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Managing Problems in Projects: A Systems Approach
by Wantuir Felippe da Silva Junior
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Managing Problems in Projects: A Systems Approach to Understand, Treat, Avoid and Reduce its Effects

by Wantuir Felippe da Silva Junior

Abstract: The objective of this article is to present a framework for capturing signals and trends of potential problems in projects before they occur. The focus is to understand the types of problems arising in projects and the different possible actions.

Introduction

Those who work in the planning environment know that the analytical practice is fundamental in the search of what will be, among the various alternatives, the path of greater chance of success to accomplish something or achieve a goal. Therefore, the accuracy of the references adopted in a plan is subordinated to the theory of probabilities. As these references suffer from lack of accuracy, the greatest value of planning is the continuous exercise of individuals and teams in anticipating and preventing potential problems.

Projects "navigate" in increasingly unstable environments with frequent changes, bringing major challenges in making decisions as they progress. These environments are characterized by elements known as VUCA.

VUCA is an acronym originally used in the military vocabulary to represent the words: Volatility, Uncertainty, Complexity and Ambiguity relating to general conditions and intrinsic situations in a given environment. Being aware of these conditions encourages the use of analytical competence and judgment in identifying and treating problems.

A more detailed definition of this acronym brings the following meanings:

- Volatility: The nature, speed, volume, and magnitude of change that is not in a predictable pattern. Volatility is turbulence, a phenomenon that is likely to happen more often these days.
- Uncertainty: The lack of predictability in matters and events.
- Complexity: The many causes difficult to understand and the attenuating factors (both inside and outside the organization) that are involved in a problem.
- Ambiguity: The lack of clarity about the meaning of an event. It can also mean the causes and reasons behind things that are about to happen, which are difficult and unclear to define.

Knowledge about the existence of the VUCA environment criteria contributes to the structuring of management processes of the following aspects:

- Anticipating matters which model the conditions;

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- Comprehending the consequences of matters and actions;
- Evaluating the interdependency of variables;
- Preparing for alternate realities and challenges;
- Interpreting and approaching relevant opportunities.

In short, for most contemporary companies, VUCA is a practical language to promote corporate awareness and readiness.

The VUCA environment can affect some of the project objectives, since it is susceptible to three potential sources of problems: "Jeopardize", "Risk[1]" and "Chaos" (figure 1).

1st Source	Jeopardize	Put at Risk	Fact	Within Domain	Internal Influence	Predictable	Past (lessons)
	≠						
2nd Source	Risk	Is a Risk	Uncertainty	Outside Domain	External Influence	Predictable	Future (Prognostic)
	≠						
3rd Source	Chaos	Random	Uncertainty	Outside Domain	Accidental	Unpredictable	Present (Diagnostic)

Figure 1: Potential sources of problems in projects.

The first source, called "jeopardize", is usually the main source of problems in projects and include predictable facts (originated from inside the organization) which should be within domain of the project's decision makers. Many people confuse it with the second source "Risk" for lack of knowledge regarding its conceptual and practical differences. The amount of problems originated form this source is inversely proportional to the level of conscience of managers and teams about the influence and impact of the company's operational efficiency upon the project.

The problems related to the *Jeopardize* source are in great extent spread in the "guts" of the organization, making its detection, deliberation and application of solutions a challenging task.

One of the basic responsibilities of a project manager, sometimes neglected, is to know directly or through specialists the *maturity level*[2] of the organization that he will use as sustaining basis for his project. Knowing this maturity level at the strategic circle is knowing the inner workings of the leadership support, culture, structure and the alignment between the goals and the political arena in the company; at the tactical level this means being aware of the maturity of the teams and the maturity of the internal processes. As shared in the PMBOK guide, the project will "drink" from Environmental factors of the company (culture, organizational structure, infrastructure, existing resources, commercial database, market conditions, etc.) and organizational process assets (formal and informal plans, procedures, guidelines, knowledge management bases, historical information, ability of the organization to learn - identify, analyze and incorporate lessons, etc.).

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Acting and achieving positive results with problems from the *Jeopardize* category depends more on the attitudes and posture of the project and organization authorities than on the knowledge and technical experience inherent in the uniqueness of the project. This includes taking action before the problem is triggered in the project and, if triggered, having carefully established plans for critical project activities and deliveries. These plans are informally known as "plan B[3]". This logic diverges from improvised solutions (popularly known as "extinguishing fires") where there is total absence of strategy.

The quality (accuracy) of project planning depends on a large part of identifying processes with recurrent problems that are known to the organization but are not yet addressed due to the absence or procrastination of decision making by the organization and project authorities, putting at risk the success and benefits estimated in the preposition of the project. In many projects these problems are ignored, an attitude exemplified by the phrase "Live and let Live". This phrase make us think of the origin of many problems, and reveals a strategic decision model of not influencing situations that the organization should solve to support the project.

Considering the VUCA environment (Figure 2), *Jeopardize* is strongly influenced by "Complexity".
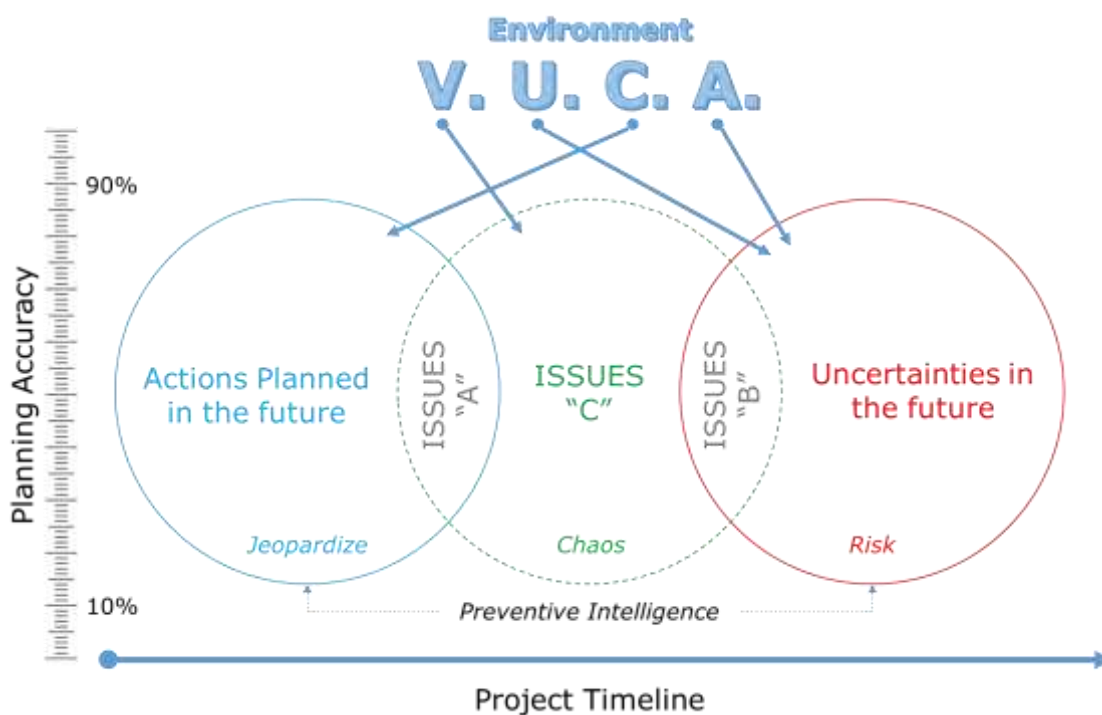

Figure 2: Sources of problems and the VUCA environment.

The second source was called "Risk", that is, a legitimate risk arising from uncertain imagined or estimated future events or conditions. Project risk management, applied with mastery, aims to plan and execute preventive actions in order to eliminate or minimize potential problems. The big difference between Jeopardize and Risk is that in the first case, the problems are factual and in the second they are imagined, that is, they cannot be experienced directly before they happen. Although *Risk* is not in the direct domain of project managers, due to external

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influences, these can be predicted when the common vision of the project is built and the identification of sources or categories of risks are adequately established with the stakeholders. In a significant number of projects, risk management does not gain adequate awareness, suffering from low effectiveness and inattentiveness of those involved.

Often, many project managers "drench" databases and controls with information related to problems in the *Jeopardize* category, thus demonstrating a lack of readiness in directing project information. The organization's risk management process should also be considered as an organizational process asset.

Considering the VUCA environment, *Risk* is subject to strong influence of "Uncertainty" and "Ambiguity", as shown in figure 2.

In the third source named *Chaos*, the focus is to act as quickly as possible to minimize "losses". It differs from the *Jeopardize* and *Risk* sources, where problems can be eliminated, minimized or avoided. In this context, the absence of strategy is natural. Actions directed towards these problems are usually initiated as a response to a crisis or as an unexpected event. Therefore, problems in this environment need to be managed differently from other sources, as there is no time for detailed planning. Improvisation comes on the scene and the work is performed continuously with non-stop interactions and continuous decision-making. To act in these situations it is necessary that project authorities are aware that the project manager and/or the specialists must possess total autonomy to make decisions and assume that there is a high chance offending up with very high costs in this endeavor.

This source is tied to "chaos theory," where a small change at the beginning of any event can have enormous and utterly unknown consequences in the future. These events are unpredictable and chaotic. To act upon the problems related to this source should be considered by the project managers as an exception, but many do not act preventively in the potential problems related to the first source (*Jeopardize*) and 2nd source (*Risk*), leaving them to occur almost entirely as if they were "*Chaos*" problems.

This type of behavior on the part of the project managers shows a low maturity in "preventive intelligence" (Figure 2), that is, the absence of planning that effectively and timely addresses the potential problems related to *Jeopardize* and *Risk*. The guidelines used by the organization to deal with crises should also be considered as an organizational process asset.

Considering the VUCA environment (figure 2), the *Chaos* is subject to strong influence of "Volatility".

Notes:

(1) Risk is only seen as a potential problem source when there is no effective risk management process or a risk event is triggered subject to containment actions or attenuating solutions.
(2) Maturity of the organization in terms of competence and ability to carry out its mission.
(3) In the "plan B" of *Jeopardize*, the focus is to see the deviations of activities and deliveries directly related to the milestones of the project (Figure 2, represented in

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ISSUES "A") and in the "plan B" of *Risk* the focus is in the contention actions, in case the event or uncertain condition occurs (Figure 2, represented in ISSUES "B").

The name "ISSUES" in Figure 2 means: deviations from the original master plan (planned baseline). In "deviations" are contained, in addition to problems, changes and nonconformities.

Methodology

The method described is, in fact, the deployment of guidelines that are usually unspoken, available here in the form of a guide or checklist that will serve as an instrument for evaluating the corporate environment (in which the project is inserted). This evaluation is a tool that can serve to map potentialities and shortcomings of the corporate environment. The goal is to get the project manager's attention, increasing their awareness, and to encourage them to find out how much the corporate environment is favorable to project progress.

The first step is to know the company's environmental factors and organizational process assets by checking what the corporate environment does best and what its difficulties are (weaknesses and strengths). This may give a broader picture of potential problems and provide instruments and insights into decision making to eliminate the outbreak of problems in the project.

The use of the checklist provided is subject to a reading and reflection on the suggested statements. It is recommended to apply it in the preparation phase of the project, evaluating whether or not it is possible to agree with such statements.

	Checklist – Evaluation of potential problems for the project		
ID	**Corporate Environment Factor or Process Asset**	Evaluation **(Agree)**	Evaluation **(Disagree)**
1	All the project goals are clearly defined and were communicated at all levels of the project structure (Jeopardize / Risk).		
2	The management team and those responsible for the work packages jointly defined a common vision of the project, clarified doubts and formalized work agreements. (Jeopardize / Risk).		
3	The service level agreement (SLAs) with the support areas defined and the history of service readiness is adequate. The model also includes how to address exceptions. (Jeopardize).		
4	The project management team is aware of gaps in the organizational processes in functional areas that can affect some of the project objectives (Jeopardize).		
5	Functional teams (areas) are committed to eliminating procedural gaps prior to the period in which the project will use the functional process (Jeopardize).		
6	Functional teams have a solid strategy of using shared resources between (scheduled and current) projects in the organization and have disclosed the concerns and points of attention, making available (for project authorities) the constraints that need to be respected and/or negotiated (Jeopardize).		
7	The project management team and the functional teams possess the necessary readiness to meet the project needs and have a solid strategy to solve gaps in readiness to guarantee availability of resources at scheduled dates (Jeopardize).		
8	The organization has a structured project management framework with mature		

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	methodologies, tools and instructions, including reuse of lessons (Jeopardize).		
9	The project management framework includes clear instructions on how the transfer of authority works for problem solving (successful conduction, solution and closure) among stakeholders (Jeopardize).		
10	The level of authority (autonomy and decisions) of the project and the roles and responsibilities among stakeholders have been agreed upon and demonstrate suitability and robustness (Jeopardize / Risk).		
11	The strategy of monitoring the project was established (including performance indicators) and all those involved agreed about what will be reported, for whom and how often (Jeopardize / Risk).		
12	The form of prioritization and quantification of risks is established (Risk).		
13	All stakeholders are contributing for the identification of risks (Risk).		
14	Risks are clearly written and without ambiguity (Risk).		
15	Each risk has only one owner defined by agreement (Risk).		
16	Each risk has an appropriate response strategy with specific actions (Risk).		
17	Exposure to risk is communicated appropriately to all stakeholders (Risk).		
18	Stakeholders and team members are comfortable to identify risk openly and honestly (Risk).		
19	Risk identification explicitly takes account of sources of influence (Risk).		
20	People are responsible and committed to completing the actions of agreed risk responses (Risk).		
21	Top management shows visible and consistent support for risk management processes (Risk).		
22	Potential risk impacts are used to inform strategies, decisions and actions (Risk).		
23	The project management team is aware of how the decision-making process works in the potential crisis situations of the project (Chaos).		

Table 1 – Checklist - Evaluation of potential problems for the project

The statements that receive the note "disagree" in the evaluation, deserve reflection and should be considered by the project manager as a warning signal or point of attention. If the project manager feels "bothered" with the results and encourages the generation of preventive actions with the organization, then the proposed result has been achieved.

Results

Over the past year we have used this checklist "mentally" when managers (Directors, product development managers, integrators, work package leaders) ask for guidelines on "project management" for structuring projects, building the management process of risks or support in the definition of roles and responsibilities in projects (figure 4). Such guidelines have proved to be positive, as several procedural questions are generated and preventive action agreements between managers (of the project and functional areas) are being fostered.

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Figure 3: Examples of events where orientations regarding potential problems in projects occurred.

Comments and Conclusions

In organizations, the main purpose of projects is to enable corporate strategies and provide value to stakeholders. It is not the project's primary focus to improve organizational processes (except in the case of internal improvement projects). Organizational processes need to be mature to serve the projects. It is worth remembering that the projects are temporary, therefore they will use the corporate processes independently of the level of maturity in which they present themselves. When the project manager understands the relationship between the (timely) project and the organizational processes (continuous routine), the preventive actions, together with the potential problems, effectively increase the chances of success of the proposed objectives and results.

"A good strategy needs not only to take into account the knowledge of an organization, but also to channel it intelligently."

Georg Von Krogh, author of **Enabling Knowledge Creation.**

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About the Author

Wantuir Felippe da Silva, Jr.

Brazil

Wantuir Felippe da Silva Junior has 27 years of experience in the aeronautics industry, with 17 years in project management activities. He has knowledge and practical experience adhering to the concepts and fundamentals of PRINCE2, PMI, IPMA, Agile Methods and Deming Cycle. Mr. da Silva is currently a consultant, mentor, instructor and head of PMO in Integrated Product Development at Embraer (DIP). He is also founder of GPSimples (www.gpsimples.com), an entity whose focus is the qualification of people to the project environment.

Wantuir is creator of the methods:

- Risk Strainer (a framework that facilitates segregation between risks and issues).
- Lean Scope Overview (understanding, deploying and managing project scope),
- Lean Risk Overview Matrix (project risk identification and management),
- Lean Project Direction - LPD (Progress Management and Project Decisions),
- E2I2 - Extreme Experience In Innovation (development of creative engineering solutions in product and service design),
- Wandala (management of interests and deployment of project requirements),
- Blended 7S Model & TOC (strategic deployment for projects),
- Spock Analysis (judgment and decisions associated with deviations in projects)

Wantuir da Silva can be contacted at wantuirf@embraer.com.br