

## Project Management In Industry Serra Gaucha

<sup>1</sup>Maria Emilia Camargo, <sup>1</sup>Marcia Rohr da Cruz, <sup>1</sup>Eduardo Henrique Frey, <sup>1</sup>Paulo Henrique da Cruz Braz and <sup>2</sup>Walter Priesnitz Filho

<sup>1</sup>Post Graduate Program in Management, University of Caxias do Sul (UCS), Caxias do Sul-RS, Brazil

<sup>2</sup>Federal University of Santa Maria, Santa Maria- RS, Brazil

---

**Abstract:** This study sought to identify from the Stage-Gate methodology proposed by Cooper in industry that there are similarities with Stage-Gate methodology and make the identification as in the operation of project management in company. Then from a discussion of the subject and the theoretical framework of Stage-Gate was conducted a qualitative case study with a descriptive showing how the industry performs the management of their projects. The industry studied was founded around the year 50 in a municipality of Serra Gaucha, which initially was considered a medium sized company with approximately 320 employees and a production capacity of 200 tons month of its main products used to supply sectors auto parts and agricultural machinery and implements. The data collection was carried from semi-structured interview with a manager of the company. Analyzing the data and observation of documents provided by the company could realize that this company uses a formal system for carrying out development projects and new products or new improvements in their areas and that these have a sequence that resembles the proposal by Cooper. The results demonstrates that the processes of project management when they are supported by an organizational environment that follow the definitions of the teams that lead to new systems, both in content as in organizational processes, and establish interfaces between the various levels of the organization will also assist in procedures and may serve as a strategic lever for the implementation of new ideas in the organization, they enable a better use of company resources. The projects undertaken by the company in study involve from improvements in the workplace, reducing risks of accidents at work or improving the quality of life of employees, to large changes that result in new products, improved profitability in their areas and increases the degree of competitiveness of the company.

**Key words:** Product Development; Project Management; Process Improvement

---

### INTRODUCTION

Because of the high competition in the market today, companies need to have various skills to remain competitive and stand out or before their competitors. For this to occur are necessary changes and adaptations causing the company to keep up to date about new technologies and new forms of management that arise each time with greater constancy, and the life cycle of products has been smaller with the years leading companies seek to generate new ideas and new products as a consequence.

According Davenport; Prusak (1998) this new scenario, also called new economy brings with it a new paradigm, where the micro chip is responsible for the increase in processing power every 18 months of action, while the price falls by half and thus be imposed changes that occur in succession and quickly. This makes it the technologies of the products to be lost rapidly and resulting in the decrease in the life cycle. For example, customers more discerning and better informed exert strong influence over the organizations, with the fall of geographical barriers are increasing the competition for this new economic context (Davenport; Prusak, 1998).

Therefore, and in line with what Cooper argues for the growing need for new products and new projects and they have good support in the market, Davenport; Prusak (1998) define this new paradigm as a scenario composed of: changes in technology constant and accelerated, most influential of the client, product life cycle shorter and increased competition.

For Cooper (1993) the development of new products is defined as a map is a conceptual process that guides the projects of a new product starting in the generation of ideas and being led to the launch of the product on the market.

It is perceived currently an important concern in companies with their business processes to adapt to market changes and to carry making them more competitive against the competition. It is worth mentioning the deployment of tools that can bring the improvement of existing processes and also to provide new procedures clearly formalized processes for developing new projects for new products, thus improving business efficiency and effectiveness for the cycles in development of new products.

---

**Corresponding Author:** Maria Emilia Camargo, Post Graduate Program in Management, University of Caxias do Sul (UCS), Caxias do Sul-RS, Brazil  
E-mail: kamargo@terra.com.br

Tel/Fax: +55 (54) 3218 2100.

The concern with the ways in which companies conduct development of its new products was the subject of many studies, mainly due to the high rate of failures recorded. The result of these studies is the construction of different ways to approach and systematize this topic. Among the different titles and approaches that arise from the literature of the subject area: Product Delivery Process, New Product Process, Product Development Process, Stage-Gate Systems, Product Launch System.

From these approaches, companies, experts in the area and agencies responsible for the facilitation and dissemination of methods began to propose methodologies that systematize the development of new products. These methodologies are generally composed of a conceptual model that describes all the steps of the process. However, overall the model used in the case of the subject follows the construction proposed by Cooper (1993), which defines the new product development is a process which contains different stages from the emergence of the idea until the release process product at each stage there is a point of decision about the next step of the process and this decision is the guideline for the continuation of the idea or approach.

Organizations seeking to adapt to the climate of fierce competitiveness and also to stay with differential front of your customers and especially of its competitors have chosen several practices that can bring benefits and keep them updated in relation to its administrative practices, how the activities to generate new ideas and new products.

The industry studied was founded around the year 50 in a municipality of Serra Gaucha, which initially was considered a medium sized company with approximately 320 employees and a production capacity of 200 tons month of its main products used to supply sectors auto parts and agricultural machinery and implements (company web site).

At the beginning of 2005 was sold to a multinational that is currently in its unity in Sierra Gaucha has approximately 650 employees in a factory area of 40 thousand square meters, and its business unit distributed in an area of 247 square meters. The acquisition of the company was considered a strategic location because the multinational tried to increase the productive capacity of the group in Brazil, and with this acquisition strengthened its position to meet the agricultural sector in Brazil.

The company is a world leader in its segment in both the treatment given to industrial equipment, such as aerospace, industrial urban mobility, electrical systems and components for quality, distribution and power control, air management systems for automobile engines, components for transmissions and clutches, automated systems for vehicles, system safety and fuel economy for trucks. The company has 55,000 employees worldwide and sells its products to at least 125 countries (company website).

As a result, this study sought to understand how the generation system, organization and implementation of new ideas in an industry Serra Gaucha, which has a program based on those practices disseminated by the Project Management Institute - PMI. Thus, the intention is to study the similarities between the system implemented in the industry Serra Gaucha Stage-Gate system and Cooper (2008).

### ***Literature Review:***

#### ***Development of New Products***

The process of developing new products, is generally for two main levels, where the macro level that seeks to divide the project to develop the new product in phases or stages. Finishing each phase or stage, the organization responsible for the process to conduct a review, which will be decided whether the project will result and, even if investments are held. At the second level or micro level are included the steps performed in the daily activities of the company and are performed within each phase or stage (Zangwill, 1993).

For Zangwill (1993) carrying out the process of developing new products in phases, stages of review and decision points can reduce process times by a third. For the author it happens because of that they maintain a logical sequence of steps and reviews to help constantly held that it is certain that what was planned actually happen. In addition, resume, or revisions made in the formal decision points are essential to define the sequence of the project, where the jobs that were poorly designed and could be losers in the market can be aborted from the observation of failures in planning.

Besides the aforementioned revisions made in the various stages of the project is formal confirmation that the decisions taken are effective and which undergo a thorough evaluation. This assessment is critical so that after the completion of the project and later launching the product to succeed in the market. Then, the process being carried out in phases and stages is considered as a way of defining and structuring of projects prior to the drafting of a contract between the team that will accomplish it and the company.

Zangwill (2003) presents some advantages for the use of new product development as a process divided into phases and stages, namely: the organization of the project in logical steps; possibility in case of discrepancy with the initial goal of the project is aborted ; provides moments for evaluation, review and decision making at each stage, are fixed in advance all the tasks of each stage / phase, as well as the criteria to be followed in each revision; enables people who are well prepared to conduct assessments and reviews; facilitates the anticipation of the emergence of problems of the following steps; revisions are scheduled in advance, which facilitates good

project management and, provides the involvement of senior management, and this can assist in decision making.

There are several authors who have developed work with the intention of guiding the systematization of management of innovation and new product development in companies, among them can be cited Roussel *et al.* (1991). However the most used model is created by Cooper (1993) which was the term used to describe stage-gate system.

Cooper (1994) refined the model that was initially developed by NASA for 1960, which was called Phased Review Process and served as a tool for management of contracts and supply of the U.S. space project. The process developed by Cooper also went through revisions and improvements over the years, always being incorporated into new practices from applications in P&D.

The system developed by Cooper has overlapping between the stages, which have become more fluid, teams that work directly are multifunctional, the production and marketing sectors were included in the team since the beginning of development. The intention is to make larger projects, including the entire portfolio. Projects are built from prior evaluation of the entire portfolio of the company and from that resources are targeted according to their importance.

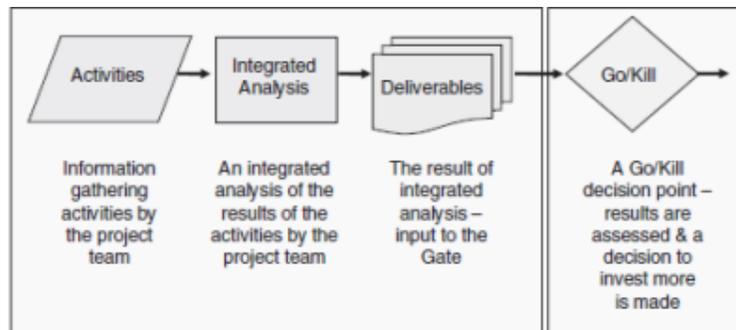
**Stage-Gate System:**

According to Cooper (2008) Stage-Gate process is a conceptual and operational map that serves to transfer the design of new products from the emergence of the idea, through the management of new product development until the time of its release always the intention of improving the effectiveness and efficiency of the process.

Cooper (2008) points out that the Stage-Gate is a system or process with a logic similar to a script for a football team. The Stage-Gate maps out what needs to be done, defines how the game should be conducted in order to obtain the victory. For Cooper (2008) the Stage-Gate is based on the premise that some projects and teams involved in the project really understand how to win the game. It reveals that the Stage-Gate was originally developed from a study that characterized the winners are (Cooper, 2004). However, many projects and too many teams miss the mark, or they simply can't run the proposed.

Cooper (2008) makes an analysis saying that if it is held that a closer examination will reveal that often the projects are plagued by new products: lost steps and activities, the organizational structure and poor leadership, inadequate implementation by, for data not reliable and, for missed deadlines. Thus, he argues that the project development teams needing help, which help may be in the form of a booklet describing the steps of how teams winning act. Cooper (2008) says that the Stage-Gate is just the primer.

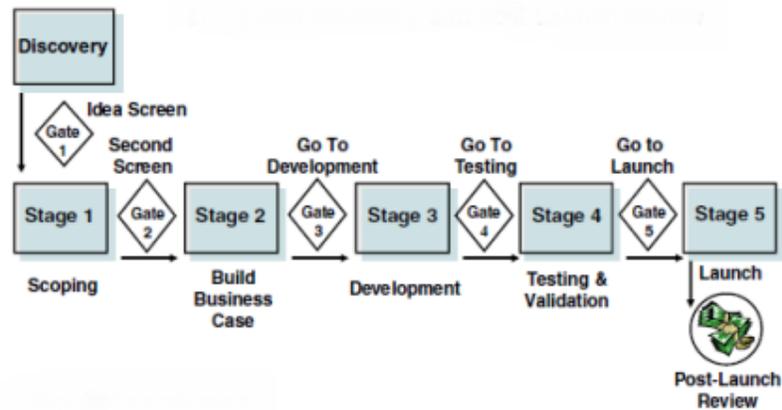
The Stage-Gate Cooper (2008) in its simplest form consists of a sequence as shown on Figure 1, the first being: a series of steps, where the project team defines the work, gets the necessary information, makes integration of data and subsequent analyzes, followed by the second stage, the gates, where decisions are made to continue to invest in the project.



**Fig. 1: Steps Stage-Gate.**  
Font: Cooper (2008)

Then the stages are defined in advance, from a set of parallel multi-functional activities to be performed. At the beginning of each stage is a decision point, where the procedures are administered, whose tasks are to control the quality of the project and the decision that encompasses the outputs.

The Stage-Gate system default presenting its main developments can be seen in Figure 2 (Cooper, 2001). The process starts with an idea of the construction phase, called discovery, and is finished with the review performed after the product launch. Cooper has three stages to the discovery, two phases preceded by a major review of the financial conditions for the development of the gate. For Cooper (2008) this model is used for the development of large projects, noting that there are shorter versions for lower risk projects.



**Fig. 2:** Stage-gate.  
Font: Cooper (2008)

**The Stages:**

According to Cooper (2008) the innovation process, or if the development of new products can be visualized as a series of steps where each step is composed of a series of activities in parallel, which are considered to be the best practices, and practices thus considered the most recommended for the smooth progress of the project to the next gate or decision point.

Cooper (2008) suggests that internships are seen as pieces in a football game with objective set out in advance and well defined, with clear targets and running proficiently. For Cooper (2008) each stage is intended to group the information with the intent to reduce major uncertainties and risks of the project, to meet the information requirements as well as defining the purpose of each stage (stages) of the process.

Another affirmation Cooper is important that in each stage, the cost will be higher than the previous one, where the process is seen to compromise a further increased number of bets. But in relation to project cost trends in each phase and step, the unknowns and uncertainties are conducted so that the risk is managed effectively.

Stages in Cooper (2008) states that the activities are conducted within stages in parallel by teams with people from different functional areas. Thus the tasks within each stage are executed simultaneously, as a team of football players in the execution of a game. So each step is considered to be multifunctional, with no research and development stages, or at the marketing stage. No department has a specific stage.

**The gates:**

Cooper (2008) reinforces that after each stage has a new gate or a new decision point, as can be seen in Figure 2. Gates is occurring in the quality control checks, the decisions of what will be prioritized and will be decided the way to be followed for the next phase of the project.

Thus the structure of each gate is similar. Cooper (2008) defined them as:

- Final results - where the project leader and his team bring to the decision point the results of a set of activities completed. These results are noticeable, due to which are based on a standard procedure for each gate, which are determined before the output gate;
- Features - these from the project is evaluated, including respect for the previously designed checklist in order to eliminate the discrepancies in the projects more quickly and, moreover, must be complied with the criteria that are evaluated and added, ie, a counting system of dots, used to prioritize projects;
- Outputs - is a decision (Go / Kill / Hold / Recycle) (continue / abort / maintain / recycle). Parallel to this Decision are implemented action plans with a timeline and committed resources that will aid approval for the next phase, and is compiling a list of products and date for the next gate.

**This is not Stage-Gate:**

Cooper (2008) and performing a new explanation of the use of Stage-Gate also made a survey of what he considered as not being Stage-Gate. For Cooper (2008) the concept of Stage-Gate seems simple, but it is amazing how some people use the wrong way. Cooper says that these people read the book and from there go on to state that it had implemented a Stage-Gate process. Cooper (2008) points out that much is already lost in translation, and, moreover, there are misinterpretations of what is written, or misapplication of Stage-Gate system.

Thus, the following are reported some of the threads, which, according to Cooper (2008) can't be considered as Stage-Gate. What Cooper (2008) argues is that the Stage-Gate is composed of stages that are multifunctional, not being dominated by a single functional area and should be a business process, not a process

P&D or marketing. Thus the activities occur in parallel rather than serial, governance is clear, with gates and criteria for decision making is efficient, the team should be run and controlled by a dedicated team leader who will command business process.

Cooper highlights that is not stage-gate: It is not a functional process phases for revising; not is a rigid superficialities, blocking or process steps; It is not a linear system; not is a mechanism to control project; not is a system of stagnation; not is a bureaucratic system; not is a schematic input data; not only is the process of delivery; It is not the same as project management and monitoring process of the Stage-Gate.

Cooper (2008) called those responsible for managing the system as guardians. These are also called gatekeepers. Cooper says that many companies find it difficult to define who its gatekeepers are. He points out that in some companies many senior managers want to be a gatekeeper, and the result is that many end up being gatekeepers. In some companies, the gatekeepers and project leaders are the same people, this is a function that executives have difficulty delegating authority to lower level people and, therefore, act as project leaders.

For Cooper (2008) to define the roles and responsibilities of governance is an important part of the Stage-Gate. Who should act in the gates are senior managers, due to having the resources needed to manage the team and the decisions to move on. However, for large projects of new products, Cooper (2008) argues that the gates should be performed by senior multifunctional from the board of directors of marketing, sales, technical, operations and finance (not just marketing or P&D). This is because resources are drawn from many departments and then the group of gatekeepers should involve providing the executives of these areas so that planning is achieved and that necessary resources are in place. Cooper (2008) also points out that a multifaceted view of the project leads to better decisions than a single functional vision.

To leave no doubt Cooper (2008) defines the functions, for which he will have the role of gatekeepers: supervise and finance the project along with the owners, managers and technical staff, on the contrary, the project leaders have the function to coordinate the project and the phases and stages, much like the captain of a football team.

## **MATERIALS AND METHODS**

The study was conducted from an interview with a manager of the company that actively participates in groups to generate and implement new ideas in the company. The survey instrument was constructed from the literature. From the identification of the steps described by Cooper (2008) was asked the manager of an industry that Serra Gaúcho recounting how this occurs the process of generating new ideas in the company. The department is under study Information Technology. This sector was chosen for the study because it is the sector of the company with the largest number of idea generation and implementation of these, and that this department is responsible for the systematization of the system used by the company and the industry is of companies that perform support to others in the process of developing new projects.

After completion of the theoretical framework which formed the basis for the systematic study and characterization of the studied company, then begins the description of the reports made by the respondent about how the company performs studied management and implementation of their projects development of new products.

The study was constructed from the case study methodology proposed by Yin (1984) because of the possibilities that this methodology offers regarding construction made from the information collected, which are focused on a specific point, which facilitates understanding of the study and detailed account of the object of study, providing thus a greater and better understanding of the reality investigated.

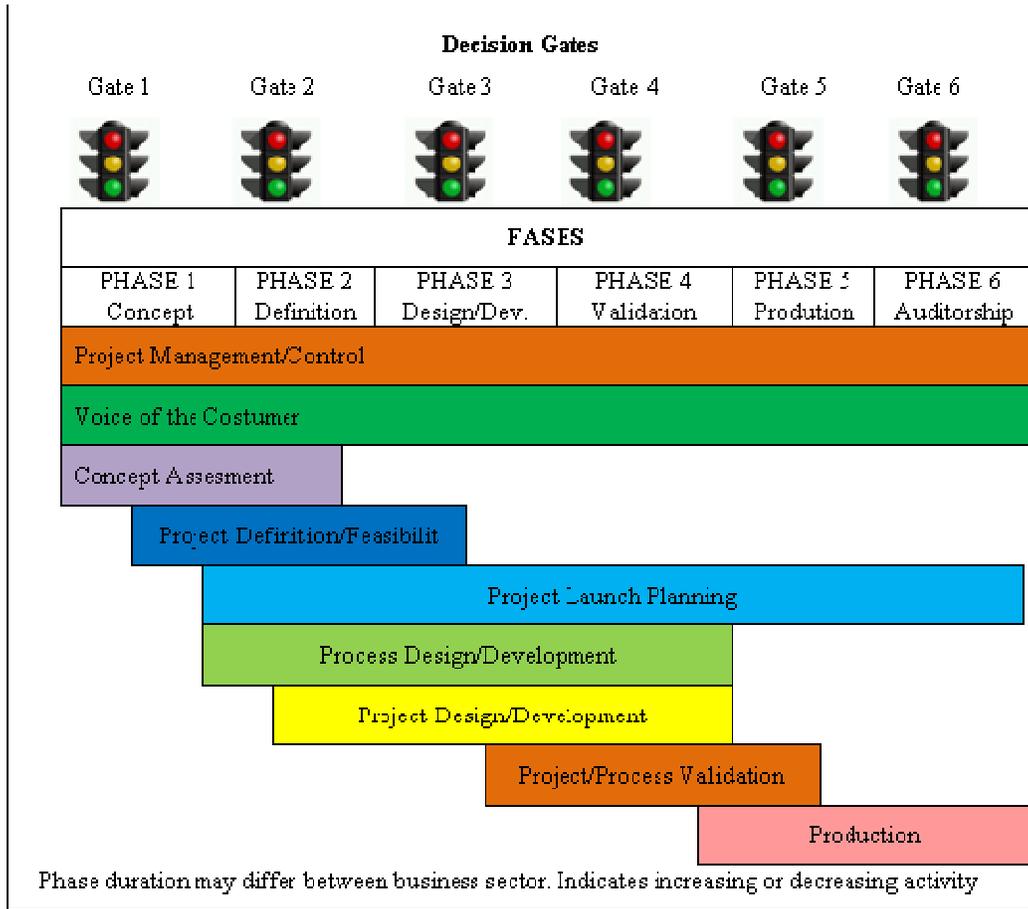
As defined by Yin (1984) to conduct the study, this is characterized as an empirical research, which investigates a contemporary phenomenon in its original context, but in conditions where the boundaries between phenomenon and context are not clearly evident, that are used for many lines of evidence. For Yin (1984) case study is recognized for being focused on complex phenomena, for maintaining the basic characteristics of the actual events in a comprehensive way, for these reasons and the characteristics of the object of study is that this method was used in this study.

The analysis of data was performed as described Yin (1984, p. 99-100), in which he reports that comprise the data analysis, the observation, categorization, tab, and in many cases, recombination evidence emerged intended to serve the original purpose of the study. So for this step in case studies, it is the suggestion that this step is built based on the resumption of theoretical propositions, followed by development and or description of the case study in order to confront the theoretical and the empirical and finish with due consideration of the study.

## **RESULTS AND DISCUSSION**

The respondent manager is responsible for managing the projects of new products the company's Information Technology department. He began his explanation of the process of the company with an example of a gate. This has shown that the company, as well as the proposition of Cooper (2008) called his system of

Phases and Gates. Figure 3 shows how the company outlined its system, whose name is preserved at the request of the company.



**Fig. 3:** System development projects.

Source: company studied

The company's systematic, set the team that will work on each project, and many members are repeated and this is because the company wants to experience being put into action, and these teams are part of the main decision makers in each sector involved in the project. The steps taken by the company as shown in figure 3 are the phases and gate "0" and "1" are conceived ideas, contextualized and defined both the appeal, which the company calls "Attractiveness (BOW) - Gold (25)" that the project will be in accordance with the expectation of the company / team and risks for the enterprise, "Risk Classification (RAW) - Major Repeater (20)" which runs in its implementation. Participate in this step, in general, the Champion (CEO of projects) and the Process Owner (manager responsible for the company in Brazil) of the company, beyond the project manager, or manager appointed to make arrangements for the completion of each project.

After the above steps, the company usually classifies their projects, define the scope, conduct meeting to present the project to the whole team. At this stage the team does what the company calls the positioning of the drawing, where you see the focus of the project. Here the manager said that people who are attending the meeting in each gate must be clear, the target to be taken by the project, which will be attacked and what should be done, so it is important the objective and scope of the project. In addition, the manager said it was important that the charge of the project know what the team should charge, what are the steps to be performed in each phase and each gate.

Next comes an account manager in relation to how the process occurs: "the methodology of the company is separated by gates that goes from the gate" 0 "to the gate" 6 "and between a gate and the other phases occur. When they occur the need for a project we did a gate "0" and this is simply to show, have a meeting to define what the need for the project is and what it is trying with this improvement project. It is a quick meeting, and then here this gate "0" to define some things as we go forward the project and see if it really is underway and the

company or high command sees this as a necessity. So there, the gate "0" we go forward, and even has some rules that we already put that gate. We now begin to classify it according to risk and attractiveness, that is, some things we already had this gate."

Then the respondent was asked who are the people who participate in this meeting and he replies: "usually, so this gate" 0 "we already have an idea who would be the DGC would be the decision-gate condition. So that DGC is usually formed by people who are connected to the area where these changes were happening and this innovation or that we want to improve. It has a sponsor, who owns the business, is the project manager, and is not necessarily a director, while below it the whole area we will also make this change and DGC managers who are related. Let's take an example, a change in the manufacturing process it is important that I not come down to the middle management. So I take senior management, departmental managers that are linked to manufacturing, engineering, IT is the part I need to change some resource is requested, for example, a human resources manager and the DGC is formed by representatives of the managerial department in here the company."

Then the respondent was asked who is responsible for determining who will be team members and he says: "this is usually done for us in the IT field we, by experience, since people define who they are and if missing someone else (leaving the company, for example) we have another scale in place. So from then on that other person becomes part of the DGC emphasizing that projects always involve other plants, it is very difficult to do small projects like we have a standard system, ie, the system was standardized computing across the enterprise, then generally are invited people from other units, including outside of Brazil and then the ideas are aligned with the outside world. So outsiders see that our project because our project is inserted in a macro context IT is set globally for the company, where all projects that are accepted are part of a portfolio, where there is a relationship between them and accompaniments are made precisely for all projects that present obstacles."

It prompted him to describe a step by step "in phase" a "is the concept phase, after the gate" 0 "be approved the concept of it is done and then you treat the objective and scope. What we put in the gate, we put in scope, the goal is a conversation not too long, we always presented with a drawing what we will do. The meetings occur at a company plant, but in many cases there are people with remote connection, not all are physically here, classes are audio conference. When the presentations are less rigorously I do not need to go through all Gates. First we make a gate "0", then a gate "2", then a gate "4", often do not need nor the gate "a" or gate "3" because the company is already a mature company. Firstweconducted a questionnaire to avoid many Gates.

The sponsor is responsible for coordinating these meetings, he manages the project. So how DCG consists of experienced people and have kow how they decide if the project moves forward or not they know the projects and know what the solutions are more likely to work out. According to him: "With this situation the project sponsor will say yes or no to the advancement of the project and makes his remarks. These things are already detailed in the gates. Then the meeting is much faster, it takes around one hour and thirty minutes, it usually happens because the components of the DCG do not question the goals and adds little in scope."

The company has an array, which sets forth that score is given for each item in each phase and or gate, and it is from this matrix that steps are taken in each project. The matrix shows each activity, from which it takes place, or fill the DCG is to be determined if all stages and all stages should be followed if they are classified according to the company as defined by a concept is already being used, where it will automatically switch to a next stage of the project. At this time the role of sponsor is essential because the success or failure of the project will depend on the decisions to be taken in each specific part, and so a hasty decision, or poorly designed can result in both reducing the time, such as failure of idea.

The matrix shows the ranking of priorities, through a score of score, which is a questionnaire that presents opportunities and risks that the company runs with the completion of each project. The questionnaire is a tool provided by the IT area, which serves to drive each gate, where in each turn of the gate must be filled out many forms with the actions to be undertaken in each phase, so the IT department is directly involved in all stages, controlling that all standards are met. The respondent reported that: "the area of IT that makes updating the portfolio and has control of all company projects. Early in the project that is working more persons involved in the IT area."

The interviewee says that from completing the matrix is perceived attractiveness of the project, where the greater the attractiveness, the higher the score. "We would have to go strictly by all the gates. The attractiveness defines how much money will be used for the realization of the project, or even be from the definition of attractiveness that can be seen that the result will have with the project, for example, how much profit you can generate change, or if may reduce some procedure that has a high cost."

When projects are undertaken with the resources already available in the company are considered low-cost example, projects undertaken by the employees themselves, without the use of financial resources beyond those that are intended to carry out business activities. The projects usually generate little income and have lower attractiveness, are called in company project Runner. For the respondent this is an example of design that does not go through all the phases, has low complexity, but involves risks.

The projects undertaken by the company involve from improvements in the workplace, reducing risks of accidents at work or improving the quality of life of employees, to large changes that result in new products, improved profitability and competitiveness for the company.

**Conclusion:**

After analyzing the data taken from an interview with the manager responsible for the field of Information Technology of the company under study, observation “in loco” and documents provided by the company could realize that this company uses a formal system for the realization of projects development of new products and new or improvements in their areas.

It could be observed also that as described by Cooper (2008) the company follows a rationale for the effectiveness of the activities in each phase and or internship. The company demonstrates that clearly defines the objectives, scope, and their intentions to each project. Projects are initiated after clearly defining the steps of the schedule to be followed and definitions built with top management.

The respondent submitted that although managers are not followed all the phases and gates in the projects under their responsibility, yet he builds all the steps and stages to present to the committee and to ensure that steps are being lost or overlooked and the justification for such attitude is that it is reduced to the possibilities of errors, or failures in projects. Besides that this attitude helps in optimization of resources and identifying new opportunities and situations for improvement.

A situation that was presented by the respondent and that is cited by Cooper is that the client's participation in projects can help reduce the time to create a new project, or even in reducing costs for its implementation. The respondent reported that there are several situations in which customers participate in committees or meetings and for decision-making.

Another similarity found between the methodology used by the company and described by Cooper is that during meetings with clients to submit a new project, the interviewee reported that uses a short presentation, do so with the intent to place the client in relation to what is being done and, if not soon tire the customer with lengthy presentations that only the client would feel being cheated. As the company has in its methodology with a clear definition of the steps that follow, the presentation of the design phases and gates, if well explained already located and let the customer-oriented in relation to the outcome of the project when completed.

The company under study showed that the organization of the phases and gates in the schedule of activities avoids loss of time for committee members and everyone involved in the projects, in addition to the schedule, which seems to optimize time, resources and activities prevents projects have tasks in excess, which would be considered an unnecessary bureaucracy.

As defined by Cooper in the activities of the guardians of the project, the project manager in the company is the person who conducts the activities from start to finish, it is he who makes all connections between the DGC is the one who leads, who calls and makes all formalisms among all involved. The interviewee noted that it needs to be aware of each gate and phase of the project and that these should be linked to other company activities.

**REFERENCES**

Cooper, R.G., 1993. *Winning at New Products: Accelerating the Process from Idea to Launch*. Second Edition. Reading: Addison-Wesley Publishing.

Cooper, R.G., 1994. Third-generation new product processes. *Journal of Product Innovation Management*, 1(11): 1-15.

Cooper, R.G., 2001. *Winning at New Products: Accelerating the Process from Idea to Launch*, 3d ed. Reading, MA: Perseus Books.

Cooper, R.G., 2004. *New Products: What Separates the Winners from the Losers*. In: *The PDMA Handbook of New Product Development*, 2d ed., ed Kenneth Kahn. New York: John Wiley & Sons, 3-28.

Cooper, R., 2008. *The Stage-Gate® Idea-to-Launch Process - Update, What's New, and NexGen System*. *Journal Product Innovation Management*. V25.

Davenport, T.H., L. Prusak, 1998. *Working knowledge: how organisations manage what they know*. Boston, MA: Harvard Business School Press.

Roussel, P.A., *et al.*, 1991. *Third generation R&D - managing the link to corporate strategy*, Arthur D. Little INC.

Yin, R.K., 1984. *Case study research: design and methods*. London: Sage.

Zangwill, W.I., 1993. *Lightning strategies for innovation: how the world's best firms create new products*, Lexington Books, New York.