

# Knowledge Management and organizational learning University-Company

Learn to Learn

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*Abstract*— this paper has information about the elaboration process of a knowledge Portal based on the relation between university and company. During this process, a study about knowledge management technologies was done to guaranty that the knowledge-life-cycle will be present in the relation between Universities and Companies; it could be implicit or explicit knowledge. One of those technologies used were knowledge management models (we present an alternative knowledge management model focus on University-Company), knowledge maps to identify and locate the knowledge present inside the organization. Theoretically the contribution of Eduardo Bueno [1], gave us a support to set the model based on his proposed model Intellect.

The Project was proposed as a solution to the detected problems because of the lack of communication between University and Company. One of the problems that we found was social problems and others were technological problems, both of them appear as a result of the economical crisis around the world.

*Keywords*-component; Knowledge Management; Knowledge Portal; Organizational learning; TICs; University-Company; knowledge maps; knowledge management model; Web 2.0.

## I. INTRODUCTION

The Project was proposed as a solution to the detected problems, caused because of the lack of communication between university and company. One of the problems that we found was social problems and others was technological problem; both of them appear as a result of the economical crisis around the world. So, it is important to create a different way to solve this problems, identify problems and solve it in order to improve human conditions should be the principal goal inside research groups. Moreover, if company and universities united their efforts to apply these solutions, it could be an economical change.

The current crisis, produce unemployment talking about the people who had just graduate or the amount of company that become bankrupt because of the lack of innovative process, products and services that allows them to be competitive in the rising marketing. However, inside the university there are

innovative developments of products more specific inside research groups. Sadly, most of the times, these products are not use properly and became obsolete.

These products could be implemented inside companies so that they can generate innovative products and services in order to be competitive. So, the purpose of this project is divided into two different goals, they are: set a new knowledge management model (UNEM “Universidad- Empresa”, that identify the knowledge every person in the organizations has and its behavior, it means, how it knowledge is use inside the organization to generate utilities, new process or create new products and services, developing a Knowledge Web Portal supported by a robust standard (J2EE “Java 2 Enterprise Edition”), with implementation of different tools of Web 2.0, among other systems that allows the interaction between the portal users, as well as easy share information, such as, products and services of companies and research groups of Universidad Distrital Francisco José de Caldas. Based on a model that was proposed, the idea is use knowledge management to change the organizations (University-Company) minds and made they learn to learn of themselves.

Also, is important that University and companies understand the importance of communication between every single person in the organization. This Project is a technological alternative to the organizations that really wants learn to use existing resources and learn to generate strategies and opportunities to the members, talking about Universities, students, teachers and researchers [2].

Knowledge management allows manage human resources and streamline processes within the organization. It detects the knowledge and finds the way to used it for all people and then generates new knowledge. There are a tool that allows Knowledge management applies models, is known as a knowledge portal, it is a way to organize all the information in order to be presented easily to the community and also be used in the best way, improving organizational processes.

Within its functions knowledge portal allows easy communication between portal users.

A problem that we found in our research was the lack of communication between Universities and Factories. Communication must be the principal challenge inside organization who wants to apply a knowledge management model. It could be the way to learn from the organization. But also, is the way to create new innovative process.

Being the knowledge that the persons possess one of the most useful resources inside the organization and the society and a different resource from other resources with which an organization arranges (land, machinery and capital), often it is not taking into account, for this reason it becomes obsolete in certain time. That is why there is a need to manage this knowledge. But first, it is important to identify where the knowledge is and who is the owner. For that, it is important to use knowledge maps and try to do it as personalized as possible. Once the organization has a map with all the information about knowledge they have it is important to share this knowledge but also identified what is the knowledge that the organization do not have it means identify the what kind of knowledge is needed. It could be the way to improves dramatically the organizational processes.

From the university and the company perspective, knowledge is constantly developing and it is necessary to identify it, use it, adapt it and disseminate it to obtain new knowledge that can be used for the organization (both University and Factory) and the people inside this one.

Within the developing process of the portal was performed an organizational analysis at the University and Company, to determine these critics nodes, as well as actors and sources of knowledge. It was also established the role of each of the nine players with which the portal counts, it was identified the concerns of each organization to establish contact and other content for the portal. Having identified the nodes were raised following the development of the subsystems to solve the different problems found, within the subsystems are: i) registry Subsystem, ii) Storage Subsystem iii) Research Groups and Companies Subsystem iv) Aid Subsystem v) Communities Subsystem vi) News Subsystem vii) Interaction Subsystem viii) Training Subsystem ix) External Links Subsystem x) Manager of employment Subsystem.

After the subsystems raised with the help of knowledge management model and the knowledge maps, facilitating the process of bringing it to a web environment, thanks to the implementation of J2EE specification and other development tools such as PostgreSQL (base engine data), JBoss (application server), which finally allows interaction and feedback from players whom are students, teachers, director of research group, factory director, company staff, factory, research groups, students and Administrators of the portal.

It is important to understand the role of technology inside organization (Neyra, 2006) [3]. If an organization wants to be competitive need to use technology. Also it is important for organizations to understand the importance of knowledge or know what they know [4].

## II. KNOWLEDGE MANAGEMENT

### A. *KM Historical Review*

Knowledge Management is used from unmemorable times, even in the migration of the people, the different cultures and knowledge they were shared and then different cultures arose, also we see it in the debates, meetings of the people, meetings, workshops, conferences, all these are ways of manage the knowledge, the idea of this one is to do that the knowledge that the persons possess will be transferred to others by the intention of creating new knowledge [5].

Though the term of management of Knowledge is relatively new already different sources of information exist where we can find information of this one. The management of knowledge has been present in the organization during already a lot of time ago, but it was known as the analysis organizations, the difference is that the knowledge management allows us to know the company, gives us the basic points to take the knowledge that the organization has to turn into new knowledge and of this form to achieve that strategies appear to future.

The Knowledge Management is so a useful term for the organizations and nowadays all with different modalities, to be able to capture and carry out all the processes of the knowledge inside the organizations, inside these we find the Knowledge Portals [6]., without leaving behind other technologies that are implemented at present as well as mobile applications applying Knowledge Management and the production of knowledge maps for each of the users of the portal, already there exist users who alone wish specifies information, for this the knowledge maps are useful to identify that a person possesses some kind of knowledge and since this one can be transferred to another person who needs it.

### B. *KM Concept*

Knowledge management is defined ace all activities taking place inside an organization to uses, audience share, and develop the possessed knowledge by individuals within the same order that they ploughs geared towards obtaining the best aims of the organization. To implement the knowledge models we uses different tools to develop Web portals such ace the site of which we speak in this paper whose name is UNEM.

To knowledge portal is that one that establishes to relationship between people who access the knowledge and the knowledge that have been established at to steal when in the Web for the benefit of an organization.

To foster this relationship between users and portal, this latter count with the help of forums, chat, and definition, sometimes virtual communities interested in sharing and

feedback to obtain a new knowledge based on knowledge already possessed.

A knowledge portal structure must support the life cycle of the organization allowing it to be able to continue with the cycle of knowledge and finally the publication of knowledge. Therefore, a knowledge portal is an influx of information, knowledge and applications through Web.

The portals are an essential component of a knowledge management model and knowledge itself, since it is one of the means used for the transmission of knowledge that is captured through the processes in each of the models.

They come with the aim of ensuring that knowledge comes in a timely and clear to the users ones they require it in certain moment. The portals allow the user access and allow for the exchange of information.

A knowledge portal specializes itself in a topic, so that this should be dealt in depth, thus providing full coverage and led to a community of users.

In the current world of set up of new virtual companies the representation of knowledge portals is something fundamental in this step, providing a point of personalized access to optimize the power supply decisions. Not only virtual enterprises enjoy the benefits of a knowledge portal in general all organizations can deploy using them to improve productivity by innovating organizational processes.

ICT (Information and Communication Technologies), make this kind of technology very broad allowing them to be implemented with a number of tools; this concept is too wide because the knowledge management philosophy are not even institutionalized. Now with the help of ICT is not necessary that the exchange of knowledge is in person or to obtain necessary information by going to the office branch of the organization, these new technologies enable the digitization of information by making it easily accessible and allowing a easy communication through chat rooms, forums, blogs and wikis.

### C. Importance

The knowledge management is useful for all and each one of the organizations, because according to the knowledge management model which is defined the innovation of the processes is guaranteed inside the organization that will meet reflected in the increase of utilities of the organization, thanks to the optimization of the processes of knowledge.

For the implementation of the knowledge management model technology puts to our scope the tools that facilitate this process in an Web environment doing that the users of the portal could know all knowledge process, doing that its contribution to the company is every time better in terms of profit. It is necessary that the persons know the organization.

## III. DESCRIPTION OF THE SOLUTION

One interesting thing about this research project is the model that we create. In order to create the model it was

necessary made a knowledge map. It is an important tool to identify not only the knowledge that the organization has but also the one that it do not has. The map also shows the different roles inside the organization, it means that doing the map helps us to know who has the knowledge. Fig. 1 shows a resume of the knowledge map.

Once the map was done, there was necessary to create a Knowledge management model, to guaranty that the process of knowledge succeed in complete their cycle. Nonoka [7], presents the important of make tacit knowledge explicit, that is the way that process that knowledge have to do.

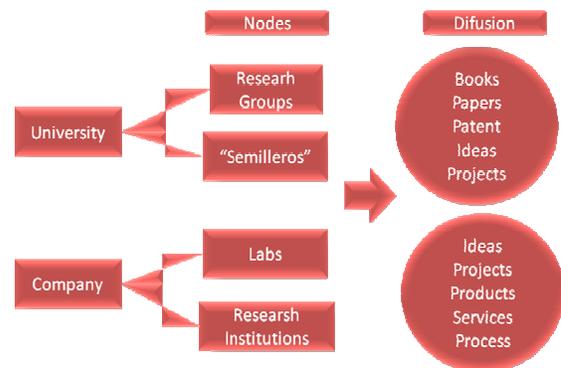


Figure 1 Knowledge Map (Resume)

Also, the knowledge portal was developed on a technological platform that was studied and considered to be appropriate for its implementation. Talking about the programming part we employed the standard J2EE because it give us a business environment and an application handles multilevel to give more safety to the application; this sort of standard handles the persistence cap, the logical cap and the cap of presentation of an independent way but each one connected with the previous one.

To handle the persistence of information we rely on the help of the Engine of Database PostgreSQL-8.1.3 that facilitates the managing of the information of the users, the portal as well as the information of the groups and the companies associated with the portal.

And finally as applications server we used Jboss-4.0.2 which supports the functioning of the application in the Web. The server is mounted on Operating system Linux.

The platform technology is necessary to implement the model of knowledge generated after the organizational analysis, the study of knowledge management in addition to the mapping of knowledge. This has a friendly user interface that allows people to put participants in the processes of knowledge and continuous creation and transfer of knowledge present in person the most important resource of the organization.

All the tools created in the portal born as a result of the knowledge model and try to solve the problems of knowledge inside the organization detected in the knowledge map.

#### IV. METHODOLOGY

In this section we will explain the methodology used for the elaboration and afterwards putting in action the Knowledge Portal to foment the relation between the University and the Company in the Electrical Sector, the general methodology is described in the following table.

TABLE I General Methodology

Stage	Description
<b>Analysis of the organization</b>	Inside this stage the organization is known, and there are identified the sources of knowledge and the nodes of the organization. It is important study the organizations looking for the organizational learning [8].
<b>knowledge Management</b>	There is guaranteed that there are fulfilled the processes of knowledge management. Inside the processes of knowledge that we find; apprehension, organization, to share, to learn, to apply, to evaluate. The necessary thing here, is to guarantee that is learned and the knowledge is applied for the approach of strategies
<b>Functional scheme - knowledge management model.</b>	In this stage the model of km appears. That must satisfy the needs of the company and allow that the processes of knowledge should be fulfilled totally. In order that the platform will be as ideal as possible.
<b>Technological platform</b>	This stage is the Model implementation of KM in a Knowledge Portal working in the Web and fulfilling the knowledge processes, doing of the organization an entity that learns constant.
<b>Implementation</b>	After the developing of the portal it is necessary to do the assembly in the Web, in order that it is used and evaluated by the direct users. In order to improve it constant.

For the elaboration of the Knowledge Management Model an analysis of the organization was realized in order to guarantees to know all the sources of knowledge inside this one, as well as the selection of the knowledge, it is necessary because there exists knowledge that odd is useful to the organization. This model is a general scheme of what must form of the application Web.

In a general way, fig 2 describes the knowledge management model, the result of analyze University and Factory. It shows the principal systems to develop in the portal, also shows the nodes or the different roles to use the portal, also the portal describe the source of knowledge inside the organizations (University and Factory).

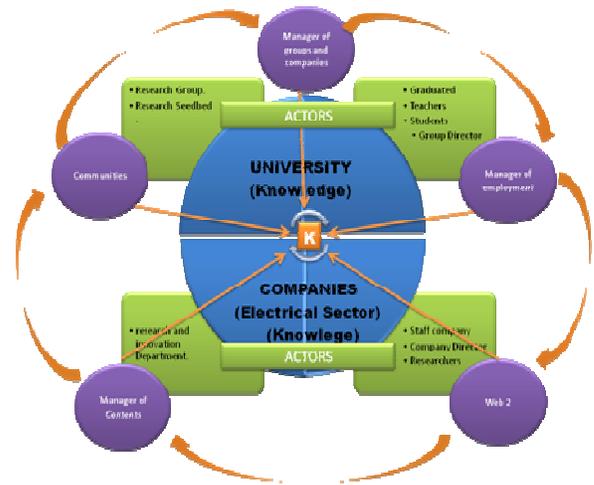


Figure 2 Knowledge Management Model

There are different models but this model is based on postulates of Eduardo Bueno (Bueno, 2004), who talk about the knowledge as an active of the organization as well as Human Capital [9].

##### A. Organizational Analysis

In conducting the analysis within the Organizational and Business University different active nodes were identified, among which are; with sub-nodes University Research Groups and Seed Research, the Electricity Sector Enterprises. The first node includes a University subnode very important for the development of the knowledge portal for Research Groups and Seed Research who are the largest producers of knowledge within the university, it is clear that within these nodes are located; students, Head of research groups or seed, faculty, alumni, we consider them as producers or makers of knowledge. The second node is detected the Enterprise around which argues the knowledge previously acquired through practice.

##### B. Knowledge Management

Inside the frame the knowledge management, persons are the most important resource of the organizations.

The most important within an application within the parameters of knowledge management is to ensure compliance with the various processes of knowledge that make this a tool for creating innovative processes within organizations that apply its principles.

Among these are: Organization, Sharing, Learning, Implementation and Evaluation. Within the knowledge organization the most important thing is to identify the sources thereof within the organization and thus able to make a classification and identification of obsolete knowledge within the organization, this process may be known as discovery of knowledge.

Sharing knowledge is the principal key in knowledge management process that ensures that knowledge is not lost, because it must be owned by each members of the organization, without running the risk that this is own of a single person, on the dissemination of knowledge makes this knowledge better.

Once knowledge is disseminated by different means (between which the portals of knowledge stand out), this should go through a learning stage, the learner must assimilate this new knowledge and apply it to ensure that the transmission of that Knowledge was a success.

As the object of knowledge management is the optimization of the processes within the organization which generate innovative models within the same, it is at this point in the process of understanding where they should strive to achieve this goal. The process that describes this innovation is the application of knowledge within the organization, with the knowledge has been gained from it, to ensure the implementation of innovative schemes to the organization, the result of the analysis of knowledge was present among the people in the organization and making it possible to satisfy the different processes.

The last step is the evaluation of performance and existing knowledge; it is worth clarifying that the processes of knowledge describing a cyclical pattern, the processes must be in continuous motion.

## V. RESULTS

The results of this project are the implementation of the Portal in the Web, which contains the information of the associate companies and the research groups of the university, besides different systems that give solution to the problems found by the lack of communication between the companies and the University.

The portal allows that the processes of knowledge should be fulfilled in a suitable way and that the creation and transference of knowledge will be in a cyclical way, guaranteeing that the processes implemented in the organizations are innovative in all the aspects. In Fig 3 we can see the results of the different subsystems of the portal. The final Portal is known as a UNEM because of its Spanish meaning (Universidad Empresa).

Currently the portal is been proved. One company of the electrical sector is helping us to prove the portal; this company is working with the “Universidad Distrital Francisco Jose de Caldas”, which is the University where we developed the project. There is a huge communication problem and with this project we are trying to solve it. However, it is a long process in which the portal is going to change according with the necessities.

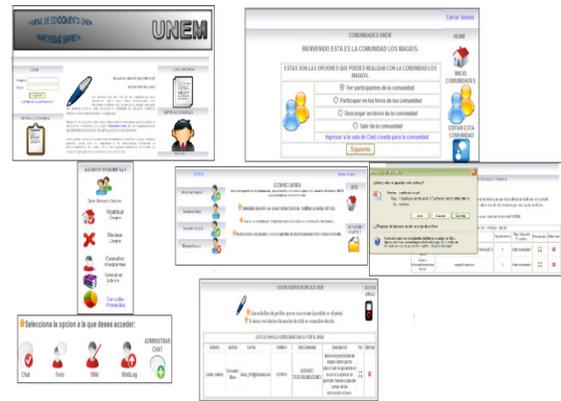


Figure 3 Project Results

This project will raise the design of a knowledge portal that allows users to interact and most importantly allowing users of the knowledge portal to access information in an easy way and search for information more effective. It portal has the following subsystems:

- Registry Subsystem: allows the management of users in the portal to facilitate the collection of contact details for them.
- Research Groups and Companies Subsystem: It allows the information management of groups and companies.
- Aid Subsystem: It allows browsing by the portal is easy.
- Communities Subsystem: The communities that allow users interested in specific issues, easily find information on this, in addition to being with others who know the subject.
- News Subsystem: Este sistema permite la comunicación de noticias y eventos a todos y cada uno de los usuarios del portal.
- Interaction Subsystem: It is one of the most important systems because it allows the permanent communication between the users of the portal.
- Training Subsystem: thanks to Moodle can be programmed courses for University or Companies.
- External Links enables users to include links of interest.

## VI. CONCLUSIONS

There is not a unique knowledge management model, because the companies internally are different, so it is necessary to do an analysis of the organization in order to know the functioning of the organization.

The most important resource of the organizations are the persons specially their knowledge, so it is necessary to find the way of implementing systems that allow that the persons

should interact in order to guarantee that the processes of the knowledge are implemented satisfactorily.

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The elaboration of the knowledge management model allows identify which are the nodes to take into account in the knowledge portal.

Wikis and blogs are very simple but also very powerful tools. If you managed it well, it could be fundamental engines in the knowledge management talking about the organizations.

It is important for organizations implements knowledge portals if they want to improve the internal processes.

The knowledge portals are indispensable in the organizations that want to improve the internal processes.

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