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E-Courts in Brazil
Conceptual model for entirely electronic court process

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ABSTRACT

The objective of the e-Courts project is to revolutionize the application of Justice in Brazil by making the whole process of justice available twenty-four hours a day, seven days a week via the world-wide web. It is a new way of managing juridical knowledge with integrity, quality and faster distribution of information, making the access to Justice easier and speeding up the whole judgement process. The proposal is innovative both in terms of its strategy for juridical knowledge management, as well as in terms of the technology to be applied. Technology-based companies, State Courts of Justice, Universities and Investment Funds are involved in the process of turning the project into reality.

1. Introduction

Electronic Government experience in the Brazilian Judiciary System has been very successful: currently most Brazilian courts turn their jurisprudence available on the web, as they make it possible for law professionals and citizens to follow lawsuits, except for those protected by secrecy. Some of those websites already allow the sending of petitions via Internet; they do not require the subsequent sending of the originals signed by the lawyer as they recognise, through the password or the digital signature, the authenticity and the juridical validity of the documents electronically sent.

Although Communication and Information Technologies (CIT) are widely used to improve and modernise structures of public governance in Brazil, it can be noticed that most of the Courts are only just starting to think about knowledge management as a policy for those improvements. The initiatives on e-government for the Brazilian Judiciary Power are commonly restricted to the digitalisation of documents and availability of information concerning to lawsuits, keeping aside a global evaluation of the judicial process and bureaucracy.

It is common to hear, in legal spheres, that transparency can be reached through the availability of important information. We believe that the ultimate revolution CIT can implement on e-governance is the change of view on problem solving, gathering and making available, for juridical operators (judge, lawyer, prosecutor) and citizens all the information required for a fair decision, enabling fast sentence implementation and identifying useless procedures.

Since 1999, researchers of the Juridical Institute of Intelligence and Systems [10] have been studying the evolution of the Brazilian courts websites, evaluating the usability and the ergonomics of their format, content and services offered. Since 1999, researchers of the Juridical Institute of Intelligence and Systems (www.ijuris.org) have been studying the evolution of the Brazilian courts websites, evaluating the usability and the ergonomics of their format, content and services offered. Since 1997, IJURIS researchers have been carrying out studies on Artificial Intelligence for the retrieval of juridical information. Many papers on conceptual models and software have been presented at International Conferences in Europe and in the USA [3] [4] [7] [8] [9] [14]. In December 2002, IJURIS was awarded the e-Gov Excellency Prize for its contribution in the Brazilian Observatory [12] of Information on Drugs, an initiative of Brazilian Federal Government to prevent the use of drugs. The development of a complex and comprehensive model for digital lawsuits as a whole is the result of a consolidated experience in using CIT in the Brazilian judicial field, reflecting its concern with the citizenship and with fair and fast trials.

In this way, the Electronic Court project (e-Court) was devised to develop the complete digitalization of the judicial process allowing parties of a lawsuit and the judge to simultaneously handle the documentation of the process, **freeing** courts from having to handle huge amounts of papers. The functionality of each legal procedure is evaluated and the unnecessary ones discarded. Given the size and scope of the project, some legislative modernization will be required. In order to guarantee security to the beneficiaries of the initiative, the technology applied to the system is chosen from the ones widely tested on fields where precision and security are essential (for instance, banks and electronic income tax declaration).

2. Present Stage of the Project

The modular structure of the project allows the different modules to be developed independently and added in accordance with the demand. Currently, the most important software of the Distribution Module is under development: the Intelligent System for Validation of Parts of the Judicial Process (*Sistema Inteligente de Validação de Peças Processuais* - SIVAPP) [2], which uses the most recent techniques of Artificial Intelligence. Due to this feature, it is possible to classify and store the petitions received via web, which allows the processing time of a judicial litigation to be optimised. This system includes a complex knowledge representation: to automatically index the petition text it will be necessary to organize the most important Brazilian Codes in the form of an ontological tree. At this moment, the Criminal Code and Consumers Code are already implemented into the system. Estimates indicate that about 16 months are required to complete all the codes. The knowledge representation will be used in other modules and systems of the Electronic Court, mainly in the Judge Module. This development will be shown in more details under item 3.

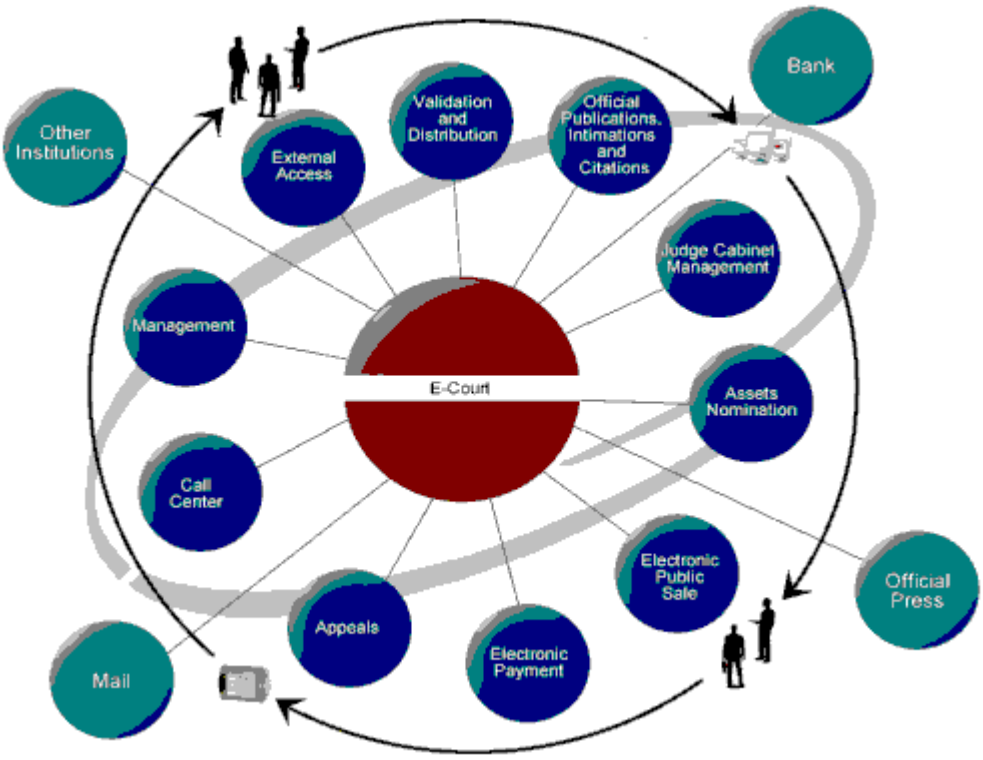

Figure 1. The Modular Structure of the Electronic Court Project

3. The Computational structure on the Web

The Electronic Court Project – E-Court - was idealized in modules to enable its portability and scalability, so that the implementation of the modules is made according to the demand. The Distribution Module is already in advanced phase of development with the construction of the Intelligent System for the Validation of Parts of the Judicial Process. The application of this technology in the Judicial district of Brusque – SC - Brazil has also been widely discussed, as a pilot project. To have a demonstration of the system ready in the short term, professionals and institutions who were involved in a specific, socially relevant type of legal procedure were identified. The process chosen for the pilot scheme was the **Fiscal Execution** (a specific procedure for the judicial collection of public tax credits). The system is designed to be formed by different modules (see Figure 1), which gives the e-Courts system the flexibility to be integrated in more complex systems.

The other modules of the project, like the Judge Cabinet Management, Official Publication and Summon, Nomination of Assets, Center of Relationship with the User, Payment, among others, can be implemented in parallel, since the lack of one does not interfere with the other. Therefore, the modules are sufficiently independent and their construction can be made jointly or separately.

Wireless communication, videoconference, tools for group work, corporative portal, electronic document management, relationship center, electronic signature and authentication, electronic banking system, electronic auction, e-post (universal and permanent e-mail) and Artificial Intelligence are examples of the innovations to be adopted by the E-Court project.

Moreover, the project attempts to turn into reality the digital communication of the Judiciary with the auxiliary agencies of Justice, such as the Public Prosecution service, Notary of Real estate offices, Police Stations, Banking Institutions, the Official Press and other institutions that facilitate the exchange of information to improve the efficiency of solving litigations.

The project is also meant to rescue the notion of citizenship, improving the efficiency of judicial proceeding and, consequently, improving the image of the Judiciary Power as perceived by the national and international public opinions.

The main advantages of the proposed model are:

> The **judicial registry** can be removed: as the main support to the Magistrate's activities, the judicial registry is the administrative structure responsible for classifying and directing the process to the judge for **rulings** and sentences, assisting the public, parties and enquirers, issuing **certificates**, and accomplishing summons; all of them are activities that can be easily automated because they are highly standardized;
>
> Accomplishment of summons becomes faster: the current personal summon made by a bailiff and the one done by mail are both replaced by an e-mail; this becomes possible under the federal government's daring project by which each Brazilian citizen will be given a permanent e-mail address; and
>
> Judicial process transparency: the proposed model will guarantee the rendering of fast judicial service to the community. This will be achieved by having cases randomly distributed among the judges working in the same city. The criterion of "the previous process" will also be satisfied, i.e. the first lawsuit on a particular legal matter received will be the first to be judged.

4. Leading technologies involved

Many technologies and tools are expected to be used in the development of the e-Court project. The following technologies and tools will be handled for the development of the e-Court project:

- Wireless Communication;
- Videoconference;
- Groupware tools;
- Corporate portal;
- Electronic management of documents;
- Call centre;
- Electronic signature and authentication;
- Electronic payment system;
- Electronic auction;
- E-post (universal and permanent electronic mail); and
- Artificial intelligence.

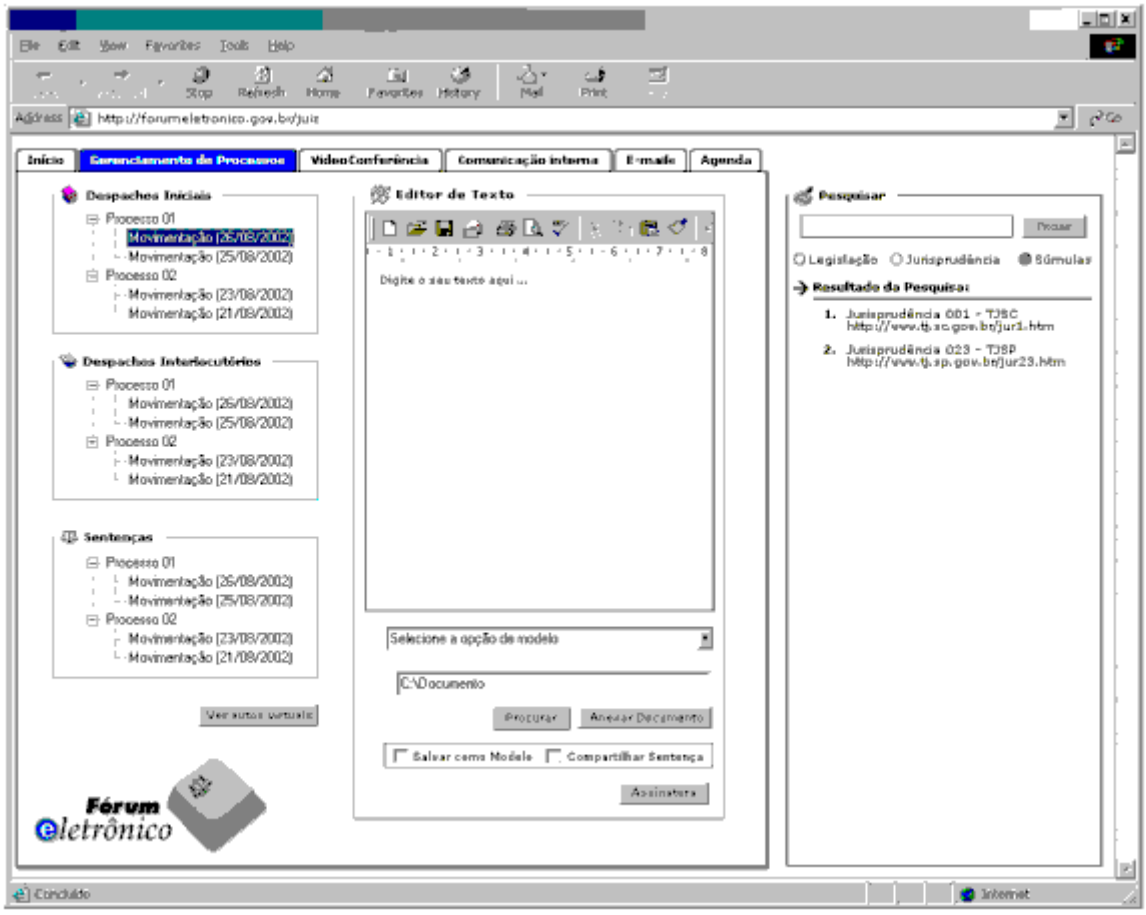

Figure 2. The Judge Module

5. The Intelligent System for the Validation of Parts of the Judical Process - SIVAPP

The development and implementation of SIVAPP software is the start of the Electronic Court project, which main objective is the modernization of the Judiciary Power and the introduction of technological tools.

The SIVAPP marks the beginning of a process of solving legal conflicts, where the citizen and the law operators will have access to all the procedures, at any time and any place, allowing enhanced transparency in the activities related to a judicial process, from the initial petition until the final judgment. Moreover, this form of organizing the knowledge will allow the many steps and mere bureaucratic structures of the Brazilian justice simply to disappear, improving the speed and quality of the judgment.

The use of Artificial Intelligence in the development of this software has to be highlighted since this is the great differential of the system when compared to the other systems available on the market. The development and implementation of SIVAPP with the use of techniques of Artificial Intelligence will turn this procedure instantaneous, decisively contributing for the optimisation and acceleration of the judgment.

All the knowledge contained in the procedural parts, as well as the identification of the legal requirements of the complaint brief, is extracted through techniques of knowledge representation like CBR - Case-Based Reasoning [11] [12], DCKR®, SCS® [4], Text Mining and Data Warehouse [7].

CBR allows the texts to be represented in the form of cases, using indices. The texts of the procedural parts will be represented in an accessible way, through the mapping the document on a structured representation, defining a set of indices to facilitate the recovery process. For text representation there is a bank of cases organized through pairs of attribute-value, which are determined after collecting and analysing a representative percentage of different parts. The indices represent characteristics of the cases that indicate its utility in a specific situation. Domain specialists and the team of legal knowledge engineering determine the set of attributes and indices (see figure 2).

At the end of the pilot project, there will be a database and a structured knowledge that can be applied at any agency of Brazilian justice. SIVAPP will make the recognition of the subject of the petition, in order to identify the minimum requirements of the complaint brief: The parties in the process, the claim, the related proceeding and the competent judgment.

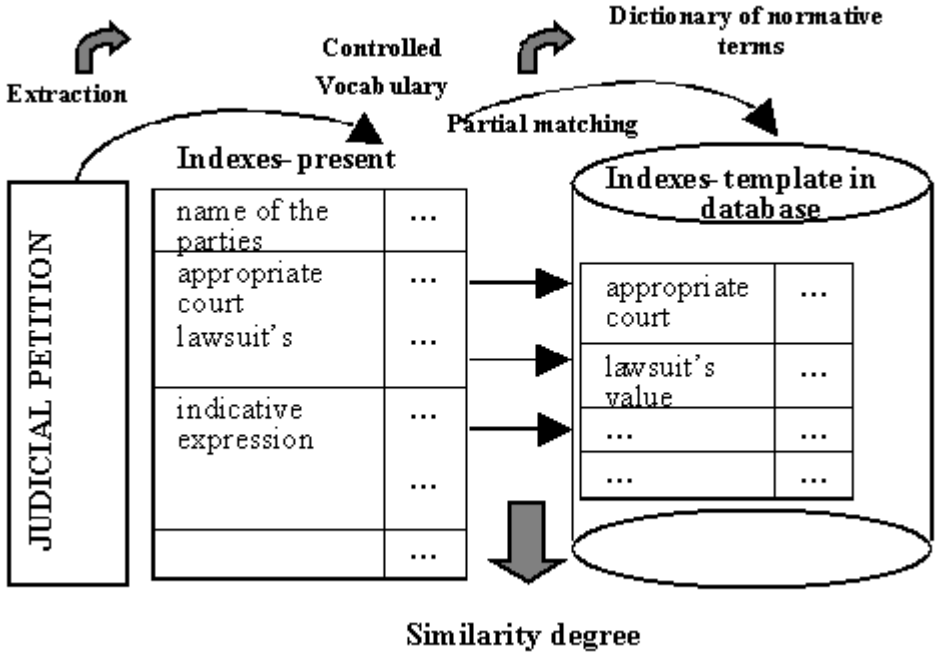

Figure 3. The Process of Knowledge Extraction of SIVAPP

6. Conclusions

In view of the problems involved in the implementation of efficient technological tools, the Brazilian Judiciary System is determined to find solutions to make possible the access to Justice. The Judiciary Modernization project includes subjects beyond a pure technological improvement. The organization of knowledge and its availability is the driving force for technological evolution, generating solutions with a high degree of usability and social reach. Therefore, it is possible to visualize the future application of the e-Court project, help to synchronize the operations of the Executive, Legislative and Judicial arms of the state.

The use of AI in this intention adds much value once it makes possible the development of systems that are capable to carry through complex tasks, without needing great interference of the human being. This means evolution in Justice Central Institution: the expenses with employees can be reduced; the work environment becomes more pleasant, without the physical presence of files of legal documents and only with virtual files of legal documents; and the citizen, the ultimate

beneficiary of this process, will have a faster and fairer service.

Another factor to be considered is that presenting a consensual definition of "Government" certainly is not an easy task; however several notions are scientifically accepted. One of them is the administration of the public power, in its hierarchies and functions. Its functions are considered starting from the classic triple view: Legislative, Executive and Judiciary Powers, hierarchically categorized in federal, state and city structures. So, it is important to differentiate "Government" from “Federal Executive Power”, especially in Brazil.

7. Acknowledgements

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