

The Information Flow Development Process of the International Student Reception Department at UFMG

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Abstract: The university internationalization demands of the universities an information management work applied to the internal departments involved in the institution. The main objective of this work is to contribute to the internationalization of Minas Gerais Federal University Reception Department and Welcome Program, through the development of its informational modeling flow. The way that this model was created is exposed in detail in this paper, focusing on renowned authors of the Information Science area, and consequently, in its practical development. The methodology that allowed this process was the Design Science Research. The specific objectives include proposing improvements to the internal work of the Reception Department and Welcome Program team and the International Relations Board from the improvement of processes and information flows and to facilitate the information flow process (documents, data and information) between the sector and among international students and Brazilians, with the feasibility of a direct communication channel. It has been designed manually and through a graphic software the Visual Information Flow, which was followed by a team evaluation through a questionnaire. After the results, it's been concluded that the activities will be reviewed with the team and the Information flow will be remade through a Business Intelligence software.

Key-Words: Internationalization. Colleges. Universities. Information Flow. Information Architecture.

I. INTRODUCTION

The internationalization is a complex process within a university that goes beyond the mobility of teachers, students and employees. It requires the involvement of several work teams, aimed at common goals and to connect tasks. Therefore, it is important to consider internal and external policies of the university and the institution itself. In the case of the Minas Gerais Federal University (UFMG), there is currently the International Relations Board (DRI) [20--]a, a department responsible for integrating the university on the world stage and to receive international students. The DRI is divided into departments, and interconnected with sequential and / or parallel activities. One of the departments is the study object of this paper and is the Reception Department and Welcome Program established in 2011 and in 2012 it was associated with the DRI. The Reception sector develops different actions including the support given to the international students related to documents and other formalities, after the acceptance of the student by the UFMG. Besides the process of the student's reception and during his exchange program in Brazil.

A study about the work team routine of the Reception Department and Welcome Program was done in addition to how the contact is made with the students throughout the exchange process. It turned out that the tasks, in most cases, are not automated. The data is recorded one by one

in Excel spreadsheets with large volumes of information. Therefore, you must manually search for information and documents filed in physical space. This situation hinders the work of the team and its communication with other sectors into the DRI, with the exchange students and Brazilian students involved in the program. This fact restricts the exchange of information and the contact between the international students themselves.

In this case, the Information and Knowledge Management is essential to build up an organizational environment for the activities involved in the university internationalization process. The main objective of this work is to contribute to the process of internationalization of the Minas Gerais Federal University Reception Department and Welcome Program, through the development of a proposal for modeling its Informational flow. The specific objectives are: a) to propose improvements to the internal work of the Reception Department and Welcome Program and the International Relations Office from the improvement of processes and information flows; b) facilitate the information flow process (documents, data and information) between the sector and among international students and Brazilians, with the feasibility of a direct communication channel between them; c) encourage the contact between international and Brazilian students; d) promote the process of adaptation and integration of international students into the Brazilian culture and the university community.

II. INFORMATION MANAGEMENT AND INFORMATION ARCHITECTURE

As theoretical basis of this article is the concept of information science presented by Saracevic and the concept of the information cycle of Tapanoff.

It was in the technical and scientific context after World War II, according to Oliveira (2005), when the Information Science was born. For some authors, two subjects in particular have contributed to its development: Documentation, through new concepts, and Information Retrieval, through the creation of automated systems. Among these authors, there is Saracevic (1996), for whom the Information Science [...] is a field devoted to scientific issues and professional practice focused on the problems of effective communication of knowledge and their records among humans, in the social, institutional or individual use and information needs. When dealing with these issues the advantages of modern information technologies are considered of particular interest. (SARACEVIC, 1996, p. 7).

About the information flow Taparanoff (2006) emphasizes:

The information cycle starts when it detects an information need, a problem to be solved or an area or subject to be analyzed. It is a process that begins with the search of the solution to a problem from the need to obtain information about something, and includes the identification of those who produce the type of information needed, sources and access, selection and acquisition, registration, representation, retrieval, analysis and dissemination of information, which, when used, increases the individual and collective knowledge. (TARAPANOFF, 2006, p. 23).

As for the organization of information in the context of Information Architecture, several scholars also position themselves on the processes, elements and steps to coordinate the development of an informational virtual environment, with different nomenclatures, but often having similar meanings among the definitions.

For Davenport (1998), information architects must determine what types of behavior are expected from a specific group. Individual companies have different goals change, depending on the strategy used for business and for information management. However, the author reiterates that there are three basic reasons why the majority of architectures fail in the behavioral aspect: 1) The information architects rarely considered behavior change the main goal; 2) Content is incomprehensible to most users; 3) the informational architecture development process inhibits changes (DAVENPORT, 1998 p. 204).

III. THE INFORMATION FLOW AT THE ORGANIZATIONS

The development of this work is based on the informational flows proposed by the following authors: Beal (2012), McGee and Prusak (1994), Davenport (1998) and Choo (2003). They were analysed carefully and compared to each other. the direction and path of the information was observed on each example. However, according to the reality of the sector, the flow defined by author Choo (2003) is the one that best meets the needs of the stated problem, as a reference.

In agreement with Beal (2012), the (unstructured, structured on paper or on computers) runs through a flow within the organizations, which may be generally represented by the model of Figure 1.

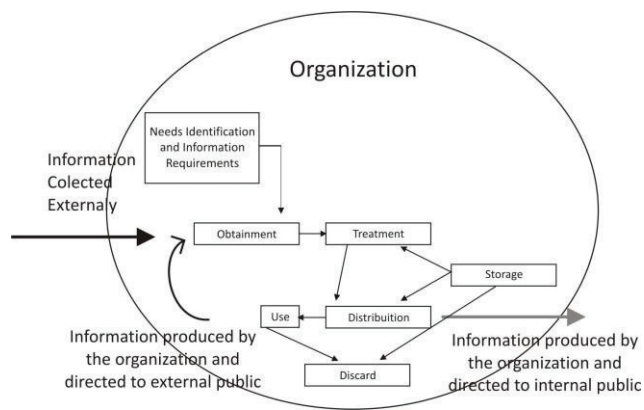


Figure 1 – Information Flow at the organizations.
Source: Adapted from Beal (2012, p. 29).

In this representation of the information flow, the needs identification and the information requirements act as part of the process starter. It's possible to establish a continuous cycle of

collection, processing, distribution, storage and use to feed the decision-making and/ or operational processes of the organization and leads to supply information to the external environment.

The organizational perspective, according to McGee and Prusak (1994, p.115), the procedures for managing information are: "1. Identification of needs and information requirements. 2. Classification, storage, treatment and presentation of information, 3. Product Development and Information Services, 4. Distribution and dissemination of information." As states by Davenport (2002, p.175), the methods are: "1. Determination of the information requirements, 2. Information obtention 3. Distribution, 4. Information use."

For McGee and Prusak (1994), a model that describes the management information should be generic for two reasons: the first is that although it can emphasize its relevance in any organization, it is equally clear that information plays different roles on each and economic organization and on each segment - on a tube mill and in pharmaceuticals, for example. Even if the information does not impose restrictions to the model, it often evidences and emphasizes the relative importance of the process.

The second reason is that different tasks within the model assume different levels of importance and value among organizations. The acquisition of new information is vital, for example, for many firms providing services and they need continually to be aware of potential customers and business opportunities, and are always facing challenges due to each new job. Using this same model, the classification and storage of information is of great importance in most financial institutions, where the customer information, records and other documents must be stored, both because of business, how to fit in the actual legislation (Figure 2).

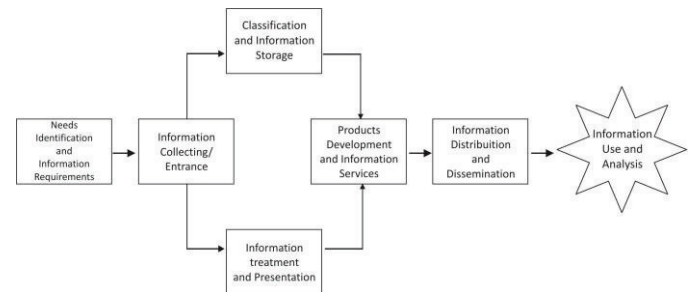


Figure 2 – Tasks of the Management Information Process.
Source: Adapted from McGee; Prusak (1994, p.108).

As for Davenport (1998), there are two ways of looking at information processes. At first, in order to facilitate the comprehension of the procedures, the author chooses to review the information processes more generally, it applies to many specific methods of information, and are described in different ways or with a different number of steps.

The other way would be to analyze more specific processes, particularly the ones that depend on information, such as market research, IT management, financial reporting and configuration of products have their places in the context of other areas, but connecting primarily to information management. (Figure 3).

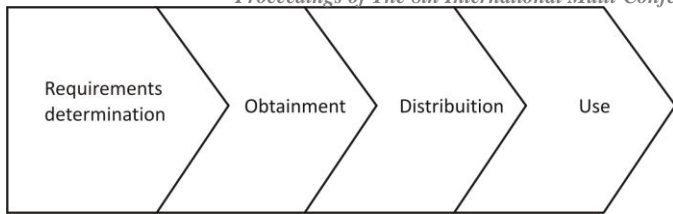


Figure 3 – The Information Management Process.
Source: Adapted from Davenport (1994, p. 175).

In Choo's vision (2003) the information management, can be seen as the management of a network of processes that acquires, creates, organizes, distributes and uses the information, resources and capabilities of the team, transforming it in understanding and insight and providing this knowledge through initiatives and actions, in order to learn and adapt to its changing environment. The vision presented analyzes the use of organizational information in terms of needs, search and use of information. This model is presented with a continuous cycle of six processes related to each other: a) identification of information needs; b) acquisition of information; c) organization and storage of information; d) development of products and information services; e) distribution of information and f) use of information. (Figure 4).

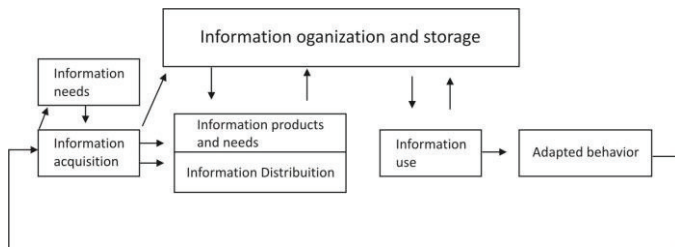


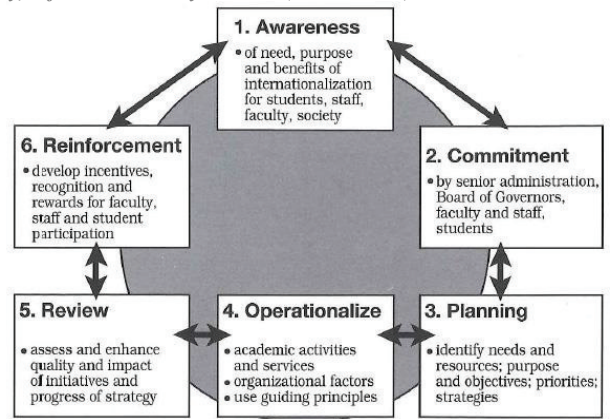
Figure 4 – Information Management Process Model.
Source: Adapted from Choo (2003, p. 396).

The result of the efficient use of information is the adaptive behavior: the selection and implementation of actions directed to objects, but that react to environmental conditions. For Choo (2003), the organization's reactions interact with the actions of other organizations, generating new signals and messages to which they must attend, keeping thus new cycles of the use of information.

IV. THE UNIVERSITY INTERNATIONALIZATION

Knight (1994) defines internationalization "as the process of integrating an international and intercultural dimension into the teaching, research and service functions of the institution." (Knight, 1994, p. 7). As said by Knight (2004), the internationalization of higher education is becoming the most important and meaningful change in the context of globalization.

Following its own pace, a higher internationalized educational institution, the cycle proposed by Knight (1994) goes through six phases, with a two-way flow between the steps:



Internationalization Cycle

Supportive Culture to Integrate Internationalization

Figure 5 – Internationalization Cycle
Source: Knight (1994, p. 12).

1) Awareness: students, administrators and work team should go beyond the awareness of the importance and benefits of internationalization. 2) Commitment: build commitment of internal leaders of academic management to the process of integration in an international dimension that goes beyond financial support. 3) Planning: to develop a strategy or plan at the right time, according to each institution. 4) Operationalize: academic activities and services, organizational factors and guiding principles, are the three most important components in this phase of the cycle. The development of academic activities and services are an essential part of this process. 5) Review: is done in two ways - by monitoring and assessing the value and success of individual activities and an annual or biennial review and the process of raising funds by the administrative units and the academic departments. 6) Reinforcement: through concrete and symbolic forms it is necessary to seek for the recognition and appreciation of the participation of the working team.

V. METHODOLOGY

The project has an applied nature research, through the development of the UFMG Reception Department and Welcome Program Information Flow, whose users are its own internal staff in order to generate knowledge with application purpose.

This research has an exploratory objective. As for the approach, descriptions were obtained in a qualitative study of the object. The data collection procedures includes literature review, observation, interview and questionnaire. There were involved in this process the sector team, international students from diverse backgrounds, UFMG undergraduate and graduate students.

During the literature review process there wasn't found any study about the theme presented on this work. It was possible to observe that most studies approach the university internationalization process in general, not a fragmented view like this, focused on the International Students Reception department. On those studies found it can be pointed out a concern by the universities to develop a wide curriculum of subjects, referring to linguistics matters and with topics about international background. Another concern is on the advertisements and

campaign to attract international students, from the moment that they arrive at the new university through the whole exchange program.

Design Science Research (DSR)

The research proposes two parallel actions: the study of the concept of the organizational flow modeling and construction of a model able to be applied to the reality of the UFMG Reception Department and Welcome Program.

From the relationship between theory and practice, in the opinion of Owen (1998), and performed literature, we propose the use of Design Science Research (DSR), as a methodology to be applied to this research. Figure 6 shows the steps of the research according to Vaishnavi; Kuechler (2004, p. 7):

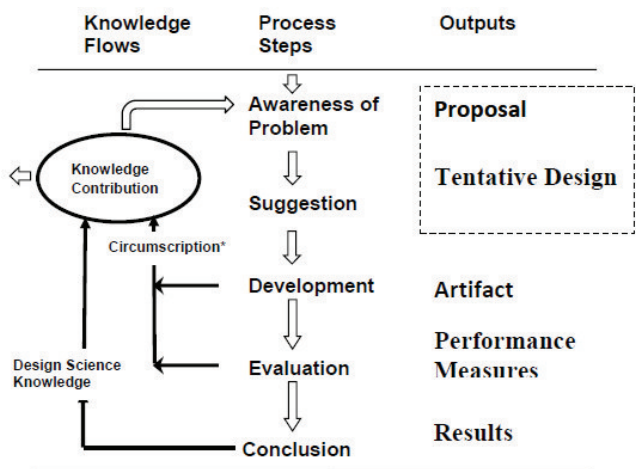


Figure 6 – Design Science Research Process Model (DSR Cycle). Source: Vaishnavi; Kuechler (2015, p. 7).

It follows the detail of each step:

Awareness of problem

We conducted an analysis of key strategic actions practiced by the industry and they were followed directly by the researcher. The observed activities included: The International Student Orientation Week (SOEI) 2016/01, the Sponsorship Campaign 2016/01, the Housing Program for International Student /Snail Project 2016/01 and some events of the Cultural Agenda 2015/02. Moreover to the proposed activities, other informations were checked in the sector report, 2015b.

Suggestion

From the data and information submitted, it has been suggested a proposal of the Information Flow of the UFMG Reception Department and Welcome Program.

Development

To accomplish this fase two technical visits were done by the researcher to the sector office. There had been an informal meeting

with three members of the team and some guidelines were defined before the design of the model was started. On the second visit it was continued to be designed and there were developed two drafts, in two stages, before the final model. The contact with the sector has been taking place since August 2015. Through meetings, telephone communication and e-mails that have occurred with the department staff. The collection of information and data occurred through undirected nonstandard interviews. All this content was essential for the development of the stages of modeling the Informational Flow that follows:

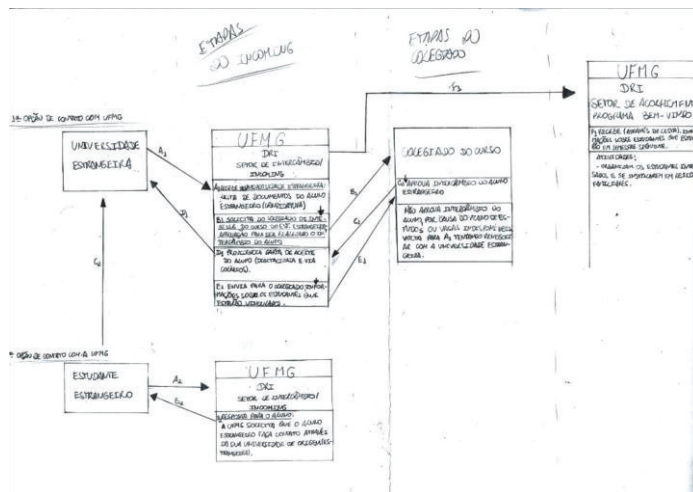


Figure 7 – Information Flow - draft/stage 1 Source: Created by the author (2015).

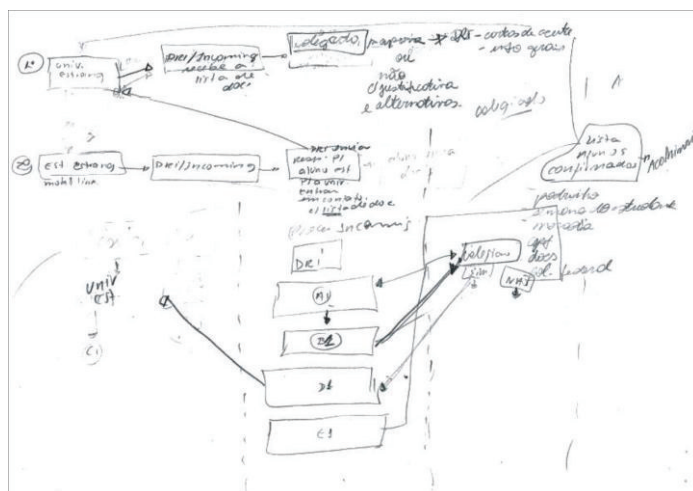


Figure 8 – Information Flow - draft/stage 2 Source: Created by the Reception Sector team (2015).

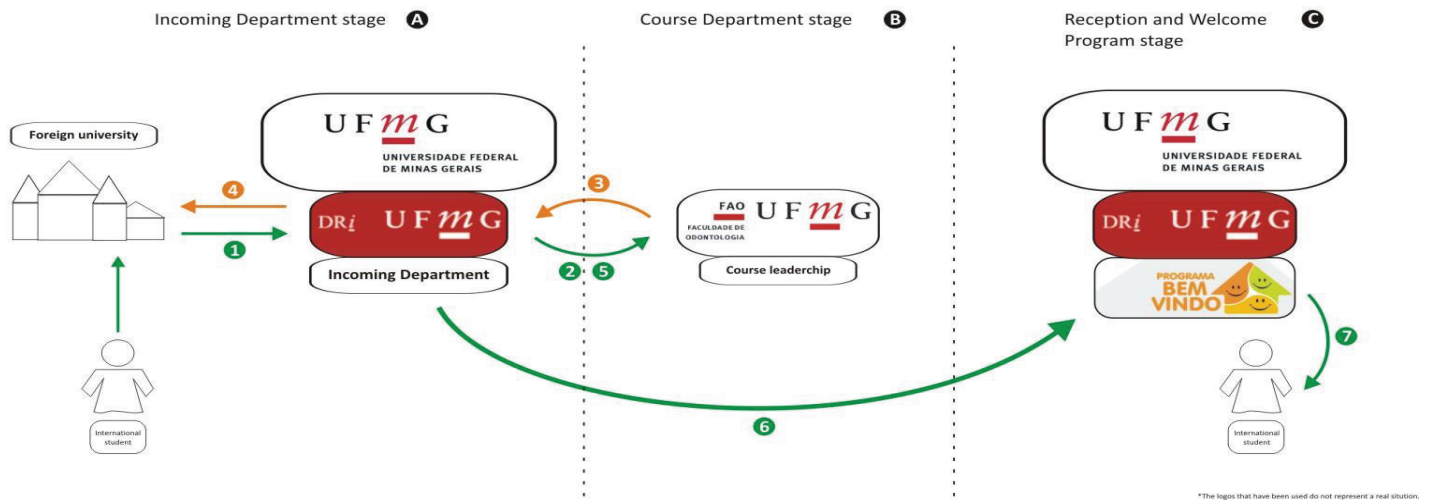


Figure 9 – Visual Information Flow
 Source: Created by the author (2016).

The Modeling of the Visual Informational Flow (Figure 9), was developed based on the graphic design skills of the researcher. It's possible to see all the activities developed by the Reception Department and Welcome Program. It displays the direction of the information flow, represented by arrows, sequential numbers, and the relationship between the parties involved. Importantly, the sector works at the same time with other internal departments of the International Relations Directory and that its activities are interconnected. Thus, the process of accepting and receiving international students is divided into three consecutive steps: Stage Incoming Sector A, Stage Board Course Department B and Stage Reception Department and Welcome Program C.

In Step Sector Incoming A: There is an institutional interaction between international students, represented by the foreign university and the Incoming Sector / DRI / UFMG. 1- Foreign University is the international student and sends its document list for the Incoming Sector / DRI.

In Stage of the Department Course B, there is an interaction between the Incoming Sector / DRI and the Course Department: 2- the Incoming Sector / DRI asks the Board course of the student's field of study, the approval of the international students' applications; 3- the Board Course approves the application of the student and communicates the Incoming Sector / DRI. 4- the Incoming Sector/ DRI provides the Acceptance Letter for the international student (scanned and sent via post) and the Foreign University (Step Sector Incoming A). 5- the Incoming Sector / DRI sends to the Board Course information about the students that will be connected to the university.

In the Reception Department and Welcome Program C, there is an interaction between the Incoming Sector / DRI and the Reception Department and Welcome Program: 6- Reception Department and Welcome Program gets through a student acceptance list information about all students who will study at UFMG in the following semester; 7- activities of the Reception Department and Welcome Program: to survey the number of international exchange students; create the Housing Program Catalog for foreign / Snail Project and assist students

interested in staying in homes with host families; Prepare the International Student Orientation Week (SOEI), which aims to pass academic and bureaucratic nature of information for students. In addition to lectures, they are offered to take Campus Tours and central parts of the city; support in obtaining the documentation required for registration at the Federal Police and instruct about getting the CPF (Brazilian Personal Certification); organize semi-annual tours sights; make and disseminate the Cultural Agenda and the weekly newsletter; promote the Sponsorship Program for international students by Brazilian students.

VI. EVALUATION AND RESULTS

An online questionnaire for the sector team, made up of 4 people was applied to evaluate the presented model. Following are the analysis of the results of the questionnaires presented in the questions:

Question 1 - To check the workplace of each employee interviewed. Do you work currently at the UFMG Reception Department and Welcome Program?

Results: 25% unanswered; 25% answered no; 50% answered yes.

Question 2 - To identify the position held of each employee. As a member of the UFMG Reception Department and Welcome Program what position you hold at the moment or you used to hold?

Results: 0% Coordinator; 0% public servant; 25% no response; 75% said intern.

Question 3 - To check the employee's working time in the sector. How long have you worked or how long did you work at the the UFMG Reception Department and Welcome Program?

Results: 0% between 1 and 2 years; 25% no response; 25% up to 1 year; 50% for more than one year.

Question 4 - The opinion about the Visual Informational Flow - ease of understanding. In your opinion, the VISUAL INFORMATION FLOW presented is easy to be understood?

Results: 25% unanswered; 25% answered no; 50% answered yes.

Question 5 - The opinion about the Visual Informational Flow - scope. Do you consider that the VISUAL INFORMATION FLOW makes it clear about the process of ALL the activities carried out by the UFMG Reception Department and Welcome Program?

Results: 25% unanswered; 25% answered no; 25% answered yes; 25% answered yes with some observations.

The staff of the UFMG Reception Department and Welcome Program was interviewed to assess the models exhibited, because the tool can be used by the team after the completion of this research. According to the results presented, it appears that VISUAL INFORMATION FLOW is on the right direction, however, as to the scope of activities carried out by the sector, there is a need for improvement. Therefore, it would be necessary to map the actions promoted by the department in more details including them in the design, with their descriptions and to redo the assessment tests with the team, in order to obtain an opinion of the positives and negatives points until it reaches an efficient model.

VII. CONCLUSION

So far, it can be concluded that the university internationalization process is complex, involving multiple instances of the institution, whether public or private, in addition to the commitment of leaders and teams involved. In the case of the Minas Gerais Federal University the Board of International Relations (DRI) and their respective departments are striving for that, in order to improve the procedures related to the information knowledge management and of related areas. The team is dynamic always formed by one public server and three interns. The tasks they do usually follow the same procedures every year. However, they have been working on improving the everyday activities as much as possible, because the amount of new students that arrive at university are around 150 per semester. However, something that limits this research, but that characterizes the dynamics of the reality of an organization and its goals, is how fast the information runs into companies and the intrinsic need for changes in their flow. It is desired by the leaders of UFMG positive growth in correlation with international institutions and providing internal services for internationalization, which goes beyond the academic mobility of teachers, students and employees. Involving research, projects, partnerships, collaborations, diploma recognition among other processes involved in increasing internationalization of the university.

After the presentation of the results for the working team it was defined that as a group the sector's activities will be reviewed and this relationship will be passed to further work. Later this process, the design of the Informational Flow will be reworked and then it will be reviewed again by the team. From its definition, we intend to apply it through in a free software of the Business Intelligence field. The choice of this tool has been under study, but its definition will depend on the development and restructuring of the Information Flow modeling. This application can facilitate the construction and future implementation of an internal informational system in the UFMG Reception Department and Welcome Program, reaching the objectives proposed in this work.

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