FROM IDEA TO BENEFIT: PROJECT PORTFOLIO MANAGEMENT USING FRONT END LOADING, THE STANDARD FOR PORTFOLIO MANAGEMENT AND PRINCE2

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ABSTRACT

This work presents ways for project management through the integration of the FEL (Front End Loading) processes, PMI (Project Management Institute) Standard for Portfolio Management® and OGC (Office of Government Commerce) PRINCE2®, as form of obtaining business value. The proposed model is a suggestion for the maximization of the return of investment of projects portfolio through its alignment with the organization strategy.

Keywords: Front End Loading, Prince2, Project portfolio management.

1. INTRODUCTION

Due to the highly competitive market, it is essential to minimize the investment risks. For this reason, it is necessary to invest in projects that are lined up or directed to the organizacional strategy and that really add value for the business. For in such a way, the development of a structure or process for the effective management of projects portfolio becomes necessary.

The FEL is used in mega enterprises projects, where the investments are of highest value, with the intention to minimize the risks of investments in projects of this nature. Normally it is applied in industrial sectors as, for example, mining, petrochemical, energy and where the projects
are of high complexity and excessive costs. In this work, the FEL is applied in the IT industry with the objective of grow the investment in projects that really bring benefits for the organization. In such a way, one concludes that the application of the Front End Loading is not restricted to the industrial sector and only the projects of highest value of investment. The FEL also can be applied in sectors whose projects are of complexities and inferior costs when compared with mega enterprises.

Although the PMI have published the The Standard for Portfolio Management, that is a world-wide recognized standard for the management of projects portfolio, it is known the difficulty and the great effort of the organizations to define its projects to guarantee and to add value for business. This is because, as well as PMI’s PMBOK® Guide, the Standard for Portfolio Management suggests what it must be made and not it how to be made.

This work, through the integration of the FEL with processes of the The Standard for Portfolio Management and of the PRINCE2, will be able to serve as reference for professionals interested in developing a methodology for management of IT projects portfolio in its organizations, as well as for excessively interested students and in knowing a little more on some of best practical the current ones of the market to manage projects portfolio.

2. FRONT END LOADING

FEL is a process that aims to eliminate investments in not profitable projects and strategically disaligned through the clarification of the enterprise objectives and alignment of projects initiatives of to these objectives. Being thus, the FEL is used to minimize the risks of investments in wrong projects and that they do not add value for the business. Moreover, it aims at to diminish the probability of great changes of target of the project during the execution phase where the change costs are raised.

FEL is defined by Ramos [2], as “a stage that involves the preliminary analysis of the organization and the enterprise and the accomplishment of basic engineering. Its execution must immediately be previous to the phases of detailing engineering, supplement management, construction, assembly and commissioning of a project”.

FEL is divided by three phases and gates between these phases. Levine [3] defines gates as points of decision between periods of training and that they serve to control quality and to diminish the probability of “immature products” to follow ahead in the process.

The first phase of FEL corresponds to the analysis of the business. It is in this phase that the projects are lined up to the strategical objectives of the organization. In accordance with Romero and Andery [4], the objective of this phase is to make the evaluation of the chance of investment through analyzes of market, risks and alignment to the business strategy of the organization.

The second phase of the FEL corresponds to the technical and economic feasibility study. For Ramos [2] is in this phase that the alternatives are selected and the procurement and technology strategies are defined. In this phase, it is already possible to use some processes and subjects suggested for the PRINCE2, as, for example, the Business Case subject and the Directing the Project and Starting up the Project processes. Slack and Chambers [5] says that the evaluation of the alternatives of an initiative can be made through three categories of project criteria. These categories are:

- Feasibility - it is possible to make?
- Acceptability - it is really necessary to make?
- Vulnerability – is it necessary to run the risk?

The third phase of the FEL corresponds to the basic engineering phase. In accordance with Ramos [2], the target is closed in this phase through the detailing of the product, as well as of the specifications of the equipment, the procurement strategies and the risk plan refinement. In this stage, it is possible to use the PRINCE2 through the techniques of Product Based Planning and Quality
Review; through the processes as, for example, Initiating the Project, Directing the Project, Controlling the Stage; e through subjects as, for example, Organization, Risk, Change, amongst others. It is not target of this article to cite and to describe all the processes, all the techniques and all the subjects of the PRINCE2.

The next figure illustrates the three phases of the FEL with its respective gates or points of verification. Please note that the Execution and Operation phases, although to be dependants, doesn’t belong to FEL process.

![Figure 1 - Process Front End Loading](image)

FEL allows to a productive standard for project portfolio management through its three described stages. It initiates with business analysis and strategies definition to reach the objectives, later for technical and economic feasibility study and arrives to basic engineering and planning of the project execution phase.

Slack and Chambers [5] says that projects includes stages of: Product/service concept creation, Concept selection, Preliminary project and Evaluation and improvement of the preliminary project.

When analyzing these stages, we noted that there are strong lined up with the stages of the FEL, as noted in Figure 2.

FEED (Front End Engineering Design) is a linking phase between FEL and the execution phase of the project. According to Ramos [2], FEED, although corresponding to the stage of pre-detailing engineering, is not part of FEL stages. The pre-detailing engineering is a little more than what the basic project and makes possible one better implantation of the enterprise.

The project is planned and managed in accordance with the processes, subjects and techniques suggested for PRINCE2. In accordance with OGC [6], PPR (Post-Project Review) are revisions that must occur after the project closing, to measure if the desired benefits had been carried through.
3. PROJECT PORTFOLIO AND ITS COMPONENTS

In accordance with PMI [7], portfolio is a collection of grouped components that serve to facilitate the management of the efforts necessary to reach the strategical objectives of the organization.

In accordance with the PMI, projects are temporary enterprises that aim to deliver a unique result only. Vargas [8], defines project as “a not repetitive enterprise, characterized for a clear and logical sequence of events, with beginning, middle and closing, destined to reach a clearly objective, being lead by people, using predefined parameters of time, cost, resources and quality”.

Program, in accordance with PMI [6], corresponds to a group of projects related and coordinate managed to get benefits and controls that could not be gotten if they were managed individually.

So that the investment in the portfolio can result in value for the organization, it is necessary that its components are lined up with the organizacional strategy. As Levine (2005), portfolio must reflect the planned investment for the organization to reach its goals and business objectives.

Maizlish and Handler [9] says that Information Technology, for being critical for the enterprise success, suffers a pressure to adequately manage the investments in this area of the organization multiple businesses. Therefore, the alignment is essential enters the IT projects portfolio with the strategical objectives of the organization and its associates risks.

In accordance with Foïna [10], Information Technology, as well as other areas of an organization, demands resources and efforts that needs previous planning. This planning not only requires actions lined up to the strategy of the organization and to the sector necessities.
To Levine [3], although the organizations invest in the development of strategical planning, the difficulty to make these strategies to come true is well known. Therefore, it is important that all the members of the organization, through the project portfolio management, have the same specific agreement on the mission, objectives, approaches and plans to search for the needed result.

**Figure 3** - Alignment between organizacional and portfolio IT strategy

In your turn, the project portfolio management, according to PMI [7], is the centered management of one or more portfolios, including the stages since the identification of the chances until the delivery and accomplishment of the benefits, to reach the strategical objectives of business.

The process group of alignment for the projects portfolio management, in accordance with the PMI [7], comprises the following stages:

- Identification - list creation with the components that will be managed;
- Categorização - grouping of the components identified in business relevant groups;
- Evaluation - search of information for evaluation of the components;
- Election - creation of the list of selected components;
- Priorização - order of the components in accordance with its importance;
- Balancing - planning and allocation of resources;
- Authorization - formalização of the allocation of resources.

It is necessary to stand out that the portfolio management process does not finish after the ending of the stage of authorization therefore, in accordance with Levine [3], the success measurement of the process must be extended to the evaluation of the benefits of the components when in fact they will be gotten. Therefore, in accordance with OGC [6], the component can be locked up but it is necessary that the PPR document is elaborated to guide the measurement of the waited benefits.
4. INTEGRATING FEL WITH THE STANDARD FOR PORTFOLIO MANAGEMENT AND PRINCE2

The figure below, represents a suggestive model for the IT project portfolio management. This model is composed of six phases, with its respective gates, and is a result of the integration between FEL, IT adapted, Standard for Portfolio Management, beyond PRINCE2 processes, subjects and techniques. In this model, the initiatives are analyzed in each period of training of the FEL and, they will be in accordance with the strategy or they will be relevant for the business, they go evolving and passing to the next phases to the model.

![Figure 4 – IT Project Portfolio Management Filter](image)

FEL I, FEL II, FEL III and FEED Phases had been explained previously. The phases of execution and operation, respectively mention to the construction or development of the components that had passed for gate Project Management and the accompaniment of these components after-implementation with the intention of mensurar the benefits preset in the Business Case.

The intention of this model is to prevent that all the identified initiatives or ideas are implement without a previous analysis. The objective is to filter the initiatives that are not excellent and that they will not add value for the business and, with this, to increase the probability of the maximização of the return of the investments on the strategically lined up initiatives with the business objectives.

In this model the initiatives, to the measure that go passing for the phases, go gaining matureness and, with this, more clearly go being each time if its implementation is or not excellent for the business.

The part of the model, before arriving at first gate (Analysis of the Business) of the filter, has the objective to catch the IT ideas or iniciatives in the organization. Note that these ideas will need to be transformed into concepts, therefore nor all will be implemented. Slack and Chambers [5], says that “concepts are different of ideas for the fact to be transparent declarations that encompass the idea and also it indicates its global form, function, objective and benefits”, as below figure.

All the identified ideas precision to be transformed into concepts and, after that, will be selected through an evaluation how much to its viability, acceptability and vulnerability. In each stage of the model, the initiatives will be worked and will suffer to analyzes and evaluations how much to the requirements from each phase.
FEL Phase I understands stages of analysis of the organizacional strategy and definition of the potentials IT initiatives that will be developed to reach the strategical objectives of the organization or the proper IT sector. The IT direction must evaluate the chances of investments through the task of the iniciativas potentials to the business strategy. The stages of identification, categorização and evaluation, suggested for the PMI (2006) [7], are executed in this phase of the model.

During the stage of identification, the potentials initiatives must be classified as projects, programs, portfolios or other works. After that, these potentials initiatives must be categorized as:

- Strategical - directly related to some strategical objective of business;
- Legal - assigned to take care of some legal or governmental requirement;
- Improvement of process - related to the improvement of the business processes;
- Preventive IT maintenance and evolution - related to the maintenance and evolution of IT material and human resources.

In the stage of evaluation, all must be collected and any pertinent information of the potentials initiatives, such as:

- This potential initiative is for taking care of some strategical objective? Which?
- Which are main the involved ones or influenced?
- Which the complexity of development and implantation?
- Exists dependence with some another component of the portfolio? Which?
- Which the estimate of cost?
- Which the expected benefit?

The gate at the end of this phase, necessary to continue to the following phase, is the feasibility study. A simple question must be made when arriving in this gate: does it has enough information to initiate the feasibility study? If it will not have conditions to initiate the feasibility study, the potential initiative will not pass to the following phase of the model.

FEL Phase II comprises the selections of the potentials initiatives where, in the first selection, an evaluation how much to the viability, acceptability and vulnerability occurs.

- It is possible to make this initiative?
- It is really necessary to make?
- Is the risk worth?

The second selection will be made through the business analysis of these potentials initiatives that had passed for the first selection. From this last selection, these initiatives leave of being potential to be definitive components. After that, these components will follow for the stage of priorization, where they will be placed in sequence of execution.
In the stage of priorization, the components will be commanded in accordance with its degree of importance for the organization. In this model, the priorização is calculated through a mathematical formula involving the following criteria:

- Benefit Criterion - the benefit indicates that the component will bring for the organization.
- Easiness of Implantation Criterion - the easiness of implantation of the components indicates.

After the stage of priorization, comes the stage of portfolio balancing. This stage consists of planning and placing the resources adequately to maximize the return of the portfolio and to reach, inside of an acceptable risk, the expected strategical results. Had the restrictions of resources, they are human or financial, it is possible that the list of the selected and prioritized components suffers alteration.

Basic engineering is gate of this component phase and necessary to inside continue it of the model. In this gate, the following questions must be answered:

- The portfolio is well balanced and lined up with the strategical objectives?
- The risk to get the expected value for the organization is acceptable?
- Is worth to invest to time and resources for the detailing of the target of these components?

FEL Phase III comprises basically to the effort to detail and to close the target of the components of the portfolio, being specified the necessary equipment and criteria of acceptance of the product or service, procurement strategy, refinement of business case and the cost and time estimates.

In accordance with Ramos (2006) [2], when arriving in this FEL phase, the components run positive risks to diminish its costs 20% on average.

The gate to the end of this phase is Detailed Engineering. The following questions must be answered:

- The target enough is detailed?
- The target is defined, validated and rank in management of configuration?
- The procurement and conduction strategy of the project are defined?

The FEED, as seen, is a phase of linking between the FEL and the execution phase. This phase is a deepening of basic engineering where the planning of each component of the portfolio is detailed and fine of form to less provide a phase of conturbada more controlled execution.

The gate at the end of this phase is Project Management. The following questions must be answered:

- Exists a plan with enough detailing to manage the development and implantation of the component of efficient form?
- The human resources and financial are available for the component?
- It has some restriction that prevent the advance component it for the following phase?
- The component still is viable and is approved by the direction to be executed?
- The execution phase comprises basically to the efforts necessary in accordance with to lead, to develop and to implant the components the criteria of acceptance previously defined and validated.

Gate of this component phase and necessary to continue it to the following phase of the model is Operational Management. In this gate the following questions must be answered:

- The product of the component corresponds what it was specified?
- The product is inside of the definite criteria of acceptance?
- The report of learned lessons was elaborated?
- The PPR document was elaborated?
- The tests had been executed successfully?
- The customer accepted and validated the product of the developed component?
- The stakeholders had been communicated of the closing of the component?
Note the importance of document PPR. It is in this document that is described the adjusted ways and periods to measure the waited benefits of the components.

The questionings and criteria of acceptance, told above during the brief description of the model, are not limited only to these. Each organization, when developing its methodology, can create its proper questionings and criteria of evaluation for gates.

5. CONCLUSION

The difficulties that the organizations have to execute what is described in its strategical planning, are a reality. The difficulty to line up the Information Technology to the strategical objectives of the organization is another reality. The IT project portfolio management, through the considered model, can be an alternative to help to solve these difficulties.

Through the integration between the Front End Loading processes with The Standard for Portfolio Management and PRINCE2 processes, it was elaborated a model for IT project portfolio management. In this considered model, some of market currently recognized best practices had been used, for project portfolio management.

This work considers a structure that can be used by the organizations as reference or starting point for the creation of its proper methodologies for project portfolio management. Moreover, it serves as reference of bibliographical sources for students and excessively interested in project portfolio management.

6. REFERENCES