

# Domus: An Intranet for e-learning and e-management

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## Abstract

The Domus is a technologic platform which intends to integrate e-learning and e-management technologies, making the education, apprenticeship and administration processes more efficient. The technologies of information are, more and more, an important tool as far as the different areas of organizational intervention are concerned, so its implementation must be seen in a global way.

The introduction of technologies in Intranets related to data warehouses, also called data webhouses, allowed the development of integrated web applications, which helps the access to the information. The Domus e-management component has in basis the organizational Intranet philosophy, giving online services which allow an optimization of time and resources.

This way the Domus Intranet main objectives are:

- Develop a system that integrates information systems, e-learning, e-management, workflow and groupware technologies
- The Intranet intends to support an more efficient administration of educational resources, to implement new strategies as far as high education is concerned in Portugal

**Keywords:** Intranet, e-learning, e-management.

## 1 Introduction

The high education institutions are, similarly to the other organizations, in great instability. For the first time in the history of high education in Portugal, the supply is superior to demand as far as vacancies to universities and polytechnic institutes are concerned, what originates, before hand, not only some preoccupation but also thinking again about the educational and administrative strategies of these educational superior institutions, in favor of a qualified, modern and competitive education.

Adding to this scenery, itself very constraining, we put in perspective, and at short date, deep transformations which shall result from the implementation of instructions related to the Bolonhe Treated, which proposes changes in the

curricular organization in favor of a competitive and equal education.

So, the basis for the competitiveness, as far as the educational high institutions are concerned, are given and they must have the same economicist postulates of supply and demand law, where the quality takes the place of the price.

Having the written in mind, there are some questions to which it is urgent to give answers:

- What strategies should we adopt having in mind the competition and the quality of education system?
- What are the right models and pedagogic instruments?
- What might the implications be as far as organizational models are concerned?
- Which should the role of the technology changeableness be?

Without wanting to know before hand, any kind of solution, we ought to refer that the high education institutions must adapt themselves to this new reality of changeableness mainly as far as the strategic vision is concerned; of models and new pedagogic tools; of new administrative process; of the use of the technologic potential actually available towards the integrated informatics platforms, which help the global aims of the organization.

This way there are, before hand, four key items to witch we must pay the best attention: **strategy, organization, education and technology.**

## 2 Strategy

The institutions of high education must leave the traditional concept of mission related to educative/formative aspects and have a global philosophy supported in a strategic vision of their performances as a dynamic system with responsibilities in the employment opportunities of their students.

This way, the vision must settle in four main vectors:

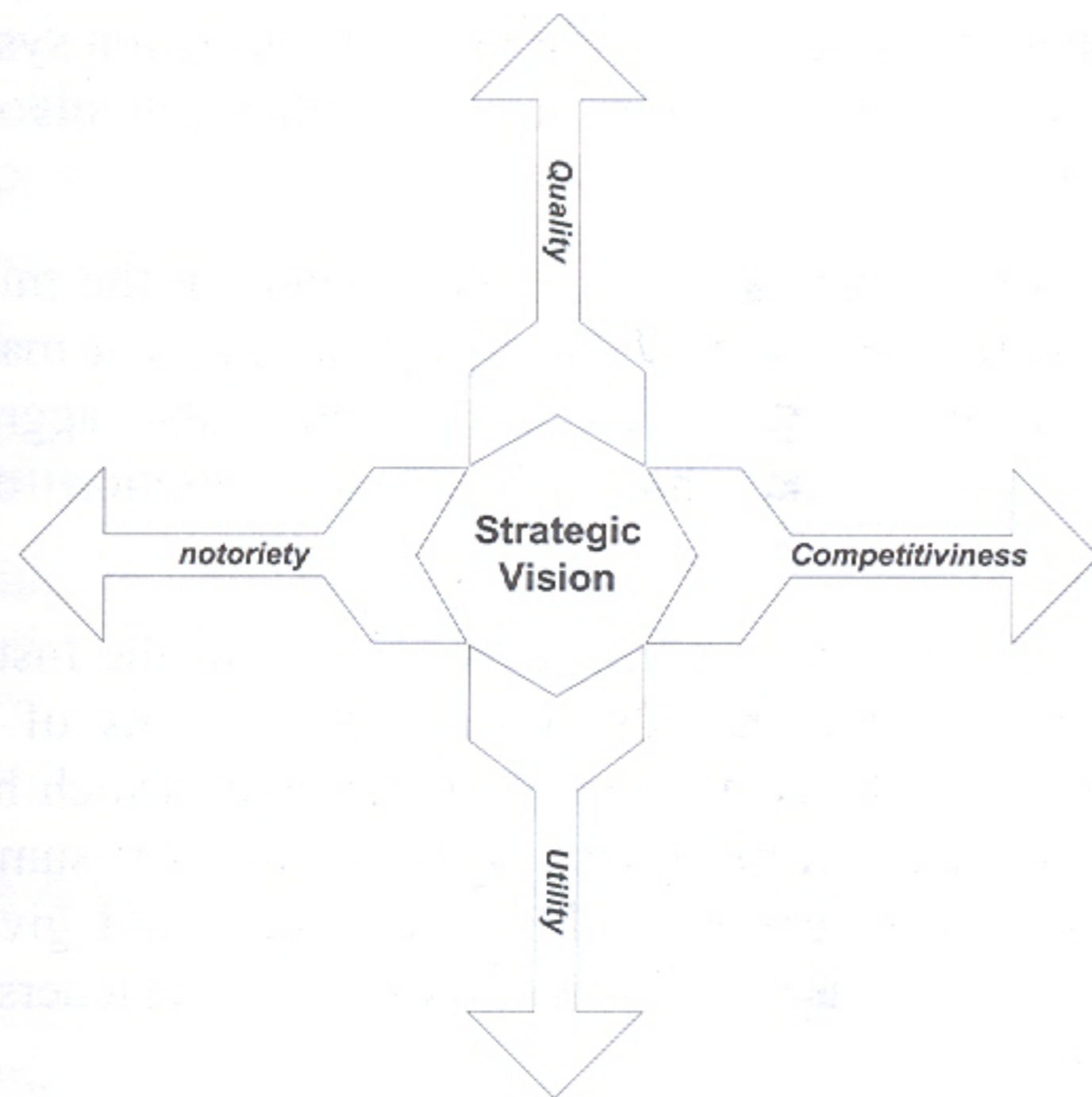


Figure 1: Strategic vectors of a high education institution.

The quality must be supported by the recognition of a series of scientific and professional competences of the graduated students by the work market.

The side of the competitiveness assumes two variants in the actual context: the competitiveness upstream of the formative process which exposes the school to find the best students that are ending the pre-graduated school, and the competitiveness at ebb tide of the formative process which claims for a bigger interaction between the school and the business tissue to increase the employment of their graduated students.

The vector of the utility shows the school necessity of being near the community by means of making services, developing projects and giving know-how and technology.

The notoriety confuses itself with the image of the institution and claims for itself the demonstration of its teacher staff scientific component, which can easily be translated in the obtaining of degrees, namely Master's and Phd degrees.

### 3 Organization

The implementation of the written strategic aspects can only be done if high schools make an effort towards the flexibility of their organization structures and at same time if they adopt a high level of information systems integration.

Traditionally, the organizations are considered to be hierarchical institutions which work under a log-haired vertical structure. The boarding to the structural aspects, used by most part of the organizations, is done having in basis the management classic theories and mainly foreseeing the construction of an organizational functions chart.

In spite of being useful in other times, this tool has no longer in use; it did not develop during times.

Alternatively to the traditional borders, the enterprises must bet in new philosophies of management which let deal in a convenient way with instability and complexity of environment. This way, Stafford Beer [1] proposes the "viable system model", where he pretends to transmit a new way for the comprehension of the organizational structures, independently from organization type and from the activity

sector where they insert themselves [2]. The high educational institutions, like the other organizations, must think their organic structures in favor of an efficient management, according to the demands of the information society.

### 4 Education

The information technologies have coming to assume an important role, as far as the teaching and learning is concerned.

During the last ten years there have been many publications about the theme of the information technologies in education and there has been the general opinion that the computer can be very useful to the learning process, because they help reflection and participation in the construction of the knowledge.

Although the recognized advantages, their use is not very common and the justification for this can be found in different points: the missing of informatic resources in sufficient number, the deficient knowledge of teachers in information technologies or even the teachers resistance as far as the changing of education paradigm is concerned.

Branson [3] presents the evolution of the educational paradigms through three models: traditional model, present model and future model.

In the traditional educational model the student receives the message from the teacher in a passive way; he does not take part in the knowledge construction.

In the present education model the teacher goes on using the acquired experiences and knowledge, but that knowledge can only be acquired by the students if the teacher gives it to them. That is what we can see on figure 2.

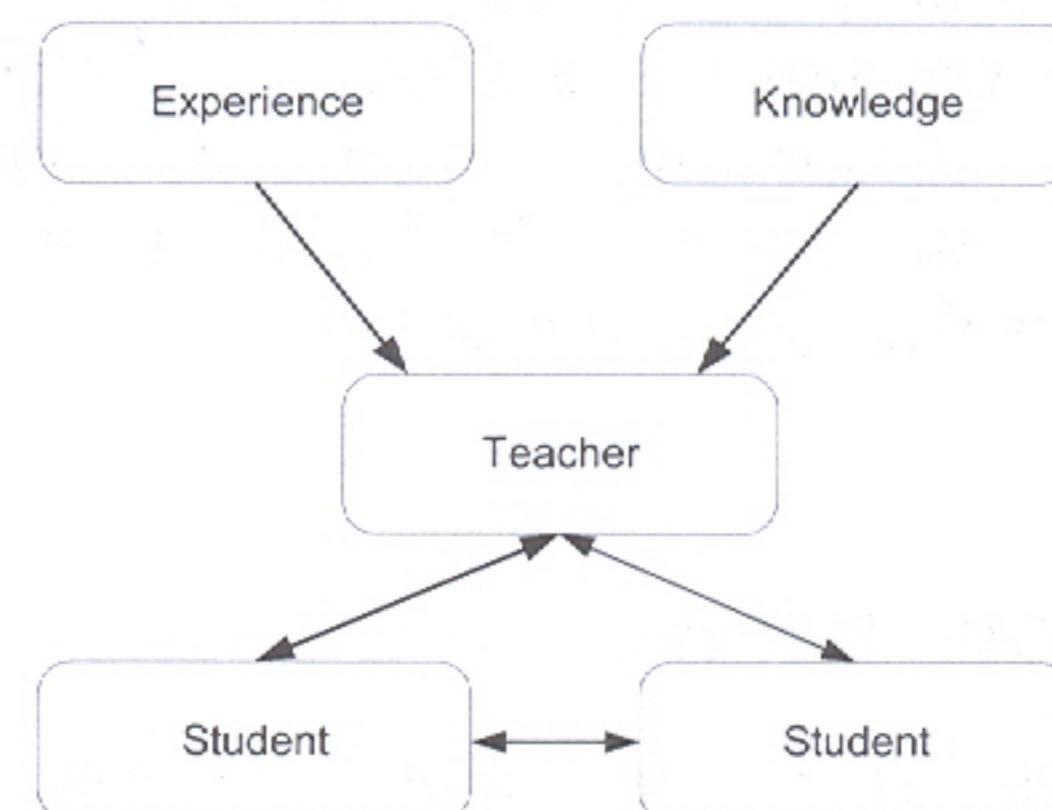


Figure 2: Educational model of the present

(Adapted from Branson)

There has been a deep accentuation in the technological development, so the knowledge changing is constant. The changing of the educational paradigm "to form for life" to "to form during live" has to be with the necessary of actualization of knowledge due to the fast technological evolution.

The educational model of the future (fig. 3), presented by Branson, suggests that the information and the management systems are the center of all educational activity.

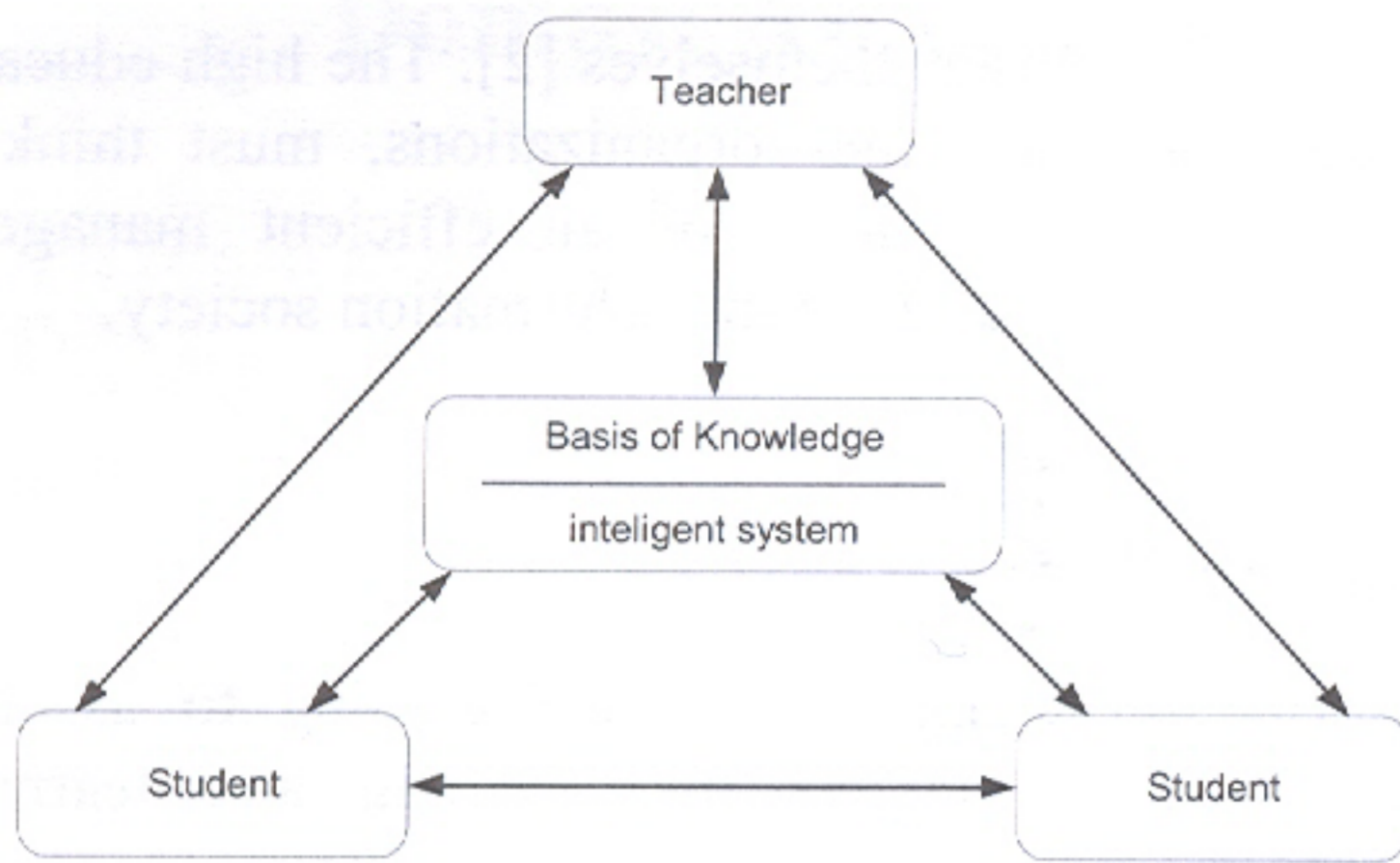


Figure 3: Educational model of the future

(Adapted from Branson)

This model is still far from being adopted and the future of information technologies in the learning process depends of that.

The development of technological platforms easy to use and very useful for teachers and students, can change the paradigm like Branson defend on the future educational model.

## 5 Technology

The society of information claims for new technologic platforms which allow the unified access to the different informatic applications of organization.

Actually the Internet and the assemblage of services around it, forms a universal standard. So the organizations are themselves obliged to see again their information systems, with the objective of making the access and partaking of their inside information easy, as well as the integration of heterogeneous applications [4]. This was, certainly, the main presupposition which was in basis of the informatic platforms that are today recognized as organizational Intranet's, which in educative context may allow the integration of management applications with the technologic tools of support to the pedagogic activities.

## 6 Intranet Domus

Taking as case-study the reality of Escola Superior de Tecnologia e de Gestão de Bragança (ESTIG), it can be checked that its structure has the course/department type centralized in the relational division of human resources, namely teacher staff, but not efficient as far as extra-curricular functions management are concerned, like: Investigation and services.

As far as the component of information system is concerned, the school has an assemblage of informatic applications that, although its utility, were thought in a separated way, as an attempt of giving answers to the necessities of the day-by-day organization.

This scenery of evolution, as far as the information systems is concerned, is very common in many other schools of high education.

The informatic applications are like islands in the middle of the information systems of the organization, what makes the integration of new application modules, the aggregation vision of data, and the difficult of adoption of new technologies.

After a study done in the operative context of the Institution, it can be conclude that the informatic systems of ESTIG considers a small assemblage of applications which help the process of make timetables, management of summaries, registration of expenses of the cost centers and giving the information about evaluation of the teachers staff performance.

The Instituto Politécnico de Bragança has an information system which integrates the modules: Personal, stewardship, treasure, accountancy and academic services which have the responsibility of the Institution global management.

The changing of information between the management organ of schools and the central organization is not always efficient, that is why it can be oportune to promote a high level of information decentralization without damage of the data and human resources. These were the premises which were in basis of Domus.

To solve this problem, a new information system was done, having in basis the Intranet philosophy which will allow a better storage, making up and diffusion of all the information of ESTIG, in a technological unified plataform.

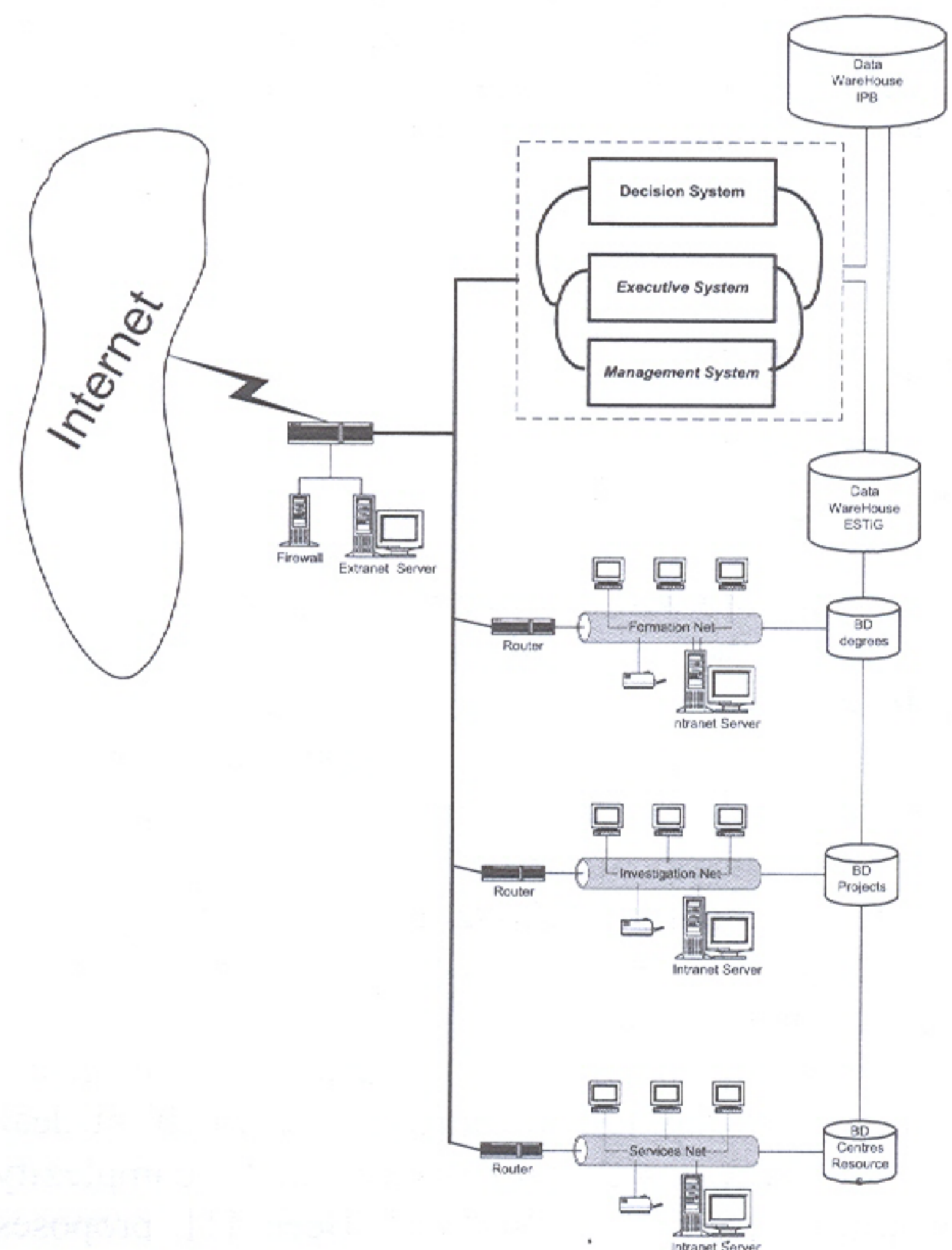


Figure 4 – Technological architecture of Domus Intranet

The ideal Intranet had in basis a structural perspective of organization and it was developed according to the Stafford Beer's practicable model systems.

The VSM-ESTIG considers three systems of level 1: Formation; investigation; services which are administered by a management system that supports the executive activities by the administrative staff and thought under strategic systems.

According to this point of view, the definition of useful informative systems to the organization objectives was done.

## 7 The e-management platform

In e-management platform there is the assemblage of informatic applications and services directed to the administrative and decision processes of the Institution.

To the different courses, investigation projects and services it is added the human and logistic resources which are registered in a database by means of applications of the type data processing.

The specific database of each centre converges to a data warehouse, from which the integrated applications of the management information systems are implemented. The support applications to the EIS-Executive information system and the applications DSS- Decision support system are also implemented.

Side-by-side with these applications, the information school system must also integrate a series of information services which help the inside communication by means of the information flux automatism. In this case the available applications are from the easy documents exchanges by e-mail to the modern tools of groupware and workflow management.

In this moment the Domus Intranet has a mix of management and decision information system which allows a better budgetary control and a rigorous affection of costs to the different sub-systems, process and institutional actors.

## 8 The e-learning platform

The development of the access portal to the central management services will dispose all the functions which dispersed in the different applications.

Beyond the referred functions, the Domus portal must also dispose an assemblage of information and didactic services under the web technology which allow the implementation of e-learning and semi-presence learning models.

By the time of Domus e-learning construction, in 1999, there were not many informatic platforms of e-learning. But each case is a case and there are solutions for some realities that do not fit in other realities. These presuppositions justify the conception of a new e-learning platform with specific

features, according to the context in which it is going to be installed.

Compared with other well-known platforms like WebCT and Learning Space, the platform may have the following advantages:

- The complete interoperability with other platforms, by exporting contents in a HTML or XML standard. This feature promote the interoperability and the reutilization of contents
- Fast way of contents publication through the integration of Web Explorer with the Winzip<sup>TM</sup> and instant link technologies
- Instant messages and videoconference services integration
- Constant communication through SMS or e-mail, sending new contents notifications, advices and schedule events
- Memorandum-book of academic year activities
- Integration of a management system of summaries with assiduity control
- Online academic services

The access to Domus can be done through a PC, cell phone or PDA, so the user can accede to the needed information in any place or through different ways.

The system assurance is a complex area, by means the user validation is done once time and checked internally in all pages, being all the critical information encrypted. The protection of the Web server and database server is guaranteed by a firewall, and the using of SSL (Security socket layer) guarantee secure communications.

The Domus services include integrated communication systems like instant messages, discussion forums and chat, helping the creation of many virtual communities of learning made by teachers, functionaries and students.

## 9 Conclusions

The high education schools ought to look their information systems as an indispensable tool of support to education and management. These systems must fortify themselves with new features of supporting to decision towards the strategic management principles.

The Domus pretends to be a general platform which integrates the different technologies and e-learning and e-management systems. In this moment there are available modules of budgetary management and semi-presence learning (<http://estig.ipb.pt/domus>). Actually the educational module has about 1000 users.

In the future the Domus Intranet may integrate a personalization system of time-tables, the disposal of

information of department and teacher management, the possibility of doing all processes online and the integration of biometric technologies will control recourses and system access.

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