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DELIVERY TIME IN PROJECT MANAGEMENT: A STUDY FROM PATENT DEPOSITS

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TITLE: DELIVERY TIME IN PROJECT MANAGEMENT: A STUDY FROM PATENT DEPOSITS

Abstract: This paper is the result of a master dissertation which identifies solutions to problems of delivery time in project management from the patent deposit Espacenet from European Patent Office (EPO). This research uses open source tools for collection and data mining, content analysis, as well as the relationship, construction of indicators among other techniques. The result of this scientific research can provide contributions to a better understanding of these solutions found and current practices of project management in conditions of the delivery time in organizations.

Keyword: Project Management; Delivery time; Patent; Patent2NET; Espacenet; Data mining

1. Introduction

The combination of delivery time and project management can leverage the achievement of goals and objectives. However, when the delivery time is crucial, effects may be observed and studied to seek improvements in project management practices, especially in the context of tight deadlines, offering practical recommendations for the resolution of delivery time problems. On the other hand, it is common to identify in the literature the number of associations and institutes that disclose practices, methods, techniques, and tools to avoid or solve problems during the project management (Patah & Carvalho, 2015).

For Shenhar and Dvir (2010), during the project management with critical deadlines, that need immediate actions, it is recommended the use of technology already used or approved, focusing only on the date of delivery. In addition to the total autonomy of the project team it must be granted to take immediate decisions and approval for a reasonable amount of improvisations, adoption of tools, techniques, methodologies, models among others to achieve the goals and the success of the project (Shenhar & Dvir, 2010).

One of the alternatives found for resolution of problems in terms of delivery time during the life cycle of a project may be found in studies (Heagney, 2016; Rutkowski et al., 2002; Saunders et al., 2004; Shenhar & Dvir, 2010; Welch & Nayak, 1992). This makes it feasible to identify potential solutions to technological problems faced in daily routines of organizations, communities and supply chains in their various expansion needs of practical knowledge (Mgbeoji, 2001) or, as a proposal, use knowledge and information recorded and published in patent basis that transfer technology and its benefits from one country to another (Mgbeoji, 2001).

This proposal to investigate the potential solutions in basis or patent deposits may break the paradigm of finding in the literature answers to a technical or managerial problem in the thousands of patents registered on the protection of intellectual property of the authors, inventors or owners (Quoniam et al., 2014).

1.1 Project Management

Project Management (PM) is considered a vital element for companies achieving the strategic goals (Sauser et al., 2009), which demonstrates a concept of leadership of interdisciplinary activities, with the objective to solve a temporary problem (Patah, 2010). It is a differential to deliver value to companies with the creation or improvement of new products and services (Kerzner, 2015). Thus, it is termed as project management “the planning, organization, direction, and control of company resources for a goal of relatively short term, that was established to complete specific goals and objective” (Kerzner, 2015, p. 3).

However, in the temporary activities or the entire project, there will always be a beginning and an end determined, which deliver the uniqueness of a product or service ((Carvalho & Rabechini Jr, 2015; Kerzner, 2015; Patah, 2010; PMI, 2013; Shenhar & Dvir, 2010), because they have distinct characteristics, uncertainties, contexts or different dimensions that make them unique (Shenhar, 2001).

Therefore, the necessary requirements to meet the delivery time in projects integrate multiple knowledge bases of project management, once the time is considered as one of the main focus of studies of project management (Söderlund, 2002). Therefore, the temporality is one of the crucial characteristics of the concept of project management. In its uniqueness and need to meet deadlines, require demands of creativity for the conclusion of activities and achieving their success.

1.2 Delivery time

One of the main reasons to manage a project is that the deadline can be met hence most of the projects have a set time (Heagney, 2016). In some scenarios, during the execution of the tasks, it may occur the non-compliance with deliveries causing the delay of the project, becoming viable the revision of the project plan, release of overtime or the reduction of the scope (Heagney, 2016).

In a study conducted by Shenhar and Dvir (2010), data were collected during15 years, in more than 600 projects and it was concluded that approximately 85% of the projects examined failed to meet the deadline and budget (Shenhar & Dvir, 2010). Another study carried out by PM Survey (*PM Survey*, 2014), connected to Project Management Institute (PMI) identified in more than 400 organizations of various segments, from Argentina, Brazil, Canada, Chile, Colombia, France, Mexico, the United States and Uruguay, that the most common problems were the lack of communication in projects (64,2%), non-compliance with deadlines and scope not defined properly (58,5%). The decrease of the term to conclude the project may cause financial loss, where the value of the money decreases over time, perhaps increasing the need for decision making and project management (Ammar, 2010).

The problem of the term is classified as strong (Hafızoğlu & Azizoğlu, 2010) e and, in some cases, shorter durations require extra resources, these cause impacts on the costs of the projects. In this definition, it may have some influence to the problems of time management that should select a mode for each activity so that the project is completed within a predefined period and the total cost is minimized (Hafızoğlu & Azizoğlu, 2010).

If the delivery time is not met, professionals or companies may lose the contract or pay any penalty, and possibly impact the relationship between stakeholders (Chen et al., 2011). However, minimize the time and cost of the project is an important issue in the competitive environment, where problems of scheduling management and allocation of resources are found (Chen et al., 2011).

These definitions and effects bring the need of performing procedures with efficient solutions (Hafızoğlu & Azizoğlu, 2010) and avoid that the delivery time impacts the progress of the project or cause some effect of multi-interruption in activities and expressive schedule management (Hafızoğlu & Azizoğlu, 2010).

1.3 Patents

A patent is a document that gives rights to production or use of a device or specific process for a certain period (Griliches, 1990) protected by patent laws (Lanjouw et al., 1998). The knowledge contained in the patent information can help and benefit from the resolutions of problems of companies, communities, public sectors or in developing countries (Quoniam et al., 2014). These records are available in various basis (in most of them the access is free), facilitating the development of research on various themes (Quoniam et al., 2014) and to meet

the growth of these records, requires the development of tools for analysis of patents (Quoniam et al., 2014).

Patent basis comprises a technical encyclopedia that provides a valuable information source of documents of patents (24). They may promote technical or managerial solutions to resolve frequently problems, because when searching such information in basis or deposits, it is possible to find records that protect the industrial property rights to inventions, product, processes or new technical solution to solve a specific problem (8).

Patents are organized by the International Patent Classification (IPC) that is a standard taxonomy developed and administered by World Intellectual Property Organization (WIPO) for the classification and patent applications (25), used by industrial property offices in more than 90 countries. The use of documents of patents and IPC facilitate the production of research due to the standardization of classification and organization of diversified technical and scientific vocabulary (Fall et al., 2003).

The research conducted by organizations and academic studies can be benefited by the use of tools of code and without cost. There are recommendations that the research on families' equivalent, bibliographical citations and advanced techniques are used to provide quality information for patents (Adams, 2012), for this, communities and universities create tools and techniques to enhance the research on patents (Ferraz et al., 2016). Having this ease of access to patent basis, tools of searches and analysis of content that facilitate research (Ferraz et al., 2016; Mazieri et al., 2016; Santos et al., 2014), there is still a lack of studies that use the information use of patents in the academic context (Ravaschio et al., 2010).

This proposal to investigate the potential solutions in basis or deposits of patents can break the paradigm to find the answer in the literature of a technical or managerial problem and find them in thousands of patents on the protection of intellectual property of the authors, inventors or owners (Quoniam et al., 2014).

2. Methods

This paper uses the methodological procedures of qualitative research, with content analysis with quantitative characteristics, which analyze results obtained on the patent basis Espacenet, using open source tools. This research has a character exploratory descriptive, with the inductive approach with the interpretation of the results obtained in the research, using methodological procedures already tested with the framework that directs the construction of search expressions, as performed by the authors Mazieri and Quoniam (M. R. Mazieri et al., 2016).

The study has methodological aspects that provide an overview of the research by means of a 'mooring matrix' (Mazzon, 1981). Based on these aspects, it was created the table 1.

Table 1: Mooring matrix

Research Strategy	Research Question	Research Goals	Techniques and Data Analysis
Bibliographical research to theoretical axes (project management, delivery time and patents) Qualitative Method Exploratory Study Inductive Approach	What potential solutions to delivery time in project management can be identified in patent deposits?	Identify the perspective of different authors about delivery time in project management; Investigate the patents related to delivery time in projects in a warehouse of patents; Identify the tools to search and analysis of content available to search for patents; Analyze the patents with potential solutions to problems involving the delivery time of projects.	Collection of secondary data on the patent basis EPO. Content analysis with free software.

Source: Authors (2017) based on Mazzon (1981), Ribeiro & Plonski (2016) and Telles (2001)

The bibliographic mapping was performed in an interface for easy understanding, enabling a consolidated view of the results found in research on 'delivery time' in project management. The authors were found by means of the software Publish and Perish and the basis of scientific papers Web of Science (WOS), with the keywords 'deadline', 'timeline', 'delivery time', 'scheduling issues', 'scheduling problem', 'project management' and 'time management'. Among other papers and books studied during professional master's in project management in Nove de Julho University, Sao Paulo, Brazil.

The definitions found were organized with a reference code to facilitate the construction of research. The use of the tool Freeplane (mental map) and the import data to the spreadsheet enabled the organization of results, as can be observed in Figure 1. The delivery time definitions were drawn from authors from different countries, journals, or scientific articles.

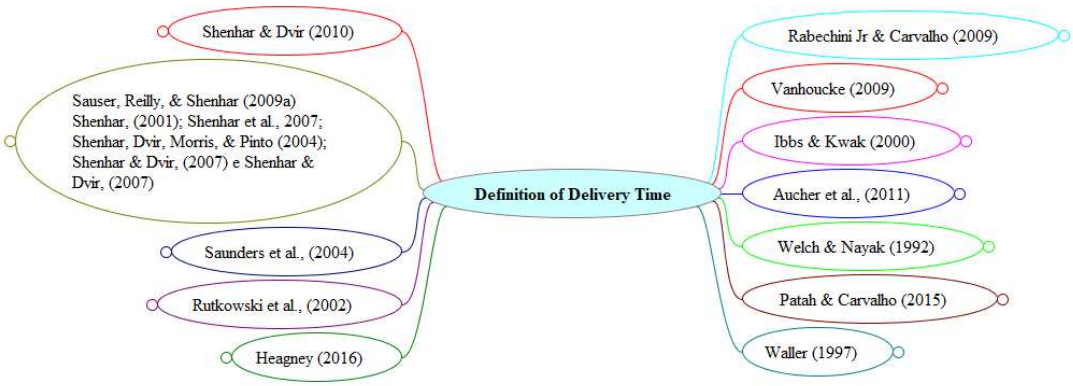

Fig. 1: First level of identification of authors about the 'delivery time'
Source: Authors (2017)

The framework (Figure 2), enabled the creation of 387 expressions of searches, with the identification of 168 repeated. However, 219 were used to proceed with the study. These initial expressions were checked by the process of analysis of ambiguity and were assembled in groups of pure expressions for later analysis and exploitation (M. R. Mazieri et al., 2016).

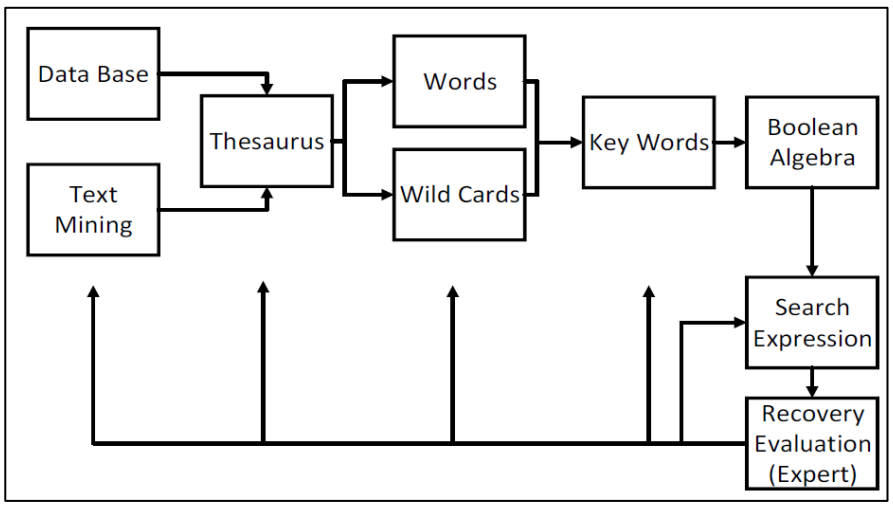

Fig. 2: Directions for construction of search expressions
Source: Mazieri et al., (2016)

When performing the procedures for collecting samples of the documents of patents, it was used the keywords in the search expression (Milanez et al., 2014). When performing a query on the basis of patent deposits, it is used the language of boolean integration that allows the realization of complex queries, making the creation of search expressions a sophisticated task for the user (Koch et al., 2011). The research uses the boolean operator 'AND' or 'OR' or 'NOT' to combine the search expressions (Koch et al., 2011; M. R. Mazieri et al., 2016; M. Mazieri & Soares, 2016; 2014).

The use of boolean operators and wildcards can contribute to a significant increase of the results (M. Mazieri & Soares, 2016). However, during the extraction of data, it may have noises that interfere negatively with the results. So, the noise should be minimized and the crawlers include data validation algorithms that try to respond to the search expressions (M. Mazieri & Soares, 2016).

The other technique used during the research is data mining that separates the recovered data into useful and useless data to the search term. At this stage, there is still some noise and it is necessary to decrease it to give more assertiveness (M. Mazieri & Soares, 2016). The process of analysis of search expressions is subject to the effects of silence and noise (Storopoli, 2016). The silence is the lack of return of results, since the noise may correspond to the terms or search expressions, but they do not have a relationship with the concept or research performed. In a certain way, different from the silence, the noise can be treated (M. R. Mazieri et al., 2016).

In according to Bardin (2011) content analysis techniques are used to recognize patterns, encodings, categories, inferences and computerization. These techniques were used to interpret the data found in this study, using practices in qualitative scientific studies (Caregnato & Mutti, 2006; Gomes Campos, 2004; Rocha Silva et al., 2005).

The patents found were analyzed with the reading of abstracts. This process permitted the exclusion of content that had no relation to the keywords searched. With the use of software for processing data to facilitate analysis (Mozzato & Grzybovski, 2011), the content has been mapped to the Freeplane software and the data were exported to a file in text format (txt). This text file was imported into a spreadsheet, with the identifier '.' (dot) and separated by columns or contexts.

During the pre-analysis stage of organization (Bardin, 2011), some data were included in the columns and headers: 'ID' (identifier of the expression or counter), 'theme of research', 'author', ' reference code', 'thesaurus', 'keyword', 'search expression', 'power of expression', 'saturation curve of research' and 'repeated' (to identify if the expression is repeated). This organization allowed for adjustments in the lines containing the bibliographic outcome on the theme 'delivery time, ensuring the organization of the data in the spreadsheet, focusing efforts on creating search expressions by the researcher.

The categorization was performed to facilitate the exploration of the material and data treatment (38). So, they were classified into three groups/corpus: temporality, exploration and project management, which will be discussed in the next section.

3. Results and discussion

With the three groups/corpus (temporality, exploration and project management), these allowed the construction of 59 lines with expressions of searches. The keywords and search expressions were organized and grouped with the boolean operator 'OR', with up to 10 terms, due to the limitation of Patent2NET and the base Espacenet. With the use of Patent2NET, the tool is instructed to stitch them, creating the master expression "((ta="project*") AND (ta="Necessar* skill*")) OR ((ta="Cris?? project*")) UNION ((ta="project?") AND (ta="Immediat* acti*")) OR ((ta="manage?? attent*")) OR ((ta="persuad* member*"))

UNION ((ta="project*") AND (ta="Actio* plann*")) OR ((ta="project*") AND (ta="split task*"))". The completed master expression, as observed in table 2 (see the appendix).

It was studied the patents that are registered by international patent classifications (IPC) and that there is a relationship with the theme of delivery time in project management. The patent records are from different economic segments and business units that address technical solutions of projects with the condition of delivery time.

It presents the number of patents collected by Patent2NET logged in EPO. It was obtained a total of 3773 patents these are consolidated in the Freeplane tool. It was permitted the creation of a mental map to identify potential solutions to the problems of delivery time and initiate the investigation. It is possible to note that is present in all areas of human technological development, as well as in sections of IPC classification. The results can be seen in Figure 3, which contains a summary of each class.

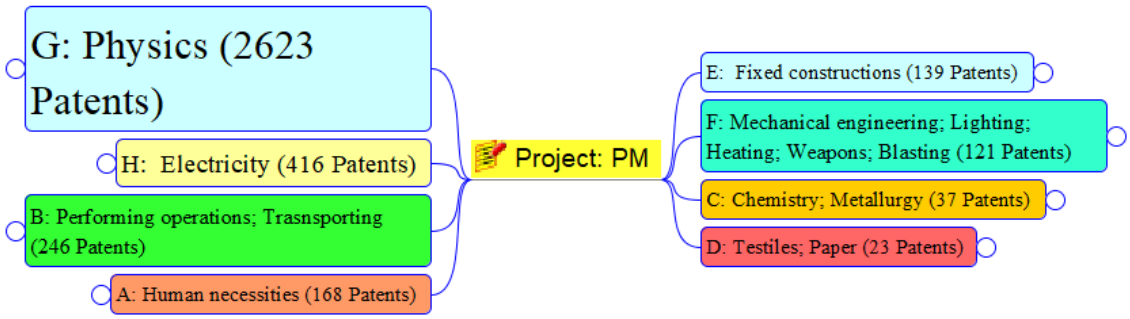

Fig. 3: Patents by IPC classification
Source: Authors (2017)

The Iramuteq software identified the frequency of words and forms (hápax), with the result of 3264 texts, 545906 occurrences, 11050 forms and 3589 unique words (hápax). The number of unique words with 0.66% of occurrences and 32.48% of forms was obtained. In addition, we obtained the mean of occurrence per text with the result of 167.56. These data are consolidated in Figure 4 and 5. The data show the frequency of the words, facilitating the decision making in the research in the identification of saturation, that is, identifying the words that repeat the most.

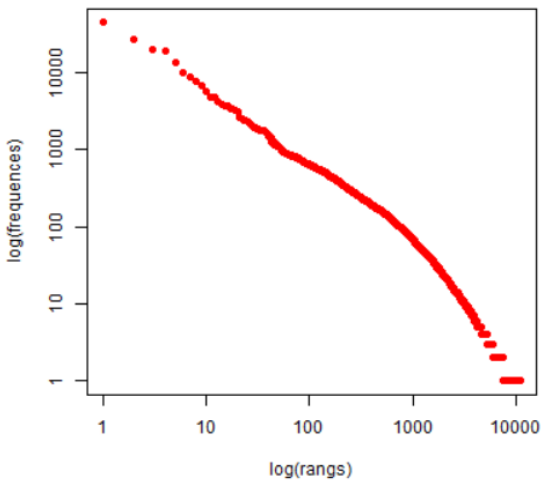

Fig. 4: Words and forms more frequently.
Source: Authors (2017)

Resumo | Actives forms | Supplementary forms | Total

Forma	Freq.	Tipos
project	9912	nom
management	5699	nom
system	4923	nom
datum	3775	nom
information	3463	nom
method	2509	nom
process	2393	nom
task	2292	nom
module	2263	nom
provide	2078	ver
user	1936	nom
time	1840	nom
base	1802	adj
include	1794	ver
device	1702	nom
work	1625	ver
control	1504	nom
comprise	1488	ver
invention	1449	nom
display	1274	nom

Fig. 5: Frequency of words and forms (hápax)
Source: Authors (2017)

The details of the words and forms that have the highest frequency can be observed in Figure 4 generated by Iramuteq. It is identified that the frequency is related to the aspects of project management, systems, methods and processes of information systems, as well as, the control and visualization of the work.

The Descending Hierarchical Classification was used the Reinert method that works with the chi-square technique (Chi2) presenting the results with graphical illustrations by word relationships. There were four classes (clusters) that are best explained below:

Class 1 (35%): the collaborative use by the user or team that uses graphical methods and systems that allow the manipulation of task management tools with readable data, as well as the status of the activities.

Class 2 (28,6%): the means of transmission is related to the way of providing information that facilitates the understanding and perception of those involved. The availability of modules can be more efficient and ensure the exposure of data with better quality, as well as the monitoring of progress in real time. The presence of engineering and technology in this class evidences the main elements that make up the class. It is verified that this class supports the construction of platforms and equipment for connection to the internet, facilitating the visualization of the information.

Class 3 (17,1%): the investigation of solutions and the resolution of problems during the measurement of the time or deadline for the activities. The way that the duration of the activity is recorded or calculated can interfere with the final result, influencing the decision making and may reflect in future changes to delivery times and possibly cause delays.

Class 4 (18,4): there is a strong relationship with the flexibility needs to adapt to the characteristics of the product, tool or system. The assembly and customization are inferred to the needs of the customer and can ensure a better user experience when modifying systems or methods.

The semantic classes identified are present in Figure 6.

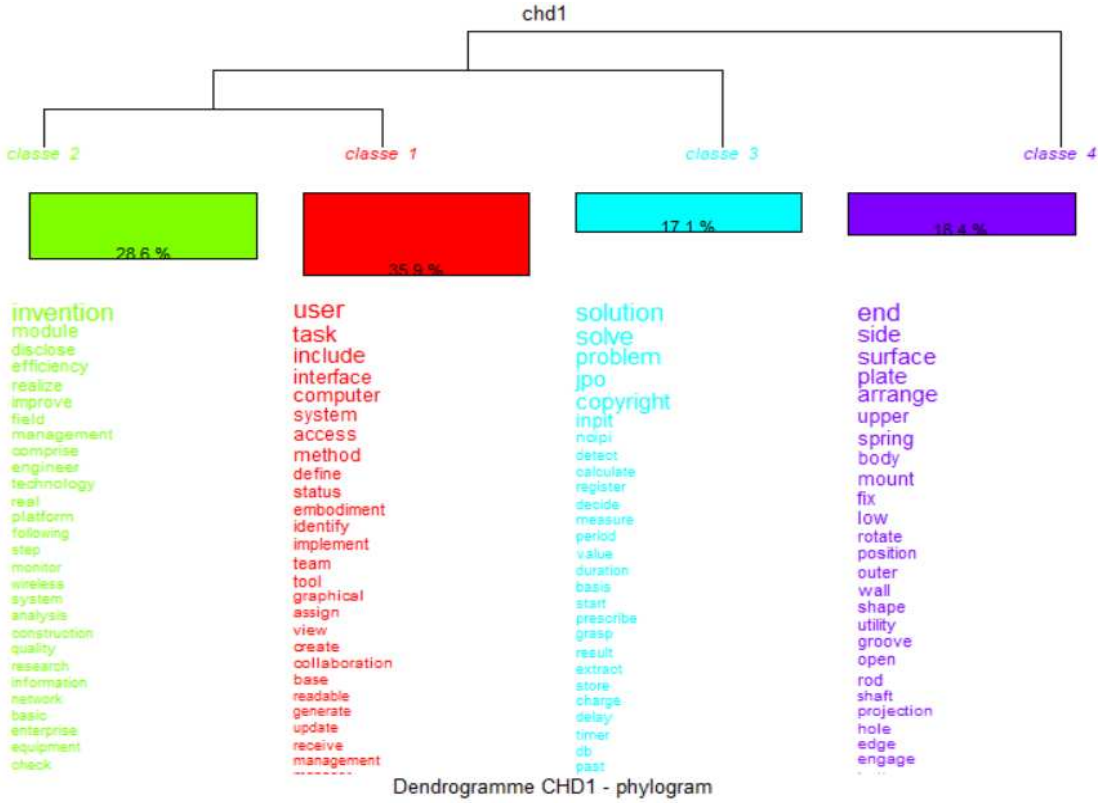

Fig. 6: Semantic classes
Source: Authors (2017)

Confirmatory factorial analysis (CFA) was performed to interpret the meaning of interlaced words. Semantic analysis separates text into classes according to vocabulary, facilitating the deep analysis of the relationship between semantic classes. It has been realized that Class 1 is associated with the handling of tools and systems that provide graphics or illustration of the information. In contrast, Class 2 is more closely linked to the means of transmission and dissemination of this information. This brings the understanding about the approximation of classes 1 and 2 that represent the usability and availability of data and information.

It was identified that Class 3 is associated with investigation and analysis of problem solutions during the measurement of time for activities. However, it is noticed that Class 4 has loose definitions, without approaching the other semantic classes, however, when interpreting them in greater depth, it was noticed the flexible characteristics for adaptation that a system must have to the business needs, allowing the customization of systems and methods. These analyzes can be observed in Figure 7.

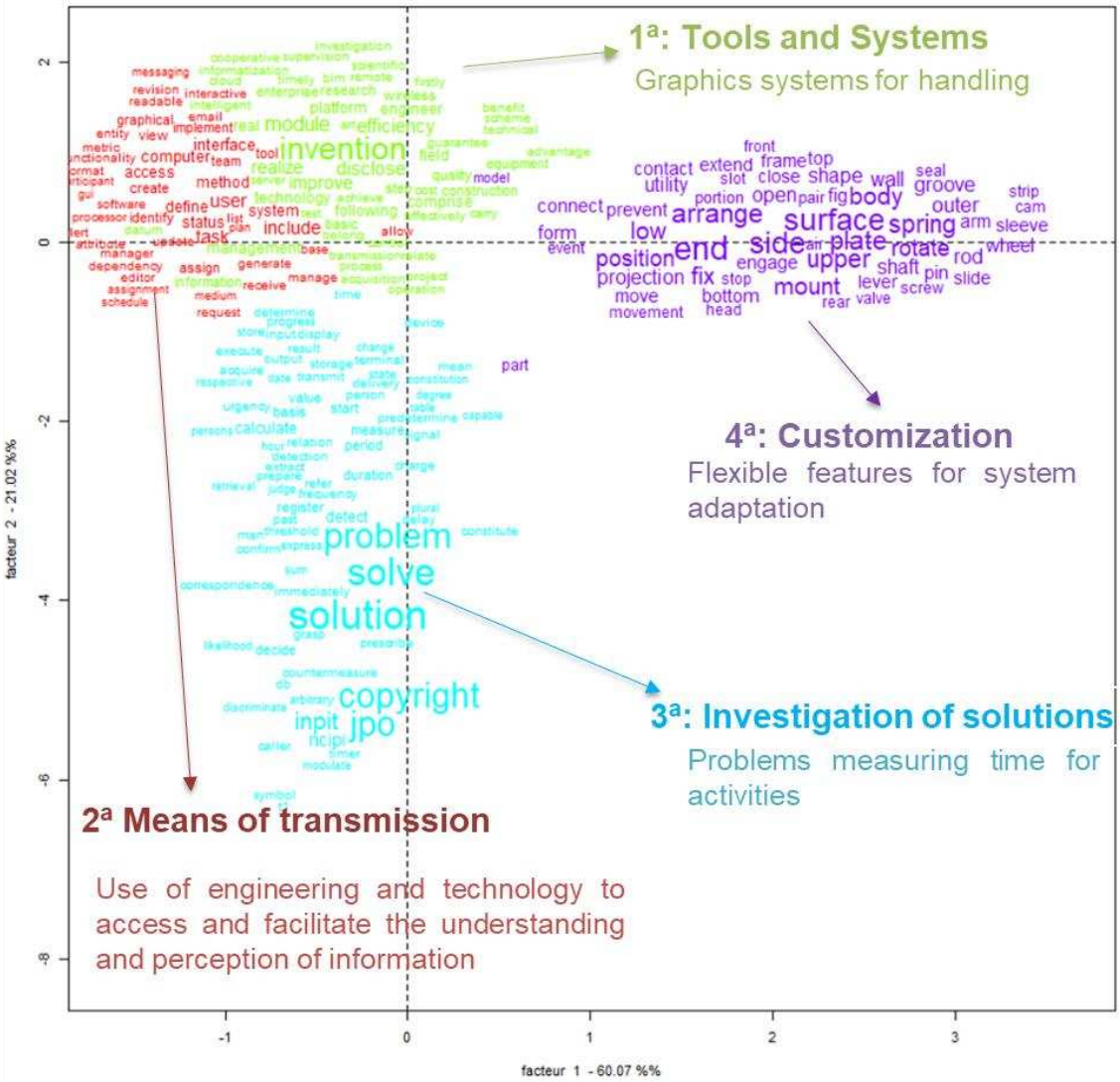

Fig. 7: Analysis of Factorial plane and the positions of the classes
Source: Authors (2017)

Similarity analysis: In Figure 8 the similarity and approximation of the words found in two semantic classes are presented. It is identified that the first semantic class contains the central word project showing a strong connection with the other words datum or date, method, and base. In contrast, the second semantic class has a strong connection to the first through the word system that interconnects with the use of network equipment and computers. This reflects the similarity between management and technology.

The Figure 8, it was also identified that the two words 'disclose' and 'invention' are distant from the others. This provides support for the interpretation of the means of disclosure. However, one realizes that the second word is out of the context of the others. It is observed that the word 'module' is between the two semantic classes, contributing with the central idea that the project management can be benefitted using systems in modules, justifying the assertive use of the communication to visualize the progress of the activities. This result can facilitate the interpretation of the results of the research, facilitating the graphical visualization of semantic classes.

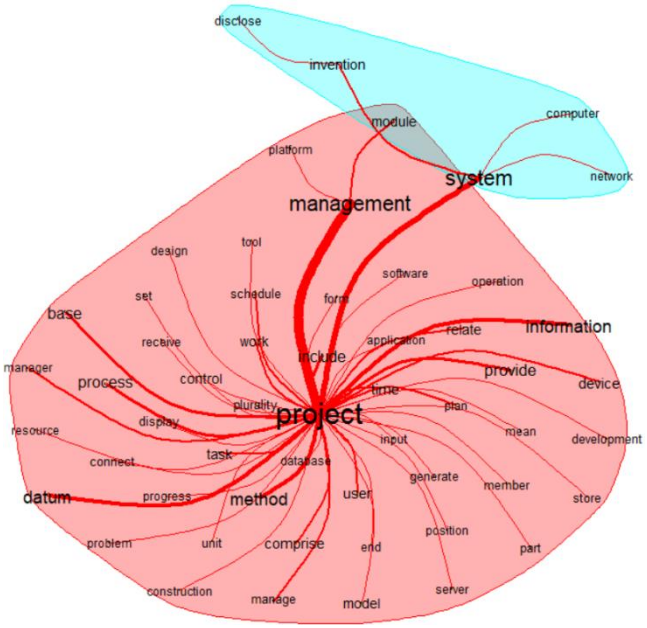

Fig. 8: Similarity analysis
Source: Authors (2017)

This study analyzes potential solutions for delivery time, however, after the abstracts analysis were selected ten patents that promote project management solutions or timeline to solve problems of time (Ao, 2015; Coulston et al., 2003; Hertel-Szabadi, 2003; Kano, Koganeyama, et al., 2008; Kano, Koide, et al., 2008; Kawecki et al., 2013; Matsushita & Narisada, 2009; Minamihama & Kobayashi, 2000; Minemoto, 2007; Takahashi, 2014). However, the study in the patent US2003233267 was deepened due to its practicality and procedural illustration by means of flowcharts.

The title of the patent is Project management, belongs to SAP, a German company in the technology segment. In its portfolio of products and services there are several business management software solutions to serve its customers.

The use of the patent can bring benefits to the project by dividing tasks and stages to control project progress. In addition, you can promote the visualization of the status of each activity or stages to the project manager or involved. Separating deliveries in stages or steps can help in detecting scope errors, identifying risks, hiring failures, vendor payments, and viewing the progress of activities and the project to achieve the expected delivery time.

Based on the patent presented, the Stages of Fixed Time Projects - SFTP model is represented in Figure 9. The use of the template can help the project manager in creating fixed time slots, from one to four weeks, and prioritize the project management by a perspective of the delivery time in stages, then the scope with the project objectives, as well as the allocation of resources and associated costs.

The SFTP model is represented in four steps. Step 1 represents the stages of time available to accomplish the project objectives up to the stage time limit, which is set to one to four weeks. Step 2 represents the project objectives and secondary objectives or requirements.

Step 3 represents the resources allocated in the project, for example, people, materials, services, among others. Step 4 represents the costs associated with the resources used to meet fixed-time objectives.

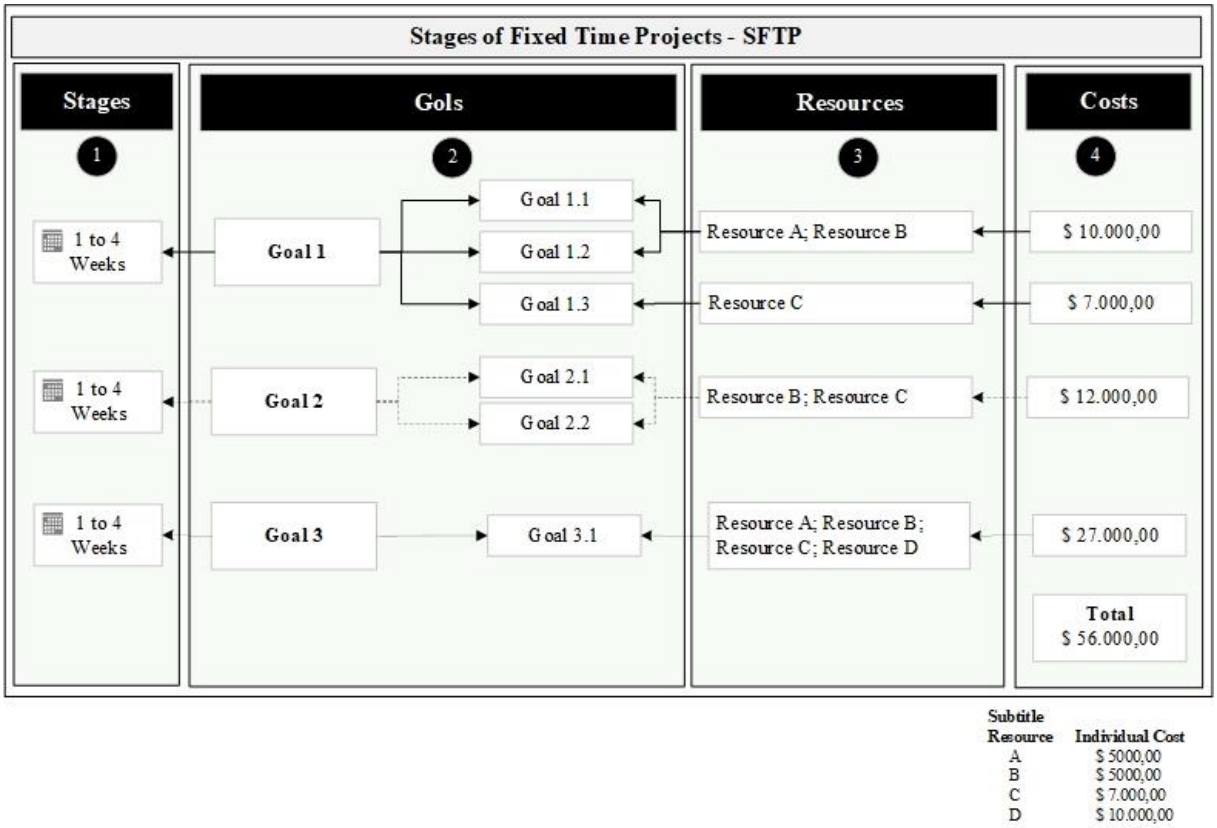

Fig.9: Stages of Fixed Time Projects - SFTP
Source: Authors (2017) based on patent US2003233267

The practice of this model can help project managers in the process of completing the projects with a defined deadline. According to the project, the number of fixed-time stages may vary, but should not exceed a minimum of one week or a maximum of four weeks. One of the benefits of this model is that the customer will receive deliveries from the project on a weekly or monthly basis and, upon receipt, the delivery will be accepted by the customer, allowing the next stage to begin.

4. Conclusion and implications

It is identified in this research that the number of patents deposited grows daily contributing to the transfer of technology and innovation to society and its countries. Currently, there are more than 100 million patents and each of them can be a potential solution to technological problems for organizations and individuals. Technological development can both motivate and can be measured in large part by the growing number of patenting records as well as the ease with which information becomes available for public consultation and no cost.

The research answered all the objectives proposed in this study, as well as the development and exploration of the identified results. The research strategy adopted, the method chosen and guidelines during the exploratory process, ensured the organization and discussion addressed. The research question ‘What potential solutions to delivery time in project management can be identified in patent deposits?'. This question directed the study and

was answered in stages by developing the research and analysis of the data received and also by means of a table with all the authors, mental map and expressions of searches.

Internet queries are available to those who have an interest in identifying potential technical solutions and can be performed by students and professionals from any area or economic segment. As an example, the identification of the results with the analysis of the abstracts allowed the selection of ten patents that promote project management solutions or a schedule to solve problems of time and the deep study of the patent US2003233267.

The Patent2NET tool is the only one that has integration with the Espacenet base, allowing the extraction of patents with potential solutions for delivery time in projects. The results analyzed and exploited allow the creation and visualization of several graphs and indicators to complete the research and encourage this practice to professional and academic researchers.

The delivery time in projects, from the technological point of view (patents), is composed of scheduling visualization systems, procedures, and time calculation processes, involving or not the probability and systems of information transmission. The information transmission system is related to the means by that project stakeholders interact by including and consuming information about the project. The fact that the semantic classes have revealed these lexical contexts demonstrates that to manage the deadline for projects, at least the existence of these themes is necessary. It should be noted that this is one of the main contributions of this research since it is not possible to find this compilation in other academic works. It was only possible by examining an expressive number of patents on the subject (3776).

Finally, we can observe the multidisciplinary of the theme. One can directly list the areas of information technology, mathematics and statistics and telecommunications. Such findings are not similar to BOOKs (PMBOK of PMI, PRINCE2 etc ...). BOOKS address management procedures and practices. In finding these four semantic classes, it is evident that there are possibilities to advance in innovative methods (especially the agile), advancing in additional research, directed to each one of the semantic classes. In advancing the aspects related to the calculations of term and flexibility, it seems possible to change the knowledge matrix about the practices of control of tasks and time present in the BOOKs. Such issues are apparently defining future research, in this case within the administration area.

This study may contribute to future research on the other problems faced in project management or internal difficulties in the organization. These intentions can promote scientific research from the information contained in the patent bases, as well as analysis of content with the tools and software presented. In addition, the researcher can explore other analytical techniques using the Gephi and Pivot table resources, thus, to deepen the researched topic or future research in the context of project management. In addition to the use of the SFTP model in projects that have the condition of deadline defined. Techniques for constructing search expressions can be used in searches for any topic or keyword that are related to technical troubleshooting. However, it is required that the researcher do the research on the definition of the topic and identify the keywords to elaborate the expressions.

The study had as a limit a single web tool as a technical encyclopedia that works as a data collector to locate patents, having a unique connection with the EPO patent base. This basis is updated daily, and the records can change automatically, and this process is not controlled by the research, because it would require the researcher to collect daily patents, making the study impossible. Another limit of the research is identified in the broad strategy used in this study in the existence of noise and another in the strategy restricted to the existence of 'silence'.

Software chained: Freeplane, Iramuteq e Patent2Net

Acknowledgements: The authors thank to Cristina Martens, Luc Quoniam, Renato Ferraz, Cristiane Drebes Pedron, David Raymond.

Appendix

Table 2 – Expression of master search

((ta="project*") AND (ta="Necessar* skill*")) OR ((ta="Cris?? project*")) UNION ((ta="project?") AND (ta="Immediat* acti*")) OR ((ta="manage?? attent*")) OR ((ta="persuad* member*")) UNION ((ta="project*") AND (ta="Actio* plann*")) OR ((ta="project*") AND (ta="split task*")) OR ((ta="project*") AND (ta="task* fulfillment*")) UNION (((ta="project?") AND (ta="Increas* risk?") NOT (ta="floor"))) OR ((ta="project management") AND (ta="Distincti*")) OR ((ta="project management") AND (ta="explorat*")) UNION (((ta="project?") AND (ta="knowledg* process*") NOT (ta="mecha*"))) OR ((ta="project? evolution?")) OR ((ta="Scarce? time?")) UNION ((((ta="project?") AND (ta="relat*") AND (ta="new? product*") AND (ta="busines*")))) OR (((ta="project management") AND (ta="relat*") AND (ta="new? product*"))) UNION (((ta="project*") AND (ta="introduct*") AND (ta="new? product?"))) OR ((ta="project") AND (ta="Measure? effect*")) UNION ((ta="project management") AND (ta="Begin*")) OR ((ta="minor task*")) OR (((ta="project*") AND (ta="introduct*") AND (ta="new? product?"))) UNION ((ta="project?") AND (ta="Subtask*")) OR ((((ta="project?") AND (ta="advantag*") AND (ta="Leader*") NOT (ta="mono*")))) OR ((ta="project?") AND (ta="Assign* priorit??")) UNION ((ta="project management") AND (ta="Executor?")) OR ((ta="project?") AND (ta="Requir* work?")) OR ((ta="Identif?? deliver???")) OR ((ta="project? failure?")) UNION ((ta="project management") AND (ta="Focu????")) OR ((ta="project management") AND (ta="Attent*")) OR ((ta="project management") AND (ta="Prioritiz*")) UNION ((ta="tempor?? resourc??")) OR ((ta="project management") AND (ta="Collectiv*")) OR (((ta="project?") AND (ta="surprise?") NOT (ta="game?"))) UNION ((ta="project?") AND (ta="intern?? project?")) OR ((ta="project?") AND (ta="Last time?")) OR ((ta="project?") AND (ta="Subgroup*")) OR ((ta="Project? deliver???")) UNION ((ta="project management") AND (ta="Fail*")) OR ((ta="project*") AND (ta="Evaluat* indicato*")) OR ((ta="project management") AND (ta="Affect*")) UNION ((ta="project*") AND (ta="Expect?? result*")) OR ((ta="project?") AND (ta="deliv??? date?")) OR ((ta="project* success")) UNION ((ta="project management") AND (ta="interest?")) OR ((ta="project*") AND (ta="Train* manage*")) OR ((ta="project management") AND (ta="Companie?")) UNION ((ta="scope? manag*")) OR ((ta="project*") AND (ta="allocat?? resource?")) OR (((ta="project*") AND (ta="actio?? taken") NOT (ta="avatar?"))) UNION ((ta="project management") AND (ta="team? member?")) OR ((ta="project management") AND (ta="Clear??")) OR ((ta="project management") AND (ta="scope*")) UNION ((ta="project management") AND (ta="Decision? making")) OR (ta="Project? leader?") OR ((ta="project?") AND (ta="Performan* measur*")) UNION ((ta="project management") AND (ta="possible?")) OR ((ta="project") AND (ta="negotiat??")) OR (ta="task* sequential*") OR ((ta="project management") AND (ta="Programm*")) UNION (((ta="project") AND (ta="event?") AND (ta="start??"))) OR ((ta="project management") AND (ta="Difficult*")) OR ((ta="project management") AND (ta="Involve?")) UNION ((ta="project management") AND (ta="complex*")) OR ((ta="project management") AND (ta="mapp*")) OR ((ta="project*") AND (ta="Increa* product?")) UNION ((ta="project*") AND (ta="time Management")) OR ((ta="project management") AND (ta="increase?")) OR ((ta="project management") AND (ta="need?")) UNION ((ta="project management") AND (ta="Activit??")) OR ((ta="project management") AND (ta="Respons??")) OR ((ta="project management") AND (ta="Techniqu*")) UNION ((ta="project management") AND (ta="Positio*")) OR ((ta="project management") AND (ta="Advantag??")) OR ((ta="project*") AND (ta="Work* schedul*")) UNION ((ta="project management") AND (ta=" Completio*")) OR ((ta="project management") AND (ta="deliv*")) OR ((ta="project management") AND (ta="organizatio??")) UNION ((ta="project management") AND (ta="member?")) OR ((ta="project management") AND (ta=" Change")) OR ((ta="project*") AND (ta="schedul* manage*")) UNION ((ta = "project*") AND (ta = urgent?)) OR ((ta="project management") AND (ta="Form")) OR ((ta="project management") AND (ta="efficient")) UNION ((ta="project management") AND (ta="value?")) OR ((ta="project management") AND (ta="Qualit???")) OR ((ta="project management") AND (ta="Different?")) UNION ((ta="Project? team?")) OR ((ta="project management") AND (ta="complete?")) OR ((ta="project management") AND (ta="Specifi??")) UNION ((ta="project management") AND (ta="Development*")) OR (((ta="project") AND (ta="event?") AND (ta="end?"))) OR ((ta="project*") AND (ta="Meet requirement*")) UNION ((ta="project management") AND (ta="task?")) OR ((ta="project management") AND (ta="model*")) OR ((ta="Project manager?")) UNION ((ta="project management") AND (ta="task?")) OR ((ta="project management") AND (ta="model*")) OR ((ta="Project manager?")) UNION ((ta="Emph* talent*")) OR ((ta="inheren* scarcit*")) UNION ((ta="Organizat* success")) OR (((ta="project?") AND (ta="Technolog*") AND (ta="Alread* use*"))) OR ((ta="Certai* commit*")) UNION (((ta="project?") AND (ta="Creativ* think*") NOT (ta="animation"))) OR (((ta="project?") AND (ta="Stimulat*") AND (ta="creative*"))) UNION (((ta="project?") AND (ta="Creativ* think*") NOT (ta="animation"))) OR

(((ta="project?") AND (ta="Stimulat*") AND (ta="creative*"))) UNION ((ta="project?") AND (ta="Conduc* Train*")) OR ((ta="project*") AND (ta="Opportunit* window?")) UNION ((ta="project management") AND (ta="Perceptio*")) OR ((ta="project*") AND (ta="market growth*")) OR ((ta="project management") AND (ta="Enough")) UNION ((ta="Temporal conflict?")) OR ((ta="doi* one thing") NOT (ta="farm")) OR ((ta="project management") AND (ta="Distinct*")) UNION ((ta="project management") AND (ta="regula?")) OR ((ta="project management") AND (ta="Wast????")) OR ((ta="project management") AND (ta="introducti*")) UNION ((ta="project management") AND (ta="Publi* work*")) OR (((ta="project management") AND (ta="Short term?") NOT (ta="water"))) UNION ((ta="project management") AND (ta="Face?")) OR ((ta="project management") AND (ta="Danger???")) UNION ((ta="project management") AND (ta="large? number?")) OR ((ta="priorit???") AND (ta="Individual? tim??")) OR ((ta="project management") AND (ta=" emergenc???")) UNION (((ta="project management") AND (ta="important*") NOT (ta="health*"))) OR ((ta="project management") AND (ta="Concent*")) UNION (((ta="war? project*") NOT (ta="ware"))) UNION (((ta="project?") AND (ta="Natura? disaster?") NOT (ta="Boulde*"))) OR ((ta="project management") AND (ta="Effort?")) OR ((ta="project management") AND (ta=Government?)) UNION (((ta="project") AND (ta = "rhythm") NOT (TA="heart*"))) OR ((ta="project management") AND (ta="market?")) OR ((ta="project management") AND (ta="appropriat??")) UNION ((ta="Improvisation?") NOT (ta="music*")) OR ((ta="project management") AND (ta="help?")) OR ((ta = "project management") AND (ta = "critic??")) UNION ((ta="urgenc???") AND (ta="delive*")) OR ((ta="project management") AND (ta="event?")) OR ((ta="project*") AND (ta="surprise?")) OR (((ta="project") AND (ta="Competitiv??") NOT (ta="projection?"))) UNION ((ta="project management") AND (ta="Mean*")) OR ((ta="project management") AND (ta="technolog???")) OR ((ta="project management") AND (ta="Effectiv*")) UNION (((ta="project?") AND (ta="around tim*") NOT (ta="led"))) OR ((ta="project*") AND (ta="Tempor* vision*")) UNION (((ta="project") AND (ta="Linear time?") NOT (ta="Optical"))) OR ((ta="project?") AND (ta="meet* deadlin??")) UNION (((ta="project*") AND (ta="allow*") AND (ta="deadlin??"))) OR ((ta="project?") AND (ta="timely manner?")) OR ((ta="Forecas* durat*")) UNION (((ta="activit???") AND (ta="first start*") NOT (ta="game*"))) OR ((ta="project management") AND (ta="timelin??")) OR ((ta="project management") AND (ta="Immediat*")) UNION ((ta="project?") AND (ta="Future tim*")) OR (((ta="project?") AND (ta="fast* respons*") NOT (ta="circuit*"))) UNION ((ta="project*") AND (ta="tim* deliver*")) OR (((ta="project management") AND (ta="product*") AND (ta="delive*"))) OR ((ta="Focus??") AND (ta="timelin??")) UNION ((ta="deadline") AND (ta="working")) OR ((ta="project management") AND (ta="delay?")) OR ((ta="promis* dat*")) OR ((ta="Activit??? complet??") NOT (ta="catal*")) UNION ((ta = "project management") AND (ta = "time")) OR ((ta="time?") AND (ta="Measure* duration?")) OR ((ta="Project? durat???")) OR ((ta = "project?") AND (ta = "deadlin??"))

Source: Authors (2017).

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