Internet, portal to justice?

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Abstract. In the Netherlands people with low income are entitled to receive legal aid. In almost every big city in the Netherlands centres for delivering this legal aid are present. Currently these centres are reformed into a Legal Services Counter (*Het Juridisch Loket*). This reform process has several aims, including improving accessibility, improving the quality and standardisation of legal aid throughout the country, and improving efficiency and consequently diminishing operational costs. To achieve this, the organisation will be turned into a service oriented one and new technologies, like call centre technology and Internet will be used. The Leibniz Center for Law has developed an Internet based knowledge system that should support both future employees of the legal services counters as well as their clients. In this paper we present our experiences in designing and implementing this system in a changing organisation and the impact of the organisational change on the design team.

1 Internet access to the law versus internet access to justice.

The internet has become an unavoidable means of communication and together with mobile phones established an enormous market growth. The internet hype that started in the nineties of the last century was caused by the opportunities that were seen to use this communications facility to create new forms of services (so-called e-services). Successful applications can for instance be found in postal order business where different products are offered, varying from books to computers systems.

Governments have also discovered the internet, a development called e-Government. In the Netherlands as in other European countries citizens can send their tax returns via the Web[1], while a number of Dutch cities support electronic requests for a housing permit[2]. International studies however show that both citizens and businesses are not satisfied with the level of support offered by their governments (see e.g. [1]). The same study shows that the Dutch government is not playing a leading role in using internet for providing e-services.

High volumes of electronic documents might have become available via the Web due to measurements of the Dutch Government, but citizens don't consider this to be a service to them. Most citizens are relative laymen in the legal domain and therefore don't want access to legal sources. They rather want answers to questions like "I want to rebuild my house by extending it with a garage, is that allowed?" or "I want to close a contract for this pension arrangement, is this pension arrangement acceptable according to the tax law" (which will make the premium paid deductible from the Dutch wage tax) [2].

These type of questions can be answered by so-called knowledge-based systems, sometimes made available on the Web. An example of such application is the life insurance application of the Dutch Tax and Customs Administration. That application calculates the amount of money that can be deducted from the wage tax. The 'knowledge' that is put in those

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[1]See: http://www.belastingdienst.nl

[2]See e.g.: http://www.cromstrijen.nl/Roccade/GPC/Formulieren.nsf/Woonvergunning?OpenForm&Woonvergunning

applications springs from the regulations that are related to the legal problem to be solved, completed with expert knowledge (especially needed to resolve legal interpretations).

2   Legal Services Counter (Het Juridisch Loket)

When citizens are involved in legal procedures they similarly want to be able to present their case and subsequently receive advice or a judgement about it. Typical cases citizens might want to be advised about are divorce, coping with rental debts and being fired. Citizens are likely to rely on trade unions, consumer organisations and law firms for legal assistance. In the Netherlands, citizens belonging to the lowest income categories are entitled to legal aid at Legal Aid and Advice Centres (*Bureaus voor Rechtshulp*), governed by the Legal Aid Boards (*Raden voor de Rechtsbijstand*). These Legal Aid and Advice Centres are currently being replaced by the so-called "Legal Services Counter" (LSC) (*Het Juridische Loket*). While the old centres could handle client cases all the way up to the court room, the new organisation is meant to focus on first legal aid. Cases that are too complex or not within the aims of the LSC, should be forwarded to other organisations as soon as possible. It was foreseen that the employees of the new organisation will gradually have a different background than the present ones. The level of legal expertise will probably diminish in the future, at least in depth. The typical LSC employee will be a generalist more than a legal specialist. Therefore the Legal Aid Boards were thinking of a knowledge management solution to support (future) employees and clients of the LSC's in solving legal problems.

The Leibniz Center for Law developed such a knowledge management application called "clarification of legal questions" (*vraagverheldering* in Dutch). This knowledge-based application is part of a virtual front office that is aimed to automatically support legal aid as much as possible. The prospective users are both clients and employees of the LSC's. The information stored within that application and the way this information can be accessed is designed for reuse. Consequently the application's functionality supports the physical and the virtual office equally.

Basically the functionality supports:

- Clarification of a legal assistance request by the client;

- Legal advice to the client.

One of the aims of the LSC is to enhance accessibility. Furthermore the first virtual client contacts should form a basis for creating an electronic client file which will be used for more elaborate forms of assistance.

An equally important goal is the reduction of the operational costs of legal aid by reducing the number of physical contacts with clients (and consequently by reducing the number of staff as well as their educational level and the related labour costs).

The use of internet for establishing contacts with the LSC's clients could have big impact on the future level of easy accessible legal aid for the target group of the current Legal Aid and Advice Centres. In this paper we will describe the development of our knowledge management application from different perspectives, a functional, technological and an organisational perspective. Especially the impact of the organisational change was quite dramatic for the employees and one can imagine that this had an enormous impact on the design teams. The design of neither the new organisation nor its supporting systems has been completed yet and at least three succeeding development plateaus are foreseen. Therefore we can only draw preliminary conclusions based upon our experience in the first plateau. Nevertheless we believe our experiences might be useful for every knowledge engineering practitioner working in large legal organisations.

3 Clarification of legal questions at the Legal Service Counter

The application for clarification of legal questions supports employees of the LSC's to determine the legal question(s) behind the posed problem. Based upon the legal questions identified this way a standardised series of products is offered. The application leads the user to an increasingly better defined legal issue by letting him choose between a number of possible answers to a posed question or by asking for specific answers to a question (e.g. "At what date did the contract expire"). This way the user can work his way to questions that have a one-to-one relationship with a set of products of the LSC. These products could be information products, for example an electronic brochure on alimony payments, but also a referral to a lawyer or another organisation than the LSC, or an appointment for an extended (face-to-face) consultation with an LSC employee. The LSC's products can consequently be categorised in three types: information, referrals or appointments.

The design of the "clarification of legal questions" module was guided by the following considerations:

1. It should serve as a kind of check list for the LSC employee or client;

2. The user is not obliged to answer questions or to be forced to answer them in a specific order;

3. Easy problems can be handled quickly, more complex problems should allow for a more detailed exchange of information (cf. JURICAS advice systems that allowed 'deepening' at certain moments [6]).
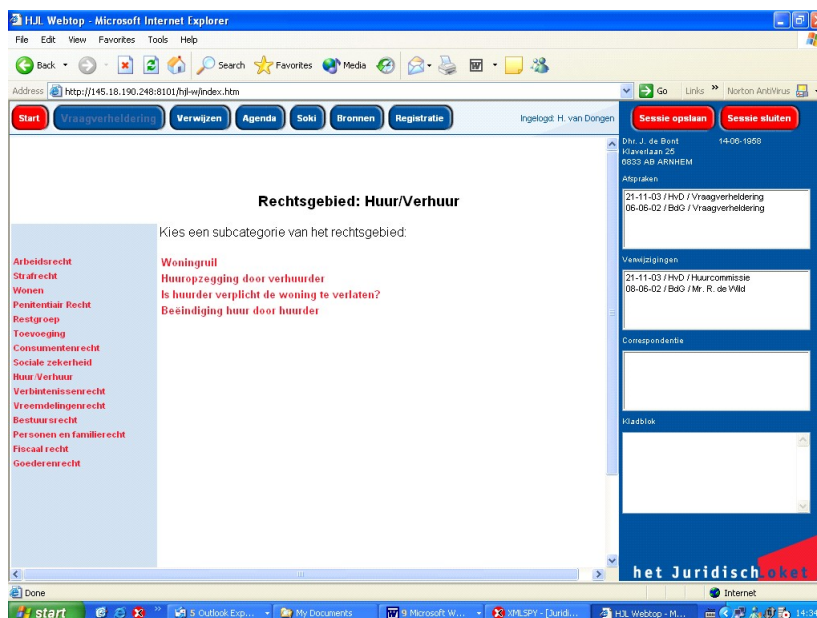

Figure 1: Sub-categories of legal domains in the application *Clarification of Legal Questions* (in Dutch). The user first makes a choice for a certain legal domain and next refines his/her question by selecting one of its sub-categories. Here the user has selected 'Rent/Let' as main category and can now choose between 'House exchange', 'Termination of tenancy by owner', 'Is the tenant obliged to evict the apartment?' and 'termination of tenancy by tenant'.

Typically, the user of the application, especially the LSC employee, already has a general idea of the legal domain to which the question belongs. Therefore we present an overview of

the legal areas the user can choose from (left column in Figure 1, in Dutch). Some legal areas however are rather broad and therefore a further division in sub-areas is necessary. After choosing a legal area, the user can select a sub-category by picking it from a list. In some cases a problem can be related to more then one legal area. In that case the user can select more than one area and switch between them as he or she likes. Answers to questions are globally available, so users never have to answers questions more than once; these answers will be reused when relevant for other legal areas.[3]

While the user provides answers to the questions posed by the system, potentially relevant information and other products appear (see Figure 2 at the right side of the screen). As long as the system has not concluded these products are certainly relevant, a question mark is presented in front of them; otherwise a red exclamation mark will be shown.

If the user is not able to provide an answer to a question the user may choose 'unknown' (in Dutch *onbekend*). The system then responds by presenting a list of questions that together, when answered, will provide an answer to the original question (see Figure 2). This is a more elaborate and pervasive version of the 'optional deepening' the JURICAS systems offered, as mentioned earlier [6].

The user may change the answers to questions at any time, as long as this does not lead to inconsistencies in the data given. Should an inconsistency arise, the user is told he cannot change the answer because of this reason, and all questions that are involved in the inconsistency are indicated with a red triangle in front of them. These inconsistencies may also arise from answers given in other legal areas.
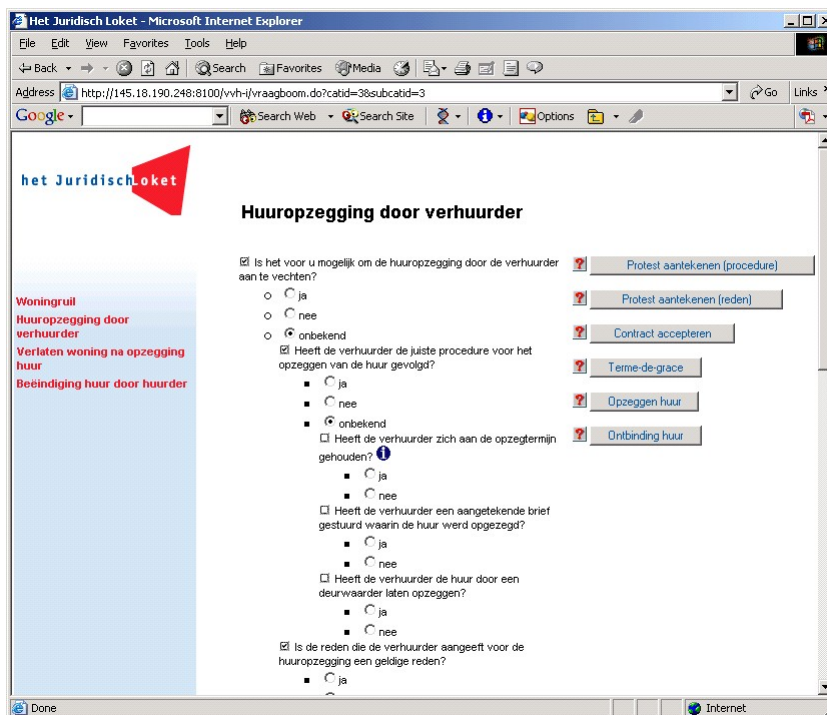

Figure 2: If the user is not able to provide an answer to a question he/she chooses 'unknown' (in Dutch *onbekend*). The system then responds by presenting a list of more specific questions that together may provide the top-level answer. In the example here the top question has been answered with 'unknown' and so has the first sub-question. This figure presents the interface of the internet or client version of the system.

At any time the user may decide to end the question-answer dialogue and continue with either one of the presented products, another legal area, or to submit the gathered data to

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[3]Assuming the questions and answers have the seem meaning in the other area.

the rest of the system and e.g. plan an appointment with a lawyer. The user can also get an overview of all answer provided during the consultation session. These answers can be stored on request and reused in succeeding consultations (this might be useful if the user wants to temporarily terminate the session and restart it again, e.g. after collecting some relevant data).

If the client is not an anonymous contact, and further action is taken, the client data will be stored in a small electronic file. This *e*-dossier can later on be used during subsequent consultations or by the lawyer who is going to handle the case.

Figure 3 presents a schematic overview of the flow of data through the system.

4 System architecture and adaptability

One of the aims of the application is to streamline and increase uniformity of the client handling processes. Clients are to receive legal advice as efficiently as possible. Consequently, the application should play a central role in the client handling processes of the organisation. The creation, maintenance and control of the knowledge (models) is in an approach as depicted of utmost importance. It will be necessary to adapt handling strategies from time to time, e.g. as a result of changed legal procedures or changes in the law. The system should therefore be rather adaptive and both the time needed for adapting the system as well as the costs of maintenance (in fact one of the biggest parts of the costs of ownership, or TCO) play an important role. Besides this it would be desirable if small changes could be implemented by the domain experts themselves rather then involving knowledge engineers to do the implementation for them.

4.1 From rules to decision trees

As can be seen from the system description above, the dialogue is presented as question or decision trees. Decision trees can be useful (cf. e.g. [7]), but they are also difficult to maintain and not storable in an efficient way. Questions may occur in more then one decision tree and when changing them, inconsistencies are likely to appear. Furthermore, knowledge engineers find it hard to map knowledge sources directly to decision trees. We've consequently chosen to represent the legal knowledge in rules rather then in decision trees. These rules have the well-known format:

```
IF condition_1 AND condition_2 AND  AND condition_n
THEN conclusion_1 AND conclusion_2 AND  AND conclusie_m
```

Using a server-side production rule engine with a java based client interface like JESS may seem the obvious solution, but external requirements for the server (not too powerful but still fast performance), clients (very thin and no use of applets) and bandwidth of the connection (not too broad), forced us to look for a different solution. We developed our own rule language, based on propositional logic.

The rules are stored in XML and then automatically converted into decision trees (also stored in XML). The application runs those decision trees. The decision trees are also expressed in XML and an obvious candidate for the translation language was XSLT (eXtended Stylesheet Language Translator). The program is quite complex, the algorithm exponential in nature, but since the separate rule sets are not too big it works in practice.[4]

An example of such a rule belonging to the legal area of tenant's rights is as follows:

If the landlord terminates a tenancy timely, by certified mail and a valid reason, then the termination procedure is valid.

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[4]The algorithm was specifically developed for this project. We knew of transformations of decision trees to rules, but not vice versa. To transform all the rules in the current version to trees takes about 8 hours on a Pentium 800MHz. The algorithm could probably be improved, but the problem is hard to solve in XSLT.
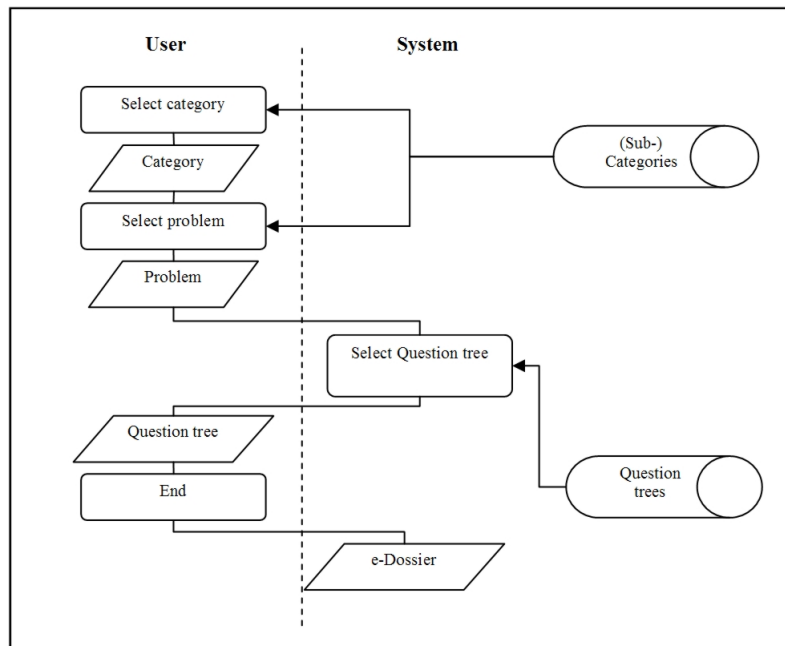
Figure 3: Data flow through the clarification of legal questions.

In XML format it looks like this:[5]

```
<rule id="termination1">
<conclusion var="terminationvalid" value="yes"/>
<condition var="terminationtimely" value="yes"/>
<condition var="termintionbycertifiedmail" value="yes"/>
<condition var="terminationreasonvalid" value="yes"/>
<comments>
```

The procedure for terminating a tenancy consists of sending a letter announcing the termination

by certified mail explaining the reason for termination and giving the tenant due notice

```
</comments>
</rule>
```

All conditions are variables that are defined separately, e.g.:

```
<boolean id="terminationtimely">
<question user="default">Was the tenant given due notice?</question>
<question user="client">Were you given due notice?</question>
<expl extref="periodofnotice.htm"
</boolean>
```

The question text (everything between the question tags) is later being displayed on the screen. In the above example there are two instances, a default text for the employee and a separate text for clients that use the internet. The explanation (tag 'expl') refers to a text that will be shown if the user clicks an iicon (see Figure 2, the question on period of notice (in Dutch: *opzegtermijn*). This text can direct to the legal sources and other back-ground information. In the case used in the example the explanation directs to a help-text with the following content:

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[5]Proposed xml formats for rules like RuleML are too complicated for our purpose and the translation to decision trees would be needlessly more complex.

"The period of notice is three month plus one year for every full rental year, with a maximum of six months. This is also valid if the tenancy contract contains a different clause, such a clause is illegal. (SOKI; BW7 art. 271, sub 5b)."[6]

An explicit connection of the rules to external sources is important from the perspective of maintenance, because when the law changes the rules that need to be adapted are much easier to trace.

Besides containing explanatory texts and references to the original knowledge sources the systems also contains modelling comments (the 'comment tag' in the example given earlier).

The variable 'periodofnotice' that was introduced before has the type "Boolean" and consequently can take the value 'true' or 'false' (in this case corresponding to 'yes' or 'no'). A third value is 'unknown', which causes the system to derive the actual value by starting a dialogue with the systems user as explained before. Another simple variable type is 'nominal'. Such variables allow different responses that have to be defined:

```
<nominal id="typeofcontract">
<question user="default">What is the type of the contract?</question>
<value const="c_hotel"/>
<value const="c_pension"/>
<value const="c_rent"/>
<value const="c_freeloan"/>
</nominal>
```

The 'value tags' refer to possible answers. It is not necessary to include the answer "unknown" explicitly; this will be added automatically when generating the trees. How the answers will appear on the screen must be described separately:

```
<constant id="c_pension">pension arrangement</constant>
<constant id="c_hotel">hotel arrangement</constant>
<constant id="c_rental">rental arrangement</constant>
<constant id="c_freeloan">free loan arrangement</constant>
```

This separation of the rules that are used for the inference process and the user representation is deliberate. As a consequence of this separation we can much easier realise a separate interface for the LSC's clients and their employees, but we could for example also create a version in a different language, while maintaining the same knowledge representation for the inference process.

4.2   Rule validation

When a rule set for a certain legal domain is completed it should be verified and validated. Verification (checking for internal consistency and correctness) is supported by automated tools. Validation (checking if the rules are correct from a legal perspective and checking if they comply with the organisation's aims) has to be done by human experts. Earlier studies show that rule sets are rather hard to validate by non technical human experts, while decision trees with the same meaning are much easier to validate (see e.g. [4]). All question trees are validated by more than one of the LSC's legal experts and their comments are used to adapt the rules when possible and desirable. The latter deserves some explanation. That change requests can not always result in actual changes in the system for technological reasons or limitations in time and budget is obvious. But can a change request be undesirable? Yes, for two reasons. First of all, the application is not intended to solve all legal subtleties – even if such a level of support were possible. The main goal is to support the majority of cases (the standard or prototypical ones) and to serve as a kind of checklist for the employees of the

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[6]A frequently consulted source for the employees of the LSC's is the Almanac for the Social Bar (Almanak voor de Sociale Advocatuur (SOKI)); the other reference is to the Dutch civil code.

LSC's or their clients. This checklist can prevent users from making mistakes and present solutions that otherwise could be easily overseen. Experienced lawyers that are validating the application sometimes focus too much on exotic legal exceptions and consequently want these incorporated in the system. If these requests would be honoured, the system would still not be finished, but it would also be much harder to maintain and difficult to explain to less experienced users. Secondly, the aims of the *new* organisation are quite different from the old one as we have seen. The legal experts are all coming from the old organisation and consequently are used to a working routine that is quite different from the new one.

The final validation of course, is in actual use of the system. All software developed for the LSC was tested for several days by users from the organisation under the guidance of an external auditor. Our module has been running now for some time at two LSCs for the employees. We are still working on the internet version for LSC clients.

5   System or human beings?

A frequently heard argument, especially used by lawyers, against a knowledge engineering approach to solving legal problems is the fact that laws contain many open evaluative terms, like 'good practice'. Norms would be hard to formalize as a consequence of this characteristic and therefore information systems couldn't cope with solving legal problems. One could use as a counter argument that legislation that contains such open norms is not sound, but that would not solve the problem of course. One could also counter that the organisation responsible for executing the law should choose an interpretation, which would result in closing the open norm. But this will not be desirable in all cases; in such cases human judgement will remain necessary. Our application – as many others in the past – solves the issue by presenting remaining open evaluative terms to the user. Background information should help the user in deciding these issues.

In a way, this argument is related to the attitude of the legal experts who focus on the rare exceptions when validating our application. The general idea seems to be: There is no such thing as a *clear case*! Theoretically this may be true, but in practice the vast majority of legal transactions never becomes a case; they are 'solved' by the parties. Of the remaining set that comes to an arbitrator or judge, again the majority merits no legal debate whatsoever (cf. [5]). Of course, the target population of the LSC's may need assistance with even the simplest of cases, and the employees may need assistance with slightly more complex ones, but this kind of support can very well be delivered by knowledge systems. One has to take care that potentially 'dangerous' cases are always being reviewed by a legal expert as well. Protocols may take care of that, e.g. "For all dismissal cases make an appointment with one of the legal experts".

In the specific context of the LSC's one should also take into account the specific characteristics of their clients. The problems of these clients are not limited to strict juridical or legal ones. Sometimes it will not be possible to achieve the desired result (e.g. in case of dismissal or eviction) but the employee (or the application) can still explain the legal and practical consequences of the case at hand. This social counselling role used to be very important in the Legal Aid and Advice Centres and it will probably remain important in the new organisation. The LSC's consequently have chosen to introduce a multi-channel strategy, in which not just a virtual office is created, but call-centre technology and personal contacts will be equally important.

6 A knowledge based approach to organizational change

We developed the application described before within the context of an organisational change programme. The aim of that programme was the introduction of a new model of interaction between the organisation and its clients that should reduce operational cost while maintaining a certain minimum level of legal support for relatively poor citizens. The business model consequently would have to change from a craftsmanship oriented one to a system level bureaucracy. According to [8] such a bureaucracy can be characterized by the concentration of the experts that are responsible for system's design and the reduction of skills in the frontline of the organisation. In big governmental organisations like the Tax Administration an important argument in favour of the latter is the need to guarantee equality before the law. This equality can best be achieved by a high level of standardisation. Economy of scale can furthermore help to reduce operational costs.

The employees of the newly created LSC organisation come for a substantial part from the Legal Aid and Advice Centres in which craftsmanship was highly appreciated. In the new situation the level of professional freedom (especially for the high-skilled legal professionals) will be limited and this of course was (and still is) a source of resistance. The role of the experts that used to work in the organisation's front line will change. These experts in the new organisation will have the role of system designer, a role that may require different skills.

We needed the full cooperation of the legal experts, since in the end it is their knowledge that needs to be captured, their tasks that have to be supported and it is their working environment that had to be (re)designed. These experts were very aware that by cooperating they would help to create a new way of working, a way many of them had serious doubts about. We were confronted with this tension during the whole development process. In such a complex political situation a successful implementation (including organisational change) can only be achieved if the process is managed by a leader with a clear strategic vision and the power and willingness to overcome these problems.

In this specific case as in many others, there were many stakeholders within and outside of the organisation responsible for getting the job done, all having their own political agenda. We experienced again that dealing with the political agenda was as important as dealing with the more technical issues. Sometimes the design team was used to communicate the organisational change to the employees of the new organisation, consequently bringing the team in a situation it wasn't suitably equipped to handle.

To cope with the complexity of the new organisation's design (including supporting systems) the design process was decomposed. Different functionalities were to be realized by different organisations. These organisations needed to develop ways of cooperating while aiming at an ever moving target. A lesson that apparently has to be learned over and over again is that developing a shared conceptual framework (i.e. a means of communication, a commonly shared strategy etc.) is time consuming and needs specific management attention (see also [2]). With respect to the design of the LSC organisation a start has been made, but the turnaround still has to be made, not only technically and organisationally speaking, but especially mentally (i.e. the organisational change will only be successfully implemented if a substantial part of its employees have adapted their mind set to it, which is not the case yet).

7 Conclusions

We have presented a knowledge based support system for clarifying legal issues in problems or questions clients of legal aid have in the Netherlands. Given all internal and external requirements, we decided to represent the knowledge in a traditional rules based format, but to automatically translate these to a decision tree format for presentation on the client side.

This turned out to be a good compromise. It combines the advantages of rules over decision trees in the area of modelling, maintenance and ease of explanation, with the speed, low overhead, ease of validation and intuitive interface of decision trees.

The use of internet technology may enhance access to legal data, but since most citizens have only limited legal knowledge, merely creating this type of access will not very likely be a sufficient improvement. Legal knowledge-based systems can play an important role in providing the desired improvement, if combined with other channels like call centre technology and traditional face to face contacts.

When designing knowledge-based systems, (re)designing the organisation and paying attention to organisational change, coping with power conflicts amongst others is very important. These power conflicts (potentially dangerous for the project's results) occur easily, because the type of knowledge based systems described here are very intrusive to organisations and the way people work within them

It is obvious that the knowledge contained in knowledge-based systems has to be frequently updated. By structuring and explicitly describing the knowledge necessary for the organisations' operations we can reduce both maintenance costs and improve the organisations adaptability in the same time. Knowledge management remains the key to organisational success.

Organisational change issues however, shouldn't be neglected. Especially when developing high-intrusive technology such as the knowledge based support as was created in this project, one might expect resistance to change. Dealing with this is as important as managing the technical aspects of a project

Acknowledgements

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