not established for this purpose. The study was conducted over an existing system, developed according to the organization's specific requirements.

This article is structured as follows: section 2 goes through the necessary literature related with Near Real Time; section 3 focuses on the Near Real Time Model for PRT AF; section 4 presents the conclusions.

2. Concepts and Applications

This section presents the most significant concepts and principles that support the Model presented on section 3.

2.1. Organizational Design and Engineering

As organizations develop and grow, with the introduction of new technologies and processes, so does the complexity of relationships between individuals, which results on an increase of difficulty in the organizations management.

Organizational Engineering (OE) results in a "*body of knowledge, principles, and practices having to do with the analysis, design, implementation and operation of an enterprise*" [2], and addresses a fundamental question: "*how to*