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### Legal expert systems and databases in Belgium

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# LEGAL EXPERT SYSTEMS AND DATABASES IN BELGIUM

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## 1. DATABASES

### 1.1. *Introduction*

The purpose of this paper is to present databases existing in Belgium today. Old as well as new databases and the future evolution in the field will be examined.

To assure a global view of available products and their features, databases are presented in terms of the different actors needed for database use, as well as necessary content. Interrogation modes, types of distribution and sets of available information will also be dealt with.

### 1.2. *Existing databases*

#### 1.2.1. R.A.J.B.i. (Recueil annuel de jurisprudence belge informatisé)

The producer as well as distributor of the R.A.J.B.i. is the Belgian legal editor "Maison LARCIER s.a." <sup>(1)</sup>.

The R.A.J.B. is a legal review that exists since 1949. It contains doctrine, jurisprudence and a list of recent publications. The computer system contains the last 15 years of the paper version.

Significant decisions of Belgian courts in all domains of law are gathered in this database.

The database contains solely the title and the summary of those decisions.

The database is installed on the computer of the user. It runs on IBM-PC

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compatible under Microsoft Windows 3.1. It is installed on hard-disk using 120 Mb of space.

The database is composed of one file. For each legal reference, there is one separate record.

A language has been specifically created for the use of this database. It permits entry of set of words and the system searches all the references containing the chosen words. It is possible to print the contents of all documents found.

The interface seems to be very clear. The system uses objects and buttons that can be selected with the mouse. The system is a real Windows application.

Pertaining to logical operators, the only one available is the "and". It can be used to link more than two objects.

This database was created in 1993 and its price is 55,000 BEF.

Nothing can be said about the future evolution of this product. The frequency and delay of updating are not yet known.

### 1.2.2. Justel

The producer, distributor and server of the database Justel is the Ministry of Justice<sup>(1)</sup>.

Justel is composed of 6 separated databases. These are as follows : "Legislation <Titles>", "Legislation <Full text>", "Jurisprudence", "Archives", "Library" and "Practical addresses".

The database "Legislation <Titles>" contains all the headings of the texts published in the official journal "Moniteur belge" since 1945. It represents 105,000 titles in the two national languages. This database is updated every day. The delay of updating seems to be 2 or 3 days.

The database "Legislation <full text>" includes approximately 16,000 texts in all fields excepted fiscal, civil and administrative law. It also contains fundamental texts like the Constitution. Around 3 weeks are required for updating.

Nearly 150,000 rulings in their native language are contained in the database "Jurisprudence". The fields covered by this database are social law, economic and commercial law, penal law, military law and environment law. In addition it contains all the judgements from the Court of Arbitration and judgements from the Supreme Court of Appeal. Rulings are selected in the papers "Revue de Droit Commercial", "Revue trimestrielle de droit familial" and "Revue générale de droit civil belge". In addition to these, magistrates from the Labour Court and from the Supreme Court of Appeal communicate unpublished judgements. Judgements from the Supreme Court of Appeal were included since 1967 and those from the Labour Court since 1970. Commercial domains have been covered since 1973 and main trials from the court of first instance of Brussels and judgements from the Court of Arbitration have been covered since 1985.

<sup>(1)</sup> Ministère de la Justice, 3, Place Poelaert, 1000 Bruxelles. Tel. 02/5046900

"Archives" is a database containing all abrogated texts coming from "Legislation <full text>".

In the database "Library", about 90,000 documents have been collected, coming from the Ministry of Justice and the youth protection and documentation service of ULB (Free University of Brussels).

Data like promulgation and publication date or titles are encoded separately in these databases. This allows research along these separate lines. A little thesaurus is also available.

The last database named "Practical addresses" simply lists the addresses from all the judicial services.

The database is installed on a Siemens computer under BS2000. The support of the database is Golem from Siemens. The connection on this relational database is a on-line one.

Each possessor of a videotex terminal, recognising the prestel standard and the Belgian character set, may attain Justel. Another solution is to use a computer with a modem respecting the V23 or V22bis and the Prestel Standards.

The operators available are "and", "or" and "and not". These may be used to link more than two research criteria.

The interface is clear. The operations are attained by selection in multiple choice menus. Having regard to the use of the Videotex network, the system runs slowly.

With few notions of law, anyone may work on Justel.

This database was created in 1979 and is free of charge. Nevertheless, note payment of the call (which is local and costs 4 BEF/minute) and the Videotex rental (3,600 BEF a year).

One half-day training is organised free of charge by Justel at its offices. A short text as support of the course is given at this occasion.

In the future, the actual 40 column screens will be changed into 80.

The producer of Justel plans to put into the database more or less 82,000 full text judgements handed down by the Supreme Court of Appeal.

One main feature is that the producer also plans to insert directly the full texts published in the "Moniteur belge" when the latter is computerized.

### 1.2.3. Judit

The legal editor Kluwer<sup>(1)</sup> is the producer as well as distributor of the database Judit.

This Flemish database includes legislation, jurisprudence and doctrine contained in the legal review "Tijdschrift rechtsdocumentatie" (IDj) since 1980 and in the "rechtsgids" since 1989. The French release is available since 1990.

Pertaining to legislation, all the texts published in the "Moniteur Belge" since 1980 can be found. Concerning jurisprudence, all judgements published in

<sup>(1)</sup> Kluwer, édition juridique Belgique, 230 Boulevard E. Bockstaël, 1020 Bruxelles. Tel. 078/116868 - Fax 02/4223979.

these reviews are included in the form of summaries. Information on books and periodical publications are introduced in the doctrine database.

Judit is updated four times a year and the delay is less than one month. There is no archive of abrogated texts.

Data like promulgation and publication date or titles are encoded separately in these databases. It allows research along these separate line.

Legal notions are structured in a tree of key words. Research is to be done by identifying the "class" (juridical theme). No logical operator is available.

The database is installed on a CD-ROM in the computer of the user. The software is specific (Soft-disk Judit). Its use is possible through a Novell Network. The software has an interface similar to conventional Dos applications.

Training is organised free of charge at the time of the first subscription. After that, a manual is available.

This database was created in 1988 and its price is 69,500 BEF for 4 CDs a year or 48,000 for 1 CD a year.

The producer of Judit plans to replace existing software by a new release.

#### 1.2.4. FBW

The legal editor Kluwer<sup>(4)</sup> is the producer as well as distributor of the database FBW.

This Flemish database includes only legislation contained in the statute book "Fundamentele Belgische Wetgeving".

FBW is updated three times a year, with a paperupdate every two weeks. There is no archive of abrogated texts.

The structure of the database is an arborescent one. Key words are available.

The database is installed on a CD-ROM in the computer of the user. The software is specific. The software has an interface similar to conventional Dos applications.

Training is organised free of charge at the time of the first subscription. After that, a manual is available.

This database was created in 1992 and its price is 24,000 BEF for 3 CDs a year including paper updating.

#### 1.2.5. Credoc

The producer of this database is the Credoc<sup>(5)</sup>. This database is distributed by the Credoc and by Belindis<sup>(6)</sup>. There are two servers. The first one is Belindis and the second one is Bistel which use a videotex interface.

<sup>(4)</sup> Kluwer, édition juridique Belgique, 230 Boulevard E. Bockstael, 1020 Bruxelles Tel. 078/16868 - Fax 02/4223979

<sup>(5)</sup> Credoc A.S.B.L., Rue de la Montagne, 34 Bte 11, 1000 Bruxelles Tel 02/5116941 - Fax. 02/5133195.

<sup>(6)</sup> Ministère des affaires Economiques, 30, Rue J. A. De Mot, 1040 Bruxelles

Credoc is composed of 6 separated databases. These are as follows: "Blex", "Bjus", "Orbi", "Name", "Capa" and "Ljus". All legal fields are covered.

The first one, "Blex" contains all the headings of texts published in the official journal "Moniteur belge" since 1980. It represents 50,700 titles in the two national languages. This database is updated every day.

The second one, "Bjus" includes Belgian doctrine and jurisprudence gathered in the main legal reviews since 1968. Some Ministries also send unpublished decisions. It represents 182,000 documents. Updating is done every month. Since 1978, documents contain summaries and key words. Since 1988, a detailed thesaurus is available.

The third one, "Orbi" is composed of international doctrine. It is made with the files of the Foreign Office and has the advantage of a monthly updating. It contains documents since 1960.

The database "Name" contains the descriptive records of Belgian lawyers since March 1987 and is updated monthly.

"Capa" is a database pertaining to bankruptcies (since 1976) and certified persons (since 1940). The "Moniteur belge" is the source of information. Updating is done every month.

The last database, "Ljus" includes judgements selected and analysed by Magistrates from Luxembourg since 1981. The review "Pasicrisie Luxembourgeoise" is the second source of information. In this case, a selection of rulings from 1880 till this date is included.

Note that the Credoc participates in the construction of Enlex managed by the "Centro Elettronico di documentazione- gruppo di lavoro "progetto Enlex" (Corte suprema di Cassazione - Roma)". This database gathered the jurisprudence of the member States of the EEC concerning the environment.

The database is installed on a Siemens computer under BS2000. The support of the database is Golem from Siemens. The connection on this relational database (Stairs VS 4.4 from IBM) is a on-line one.

Each possessor of a personal computer with a modem respecting the V23 or V22bis standards may attain Credoc.

The structure is arborescent for Blex and hierarchical for Bjus. The thesaurus of Bjus also have an arborescent structure. Interrogations may be based on words or expressions.

All logical operators are available. Operators of proximity also exist (a word must be close to another).

To use these databases, it is necessary to learn the Stairs system. On payment, training is organised by the distributors. This includes 5 hours of connection. A hot line and manuals are available.

This database was created in 1967. The price varies according to the database consulted. It is 3,960 BEF/hour of connection for Bjus, 2,400 for Blex, 2,200 for Ljus, 3,000 for Capa, 3,960 for Orbi, and 2,000 for Name.

#### 1.2.6. Législation fiscale

The database "législation fiscale" is produced and distributed by the editor

Ced-Samsom<sup>(7)</sup>.

It contains in full text all documents pertaining to fiscal law legislation (287 items), jurisprudence (908 judgements) and administrative circulars (101 circulars). Concerning income tax, all articles of law are introduced and classified by year since 1962. Since 1982, all parliamentary questions and answers are included (413 questions and answers).

Each text is encoded with a list of key words chosen in the thesaurus.

Results of the research can also be saved on disk and printed.

For each significant fiscal change (on average, four a year), a new CD-ROM is received. A synthesis is sent weekly including the last texts.

The database is installed on the CD-ROM in the PC-compatible computer of the user. The CD-ROM reader is lent by Ced-Samsom if the user does not have it.

The interface seems to be very clear.

A demonstration and explanations are given at the time of the delivery of the CD-ROM.

The database exists since September 1992 and its price is 12,069 BEF a CD and 22,42 BEF a page, for the weekly synthesis.

### 1.2.7. Bibliothèque L. Graulich

The producer as well as distributor is the Library L. Graulich of the University of Liège<sup>(8)</sup>. The server is the computer of the University of Liège.

The database is composed of 3 separate ones listed as follows: "national legislation", "Belgian legal doctrine" and "regional and community legislation".

The first one, "national legislation" contains parliamentary documents and texts from the "Moniteur belge" since 1964. It offers references to all projects and propositions of bills brought in front of parliamentary chambers till the final vote. It also includes most decrees providing for the enforcement of laws and ministerial circulars. Updating is done every month.

The second database is, "Belgian legal doctrine" composed of a hundred Belgian reviews since 1971. Updating occurs each month. The database involves more than 28,000 documents.

The last database, "Regional and community legislation" contains references to all decrees providing for the enforcement of a law from regional and community institutions and references to all decrees and judgements of annulment from the Court of Arbitration since 1971. It is updated monthly.

This relational database is installed on IBM 3090 under VM/CMS and each possessor of a personal computer with a modem may attain this database. Access is also available via the DCS network.

Connection on this relational database (Stairs VS 4.4 from IBM) is a on-line

<sup>(7)</sup> Ced-Samsom, 44, Kouterveeld, 1831 Diegem. Tel. 02/7231111 - Fax. 02/7231191.

<sup>(8)</sup> Faculté de droit de Liège, Bibliothèque L. Graulich, 7 (B31) Boulevard du Rectorat, 4000 Liège (Sart Tilman). Tel. 041/562966.

one. Each possessor of a personal computer with a modem respecting the V23 or V22bis standards may attain this database.

The interface seems clear. All logical operators are available and the use of key words is permitted.

This database was created at the beginning of 1970 and is free of charge for students and members of the library. For others, the price is about 60 BEF a minute (2,900 BEF an hour). Documents may be printed at the library (5 BEF for doctrine and 7 BEF for legislation).

Training is organised free of charge upon request of users.

### 1.2.8. Droit du travail et de la sécurité sociale

The producer as well as distributor are the Social law department and computer service of the faculty of law at the University of Liège<sup>(9)</sup>. The server is a IBM 4381 VM/CMS computer at the University of Liège.

The connection on this relational database (Stairs VS 4.4 from IBM) is a on-line one. Each possessor of a personal computer with a modem respecting the V23 or V22bis standards may attain this relational database.

The database is composed of 4 separate ones listed as follows: "jurisprudence <main>", "jurisprudence <redundancy notice delay>", "legislation <main>" and "legislation <labour collective agreements>".

The first database "jurisprudence <main>" in labour and social security law contains summaries and key words of all the Belgian published jurisprudence. It concerns social law, judgements of the EEC Court in the social field as well as all judgements of the Supreme Court of Appeal published in the Belgian legal review "Pasicrisis" since 1978.

The second database "jurisprudence <redundancy notice delay>" contains judgements since 1978, some unpublished.

The third database "legislation <main>" in labour and social security law is composed of all legal norms in social law published in the "Moniteur Belge" since 1985.

The last database "legislation <labour collective agreements>" is composed of all collective labour agreements published in the "Moniteur Belge" since 1980, as well as those entered into by the National Labour Council.

The two first databases contain approximately 11,000 documents and the last two, 3,000 documents.

The interface seems clear. All logical operators are available and the use of key words is permitted.

Free training of four hour is offered. The price is 20,000 BEF a year plus 1,000 BEF every 15 minutes.

<sup>(9)</sup> Faculté de droit de Liège, 7 (B31) Boulevard du Rectorat, 4000 Liège (Sart Tilman). Tel. 041/56.29.66

## 1.2.9. Others databases

### 1.2.9.1. Juridisk

Juridisk is a database of the "Vlaams Economisch Verbond". It contains legislation, collective labour agreements, references and summaries of jurisprudence in social law.

### 1.2.9.2. Montesquieu

The law faculty of the catholic University of Louvain (UCL)<sup>(10)</sup> is going to set up a database. All academic and scientific members of the faculty must analyse published jurisprudence in their respective fields of speciality. All published jurisprudence since 1988 is included in the database. It runs on 4D server on Macintosh. A hierarchical thesaurus is used to index the database.

### 1.2.9.3. Houses of Parliament

The Houses of Parliament have their own database containing projects and propositions of bills brought before them, along with questions relating to these projects and propositions.

## 1.3. The use of databases in Law Courts

Attention will be focused on the position of Belgian courts pertaining to the issue of database use. Before that, a few remarks are necessary concerning the access to these databases. Legal databases face various problems, the most important of which is probably their "accessibility". This term should be understood in different ways. It primarily and obviously means 'physical access' - magistrates should have a consulting terminal. But access also implies that the system be 'userfriendly': an access which would prove difficult - magistrates are seldom computer scientists - is no access at all. But the most important meaning of the term 'access' is probably the following. 'Access' implies a process of selection among pieces of information supposed to be available in the database, either before its inclusion in the database or after - archiving -, since there is no doubt that too much information actually means no information at all, and thus no effective access. Only under these conditions, complete and updated informations can be said to be available.

Do Belgian magistrates have legal databases at their disposal? Regardless of the aforementioned question of usefulness of databases, Belgium is far removed from the situation where each magistrate can consult legal databases from his or her desk, although there is undoubtedly a tradition in the field of legal databases. The Belgian Ministry of Justice has been running a legal database - Justel - for

<sup>(10)</sup> Monsieur Van der Kelen, Faculté de droit, Collège Thomas More, place Montesquieu, 2, 1348 Louvain-la-Neuve, Tel. 010/474770, Fax 010/474601.

about 15 years now, which contains both court decisions and legislation. Although this database can be consulted free of charge, through modem, with the help of a terminal (a quite easy and cheap solution), only few magistrates actually consult it: Justel receives less than 50 queries per day, a small minority of which originates in courts<sup>(11)</sup>.

There are various reasons for this. First, although all Belgian courts, according to the Ministry of Justice, should be equipped by the year 2000, only about 20 Law Courts have been equipped with computer systems facilitating the consultation of Justel, i.e. less than 10 % of the courts. Others were provided with personal computers, with which access to Justel may be quite straightforward<sup>(12)</sup>. Moreover, the fact that a court has been equipped does not actually mean that each magistrate working within the court has a terminal at his or her disposal.

Some magistrates compensate this with other solutions, either by drawing up legal databases with their own decisions or consulting legal databases in other institutions, such as university libraries or the local association of barristers. Some of these institutions have developed legal databases of their own, or at least provide access to other ones, such as Justel, Judit, or Credoc.

As to legal databases originating in the private sector, the number of magistrates which consulting them is too limited to be worth mentioning, partly due to high cost.

Apart from the effective lack of equipment and the high costs of private databases, other reasons should be found to explain the lack of consultation, particularly among those who have access to legal databases. To begin with, some users or former users blame Justel for not being 'user-friendly' enough; only a few magistrates, however, have become familiar with the use of Justel, even though free training is available at the Ministry of Justice. Moreover, many users claim that Justel would not be specialised enough in the area of law they are dealing with. This is probably true as to what regards court decisions - Justel was initially intended as a Labour Court database -, but an effort is currently being made to enlarge the area covered.

The main reason, however, might prove to be the dearth of information, not only among magistrates as to legal databases, but also at the Ministry of Justice as to the needs of magistrates, which might sound paradoxical for an information technology product. But these considerations lead to further questions: how can this current situation be explained in face of the necessity of complete and up-to-date information concerning both case and normative law? Would the above mentioned necessity remain theory when applied to the effective situation of magistrates, especially judges, when confronted with problems such as backlog, for instance? Might there be a lack of motivation among magistrates? An answer to these questions would probably mean fruitful progress in the global issue of legal databases.

To conclude, it should not be forgotten, regardless of the various problems

<sup>(11)</sup> Figures advanced by persons in charge of Justel.

<sup>(12)</sup> To be complete, the equipment of examining judges should be mentioned, but it seems that its use has been given up by almost all examining judges.

described above, that the fundamental objective of legal databases is only to make justice more coherent and equitable. Still it is ultimately to the magistrate to make it reality.

## 2. EXPERT SYSTEMS

### 2.1. Introduction

Expert systems in law were first developed in Belgian universities. Private firms subsequently developed systems either for the Belgian government or for private use.

The interest in artificial intelligence and its innovative applications in the legal field are relatively recent in Belgium. An attempt will be made to draw up an inventory of systems both currently in use and in the process of being developed. Shells relative to these systems will also be discussed.

### 2.2. Existing systems

#### 2.2.1. M.I.J.A. <sup>(13)</sup>

The MIJA project began on 1 January 1987 and is being carried out at the Social Law Institute at the Catholic University of Louvain (KUL). The project involves the formulation of a methodology for the development of aids to legal-decision-making, particularly in the social security field. Great importance is devoted to methods for structuring, representing and checking knowledge. An integrated environment has been developed, based on the Prologa software which provides an interactive medium for the acquisition, structuring and checking of knowledge. The results of the formalisation work in this environment may be converted automatically into decision rules that may be interpreted by various inference mechanisms or into IF-THEN-ELSE structures.

Several systems of this kind have been developed within the project, two of which have been brought on the market: Handipak concerning allowances for the disabled and MINIPAK concerning the minimum income. They are used by front-line personnel in the social security field: welfare centres, local authorities, etc.

The system operates on MS-DOS with a PC. In addition to the automatic counselling systems, a document retrieval system containing the full text of circulars relating to the 81 Fund has also been developed.

<sup>(13)</sup> "Model voor de inzet van Informatica bij Juridische Adviesverstrekking (Model for the application of data processing to legal counselling). This project was set up by the Katholieke Universiteit Leuven".

#### 2.2.2. Prisme <sup>(14)</sup>

The "Prisme" project began on February 1987. It involves the development of software able to identify the various forms of government aid to which businesses established in Belgium are entitled. The relevant information may be transferred automatically to a software package called "Spectre", which assesses the impact on the firm's results.

The system designed in this way enables the user to determine the forms of aid corresponding exactly to his or her situation. The expert system design methodology generated by Qrcd <sup>(15)</sup> is similar to an intuitive approach.

The purpose of Prisme is to place a set of complex knowledge, difficult for a non-specialist to attain, at the disposal of as many people as possible through a user-friendly "expert" computer system.

The system operates on an IBM compatible.

#### 2.2.3. Aid in drafting specifications for public contracts <sup>(16)</sup>

The expertise domain of the expert system concerns Public Procurement in software acquisition. Very few civil servants have the necessary skills to combine public procurement regulations, data processing and computer law knowledge. The system should assist Belgian civil services in drafting legal documents.

The matter is divided into 21 topics such as software performance, duration of the operations, maintenance, documentation, warranties, intellectual property,.... For complete consultation, each topic should be inspected.

A prototype was built in 1989 containing the maintenance aspect. It was made with the shell Qrcd conceived to build the system "Prisme". It runs on PC compatible.

#### 2.2.4. Sugar regulations <sup>(17)</sup>

This project is a Prolog based expert system for the application of import and export regulations and is developed by BIM for the Belgian Ministry of Economic Affairs.

The Ministry requested an expert system to support the decision procedures on importing and exporting sugar products, and to improve the quality of the delivered work in terms of correctness and completeness.

Because regulation is extensive, complex, and frequently amended, it is difficult for the executive personnel to work correctly. Also the one expert

<sup>(14)</sup> "Processus Rationnel et Interactif de Sélection des Mesures d'aides publiques aux Entreprises". This project was set up by the "Facultés universitaires Notre-Dame de la Paix de Namur".

<sup>(15)</sup> QRCd is a shell written in Pascal especially for this project.

<sup>(16)</sup> This project was set up by the "Centre de Recherches Informatique et Droit" (CRID) from the "Facultés universitaires Notre-Dame de la Paix de Namur".

<sup>(17)</sup> This project was promoted by the Ministry of Economic Affairs and built by BIM..

responsible for the sugar sector does not have the time to check all the delivered work for correctness and completeness. Moreover, the situation is complicated by the fact that the turnover of administration personnel is substantial.

A clear architecture is used and the multi-language problem is solved by means of its dictionary module. A structured methodology is followed for the knowledge base development. It aims at providing a formalisation which is readable, may be easily assessed by the expert, and is near the form used in the implementation. This application has proved successful on a first prototype of a system dealing with 40 pages of regulations.

This project started on January 1990 and ended on January 1992.

The prototype was implemented in Prolog and runs on a SUN station. The interface is window-oriented in compliance with the standard windowing interface.

### 2.2.5. Management of prison penalties <sup>(18)</sup>

A prototype was built by the Centre de Recherches Informatique et Droit (CRID), partly in collaboration with the private software company "Telinio IS". The project started in February 1991.

The aim of the project is to provide Belgian civil services with an expert system able to manage prison penalties.

The penitentiary administration has to compute the planned day of release of prisoners by adding sentences and deducting detention periods already served. Furthermore, it has to deal with the different ways in which sentences may be served: normal detention, part-time work outside, etc. There are also several legal procedures for releasing a prisoner earlier: free pardon, release on parole, etc.

The system is to be installed in the 33 Belgian prisons and in Ministry of justice. It is also to be used by public attorneys as they are in charge of supervising the enforcement of prison penalties.

This system was implemented with Flex from LPA, a shell in Prolog.

### 2.2.6. Parcom <sup>(19)</sup>

Upon request of the Belgian labour administration, a bilingual (Dutch-French) legal expert system, Parcom, has been developed with regard to collective bargaining committees.

In Parcom, knowledge is extracted from legislation and, to a lesser extent, from legal cases, authoritative publications and human expertise.

The system was implemented in Prolog and runs under Windows 3.1 on PC and is fully operational at present.

<sup>(18)</sup> This project was set up by the "Centre de Recherches Informatique et Droit" from the "Facultés universitaires Notre-Dame de la Paix de Namur" and "Telinio IS".

<sup>(19)</sup> This project was developed by the software house ORIGIN BELGIUM n.v. in cooperation with the Interdisciplinary Centre for Law and Information Technology (ICRI) at the Katholieke Universiteit Leuven (KUL) and ORIGIN:BSO Artificial Intelligence, The Netherlands

### 2.2.7. Exsys and Exsystutor <sup>(20)</sup>

The knowledge base of the rule-based expert system Exsys covers the complete regulation of all possible leaves and absences in the public sector. It also includes a documentary database which is fully integrated with the expert system. The documentary database contains all original texts, including the associated jurisprudence. This integrated hybrid architecture is very well suited to inform efficiently any user, regardless of level of specialisation. Furthermore, Exsys can easily be coupled to any personnel administration system and, as a result, allows to increase the productivity of the personnel department.

Exsystutor is a CAI ("Computer Aided Instruction") application, characterised by a highly dynamic interaction with the user, based on the knowledge of the system mentioned above. All lessons, exercises, and also the support and feedback towards the user, are extracted semi-automatically from Exsys.

Both Exsys and Exsystutor are multilingual systems.

These systems were built by Siemens-Nixdorf under supervision of the Belgian Ministry of domestic Affairs, between 1991 and 1993, and required a total capacity of approximately 4 man-years.

Exsys was implemented in Prolog and the SNI-shell Twice, and runs on MS-DOS, MS-Windows or Unix environments. Exsystutor was developed in C++ and SDK, following the object-oriented approach, and runs on MS-Windows.

## 3. CONCLUSION

The number of legal databases in Belgium is large, perhaps too large for such a small country. Often, the content of these databases overlaps. Wastes may result. Furthermore, the official journal "Moniteur belge" is not yet computerized. Finally, the equipment needed to consult existing databases is perhaps too expensive for an ordinary lawyer. All this may explain the poor use of databases in Belgium may be explained for these reasons. A fruitful avenue for legal database evolution might be the co-ordination between producers.

Regarding legal expert systems, few of them exist in Belgium and even fewer are actually in use. The main reason is the lack of interest of decision-makers. The high price of this technology may be another factor.

## 4. BIBLIOGRAPHY

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