# DEVELOPMENT OF TECHNIQUES FOR SPREADIN AND APPLICATION OF METHODOLOGIES

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***Abstract.*** *The creation of new products implies in one high probability of failure. Techniques to provide a project development time reduction with more efficiency and systematically are highly indicated for project and for products and services improvements. In this context, the project methodology presents a series of tools and techniques which can guide the mentioned objectives. This paper proposes a study which could demonstrate the applicability of the project methodology for segments of products and services. For service case study, the project methodology used in the development of new products was Guia Rápido de Projeto software, which was created for this purpose. Thus, it was possible to present and to evaluate this systematic process, with the software users who certainly will be able to disseminate the importance of the project methodology during the products development. As result of this paper is presented a new software using developed methodology and the project stages for the product development through easy interface evidencing the utility of the methodology.*

***Keywords****: Design methodology; Product development; Case studies; Computational interface*

## 1. INTRODUCTION

Countless definitions exist for "project", that can show the conceptualization of make project is ample. Each author or thinker have its own definition, which is considered excellent by each one of them. As described by Ertas and Jones (1993), design of the engineering is the process to develop a system/component or process to support specific needs.

From Back point of view (2004), the project of the engineering is an activity guided to support human needs, mainly, which that can be supported by technologies factors of our culture.

Methodology is the study of the applied methods to solve theoretical and practical problems. The method concept is from of the Greek-Latin and means way for something.

Then, the methodologies are applied in the projects development. The selected methodologies during creation process are necessary in order to auxiliary a good results. Therefore, the methodology is a job tools and its application can´t guarantee the success of the product project.

This good result is a consequence of the capacity technique and creative of who decides the problem, being the methodology only one logical support. The objective of all methodology is to support the designer in the project development.

### 1.2. The Brazilian Industry

The Brazilian industry, in a growing multiplication need and innovation of its line of products, no longer it is just satisfied in go look for the inventions that gave right outside commercially, same because, not always the regional expectations come true.

The products designer, before of that aspect of it continues innovation, will need the most correct methodologies to determine with clarity all of the relevant aspects for the project and to minimize the failure (Ullman, 1997) risks, as project flaws that can be detected at the beginning of the creation process and development "Figure 1".

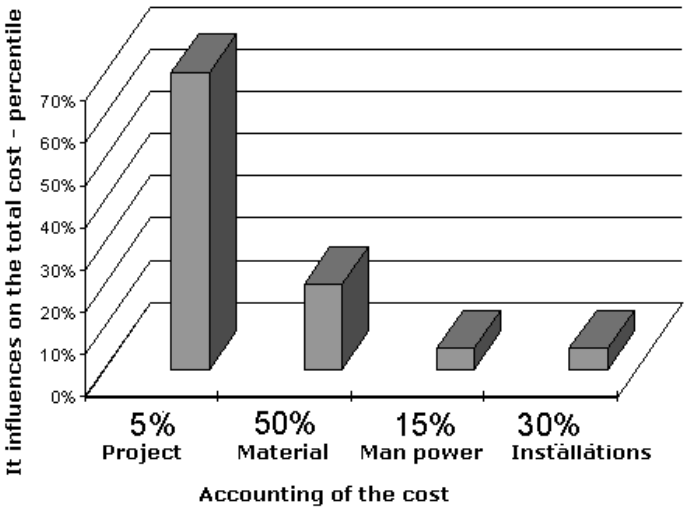


Figure 1. Influence on the total cost of the product x project, material, labor, facilities "Smith, (1991)".

As display at "Figure 1", in the area of performance "project" is where it appears the largest influence on the cost of the product. However, as display the "Figure 2", during the development of the project, where it is smaller the accounting cost, it can´t have any neglectful stage, because the effect of scale of changes of the product in the several development phases will be very larger, as well as a big one percentile contemplated in the final cost of the product.

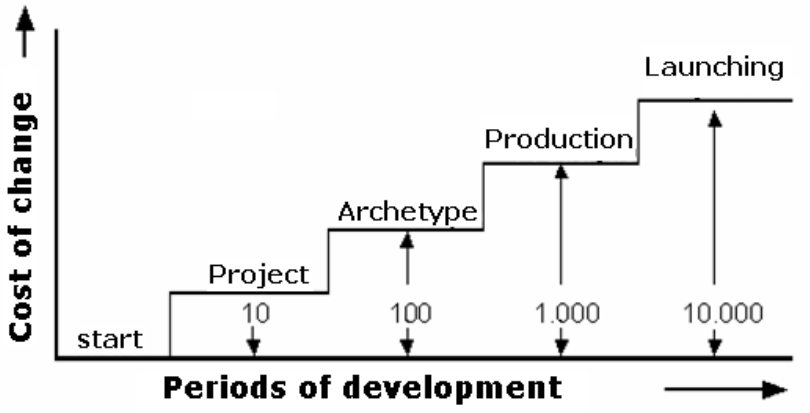


Figure 2. Cost of changes x development "Huthwaite, (1987)" Apprenticeships.

The product development uses a group of procedures, process and project tools. In the case of the industrial product it is possible to identify the lack of project tools, the one that comes causing flaws and difficulties to develop and to create new products, turning strong necessary dedication and larger concentration of efforts for the creation of access means to the those tools.

### 1.4. Project Development

The creation of a product has as objective to satisfy and to assist the customer's need (Back, 2004). Like this, to obtain a conception to assist the customers' needs and that it takes into account the aspects, the recommendations, the limitations, as well as restrictions related to the project engineering, it should be obtained information and to build the necessary project specifications for the product.

The necessary project specifications are certain in agreement with the rules and recommendations of project of this product type, in the case, industrial products. Many of the necessary information in begin of the project, they are not clearly identified and defined (Dedini, 2002), what takes to the need of the use of tools that can help in this initial stage of the project, as the methodologies. Therefore, to facilitate, to organize all of the information, to lift restrictions of the product and tools to be applied, it grew a computational program.

## 2. THE SOFTWARE - FAST GUIDE OF PROJECT

This program has as purpose to guide and lay auxiliary in new projects development, through the application of methodologies. This decomposes the global project in individual steps and it establishes a sequence of events of projects, in a chained way.

The user should feed the program with pertinent data to each stage of the project, "Figure 3".

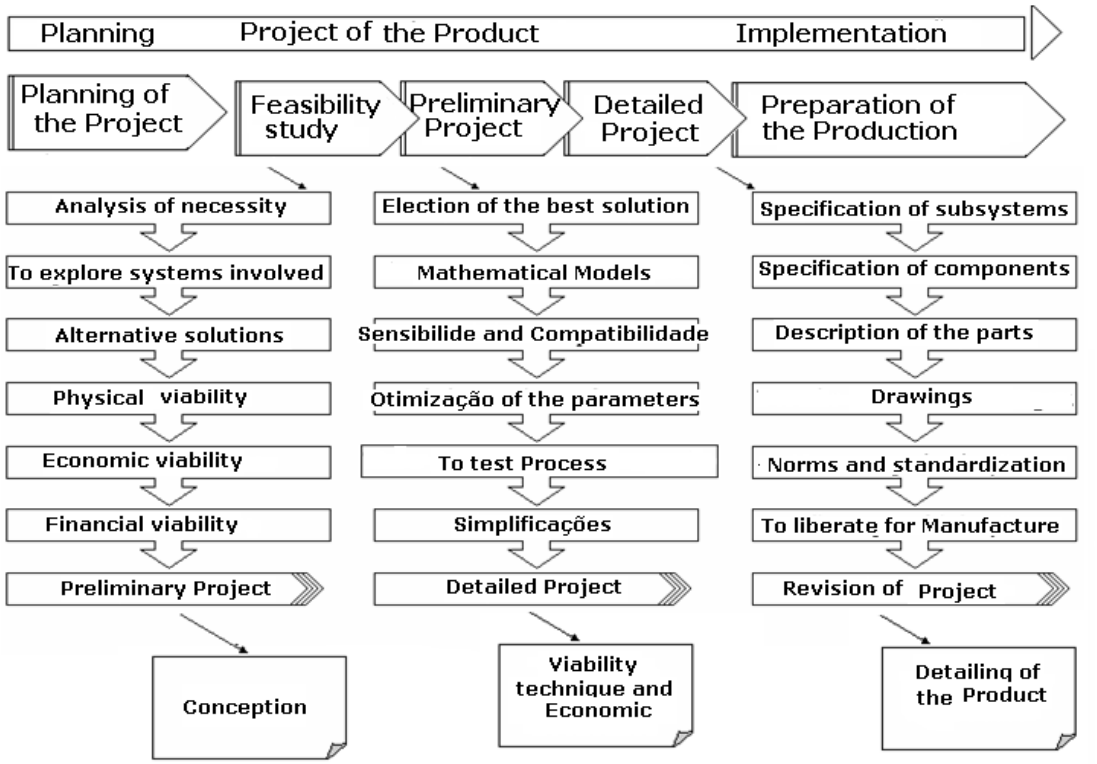


Figure 3. Stage of the project

The creation process or manufactured product development starting from an initial idea or starting from a need, it is not an easy task. Like this, to obtain good result, independent of maybe, it is necessary the adoption of methodologies.

The methodology used to project a product varies from company to company, from product to product and so on, but, a generic itinerary can be built, applicable in the great majority of the cases. The "Figure 4", shows the process of development of products, pertinent stages, and generated documentation. In the detail the area of performance.

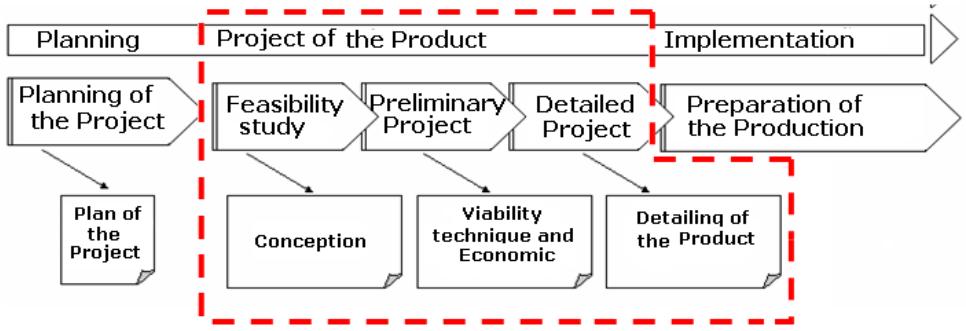


Figure 4. In the detail the area of performance

The project of a component or of a system, it presents for each case, a methodological and chronological development similar that makes possible to create a model common to almost all of the projects. This is formed by a sequence of different events and chained, resulting in the stages acted to proceed in the "Figure 5".

The flowchart is represented graphically in the screen of the computer. Understand each other for that as a drawing faithful of the flowchart. To each stage of the flowchart it is possible to associate comments or pertinent data to the stage in itself, as well as it can be requested, it helps regarding the methodologies related to the stage.

Each stage only the previous stage can be filled out is already concluded

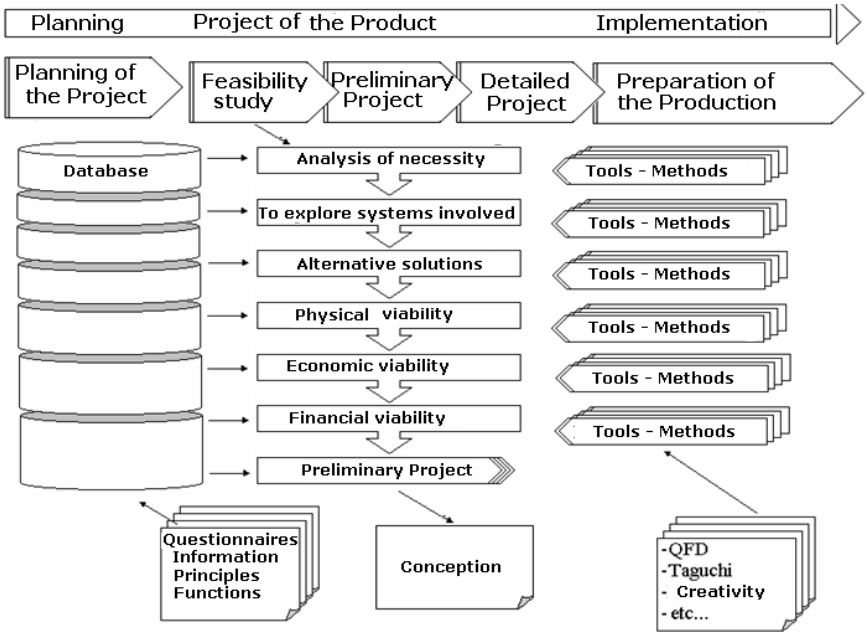


Figure 5. The flowchart

The improvement of the model, that is structured in Free Pascal and using the program Lazarus® as interface "Figure 6".

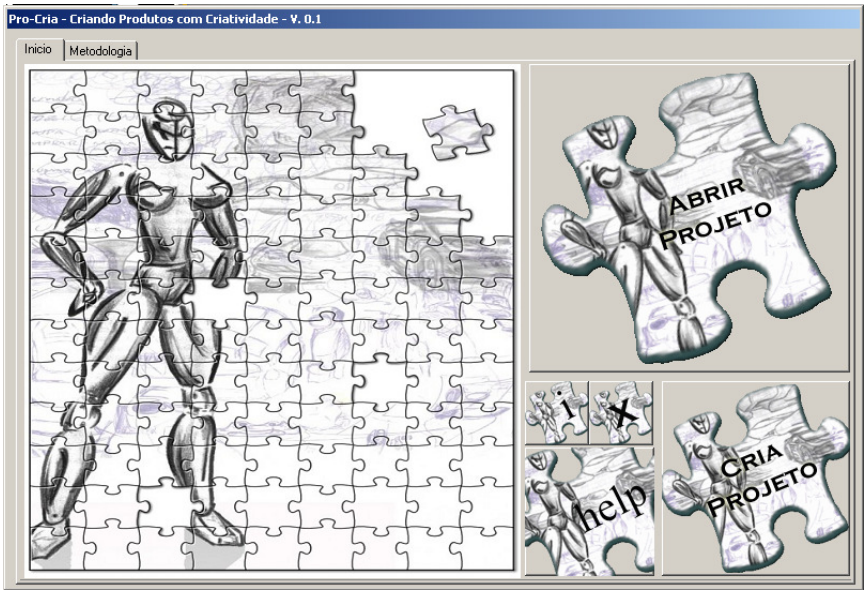


Figure 6. The presentation of the program Fast Guide of Project

Click in one of the project stages, it opens up a file with an explanation on the stage clicked "Figure 7".

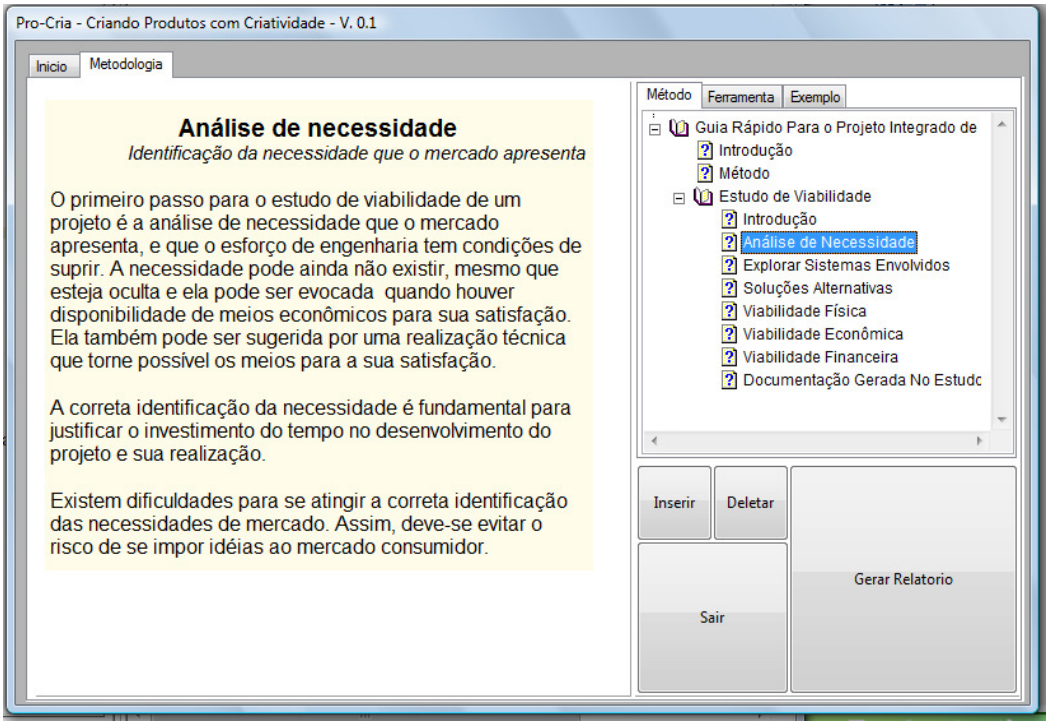


Figure 7. Explanation on the stage of the project

After, the explanation of the stage the user can opt between the following items: examples (examples are presented dedicated to toys and infantile games), recommended (it recommends the appropriate methodology for the stage and it supplies explanation and procedures for you use it) methodologies, to generate report (with the solitary information of the screen the user generates the report) and to return to the flowchart (it allows the user to pass for the following stage or if necessary it goes back to the previous stage). See, “Figure 8”.

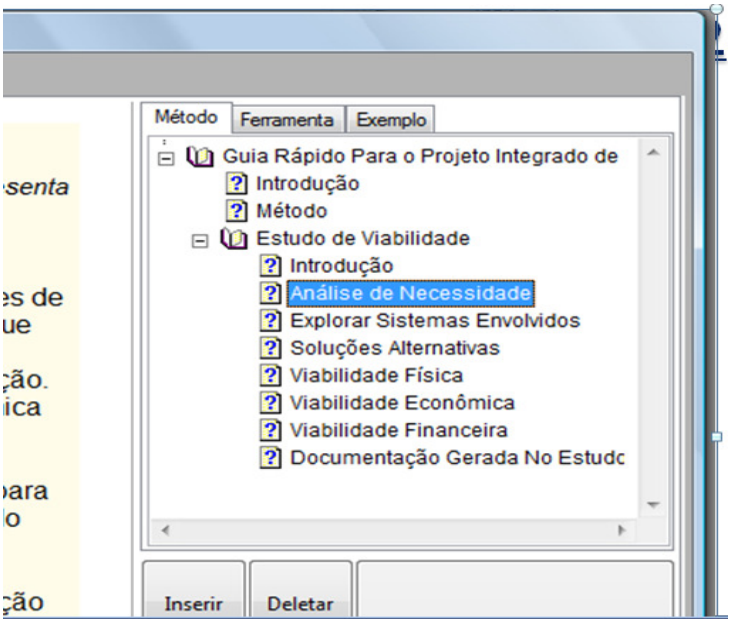


Figure 8. Document options buttons

## 3. CONCLUSION

The activity of products development consisted to little time of a single person's task, whose experience allowed to visualize the whole process of resolution of the problem. With the growing complexity of the products and their production processes, the action of projecting raisin the being function of an interdisciplinary group, where the use of

new techniques and theories are always more frequent. The job of project tools appears exactly in those complex problems where it is impossible to base just in the individual experience for the systematic development of the demanded tasks. Like this, the use of methodological tools isn´t restricted one to the development of complex projects, but it is through of those that it is noticed the need of a logical support, external to the project and that will allow the development in a systematic and efficient way.

For the creation of a project it is evident that the planner needs a great amount of information, already accumulated or the ones that should obtain of other sources. This way, to gather all these information and to facilitate the way of applying them is to it that Fast Guide of Project intends.

The own creation of Fast Guide of Project is the accomplishment of the main objective, because the structure and elements (orientations to tools and methods) of project development provide the inclusion of the industrial demands in the improvement of the product. In the field work developed in this research, with some of the largest manufacturers of products it was verified that are few projects developed, for the own industry, to create new products.

The program is simple and it makes possible the execution in any computer that uses a platform Microsoft Windows®, that is the more acquaintance and usual, as well as to be used by people with basic knowledge in project. For the creation of interface, the program Lazarus® was used, for being a friendly software for the development of interfaces.

## 4. ACKNOWLEDGEMENTS

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