

# **e-LEGAL SERVICES: TO SPEED UP JUSTICE FOR B2B SYSTEMS**

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## **Abstract**

International business is increasingly undertaken within flexible, multi-organisational e-Businesses to address the needs of the global market. Underpinning this are Business-to-Business (B2Bs) processes and Web Services. The purpose of this paper is to outline some new ideas to speed-up the Negotiation and Dispute Resolutions business processes. In particular it addresses the need for systems to support the legal process when a negotiation has broken down by proposing service architecture combines negotiation and associative legal services.

The paper provides a summary of B2B process management for virtual organisations using Web Services and the Grid. Further it provides the relevant details on knowledge management, shared ontologies for legal systems and e-Negotiation systems. This provides the background to the design of a B2B BPEL architecture to speed-up the legal processes involved in resolving disputes using IT-enabled dispute resolution. The paper describes an e-NegLegal network and a conceptual design of an e-Legal Services module.

## **1 Introduction**

### **1.1 Context**

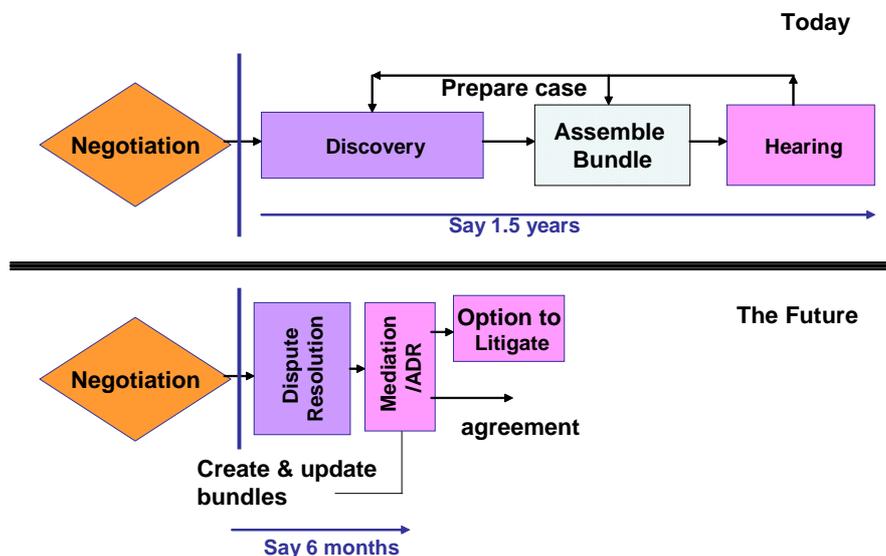
Although there have been great advances in internet and artificial intelligence search technologies over the past 5 years, the growth of the use of IT in trials or dispute resolution has been ad hoc and unspectacular [Barnett 2005a]. Many lawyers now use email and wi fi connections to their offices, and a great deal of money is spent by law firms and chambers on automation of back office functions. The present legal systems were designed for the pre-internet world. As commerce moves on, the challenge is to harness emerging technology for the future generation of legal process. For example to enable lawyers, judges, mediators, bankers and clients conduct better hearings, meetings, mediations and if necessary trials.

Although criminal and civil litigation are based on different principles, they are both conducted in traditional environments, which are cumbersome, expensive and time consuming. Long trials become document heavy, with weeks, sometimes months set aside to conduct investigations into events that often took place many years ago. As a result of the huge increase in cost, there is reluctance amongst clients to go to trial unless there is no alternative. Legal process has to be redesigned to catch up with the changing commercial landscape.

The increase in globalisation of trade has resulted in a proliferation of international disputes. These often involve potential litigants, based in remote locations, where the disputes exhibit dual problems of differences of language and legal systems. The growth in ICT and intelligent decision support system has enabled a rapid growth in the scale and connectivity between users, around world. The historic perspective on ICT is described in [Susskind 2003]. This paper is concerned with speeding up the processes used in Business-to-Business dispute resolution.

To reduce the cost of justice there is a growing use of Mediation and Alternative Dispute Resolution (ADR) and Online Dispute Resolution (ODR) [Katsh 2001, Rule 2002, Larson 2004]. Early examples of ODR across the Internet, are <http://www.squaretrade.com/> and [Thiessen 2003]. These support human-to-human discussions and collaboration. It is anticipated that there will be a substantial growth in the use of ADR (Alternate Dispute Resolution) at the expense of traditional litigation. Private panels of mediators and arbitrators will provide an alternative to expensive trials conducted by Judges employed by national legal systems. Systems of the future will need to integrate information, manage information flows and enable collaboration between both litigants and their legal advisers. An introduction to ODR is given in appendix 1.

A particular class of ODR considered here is ICT-enabled Dispute Resolution, where the emphasis is on those ICT systems that unpin ADR processes. A recent conference held at Leeds University Business School (LUBS) on May 11<sup>th</sup> 2005 on IT-enabled Dispute Resolution and UK-China disputes, discussed the advances and the issues that need to be addressed [Barnett 2005b and Shenkar 2005].



**Figure 1 Speeding up Justice**

Practitioners have recognised the trend towards document heavy hearings in both civil and criminal jurisdictions, as disclosure and discovery generate huge stores of information, including email traffic and network information. The use of ICT to support

the legal process concentrates on the ability of legal practitioners to master these large data sets. This is illustrated in Figure 1. An early example of an ICT-enabled Dispute Resolution System is Custodian from CourtCom Ltd ([www.courtcom.co.uk](http://www.courtcom.co.uk)) and its online version from LGO Ltd. The focus of Custodian is to support the formation of so called *Legal Bundles* that incorporate a large volume of papers, some of which are common, some of which are confidential. Further these must be archived, thus creating the need for large and intelligent storage systems (such as Documentum ECM Platform by ECM Ltd and SolcaraLtd.).

## 1.2 Purpose

International business is increasingly undertaken within flexible, multi-organisational e-Businesses to address the needs of the global market. Underpinning this are **Business-to-Business (B2Bs)** processes and Web Services (see next section). The purpose in this paper is outlining some new ideas to speed-up the Negotiation and Dispute Resolutions business processes.

Although there has been a history of development of e-Negotiation systems (<http://interneg.org/interneg/research/papers/>), there has been little research on systems to support the legal processes once a negotiation has broken down. This paper aims to address this need. In particular it describes a possible e-Legal Services and the feasibility of an integrated e-Negotiation/Legal network (e-NegLegal) architecture that integrates negotiation and legal services. This enhances the capability of B2B systems to support processes which quickly enable a legal practitioner to resolve any conflicts that might arise.

At present international disputes that occur between companies, financial exchanges, international trade bodies and governments are now resolved in various centres such as the Court of Arbitration in Sport at Geneva. Parties who wish to participate have to travel by air, unless point to point video conferencing, with its well documented limitations, has been arranged. Often the dispute will arise after negotiation between the parties has been unable to resolve their differences and hence the need to go to Law.

The focus of the research reported here is to study Web-based services for international business mediation and arbitration using B2B inter-process systems that operate in a virtual organization, within a global market. There are many definitions of virtual organization but in essence it is a network of organizations with compatible business processes. Web Service/Grid environments are designed to support virtual organisations using international standards. This is discussed further in the next section. The inter- and intra-business processes are modeled in the Web Services standard BPEL (Business Process Execution Language). In this paper BPEL is used to model the inter-processes which interface with the local workflow engines managing the intra-processes. An example of the use of BPEL for negotiation is given in [Kim 2004].

The paper is structured in the following way. The next section provides a summary of process management for virtual organisations using Web Services and the Grid. This is followed by relevant details on knowledge management and shared ontologies for legal systems. Section 4 is concerned with e-Negotiation systems and the Market-Place, and the issues involved in the design of an integrated e- Negotiation/Legal network (e-NegLegal). This leads on to a conceptual design of an e-Legal Services module that is a key building block of the e-NegLegal network. Finally conclusions and future work are discussed.

## 2 Process Management for Virtual Organisation using the Grid

The purpose of this section is to discuss the key architectural elements that will be used in the design of an architecture for e- Legal Services. The underlying system architecture uses the Grid, which is a loosely-distributed system, based on the Web Services Resource Framework (WS-RF) and the BPEL [Alonso 2004a and b].

### 2.1 Grid and Virtual Organisation

The Grid is a major international initiative, to build worldwide collaborative, computation and data management environments. It provides a collaborative computational and data infrastructure for supporting global virtual organisations (e-businesses and organisations) and when disputes arise, the use of distributed legal services to support resolution of the dispute.

The Grid a major paradigm shift in distributed computation principles, with a focus toward service oriented, open standard integration, collaboration and virtualisation of resources, [Joseph 2004 *etc*]. The Grid provides a framework for building virtual organisations using a *service-oriented architecture* (SOA) [Alonso 2004a]. A service is a stable, published interface that can be invoked by other processes. Services specify the functional and non- functional (e.g. Quality of Service – QoS - such as security, performance etc.) of a service. It is an extension of component architectures used, for example, by Kim [Kim 2004] for e-Negotiation systems. Importantly services can be composed and discovered by other services. This enables the growth of international e-Business networks, where each party can provide specialised services such as in a supply chain business.

More generally it enables *the integration of services and resources within distributed, heterogeneous, dynamic, virtual organisations* [Foster 2001, Foster 2004]. It provides the required connectivity to integrate applications and better utilise unused compute processing power and data storage. Clearly open standards are critical. These are provided by the Open Grid Service Architecture (OGSA), which is implemented in a set of well defined Grid Middleware Services. Early implementations of Grid Middleware are Globus4 (<http://www.globus.org/toolkit/>) and Crown (<http://www.crown.org.cn/en/>). There are a number of national and international Grids in academia such as the UK's National Grid Service (<http://www.ngs.ac.uk/>) for sharing computational and data resources. There is a federated deployment of Storage Resource Brokers (SRB) ([http://www.sdsc.edu/srb/index.php/Main\\_Page](http://www.sdsc.edu/srb/index.php/Main_Page)). This supports distributed access to data resources. Finally OGSA-DAI (<http://www.ogsadai.org.uk/>) is middleware to support the exposure of data resources, such as relational or XML databases, on to grids.

### 2.2 Web Services and BPEL

Workflow is widely used in industry to coordinate business processes often using the Workflow Management Systems standard [WfMS see Aaist 2004]. The extension of workflow management systems to service-based Grid architecture has been considered by [Yang 2005]. There has been considerable progress in workflow automation. This enables quick deployment of process, monitoring and improvement of implemented processes. The automation is achieved by the separation of build time and run time components of workflow management systems.

The build time is concerned with assisting the creation of processes, business rules and user models. At run time the workflow management system provides the interpretation of process models, the creation of process instances, and the control of processes and activities. Popular systems are IBM's MQSeries and BEA WebLogic. Following the classification of Stohr and Zhao [Stohr 2000] the requirement is for flexibility and specificity of the process. Ad hoc processes for legal workflow systems are needed to support user-controlled routing and collaborative sharing of documents. For support of Legal Services the key requirement is a Document centric architecture with workflow capacities. This is provided by companies like ECM with their EMC Documentum and E-Rooms systems (<http://www.documentum.com/>).

The basic Service Oriented Architecture (SOA) is used to describe and publish services and is an interact mechanism for service composition. However it needs to be extended to provide Quality of Services (QoS) as shown in Figure 2. For this purpose the WS-Resource Framework has been specified. This is inspired by the work of the Global Grid Forum's Open Grid Services Infrastructure (OGSI) Working Group. Indeed, it can be viewed as a straightforward refactoring of the concepts and interfaces developed in the OGSI V1.0 specification in a manner that exploits recent developments in Web Services architecture.

Today, Web Services most often provide their users with the ability to access and manipulate state. (State refers to data values that persist across, and evolve as a result of Web Service interactions). Web Services can be used to implement applications that manage state. There is a need to define conventions for managing state so that applications discover, inspect, and interact with stateful resources in standard and interoperable ways. The *WS-Resource Framework* does this within the context of established Web Services standards. A secure collaborative workflow system has been proposed by Russell [Russell 2005]. This system enables dynamic workflow-team policies to authorise user access to workflow instances and corresponding service instances.

The WS-Resource Framework standard has been divided into four layers as shown in Figure 2. These are

- **BPEL**: overcomes many of the weaknesses in workflow languages; it provides the composition of services within a virtual environment using WS-Coordination and is supported by industry.
- **WSDL**: WS description language which is enhanced by WS-Policy to allow the encoding of QoS information services in the form of reusable services.
- **Quality of Services (QoS)**: There are a number important WS services at this level: WS-Coordination and WS-Transaction to support robust service interactions; WS-Security for enforcement of information integrity, to maintain the accuracy of the information, and prevent access by unauthorised parties [OASIS Security 2004 and 2005]; and WS-ReliableMessages. All these are critical elements of meaningful interactions.
- **Transport and Encoding**: These services underpin Web Services such as SOAP (Logical Messaging) and XML for encoding.



*Figure 2 The Web Services Stack*

The Business Process Execution Language for Web Services provides a means to formally specify business processes and interaction protocols [OASIS 2005, IBM 2005]. The language has been proposed to handle asynchronous and long time transactions (e.g. as arise in negotiation). The standard handles the specification of the services composition using WS-Coordination and Transaction standard protocols for multiple Web Services. It was introduced in July 2002 by BEA, Microsoft and IBM and is now following the OASIS standardisation process draft version 2.0 [WS-BPEL 2.0]. BPEL overcomes many of the limitations of the early workflow languages. Worked examples are given in [Alonso 2004]. [Kim 2003 & 4] proposed a BPEL process-based solution approach to e-negotiation.

BPEL does not support user interaction with system services. This is handled in a recent proposal for a new standard BEPLPeople [Kloppmann 2004] which offers the potential to provide improved interaction between legal representatives and e-Negotiation and legal processes.

BPEL is a process-oriented form of service composition. Each BPEL process composition is a business process (or workflow) that interacts with a set of Web Services to achieve certain business goals. There are two key primitives: – *process-services* and process interactions called *partners*. A process, like any other Web Service, supports a set of WSDL statements that enable the exchange of messages between partners. For further information see [Juric 2002].

## **3 Knowledge Management**

### **3.1 Management of Legal Documents**

One of the key elements in our goal to speed up justice is document management. This involves the capacity to search very large unstructured, multi-media documents together with the ability to annotate them. This section outlines the issues that must be addressed.

XML is often used for the efficient managing and processing of information for legal documents. This has been considered by a number of authors – see [Boer 2002]. There are a number of standards for the representation of legal documents mainly developed by legal publishers.

(see OASIS,Legal XML web site:

[http://www.oasisopen.org/committees/tc\\_home.php?wg\\_abbrev=legalxml-intercept](http://www.oasisopen.org/committees/tc_home.php?wg_abbrev=legalxml-intercept)).

In addition there have been number of initiatives by government agencies to annotate legal documents. These include the British Legal and Advice Metadata Scheme (LAMS) (<http://www.uklegal.com/abi/>) and the Australian Justice Sector Metadata Scheme (JSMS) (<http://www.ag.gov.au/>). A more interesting way forward is the use of schemes that enable more flexible ways to markup documents to enrich them with *metadata*. This allows applications such as intelligent retrieval and reasoning to be used. For example the MetaLex standard which intends to provide a generic and easily extensible framework for the XML encoding of the structure and content of legal and paralegal documents. These are expressed using RDF which is the basis of semantic reasoning and is part of the semantic web initiative. [Winkels 2003].

*Bundle Management* is a fundamental process used by lawyers. This is management of the collection of legal multi-media documents submitted by the various parties. Lawyers use bundle management when resolving a dispute.. Some documents are private to one of the parties whilst others are public and available to all parties involved in the dispute. Today there is a move to legal documentation management systems which are essential for processes like ODR.

An early implementation legal document managed system is Custodian from CourtCom Ltd. This was built in 2003 to demonstrate the main features of an online searchable 'jury bundle'. This could be used to form the backbone of the fully enabled ICT Criminal trial. The key requirement is to be able to handle unstructured data in order to preformed content-dependent search and retrieval of documents. Custodian uses a document management system from Nextpage/FAST (<http://www.nextpage.com>) for this purpose. This provides collaborative document management services such as search, authorisation and account management etc and adds indexation as a core function. Other relevant Document Management Systems are Documentum ECM and Solcara Information manager (<http://www.solcara.com>). These systems provide an integrated approach to the identification, capture, classification and sharing of an organisation's information. They enable management of knowledge resources (e.g. conceptual metadata) as discussed below.

The main features of a Bundle Management Service of the type envisaged for the e-Legal system described below is to provide a secure, Web Services document exchange. This needs to store all case papers and allow pre-defined levels of access to multiple participants to a legal action. The goal is to eliminate the need for paper, so that parties to a complex dispute can have access to all the core material during the trial or hearing, in a form which supports the preparation that has been undertaken over the preceding months or years.

### **3.2 Two-level Methodology**

There has been considerable progress in knowledge- based information systems, for example see [Beale 2002]. Beale proposes a two level methodology separating out knowledge, and system modeling and management. More specially:

- 1) *Information*: statements about specific entities and used at the system level, and
- 2) *Knowledge*: conceptual statements which apply to all entities of a class.

The main advantages are that it provides future-proof systems and data; domain empowerment; interoperability at the knowledge-level; and the possibility of more intelligent searches. The rational is that information requires stability whereas knowledge requires flexibility and changes more frequently. The separation of the knowledge and system domains empowers users to formally express their concepts in the appropriate language. Technical models (e.g. E-R) are undertaken by system engineers whilst knowledge specialists specify knowledge models often using ontologies.

The term *archetype* has been introduced to denote a model defining some domain concepts. These are expressed using constraints on instances of the structure of an underlying reference model.

This enables:

- users in a domain to formally express their concepts,
- information systems to guide and validate user input during creation and modification at runtime, guaranteeing that all information "instances" conform to the domain requirements.
- guaranteeing data interoperability at the knowledge level, not just at the data structure level,, and
- provides a well-defined basis for querying complex information.

This approach is used in the conceptual system design phase. It fits well with emerging intelligent search systems such as Solcara Information manager. It meets the requirements of a Legal Information system. For further information see [Beale 2002]

### **3.3 Semantic Web/Grid**

Similarly in Web Services, the semantics are embedded in hard wired applications. There is a need for a knowledge service layer. This is provided by the Semantic Web/Grid technologies which make the semantics explicit. See [Goble 2004] for a good introduction.

The Semantic Grid has:

- An unique identity of resources by the URI and namespace,
- The ability to undertake the annotation of resources with metadata for subsequent querying or manipulation,
- A shared ontology to supply the terms used by the metadata for querying,
- An ability to make inferences over the metadata and ontologies such that unasserted facts or knowledge data and be inferred.

Minimal components include: annotation mechanisms; repositories for annotations and ontologies with associated queries; and lifecycle management. Inference engines are resilient, reliable and perform well. Semantic Web is described by the Berners-Lee Layer (see [Goble 2004]) and revisited in 2006 see [Shadbolt 2006]. Layered above the XML is RDF (Resource Description Language) and schema which describe metadata, building on Web Services [Broekstra, 2002]. The Ontology layer, using OWL Web Ontology Language, provides the layer for the building shared ontology that is discussed below. Finally an ontology can be specified and viewed using Protege.

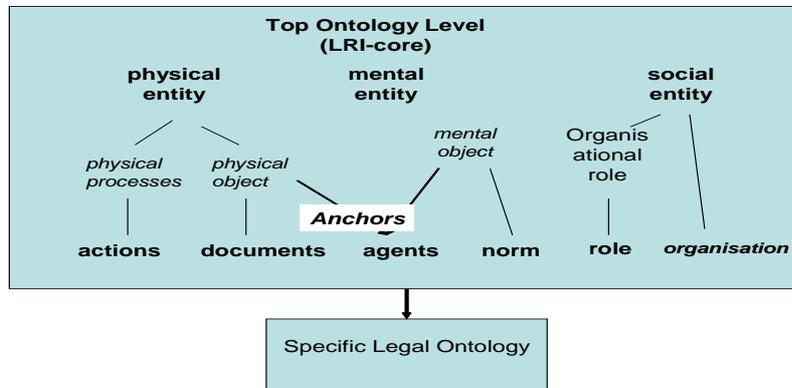
### **3.4 Shared Ontologies for Legal Systems**

Law is concerned with constraining and controlling social activities using documented norms, see below. Legislation refers to social situations and activities that can be qualified. In contrast to medicine, engineering and biology, law is not "ontologically" founded. Legal questions concern the justification by law and legal systems. It is the nature of *social* situations and activities that is the object of ontological modeling for law. A good discussion is given in the paper is "Ontologies for Legal Information Serving and Knowledge Management" [Breuker 2003]; this describes a legal ontology for the Dutch e- COURT project. Other papers concerned with Legal informatics include [Winkels 2000 & 2002, Bench-Capon 1998, Allen 1997].

The design below is concerned with a B2B application which shares information between the partners who are involved in a negotiation or the resolution of a dispute. The business partners are likely to have different business practices and terminology and hence there is always the possibility of confusion in the meaning of terms [Breuker 2003]. For example, the meaning of the "product" and "delivery" can be widely different depending on whether the company is in the manufacturing sector or in the services sector. Likewise, the terms "price" may mean total price, unit price, before tax price, after tax price and so on.

Hence there is a need provide a glossary that provides a common definition and therefore a common identify that can be used for both for the negotiation and the legal services. This consistency is an important factor in reducing the time to resolve a dispute. It is very unlikely that one single ontology standard will be sufficient and so there is a need for an ontology registration service as well as an ontology repository service [Kim 2004]. This will support the attributes unique to the company. The conflicts between the general definition and the company specific definitions are managed through using a *name space* which is widely used to discriminate one from others. Further business-process oriented delivery of knowledge is discussed in [Abecker 2000].

An interesting way forward to provide consistency for the Legal ontologies is to use something like the *LRI-Core Upper Ontology* which has been proposed for legal ontologies. This is in contrast to the IEEE Standards Upper Ontology (SUO) (<http://suo.ieee.org>) [Lehmann 2001] which is more appropriate for physical communities [Breuker 2003]. This is shown in Figure 3.



**Figure 3 LRI Upper Shared Ontology**

The underlying principles used by [Breuker 2003] are:

- *Objects and processes* are the primary entities of the physical world.
- *Mental entities* behave in ways largely analogous to the way physical objects behave. In fact, one may argue that the mental world consists largely of metaphors of the physical world. A typical mental object is a concept., Mental processes affect mental objects. Knowledge, facts, and beliefs are mental objects consisting of concepts.
- *Communication* proceeds via physical objects (documents, sounds) and actions (talk, reading) which represent mental objects (information)
- *The mental and physical and mental worlds* overlap in the concept of an “agent”. It is ambiguous and because “agent” is classified as both a physical and a mental object
- *Social organization and processes* (e.g. communication) are composed of roles that are performed by agents that are identified as individual people.
- *Time and Space* have an ambiguous state. They provide positions of events and situations both related to occurrences and as physical entities.
- *Anchors* connect the major categories used in law (person, role, process, procedure, time, space, document, information, intention). The main purpose of the ontology is to provide a framework for particular domain ontology and allow inheritance of well-defined terms. The ontology is at a very high level of abstraction to enable all lower level domain ontologies to inherit the framework. It is implemented in DAML+OIL/RDF. [Breuker 2003] illustrates the use of this approach on aspects of Dutch law. Domain ontologies which inherit LRI can be used to generalise e-Legal systems and handle the integration between the legal and the negotiation phases.

## 4 B2B e-NegLegal Networks

### 4.1 Introduction

B2B is a term used to describe inter-company business processes where buyers, suppliers and any third parties operate in an online marketplace to request or supply products or services. There are a number of business models such as *auction and sealed bidding*, which can lead to more competitive and dynamic businesses. One aspect, of interest here, is to support online negotiated agreements concerning subjects such as price, delivery and other terms and conditions. Our main focus is on B2B organisations involved in the delivery of web-based services for international business mediation and arbitration. Examples of such B2B systems that are of interest here are discussed below and in more detail in appendix 2.

This section and the next outline a high-level service-based network architecture for dealing with situations where a negotiation has broken down and the parties resolve to go to law. It is one example of a system for "Speeding up Justice". Our intention here is to outline the conceptual model of the architecture, which could provide the structure for a detailed user requirement analysis.

To achieve the speedup this paper proposes a conceptual design for a network that combines negotiation and dispute resolution legal services (called *e-NegLegal network*). The integration of these services would make dispute resolution faster. However this is challenging because both legal and negotiation services are normally undertaken on a case-by-case basis, they deal with social problems and are often context dependent, one-off decisions. The context dependency makes it difficult to build general systems, that are applicable to a wide variety of negotiation and dispute resolution problems. Once a legal dispute has arisen there is the added difficulty of managing the very large and complex data sets that arise from the negotiation phase. The *e-NegLegal* system is designed as a decision support system where humans (actors) are supported in making higher quality decisions at reduced cost.

A virtual organisation is used, where legal organisations operate independently and information is distributed around the network with appropriate security levels. (Note This virtual organisation includes a business model in which an individual corporate structure can be represented by a number of separate autonomous organisations within that virtual environment.). A major trial, mediation or enquiry such as the Bloody Sunday Enquiry [Barnett 2003], could involve the creation of a virtual organization. This would enable participants involved in the dispute from around the world to come together in the virtual environment. Here they could consider evidence and argument, contained in documents and other media held on disparate networks

A process oriented approach is used, which enables the business and system processes to be modeled using BPEL. The processes for negotiation and legal services are both specified at build time so that it is much quicker to move from the negotiation phase to the dispute resolution phase. It is likely that much of the information needed for dispute resolution has been captured during the negotiation phase and so is readily available for the dispute resolution stage.

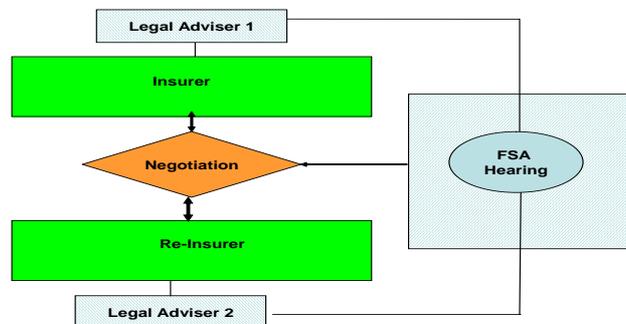
The need for more rapid dispute resolution is discussed below followed by the background on the Kim et al e-Negotiation system using the Market-Based business

process model. This is used to illustrate the issues involved in the design of a BPEL e-NegLegal network.

## 4.2 The Need

The two examples given below illustrate the type of B2B networks that arise in business and for which the e-NegLegal network could provide a greater integration between businesses, negotiation and legal processes. This would achieve the goal of “speeding up justice”.

### Example 1 B2B - Reinsurance contracts -

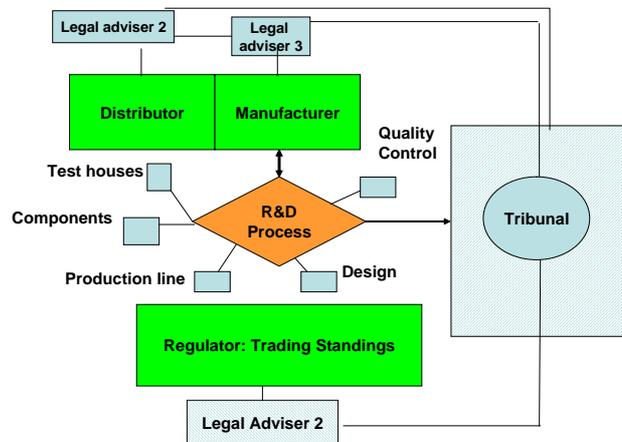


**Figure 4. B2B - Reinsurance**

In this example, the aim is to ensure quick and efficient compliance with the new regulatory regime that is anticipated. Disputes that may arise would include:

- Disputes between parties to the negotiation as to the terms of these contracts,
- Regulation by the Tribunal of FSA [Financial Services Authority] under s133(4), where the Tribunal must determine what (if any) is the appropriate action for the FSA to take in relation to the matter referred to it. Further an ADR process has been established for suitable cases.

## Example 2 Carb Product Safety Tribunal



**Figure 5 Carb Product Safety Tribunal**

The second example is in relation to a new Product Safety tribunal established by the Chartered Institute of Arbitrators. The 2005 General Product Safety Directive creates new powers for enforcement bodies, and new obligations upon suppliers and producers to notify the authorities about unsafe products that they have put on the market. The present regime for product recalls is expensive, very lengthy and unscientific - appeals against suspension notices are civil proceedings heard in the magistrates courts, which are notoriously unsatisfactory for a variety of reasons. The new tribunal offers a quick and inexpensive method of obtaining a non binding opinion from a senior judge, which can be referred to by all parties in any litigation that may follow.

### **4.3 Introduction to e-negotiation system (ENS) and the Market place.**

Negotiation is the process of reaching a mutually beneficial agreement through compromises and discovery of information [Katsh 2001; Fisher 1991]. While the negotiation has been a primary business transaction mechanism there is growing research on "automated negotiation". A comprehensive reference covering this material is [Lodder 2005].

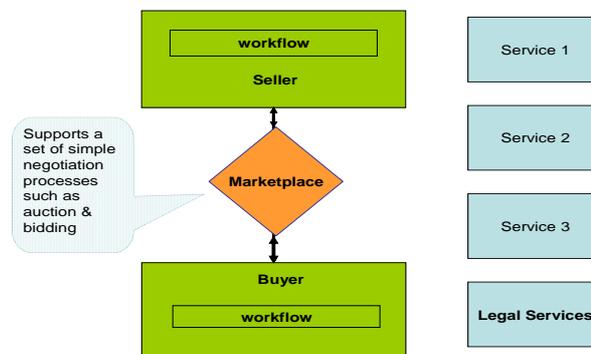
Every negotiation that involves the use of ICT distributes the work between people and the technology. The work has to be agreed by the parties and the rules for the negotiation have to be written down and agreed by all parties before the negotiation can take place. A protocol for negotiation is a set of rules governing the interpersonal and intrapersonal activities.

In the introduction to this paper we noted that the growth in ICT and intelligent decision support systems have enabled a rapid growth in the scale and connectivity between users around the world. They have also vastly increased the ability to store and access of large volume of information. Furthermore they make it possible to use models and procedures to process this information [Bichler 2003]. This has led to Negotiation Support Systems (NSS) which are a class of group decision support

systems designed to support the negotiation activities of two or more parties. Electronic Negotiation Systems (ENS) (or e-Negotiation Systems) are NSSs which use internet technology for communication such as the web [Wu 2006, Webber 2005]. A component-based software protocol approach has recently been proposed by [Kim 2005] to improve the class of negotiation problems that can be addressed by ENS.

A number of studies have approached ENS from a business/workflow management perspective [Kim 2003, 2004 & 5]. Kim and Segev have discussed a process management approach using BPEL. A Market-Place is used for structuring a negotiation. The Market-Place, which is a transformation of supply chains into an open market place, supports the composition of Web Services [Chen 2004]. This is recognised as a good solution for managing inter-organisational processes such as negotiation. Web Services and BPEL process management standards can enable a clear definition of negotiation processes that are both understandable and platform independent. In addition the Market-Place is more efficient than point- to-point links between every buyer and seller.

This is illustrated in Figure 6 for a WS Buyer-Seller- Negotiation network.



**Figure 6**

Kim and Segev have proposed a WS-enabled Market-Place architecture which has been extended below to include legal services. This paper specifies two *generic BPEL services*:

- *P1 Business Services* to support intra-processes, such as existing workflow processes, and inter-processes for the interaction with external processes
- *P2 Negotiation Services* such as the Market- Place.

The WS-enabled Market-Place architecture provides:

- *Shared ontology and message formats*: With a number of potential partners it is necessary to have a consistent naming service. In the Market- Place this comprises a glossary of common definition of terms (e.g. price, delivery and other terms and conditions). Based on these shared terms the Market-Place can provide negotiation message formats and templates. The message templates contain common negotiation variables such as price, quality etc.
- *Negotiation process definition*: There needs to be a shared understanding of the rules of the negotiation. The processes to enforce these rules can be expressed in BPEL. This enables clearly defined and easy to interpret processes. The process definitions can be specified for a number of common

processes in negotiation (e.g. two-stage sealed-bit auction). This is explained more fully in section 4 of Kim and Segev).

- *Negotiation process execution and control:* Instances of the negotiation process are to be instantiated, controlled and monitored using the Market-Place. It can enforce the commitment of the negotiation partners by providing a non- repudiation mechanism. In addition the Market- Place is well placed to execute and control the negotiation process.

To achieve interoperability between processes Kim and Segev's architecture includes an inter-organisation process management system that mediates between the negotiation partners through Web Services. The Market-Place has a BPEL repository of executable negotiation processes and runs a WS execution engine that enacts and controls the negotiation process. In addition the Market-Place stores the Shared Ontology and Message Templates (using NameSpace) and the Negotiation Process Definitions. This is more fully explained in Kim and Segev.

To illustrate the negotiation process Kim and Segev use a RFQ- service (Request For Quotation). The BPEL interacts with the negotiation processed through WS-Negotiation.Ports In their example there are 7 *PortTypes* to communicate between the negotiation process and partners. For example to enable: (1) the Buyer to receive RFQ from the negotiation process; (2) from the negotiation process to the Seller to request/receive a quote. Fuller details including BPEL and WS code are given in their paper. Because the negotiation information flows through the WS-Negotiation.Ports it is possible to capture information and documents on the progress of the negotiation that can be used if a dispute arises.

#### **4.4 e-NegLegal network using the Market-Place**

It is important to emphasis that the goal here is to provide decision support services and assist the human decision making process and not replace or automate it (in contrast to e-Neg systems what provide reasoning tools). It is necessary to record the negotiation at key points during it thus creating an audit trail which can be used by the e-legal service.

The Market-Place can be used to illustrate the main services needed to support legal services. To illustrate this consider the enhanced B2B network shown in Figure 7 which now includes the legal services modules. The details of the legal services are given in the next section.

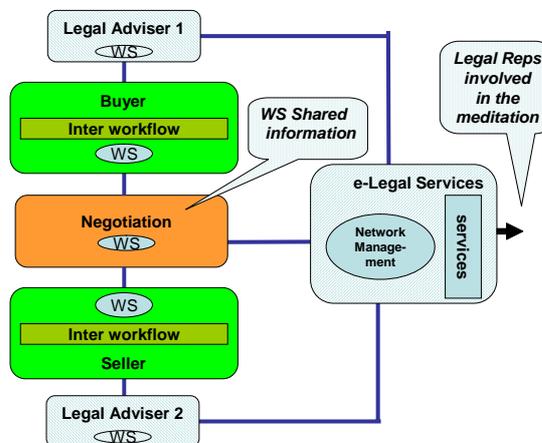
Consider the following scenario:

*"A situation has arisen where the negotiation has broken down and it is necessary to go to law. The dispute, if possible, is to be resolved by a Mediator that both partners have agreed on. They are using the e-NegLegal network which has been set up prior to any negotiation taking place. The relevant documents on the negotiation have been collected as the negotiation proceeds at the WS-Negotiation.Ports (discussed above). This information is collected from the Ports which are at the interface between the negotiation and business processes. In addition each party has their own Legal Advisor from an external Legal Company. The relevant documents for both parties are collected into a "Bundle". Some are marked private (only available to one party) and others are marked public and are available to all parties. This is managed by a Bundle Service (discussed in section 3.1). Once it is complete the bundle is made available on-line for the parties and the Mediator.. The speedup is achieved in two ways. Firstly it*

comes from a significant reduction in the time needed to form the Bundle. This is because during the negotiation phase the negotiation itself has been captured and together with other documents from each party can be made available on line and put into the Bundle. Secondly a mediation process can be used rather than a full trial

An example of an e-NetLegal network is shown in Figure 7 for a two party Buyer- Seller model (see Figure 6). To build the network two additional generic BPEL services need to be specified:

- A P3 Legal Advisor service which is responsible for the documents on behalf of their client
- P4 Legal Services to support the parties and the mediator in reaching a decision faster.



**Figure 7 WS e-NegLegal Network using BPEL**

The Legal Advisor and the Negotiation services are composed into a BPEL Network Management Services using orchestration. An instant of the service collects the documents etc for a particular case. The negotiation “Shared Ontology and Message format” data stored in the relevant database together with the “Negotiation Process Definition” data. This will ensure consistency within the network.

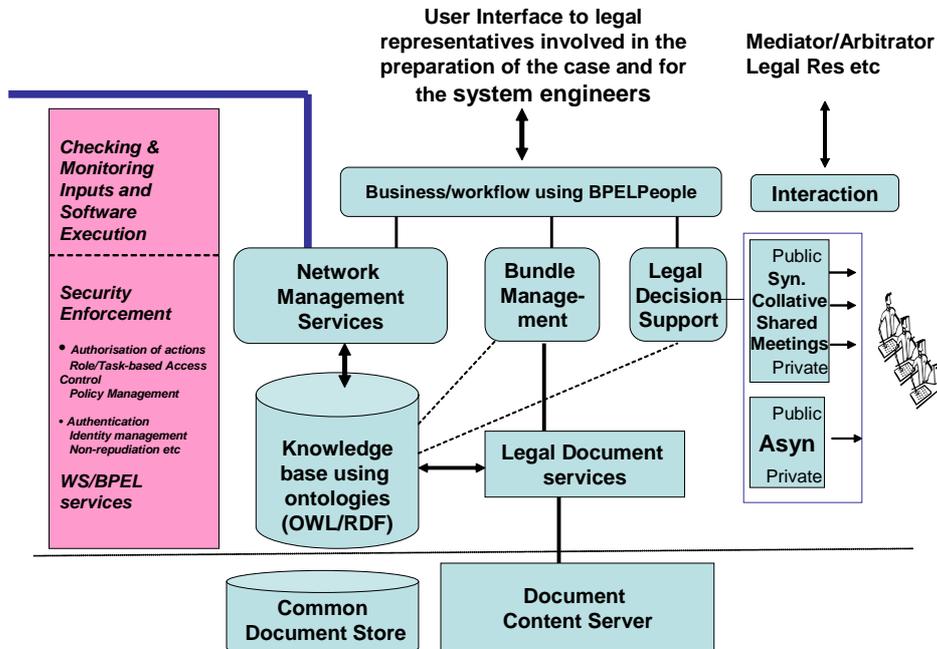
#### **4.5 Enhancing the Market-Place model**

Enhancing the Market-Place model requires negotiating parties to agree on a structure or framework for negotiation, which can be very complex in business negotiations. To enhance the capability of the Market – Place, and provide an effective process for the participants, it is necessary to incorporate a tool to assist the parties.

One possible way forward is to integrate a system such as Smartsettle [Thiessen 2003] , which is a secure eNegotiation system using patented optimisation logarithms to achieve fair and efficient solutions. Smartsettle has an initial phase in which parties agree on a Framework for Agreement and identify decision variables. A multivariate blind bidding

process is then used to bypass the conventional negotiation dance and quickly reach an agreement . Optimisation is used to uncover hidden value.

## 5 e-Legal Services



**Figure 8 WS e-Legal Service Structure**

This section outlines the e-Legal Services architecture to support Dispute Resolution. The purpose is to present an early conceptual design that can be used, in the next phase of the project, to capture detailed user requirements. This exploits the technologies and methodologies described above.

The major innovations are:

- A set of process services that enable rapid transfer of information and documents around the e-NegLegal network
- A significant reduction in the time to form the "Bundles" and potential improvements in the accuracy/richness of the information
- The use of a well defined WS security/trust model that maintains confidentiality & privacy whilst making information highly available to the parties involved
- The use of a Legal Ontological Service that provides the knowledge concepts structure for a shared ontology for dispute resolution.

The high level system structure for the WS e-Legal Services structure is given in Figure 8. This is an overview of the main services and the way they interact with each other and, through the network management services gateway, with the outside world:

- *BPEL Network Management Service* for the composition of the BPEL e-Neg/Legal network as described above. The main e-Legal services (e.g. Bundle Management) are composed by an internal business/workflow service to provide the user interface for the various legal representatives, system engineers etc. An interesting new development is the introduction of BPELPeople which is layered on BPEL and models the interaction with the Web Services and the human user and associated data flows between them. This is exactly what is needed to manage the interfaces between the legal representatives and the system.
- *Legal Ontological Services* are an important part of the design. It provides a knowledge-base to support consistency (for example of terminology) for the e-Legal services. It builds on the LRI-Core Upper Ontology discussed in section 3 and its application to Dutch e-Court research. The LRI-Core Upper Ontology provides a way of ensuring consistency between the negotiation and legal phases for specific legal cases. The ontology separates the knowledge and systems layers (see section 3). It is used by the main business services: Network Management, Bundle Management and Legal Decision Support services.
- *Bundle Management Service* provides BPEL service interfaces to the Legal Document Management system. It enables each legal representative to have their own view of their relevant documents and the public documents. Legal Document Management, for example, can be an extended form of the services provided by the Custodian system. (This provides customised search and navigation of the Legal Documents store). A Custodian-like system is built as an application module for a commercial document management system such as the ECM Documentum platform (Documentum Technical White Paper, <http://documentum.com>). It provides both structured and unstructured search and annotation services.
- **Legal Decision Support and Conferencing:** This collection of services supports the parties and Mediator in reaching a decision. The user interface provides interactive support between the legal representatives and the system using something like BPELPeople. Both synchronous and asynchronous conferencing is required. One of the best solutions for conferencing is the AccessGrid which can support large-scale distributed meetings, collaborative work sessions, seminars, lectures, tutorials and training with other sites across the world. It provides either room or desktop multiparty conferencing and multimedia document exchange across the Internet ([www.accessgrid.org](http://www.accessgrid.org)). The first commercial instance is provided by inSORS ([www.insors.com](http://www.insors.com)).
- **QoS support:** as discussed in section 2, the WS Resource Framework has a layer for the Quality of Service such as security enforcement. This includes authorisation of actions providing role/task access control and policy management, authentication identity management and non-repudiation etc.

## 6 Conclusion and Next Stage

The paper provides a proposal for an eNegLegal-Network. This will support future private legal systems which will be quick, effective and flexible, aimed at people who do

business in remote parts of the world. The next stage is to validate the architecture with potential users and stakeholders, and using their feedback update it in preparation for an implementation study. The architecture shows that the range of technologies which are needed to support an eNegLegal service is substantial, but necessary, if the vision of a global private legal service is to be properly realised. The potential beneficiaries of this service include business communities, lawyers, mediators, negotiators, system integrators and professional advisers. These stakeholders need to be consulted and involved in assessing the value of an on line negotiation and dispute resolution service and considering how such a service should develop. For this to happen we need to build a demonstrator for example of the proposed eNegLegal service.

## 7 References

### 7.1 Section 1 - Introduction

[Barnett 2005a] *IT enabled Dispute Resolution*, J. Barnett and P.M. Dew, Ed. J. Zeleznikow and A. Lodder, In International ORD Workshop (odrinro.info), Titburg: Wolf Legal Pubs, 1-10, 2005.

[Susskind 2003] *Transforming the law: essays on technology, justice and the legal marketplace*, Oxford University Press, 2003.

[Rule 2002] *Online Dispute Resolution for Business*, C. Rule, John Wiley & Sons Inc. 2002

[Katsh 2001] *Online Dispute Resolution, Resolving Conflicts in Cyberspace*, E. Katsh and J. Rifkin, John Wiley & Sons Inc, 2001.

[Katsh 2005] *Online Dispute Resolution: Some Implications for the Emergence of Law in Cyberspace*, Third International Workshop on Online Dispute Resolution in conjunction with the 8<sup>th</sup> Annual Conference on Legal Knowledge and Information Systems (Jurix) 2005.

[Larson 2004] *Online Dispute Resolution: Technology Take a Place at the Table*, D. Larson, Negotiation Journal, Jan. 2004, pp 135129

[Thiessen 2003] *Mobile with SmartSettle*, Proceeding of the UNECE Forum on ODR 2003 (<http://www.odr.info/unece2003>).

[Lodder 2005] *Proposal for an Online Dispute Resolution Environment: Dialogue Tools and Negotiation Systems: Dialogue Tools and Negotiation System in a Three-Step Model*, AR Lodder, J Zeleznikow, Harvard Negotiation Law Review, 10; 287-338, 2005.

[Barnett 2005b] in Processing of the Conference on IT-enabled DR workshop and UK-China Leeds University 12/13- <http://www.lgt-seminars.com/default.asp?content=3>

[Shenkar 2005] *The Chinese Century, The Rising Chinese Economy and Its Impact on the Global Economy, the Balance of Power, and Your Job*, Oded Shenkar, Wharton School Publishing, Pearson Education Inc, 2005.

### 7.2 Section 2 Process Management for Virtual Organisations using the Web Services and the Grid

[Alonso 2004] *Web services: concepts, architectures and applications*, G Alonso, F Casati, H Kuno, V Machiraju, Berlin; New York: Springer, 2004.

[Joseph 2004] *Evolution grid computing architecture and grid adoption models*: Joseph, Ernest and Fellenstein IBM Systems Journal Vol 43, no 4, 2004

[Foster 2001] *The Anatomy of the Grid: Enabling Scalable Virtual Organisations*, Foster, Kesselman Tuecke, International Journal of Supercomputer Applications, springerlink.com, 2001

[Foster 2004] *Grid 2 (Chapter 17) The Open Grid Services Architecture*, Foster, Kessleman and Tuecke, Morgan Kaufman Inc 2004.

[WfMS] Workflow Management Coalition, Workflow process, [www.WFMC-TC-10003](http://www.WFMC-TC-10003), 1996

[Yang, 2005] *S-WFMS: A Service-based Workflow Management System in Grid Environment*, Yang, Mingkui; Liang, Hongbing and Xu, Bin in the Proceedings of the 19<sup>th</sup> International conference on Advanced Information Networking and Applications (AINA'05), 2005.

[Aalst 2004] *Workflow Management: Models, Methods, and Systems* Aalst, W.M.P.v.d. and Hee, K.v. (Cooperative Information Systems S.): The MIT Press, 2004, 384.

[Russell 2005] Russell, Duncan; Dew, Peter; Djemame, Karim, *Service-based Collaborative Workflow for DAME*, (SCC2005) VI. 1, pp. 139-146 IEEE Computer Society Press 2005.

[OASIS Security 2004] *OASIS Security Services (SAML) TC*, OASIS, 2004. [http://www.oasis-open.org/committees/tc\\_home.php?wg\\_abbrev=security](http://www.oasis-open.org/committees/tc_home.php?wg_abbrev=security)

[OASIS 2005] *OASIS Web Services Business Process Execution Language (WSBPEL) TC* Committees Page [www.oasis-open.org/committees/tc\\_home.php?wg\\_abbrev=wsbpel](http://www.oasis-open.org/committees/tc_home.php?wg_abbrev=wsbpel)

[IBM 2005] *Business Process Execution Language for Web Services version 1.1*, [www-128.ibm.com/developerworks/library/specification/ws-bpel/](http://www-128.ibm.com/developerworks/library/specification/ws-bpel/)

[WS-BPEL 2.0, 2005] *Web Service Business Process Execution Language Version 2.0, Working Draft*, July 2005, OASIS Technical Committee, available via

<http://www.oasis-open.org/committees/wsbpel>

[Juric 2004] *Business Process Execution Language*, Juric, M. Mathew, B; Sarang, P., Packt Publishing, 2004.

[Kloppmann, 2005] *WS-BPEL Extension for People – BPEL4People* Kloppmann, Matthias; Koenig, Dieter; Leymann, Frank; Pfau, Gerhard; Rickayzen, Alan; Riegen, Claus von; Schmidt, Patrick and Trickovic, Ivana. A Joint White Paper by IBM and SAP, July 2005

### **7.3 Section 3 Knowledge Management**

[LegalXML] *OASIS Member Section, OASIS LegalXML*, <http://www.legalxml.org/>

[Boer 2002] *Metalex: Legislation in XML*, Boer, A; Hoekstra, R and Winkels, R. In *Legal Knowledge and Information Systems*, Bench-Capon, T; Daskalopulu, A. and Winkels, R. editors, pages 1-10, Amsterdam, 2002. IOS Press. Proceedings of JURIX 2002: The Fifteenth Annual Conference.

[Beale, 2002] *Archetypes: Constraint-based Domain Models for Future-proof Information Systems*, Beale, Thomas. In OOPSLA 2002 workshop on behavioural semantics.

[Goble 2004] *The Semantic Grid: Building Bridges and Busting Myths*, C.A. Goble, D. De Roure: In Proceedings of the 16th European Conference in Artificial Intelligence ([www.ECAI 2004](http://www.ECAI 2004)), including Prestigious Applicants of Intelligent Systems, PIAS IOS Press 2004, Valencia, Spain, 22-27 August 2004.

[Shadbolt 2006] *The Semantic Web Revisited*, N. Shadbolt, W. Hall, T. Berners-Lee, IEEE Intelligent Systems, 2006.

[Broekstra 2002] *Sesame: A Generic Architecture for Storing And Querying RDF and RDF Schema* Broekstra, J; Kampman, A. and Harmelen, F van. In *Proceedings of the First International Semantic Web Conference*, Horrocks, I. and Hendler, J. A., editors. LNCS, 2002.

[Sabou 2005] *Learning Domain Ontologies for Semantic Web Services Descriptions*, M Sabou, C Wroe, C Goble, G Mishne, 17th Intl Conference on World Wide Web WWW2005, Japan, May, 2005

[Bench-Capon 1998] *Legal Knowledge Based Systems*, Editors: TJM Bench-Capon, AW Koers, CNJ de Vey Mestdagh and C.A Grutters, The Eleventh Conference, 1998

[Abecker 2000] *Business – process orientated delivery of knowledge through domain ontologies*, Abecker, Mentazas, Legal, Itioudis, Papavassiliou: Database and Expert Systems Applications, Proceedings of the 12<sup>th</sup> International Workshop, Munich ( 2000).

[Breuker 2003] Use and reuse of legal ontologies in knowledge engineering and information management: Breuker and Winkels, ICAIL Workshop on Legal Ontologies & Web Based Legal Information Management (2003).

[Allen 1997] *The language of legal relations, RLL: useful in a legal ontology toolkit?* Allen, L. In *Legal Ontologies: proceedings of the ICAIL-97 workshop*, Visser P.R.S. and Winkels, R. editors, pages 47-60. ACM, New York, 1997.

[Winkels 2000] *Extended Conceptual Retrieval*, Winkels, R.G.F; Bosscher, D; Boer, A and Hoekstra, R. In *Legal Knowledge and Information Systems (JURIX-2000)*, Breuker, J.A; Leenes, R and Winkels, R.G.F, editors, pages 85-98, Amsterdam, 2000. IOS Press.

[Winkels 2002] *CLIME: lessons learned in legal information serving*. In *Proceedings of the European Conference on Artificial Intelligence-2002, Lyon (F)*, Harmelen, Frank Van; editor. Amsterdam, 2002. IOS-Press.

## **7.4 Section 4 e-NegLegal Networks**

[Fisher 1991] *Getting to Yes: negotiation agreement without giving in*, R Fisher, W Ury, B Patton, 1991.

[Lodder 2005] *Developing an online dispute resolution environment: Dialogue tools and negotiation support systems*, Harvard Negotiation Law Review, 2005.

[Kersten 2004] *E-Negotiation systems: Interaction of People and technologies to resolve conflicts*, G.E. Kersten, UNESCAP Their Annual Forum on Online Dispute Resolution, Australia, 2004.

[Bichler 2003] *Towards a structure design of electronic negotiations decision*, Group Decision and Negotiation, Springer Page 1-311 and Negotiation 12: 311–335, 2003 © 2003 Kluwer Academic Publishers.

[Wu 2006] *INSS - A New Approach in Designing Web-Based Negotiation Support Systems*, Shikui Wu, Gregory E. Kersten and Morad Benyoucef, InterNeg Research Papers, INR09/06.

[Webber 2005] *An Inspire ENS Graph is Worth 334 Words, on Average*, Michael Weber, Gregory E. Kersten and Mike J. Hine, InterNeg Research Papers , INR04/05.

[Chen 2004] *An e-marketplace for agent-supported commerce negotiation*, E Chen, G E Kersten and R Vahidov, 25<sup>th</sup> McMaster World Congress Management of Electronic Business, Ontario, Canada 2004.

[Kim 2003] *Web Services and BPEL4WS for Dynamic eBusiness Negotiation Processes*, J B Kim, A Segev, A Patankar, MG Cho, Proceedings of the International Conference on Web Services, 2003.

[Kim 2003] *Web Services and BPEL4WS for Dynamic eBusiness Negotiation Processes*, J B Kim, A Segev, A Patankar, MG Cho, Proceedings of the International Conference on Web Services, 2003.

[Kim 2004] *A Web Services-Enabled Marketplace Architecture for Negotiation Process Management*, JB Kim, A Segev , Decision Supporting Systems Special Issue on Web, 40, 71-87, 2005.

[Kim 2005] *Component-based Software Protocol Approach*, J.B Kim, G. Eersten, S. Stecker, and KP Law, interneg.concordia.ca and <http://interneg.org/interneg/research/papers/> 2005

[Barnett 2003] William and Mary Bill of Rights Journal. Vol 12 December 2003, page 687.

## **7.5 Appendix 1**

[Cameron 2004] *Introduction: information technology law at the crossroads*

EK Cameron - International Review of Law, Computers & Technology, 2004 - Taylor & Francis.

[Nolan 2006] *EverCloserUnion. Eu*, P Nolanr, R McMahon, Computer law review international, Verlag Dr. Otto Schmitt, 2006

[Davis 2002] *Symposium: Exploring Emerging Issues*, New IP, Information Technology and Security in Borderless Commerce: Building the Seamless Dispute Resolution Web, (2002) 8 Texas Wesleyan Law Review 529

[Bol 2005] *An Analysis of the Role of Difference Players in e-Mediation: the Legal Implications*, S Bol, Ed. J. Zeleznikow and A. Lodder, In International ORD Workshop, Titburg: Wolf Legal Pubs, 23-30, 2005.

## **8 Appendix 1**

### **8.1 Introduction of ODR**

The use of ICT in litigation has grown in two distinct areas. The Virtual Courtroom movement led by Professor Frederick Lederer ([www.legaltechcenter.net](http://www.legaltechcenter.net)), uses electronic filing, electronic evidence and the development of virtual or electronic courts with the use of video conferencing and other technologies to enable litigants in remote locations to participate in the hearing. Some techniques pioneered in the McGlouglin Moot Courtroom at Courtroom 21 are now in everyday use throughout the world, but in the UK, the 1995 vision of the paper free courtroom of the future lies in ruins, as various initiatives have fallen by the wayside for reasons which are beyond the scope of this paper [Barnett 2003].

The Online Dispute Resolution movement, led by Professor Ethan Katsh, defines ODR as *any method of Dispute Resolution* which wholly or partially designates the Internet as the *virtual location to solve a dispute* [Katsh 2001]. Examples include:

- Litigation (court processing),
- Mediation where the two parties agree to resolve their differences with a non-binding agreement, and
- Arbitration where parties agree to abide by the results of the arbitration.
- Negotiation which is the process of reaching a mutually beneficial agreement through compromises and the discovery of information

[Cameron 2004, Nolan 2006] consider the various techniques embraced by the phrase ODR and conclude that no single existing definition is wholly appropriate for it. Further, they suggest that ODR involves the use of ICTs to create a forum for dispute resolution. ICTs increase the efficiency of traditional methods but cannot automate the actual decision process.

There are a number of potential advantages to ODR [Rule 2002]. These include: potentially speeding up decision making; building in pauses that can be periods of reflection, supporting further research during the process, and reducing bias (because the process is not in real time). The advantages for neutral participants (e.g the

mediator) include: using asynchronous communication as a cooling-off device, opportunities to re-frame (for example the argument), the ability to caucus simultaneously with each party, and the reuse of effective language. Finally there are a number of other potential advantages of ODR such as early intervention, cost reduction, retention of customers, better feedback loops. [Davis 2002] remarked:

*'A merger of terrestrial ADR and online ODR activities appears inevitable. More broadly however with the advent of the use of online technologies in traditional dispute resolution in courts, I do wonder whether we will see a further integration of ODR, ADR and traditional court proceedings worldwide in a manner heretofore only glimpsed as we work towards our common goal to provide a fair, impartial and neutral dispute resolution - in short, justice – for all. Thus in our lifetimes, our task will be to build the truly seamless dispute resolution web'*

In online dispute resolution, the technology is often referred to as the Fourth Party [Katsh 2001]. This analogy has been taken by others and extended. For example, [Bol 2005] in an attempt to clarify, defines the provider of services such as a web site where e mediation takes place, chat or e-mail facilities as the Fifth Party. Although this extension to the analogy is helpful in considering the legal liability of all parties to a mediation, the Fourth Party should be limited to those specific situations where the technology plays a role in the decision making process of either the disputants or the mediator, for example in Smartsettle.com, where the software is a tool capable of extracting hidden value from a negotiation by any party to the process.

There a number of examples of B2C systems for which the most well known are SquareTrade and the Claim Room. The WIPO Arbitration and Mediation Centre offers an ORD service for the resolution in disputes.

## 9 Appendix 2

The examples below are full version of the ones given in section 4.2.

### 9.1 Examples 1 B2B - Reinsurance contracts (Figure 4)

The FSA regulates the financial services industry and has four objectives under the Financial Services and Markets Act 2000; maintaining market confidence, promoting public understanding of the financial system, securing the appropriate degree of protection for consumers and fighting financial crime.

It has recently adopted a new approach to insurance firms use of financial engineering, which is an umbrella term for certain types of arrangement used by insurance firms for financing or regulatory reporting purposes. These arrangements are used to improve or sometimes smooth profits, or to improve reported balance sheet positions. Examples include financial reinsurance, implicit items and contingent loans and can be used for legitimate purposes, including strengthening a firm's solvency position or accessing overly prudent 'economic reserves' of capital. Concerns arise when its use obscures the underlying financial condition of a firm or is designed to mislead consumers or regulators.

The FSA proposed high level guidance setting broad standards to regulate this practice in consultation paper 144 in July 2002 see:

<http://www.fsa.gov.uk/Pages/Library/Communication/PR/2005/107.shtml>]. Feedback showed that a number of insurers have used financial reinsurance arrangements in recent years, and a number of problem cases are the subject of investigation, often with

overseas regulators. New draft rules have now been circulated, in consultation paper 05/14 in the above paper. These are complex provisions, and will require certainty of compliance at the time a reinsurance contract is entered into, to avoid regulatory action by the FSA.

There is need for B2B e-NegLegal networks that ensure quick and efficient compliance with the new regulatory regime that is anticipated. Disputes that may arise would include

- Disputes between parties to the negotiation in to the terms of these contracts
- Regulation by the Tribunal of FSA under s133(4), where the Tribunal must determine what (if any ) is the appropriate action for the FSA to take in relation to the matter referred to.. Powers include financial penalties, public censure, and withdrawal of authorisation/approval, prohibition or civil or criminal litigation. Further an ADR process has been established for suitable cases.

## **9.2 Example 2 Carb Product Safety Tribunal (Fig 5)**

The second example is in relation the new Tribunal established by the Chartered Institutue of Arbitrators Tribunal. The 2005 General Product Safety Directive creates new powers for enforcement bodies, and new obligations upon suppliers and producers to notify the authorities about unsafe products that they have put on the market. The present regime for product recalls is expensive, very lengthy and unscientific - appeals against suspension notices are civil proceedings heard in the magistrates Courts which are notoriously unsatisfactory for a variety of reasons.

The DTI has established a new 'Advisory' scheme, to be administered by the Chartered Insitute of Arbitrators. This is cheap, very quick, and administered by an exceptional panel of retired High Court Judges. The procedures allow for the presentation of any form of evidence and for participation by video link. The parties are limited to 3 representatives per side, and the evaluator can call an independent expert if required. Strict procedures have been laid down to ensure that a hearing can take place within days of a proposed action, rather than the 6 - 12 months delay that occurs at present. (One case that is presently being undertaken is expected to take place 24 months after the enforcement action).

Much evidence in such cases is of a highly technical nature. Suppliers have an obligation to retain a 'technical file' including all design, specification, safety certification including individual components. Quality management techniques also require business process information in respect of production line information, rectification procedures and other material such as complaints and actions files. These technical files are usually held in various document stores (often in many countries as many products are manufactured in the Far East) and need not be retained in one paper file. It is envisaged that these virtual technical files will be built on new platforms to assist in the speed and accuracy of the design procedure, permitting almost instant access to the parties in the new Advisory Scheme by way of the DRM.