

Proceedings of the 6th International Workshop on Online Dispute Resolution (ODR Workshop'10)

Marta Poblet

Brooke Abrahams

John Zeleznikow (Eds.)

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Editors: Marta Poblet
Brooke Abrahams
John Zeleznikow

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Editors' address:

Institute of Law and Technology
Political Sciences and Public Law Department
School of Law
Universitat Autònoma de Barcelona
08193 Bellaterra, Spain

marta.poblet@uab.cat

Laboratory of Decision Support and Dispute Management,
School of Management and Information Systems, Victoria University
283 Queen St., Melbourne, Victoria, Australia

brooke.abrahams@vu.edu.au
john.zeleznikow@vu.edu.au

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Foreword

The 6th International Workshop on Online Dispute Resolution (ODR Workshop 2010) was held in conjunction with the 23rd International Conference on Legal Knowledge and Information Systems (Jurix Conference 2010) on December 15th, 2010. The workshop follows previous International Workshops on Online Dispute Resolution held in Edinburgh (2003), Bologna (2005), Brussels (2006), Palo Alto (2007), and Firenze (2008).

Online Dispute Resolution (ODR) continues to be a fertile domain breeding new approaches on how to manage disputes online. As in the previous five editions of the Workshop, the 6th International ODR Workshop aimed at offering a forum for the exchange of ideas and projects between people with different backgrounds, such as researchers in the fields of ADR/ODR, law, argumentation, negotiation and AI & Law as well as providers of ODR-services, practitioners, justice experts and others.

This year eight papers—six full papers and two short papers—have been accepted coming from Australia, Germany, Portugal, Switzerland, England, and Spain. We thank the authors for choosing the ODR 2010 Workshop to disseminate their latest research activities and for their timely work. And we also thank the 2010 Jurix Conference organization committee and the sponsors for their support in making this event possible.

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Online Dispute Resolution in 2010: a Cyberspace Odyssey?

Josep Suquet¹, Marta Poblet¹, Pablo Noriega², Sílvia Gabarró¹,

¹ UAB Institute of Law and Technology
UAB Campus, B Building, Faculty of Law
08193 Bellaterra, Spain

² Artificial Intelligence Research Institute (IIIA-CSIC)
UAB Campus
08193 Bellaterra, Spain

{Josep.Suquet, Marta.Poblet, Silvia.Gabarro}@uab.cat
{pablo@iiia.csic.es}

Abstract. This paper presents some results of a research on Online Dispute Resolution (ODR) and mediation online that was undertaken for the White Book on Mediation in Catalonia. The research shows the state of the art of ODR today. It presents the technologies, processes and products currently existing in the global market. A survey of 34 ODR providers is presented with information on service models, communication types, functionalities, ADR services and other off-ADR services such as seals of quality or formation activities. The survey shows that in most ODR services, IT is not fully employed and web 2.0/web 3.0 tools are barely used at all. Consequently, ODR systems do not yet benefit from the opportunities these technologies could provide. Our survey also shows that there are less active ODR services providers today than only a few years ago.

Keywords: Online Dispute Resolution, Mediation, IT, Web 2.0, Web 3.0.

1 Introduction

This paper aims at presenting some of the results of the research undertaken by the Technological Group in ODR and online mediation within the framework of the White Book on Mediation in Catalonia. The research shows, on the one hand, the technologies, processes and products currently existing in the area of the Online Dispute Resolution (ODR) and, on the other, it analyses the uses of technology of mediation services providers in Catalonia as well as their needs. This paper deals only with the former subject.¹

¹ The referred chapter of the White Book is titled Technologies for online mediation, State of the Art, Uses and Proposals .[8]

The research was carried out through 2009 and finished on May 2010. This included an ethnographic and online research with interviews and electronic mail communications with experts on the field. We also took into account former studies and surveys on the topic such as those of Conley Tyler (2003, 2004) and, more recently, the European Centre of Standardization. [3]

1.1 Concept of ODR.

A flexible notion of Online Dispute Resolution (ODR) is adopted according to which ODR is considered as any ADR mechanism in which technology plays a considerable part. The “considerable part” element may be fulfilled when there is something more than a mere electronic application form or an email communication. However, this does not imply that all communications must be done online.

We have excluded from the survey the following: i) Internal complain management systems (ICM) that do not include any ADR mechanism. ii) Domain Name dispute resolution systems. iii) Systems used in the area of negotiation (such as Negoisst or Inspire). iv) IT applied to Court systems (Cybercourts).

We have considered as ODR mechanisms the following: assisted negotiation, automatic negotiation, mediation, arbitration, adjudication, recommendation and initial neutral evaluation, premediation services and other hybrid services such as those of med-arb procedures, dispute avoidance and early resolution or trial preparation. We have also included off-ADR services that in some occasions are provided by ODR providers. Basically, these include the provision of seals of quality, the setting of standards of conduct, some formation activities, the provision of watch lists, the provision of psychometrics profiles of help to mediators, the provision of lists of mediators, etc. It must be noted that these off-ODR services may give a stronger position to the ODR provider in the globalised “market of conflicts.”²

1.2 Table of ODR providers: considerations.

The research outcome shows a table of 34 ODR services providers that may be consulted below. This reflects the panorama in the international market.

The ODR providers are displayed within the rows. The columns identify several characteristics of them, basically being: ownership, country of activity, web site and the domain of application. Moreover, we include mechanisms of ODR, off-ADR services, communication methods (synchronous and asynchronous), negotiation automation and ODR service models. We have classified the scope of application of these services according to the following categories: electronic commerce (B2C, B2B, C2C), Privacy, Intellectual Property and Generic.

The technological functionalities referred to are: i) Automated flow monitoring: It monitors the sequence of the process, the times and the participation of parts. ii) Registry of cases. It makes a transcription in digital format of the case in order to be usable in a later time. iii) Structured forms: The information inherent of the process

² This term is used by K.P. Berger.[2]

(like the claim, offer and counteroffer and final agreement) is represented digitally in a structured way. iv) Automatic messages of the parts. The system generates automatically the communications according to the protocol established in time and sequence. v) Confidential records. Cases are preserved with confidentiality and persistence. vi) Data bases. The information of the cases and its administration are stored in order to be able to retrieve it on line in a systematic way.

As regards negotiation automation processes, we have identified the presence of two types of algorithms. First, the results optimization algorithms mean those algorithms that select the best of among the solutions that are acceptable for each party. Second, according to the offer/counter-offer algorithms, each delivery makes a proposal in a confidential way and if the offers coincide in a determinate threshold, the algorithm chooses the half point as the best solution. If the offers are not compatible new confidential proposals are asked again and the cycle a finite number is repeated.

Finally, and regarding the degree of technology sophistication, we have established the following models: i) ODR of basic technology: it integrates easily disposable components into the market (electronic mail, voice over IP, etc). ii) Owner of ODR technology: the entity uses computer technology that has been developed from this entity. iii) Licensor of ODR technology: the provider licenses ODR technology to entities employing it for dispute resolution activities and allowing this licensee to adapt it to its interests and brand. iv) SAAS provider (software as a Service): it offers web platform services but the administration of the cases is carried out by another supplier.

1.3 Research results

The short history of ODR in its fifteen years of existence is far from stable. Conley Tyler [4, 5] has distinguished four phases of development: According to the amateurish phase (1990-1996), a series of persons started to work, often without formal support, to develop an online ADR. Then, it followed an experimental phase (1997-1998), characterized by the presence of pilot programs developed for academic institutions or without spirit of profit and funded by foundations and international organizations, like the Hewlett Foundation or United Nations (e.g., the Virtual Magistrate). The entrepreneurial phase (1999-2000) was promoted by initiatives of the private sector that threw themselves to the Internet market with the provision of online mediation services. After the dot com bubble burst, many ODR projects were shut down. The institutional phase was initiated around 2001. Some institutions, including courts of justice became licensees of ODR software and started providing ODR services. In 2004 Conley Tyler ascertained that, of the 115 analyzed services, more than thirty were not operative any more. As of today, only 34 ODR providers are still in operation which makes only a 29, 5% of those previously active.

Several factors of the research we have undertaken may provide some light as to where ODR is today and more important, where is it heading to. Further to the sharp decline in the number of ODR providers, these may include other aspects such as their location in the globalised world, the different type of services offered and the

mechanisms employed, the different IT tools used as well as the lack of interoperability services or the lack of web 2.0, web 3.0 and mobile web tools; even the role of private and public entities in the ODR world.

As it can be seen from the table bellow, the localization of these ODR providers is overall situated in EEUU (17 providers) and Europe (14) with 2 services situated in Asia (ODR India and ODR China, both owned by the generic ODR World) and Oceania (Asset Divider and Family Winner, both being a project from Victoria University and employing negotiation decision support services- NDSS). We have identified one mechanism situated in Argentina, South America even if it is also located in Spain (Mediar Online).³

More than 65% of these have a generic domain of scope whereas only two deal with privacy (Mediateur du Net and Trustee) and one covers intellectual property controversies (WIPO Arbitration and Mediation Centre). 26% of these ODR providers (9 of them) deal with electronic transactions, the majority of which covers B2C disputes. The latter aspect may be due to lack of trust of companies to ODR systems. In fact, some ODR providers informed us that in general companies are not as willing as consumers to enter into these systems and some might even not know of their existence. [8] It could be also noted that consumers may be more benefited from inexpensive mechanisms employed in ODR systems in comparison to litigation. Moreover, platforms like eBay have provided an important growth in the number of C2C conflict resolution systems.

As regards the mechanisms employed, mediation is the mechanism more used with 74% of ODR providers using it. This is followed by arbitration with more than 40%. This may be of importance since former surveys indicated that both mediation and arbitration were used quite similarly in comparative terms. [4] The chapter on consumer mediation of the White Book on Mediation in Catalonia shows that in consumer cases companies prefer to mediate rather than going into arbitration. [1] Therefore, it can be affirmed that ODR providers understand that parties prefer to use consensual, win to win methods that entitle them to retain the ultimate decision of the controversy. Moreover, consensual methods seem to be less expensive than litigation or arbitration. Therefore, it seems that consensual-based services will increase and this seems a trend for the near future.

Only 9 institutions offer assisted negotiation and the other mechanisms are less implemented. It may be noted that some of these entitle users to choose the mechanism they prefer. Moreover, we have come across some mechanisms where a three-step process is employed, e.g, ECODIR where it uses a negotiation phase, and if parties are not able to solve their problem, it delivers to a mediation phase and if neither parties succeed a third independent party issues a recommendation that solves the problem (recommendation phase). The use of hybrid mechanisms is of no significance: The Electronic Courthouse is the only one that offers Med-Arb services.

As regards the communication method, the use of asynchronous mechanisms (such as forums or email communications) is predominant. A 42% of ODR services employ this method exclusively whereas only a 10% of those only employ synchronous communication types (such as videoconference or chats). However, almost a 48% of

³ Please note that since some ODR providers have simultaneous locations we have included both of them in its territorial domain.

cases employ both communication methods. This may combine the benefices of both. Further than this, ODR providers do not employ tools from the web 2.0. There are no cases of Twitter, Wikis, Facebook or Flickr to name some of the best well-known examples of the web 2.0 in those systems. Furthermore, they do not employ tools from the semantic web or web 3.0. Again, we regret a lack of IT interoperability among ODR services. This is true since, further to the concerns expressed by the European Centre of Standardization [3] we have found no examples of interoperability services among the ODR providers analyzed.

As regards the service models of ODR, it is noteworthy to state that more than half of them own the technology employed. This may be because it better adapts to the mechanism employed as well as to the needs of the parties. The second more widespread model is ODR of basic technology, since the fact that, as it takes tools that already exist, this reduces costs for the institution. On the other hand, this implies that the institution has to adapt to the current available technology. The number of licensors of ODR technology and SAAS suppliers is similar (6 and 5 institutions respectively). The licensor may design ODR software according to the licensee brand and therefore, institutions such as Her Majesty's Court Service HMCS employ these systems apparently as if it was theirs'.⁴ The latter entitles a third party to use the provider's online facilities on the pay-for-use basis. Yet, it seems that both licensors and SAAS suppliers will continue being minority groups as long as the culture of ODR is not more widespread and more professionals require these services.

⁴ In this case, The Mediation Room is the licensor. See: <http://v2.theclaimroom.com/index.lxp?host=294>.

2 Table of ODR providers

Product	Automated Dispute Resolution System (ADR/Res)	Lept Solutions Centre Ug	Agència Catalana de Consum	All American Dispute Resolutions Online	American Arbitration Association WebFile	Appellex Bargaining Solutions	AssetDivider	Better Business Bureau (BBB)
Owner	WebAssured	Miscation et Arbitrage de Paris	ACC (Government of Catalonia)	All American Dispute Resolutions Online Inc.	American Arbitration Association	Fair Outcomes Inc.	Zeleznikow & Bellucci (Victoria University)	Council of Better Business Bureaux
Country	EEUU	France	Catalonia	EEUU	EEUU	EEUU	Australia	EEUU, Canada
Web	www.webassured.co.uk	www.mediationeug.com	www.consum.cat	http://shop.mediate.com	http://www.adr.org	http://www.appellex.com		http://www.bbb.org
Domain	e-T(B2C)	G	G (B2C)	G	G	G	G	G
ODR Mechanisms								
Assisted Negotiation						X	X	
Automated Negotiation								
Mediation	X		X	X	κ			X
Arbitration					κ			X
Adjudication	X							
Recommendation		X						
Early Neutral Evaluation		X						
Other services								
Provides a list of mediators	X				κ			
Seal of Quality Formation	X			X	κ			X
Others	Watchlist				Dispute avoidance and early resolution			Standards
Functionalities								
Automated flow monitoring	X							X
Registry of cases	X	X						
Structured forms					κ			X
Automated messages to parts	X	X						X
Confidential Registers		X			κ			
Data Bases	X							
Communication Types								
Asynchronous communication	X	X	X	X	κ			X
Synchronous communication			X		κ			
Negotiation Automation								
Optimisation algorithms						X	X	
Offer/Counter-offer algorithms								
Service models of ODR								
Basic ODR Technology			X		κ			X
Owner of ODR Technology	X	X			κ			
Licenser of ODR technology				X				
SAAS provider								

Product	Concilia Online	Confianza Online	Conciliazione On-Line	CyberSettle	eBay	Der Internet Ombudsmann	ECODIR	Electronic Courthouse
Owner	Camera di Commercio di Firenze	Aecem. Autocontrol & Red.es	Camera di Commercio di Ancona	CyberSettle	eBay	Der Internet Ombudsmann	Int. consortium of research entities & private entities	Electronic Courthouse
Country	Italy	Spain	Italy	EEUU	EEUU	Austria	Ireland/Europe	EEUU
Web	http://www.conciliaonline.it	http://www.confianzaonline.es	http://conciliazione.an.camcom.it/index.php	http://www.cybersettle.com	http://resolutioncenter.ebay.es	http://www.ombudsmann.at	http://www.ecodir.org	www.electroniccourthouse.com
Domain	G	G	e-T (B2B, B2C)	G	e-T (C2C)	e-T (B2C, C2C)	e-T (B2C)	G
ODR Mechanisms								
Assisted Negotiation					x		x	
Automatic Negotiation								
Mediation	x	x	x	x		x	x	x
Arbitration		x		x				x
Adjudication		x						
Recommendation							x	
Early Neutral Evaluation								x
Other services								
Provides a list of mediators								x
Seal of Quality		x						
Formation								
Others								Med-Arb
Functionalities								
Automated flow monitoring	x			x	x		x	x
Registry of cases	x			x				x
Structured forms		x	x	x	x		x	x
Automated messages to parts	x			x			x	x
Confidential Registers	x		x	x		x	x	x
Data Bases								
Communication Types								
Asynchronous communication	x	x	x	x	x	x	x	x
Synchronous Communication	x		x	x	x			
Automatizació de negociació								
Optimisation Algorithms								
Offer/Counter- offer algorithms				x				
Service models of ODR								
Basic ODR Technology		x			x			
Owner of ODR Technology	x		x				x	
Licensor of ODR technology								
SAAS provider	x			x				x

Product	eMediation.NI Roelvink Advocatenkantoor The Netherlands http://www.emediation.nl	Family Winner Zeleznikow & Bellucci (Victoria University) Australia	Global Mediation Initiatives Ms Lynn Cole EEUU http://mediationinitiatives.com	Juripax The Netherlands www.juripax.com	Mediation Arbitration Resolution Services (MARS) MARS EEUU http://www.resolvemyspuit.com e-T (B2C)	Mediar Online Physical persons & institutions collaboration Spain- Argentina http://www.mediaronline.com	Mediateur du net Le Forum des droits sur l'Internet France http://www.foruminternet.org/particuliers/mediation e-T (B2C, C2C), nd, priv
ODR Mechanisms							
Assisted Negotiation		x			x		
Automatic Negotiation							
Mediation	x		x	x	x		x
Arbitration					x		
Adjudication							
Recommendation							
Early Neutral Evaluation							
Other services							
Provides a list of mediators						x	x
Seal of Quality					x		
Formation			x			x	
Others				Premediation			Psychometric profiling
Functionalities							
Automated flow monitoring				x	x	x	x
Registry of cases				x	x	x	
Structured forms				x	x	x	
Automated messages to parts				x	x	x	
Confidential Registers				x	x	x	
Data Bases							
Communication Types							
Asynchronous communication				x	x	x	x
Synchronous Communication	x		x	x	x	x	
Negotiation Automatisation							
Optimisation Algorithms		x					
Offer/Counter- offer algorithms				x			
Service models of ODR							
Basic ODR Technology			x				
Owner of ODR Technology	x						x
Licensor of ODR technology		x					
SAAS provider				x			x

Product	Mediation Room	National Arbitration Forum	National Arbitration and Mediation	Net Neutrals	ODRWorld/India/China	PayPal	Risolve Online	Settle Today
Owner	Mediation Room United Kingdom	National Arbitration Forum EEUU	National Arbitration and Mediation EEUU	DeMars & Ass. EEUU	ODRWorld China	PayPal EEUU	Camera Arbitrale di Milano Italy	Settle Today EEUU
Country	www.themediationroom.com	www.adrforum.com	www.namadr.com	www.netneutrals.com	http://www.odrworld.com	https://www.paypal.com/es/cgi-bin/webscr?cmd=_loginout_signup	http://www.risolveonline.com	http://www.settletoday.com
Web								
Domain	G	G	G	G	G	e-T (B2B, B2C, C2C)	e-T (B2B, B2C, C2C)	G
ODR Mechanisms								
Assisted Negotiation				x		x		
Automatic Negotiation								
Mediation	x	x	x	x	x		x	
Arbitration		x	x	x	x	x		x
Adjudication				x				
Recommendation								
Early Neutral Evaluation		x						
Other services								
Provides a list of mediators	x	x	x	x	x		x	x (arbitrators)
Seal of Quality								
Formation	x	x		x				
Others			Trial preparation					IT testing; Damages analysis; IP archives
Functionalities								
Automated flow monitoring	x	x	x	x	x	x	x	x
Registry of cases	x		x	x				x
Structured forms			x	x	x	x	x	x
Automated messages to parts	x	x	x	x	x			x
Confidential Registers	x	x	x	x	x		x	x
Data Bases								
Communication Types								
Asynchronous communication	x	x	x	x	x	x	x	x
Synchronous Communication	x	x	x	x	x			
Negotiation Automatisation								
Optimisation Algorithms								
Offer/Counter- offer algorithms								
Service models of ODR								
Basic ODR Technology		x						
Owner of ODR Technology			x	x		x	x	x
Licensor of ODR technology								
SAAS provider					x			

Product	Smart Settle	Truste	Mediation Center (Electronic Case Facility - ECAEF)
Owner	Ultimate Standards Everywhere, Inc	World Intellectual Property Organization	
Country	EEUU	EEUU	International Organization
Web	http://www.smartsettle.com	http://www.truste.com	http://www.wipo.int/aml/en/ecaf
Domain	G	Priv	IP
ODR Mechanisms			
Assisted Negotiation			
Automatic Negotiation	x		
Mediation		x	x
Arbitration	x	x	x
Adjudication			Expert determination
Recommendation			
Early Neutral Evaluation			
Other services			
Provides a list of mediators	x	x	x
Seal of Quality		x	
Formation	x		
Others			
Functionalities			
Automated flow monitoring	x	x	x
Registry of cases			x
Structured forms	x		x
Automated messages to parts	x		x
Confidential Registers			x
Data Bases			
Communication Types			
Asynchronous communication	x		x
Synchronous Communication	x		
Negotiation Automatisation			
Optimisation algorithms	x		
Other/Counter-offer algorithms	x		
Service models of ODR			
Basic ODR Technology			
Owner of ODR Technology	x	x	x
Licensor of ODR technology			
SAAS provider			

G (Generic domain)
e-T (electronic transactions: B2C, B2B, C2C)
Priv (privacy)
IP (Intellectual

5 Conclusions

The world of ODR is a changing and uncertain world. According to the survey undertaken within the framework of the White Book in Mediation in Catalonia, the technological chapter of this has showed that today there are less than 30% of those ODR service providers existing only five or six years ago. The survey has been coherent with the ODR concept employed and therefore it has excluded systems which fall outside this and which have been taken into account in former surveys (e.g., internal complaint systems).

The fall of the number of bodies providing ODR services may also be understood as for other factors, external to the scope of study. After ODR pilot projects burst

around the turn of the millennium, the private sector has been unable to meet new entrepreneurial gains from ODR. It seems clear that many initiatives collapsed because of financial problems. Only a few pilot projects developed into private, for profit organizations and again, only a few of them remained into the market of conflicts. In 2010, financing ODR bodies remains one of the key issues in ODR, particularly for its neutrality and impartiality requirements. [6] On the other hand, it remains unclear as to what role public entities have to play in the ODR arena. To name only an example in the B2C sector, in Spain, consumer controversies are kept away from private initiatives as long as they do not use consensual mechanisms such as mediation.

What it may be intuited is that ODR initiatives should gain strength in order to position themselves in the globalised market of conflicts. Perhaps, this could be accomplished with the provision of ODR mechanisms used in conjunction with other off-ODR systems. Again, this is particularly important in the consumer domain where ODR services may be an item to add to seals of quality, codes of conduct, formation activities, or publicizing activities. In a way, it recalls some of the notions promoted within the e-commerce Directive as regards self-regulation entities. From our survey, it can be noted that those entities providing these kind of off-ODR services enjoy a certain stable position in their territorial market of reference. This is the case with Confianza Online in Spain but also with Better Business Bureau in the EEUU and Canada providing seals of quality to B2C activities or Trustee, also in the EEUU, providing a seal of quality regarding privacy activities.

B2C disputes seem to be some of the most employed controversies in ODR systems as we have seen in our research. It may be noted that consumers take the most of these systems since they are far better off with inexpensive services as compared with businesses. Yet, it seems that companies are not fully devoted to ODR and they may even be opposite to such systems. Bodies are mostly located in the United States as well as in Europe whereas other continents lay far behind. Furthermore, mediation is the service most commonly used (70%) followed by arbitration (40%).

According to our survey, the use of IT in ODR systems is not fully exploited. Basically, most of the bodies employ owned IT software although some of them use what we have referred to as basic ODR technology. The communication type preferably used is asynchronous such as emails, or forums. Videoconference and other synchronous communication types are less used. However, almost 50% of these systems rely on both communication types. Well known examples of entities using both types of communicate encompass The Mediation Room, National Arbitration Forum, National Arbitration and Mediation or Smartsettle.

However, ODR platforms do not take into account the different tools that the web 2.0 enables. ODR providers do not base their services in cutting-edge technology and it appears that ODR entrepreneurs may not see the need for losing time and resources to adapt platforms to the standards of web 2.0. [9] It has been pointed out that ODR would be one of the biggest beneficiaries of web 2.0 technologies. [9] However, according to our research we have found no examples of social web or web 2.0 tools. Twitter, Wikis, Facebook, Flickr or You tube are well known examples of this and are not used as with ODR systems. The results of the research indicate that ODR practice is far from using web 3.0 tools. For example, ODR platforms rely particularly on

concerns. However, web 3.0 relies on a preference for the treatment of real-time data and is concerned with systems interoperability. [7] Even though the limited use of this, we should be far from hopeless. For one thing, some of the characteristics of consumer mediation, [1] such as the standard claims typology and a low value of the disputes suggest the consumer domain to be a convenient arena for ODR.

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RisolviOnline, Médiateur du Net and Internet Ombudsmann: Have They Experienced a Significant Evolution Lastly?

Sílvia Gabarró

UAB Institute of Law and Technology
UAB Campus, B Building, Faculty of Law
08193 Bellaterra, Spain
Silvia.Gabarro@uab.cat

Abstract. This paper aims at monitoring the evolution of three European ODR providers that were studied in our previous paper “Mediation for B2C Disputes: Results of a Study of Three European ODR Providers”. We focus on quantitative data such as the number of disputes managed, their type and their nature for 2007, 2008 and 2009 to see if any development has taken place. The question of whether the world financial crisis has affected these institutions and some facts in this respect are presented, as well as other issues such as the specialization of the organisation for the success of the service. Finally, future European and worldwide challenges are mentioned with regard to online dispute resolution (ODR) evolution.

Keywords: ODR provider, mediation, e-commerce, RisolviOnline, Médiateur du Net, Internet Ombudsmann, ECC-Net.

1 Introduction

Online dispute resolution (ODR) is a branch of dispute resolution which uses technology to facilitate the resolution of disputes between parties. It provides a faster and cheaper way to get disputes solved than ordinary litigation, as well as it relieves courts and administrations. ODR may be used in different fields where technology helps the parties to reach an agreement, for instance e-commerce. This method was born in North America around twenty years ago and, during its history, several projects, commercial initiatives and others have taken place. As Conley Tyler stated in [1], the four stages of ODR development are the hobbyist phase (1990-1996), the experimental phase (1997-1998), the entrepreneurial phase (1999-2000) and the institutional phase (started in 2001)¹.

Taking these four stages as starting point, this paper aims at monitoring the evolution of three European ODR providers which appeared at the end of the entrepreneurial phase and during the institutional phase. RisolviOnline (2002),

¹ Further information on the different phases can be found in [2] and [3] (this last reference is a paper of this volume).

Méiateur du Net (2001, although free service was opened in 2004) and Internet Ombudsmann (2000) are these institutions that deal with e-commerce disputes using mediation. The statistical data on their performance was already collected and compared in [4] for 2007. Now the goal is to go further in this study by collecting and comparing data from 2007, 2008 and 2009 to see whether or not there has been a significant change and what the future trends may be. In this respect, we have found interesting to ask the question of whether the financial world crisis has affected ODR providers.

The paper is organized as follows: section 2 briefly describes the three providers; section 3 gathers all the data found in the institutions' websites focusing the attention on the number of cases per year, the type of cases and the nature of the disputes; and section 4 presents a set of conclusions and issues for further research.

2 The Three Institutions

This section explains shortly the main features of the three ODR providers which will be analyzed. The three institutions were chosen because (i) they only offer online mediation and no other ODR mechanism is used; (ii) they are owners of ODR technology [3]; (iii) one or the unique domain they manage is e-commerce; and (iv) the main or unique type of disputes handled are B2C.

2.1 RisolviOnline

RisolviOnline² is a service of the Chamber of Arbitration of Milan (Italy). It offers services of offline and online dispute resolution for B2B, B2C and C2C (individuals, businesses and representatives such as solicitors), no matter the economic value and the nationality of the parties. This organization provides a mediator—chosen from a panel of mediators—and the tools for the conflict resolution process to occur. The service is managed by the Secretariat and its personnel shall be and appear to be impartial in the management of the disputes and towards all the parties involved, they shall not enter into the details of the dispute nor shall they give legal advice nor engage in conciliation activities.

2.2 Méiateur du Net³

Méiateur du Net⁴ is managed by Marie Françoise Le Tallec. This service is a part of the *Forum des droits sur l'internet*, a non for profit organization which counts with

² <http://www.risolvionline.com>

³ This provider has stopped its activity while this research was being carried out (see <http://www.cio-online.com/actualites/lire-le-chant-du-cygne-du-forum-des-droits-sur-internet-et-de-ses-services-3287.html>). This issue and its consequences are commented later on in this paper.

⁴ <http://www.foruminternet.org/particuliers/mediation/>

over 70 members, public organizations, associations and private companies. Médiateur du Net is based in France and it deals with national and international B2C, C2C, P2P disputes and .FR domain name conflicts. To mediate in any of these cases, there is a team of three qualified people or an external mediator can be appointed. He must be neutral and impartial towards the case and the parties and he has to use the platform to manage the dispute.

2.3 Internet Ombudsmann

Internet Ombudsmann⁵ is a neutral and independent organization located in Vienna which receives funds from the Austrian Ministry of Social Affairs, Labour and Consumer Protection and the Chamber of Labour. The service offered is online dispute resolution for e-commerce and the Internet, especially for national and international B2C disputes, although C2C and B2B issues may be also helped. A mediator to manage the conflict is appointed out of a team of experts in the fields of Internet, law, consumer consultation and communication. In addition, Internet Ombudsmann also offers legal information, advice on alleged “free offers”, conferences, etc.

3 The Evolution of the Institutions from 2007 to 2009

In [4], there were nine points which were analyzed for the three providers for 2007: the process, the toolkit, the cost, the number of cases, the type of cases, the nature of the dispute, the outcome of the process, the duration of the process and other data. The aim of that paper was to draw a picture of how ODR providers worked and to identify common patterns. However, for the purposes of this study we will focus on the number of cases per year, the type of cases and the nature of the dispute as these are the features that will allow us to see the evolution. The process, the toolkit, the cost and the duration are not covered as they remain the same and do not offer quantitative data on the development of the institution. Finally, the outcome of the process (which remains with high rates of agreement) and other data have neither experienced significant changes with regard to the evolution.

⁵ <http://www.ombudsmann.at>

3.1 Number of Cases per Year

When gathering the number of cases of the three institutions, we can see that the differences are huge especially for RisolviOnline which has very low case management figures. Therefore, we will devote our attention to Médiateur du Net and Internet Ombudsmann. Table 1, 2 and 3 show the number of requests received during the different years, the number of cases which were managed and the percentage of acceptability.

Table 1. Number of cases of RisolviOnline (adapted from [5]).

Year	Number of requests	Number of cases managed	Percentage of acceptability
2007	117	8	6.83%
2008	181	9	4.97%
2009	188	6	3.19%

Table 2. Number of cases of Médiateur du Net (adapted from [6], [7] and [8]).

Year	Number of requests	Number of cases managed	Percentage of acceptability
2007	3559	1317	37%
2008	1739	981	56.41%
2009	2003	974	48.62%

Table 3. Number of cases of Internet Ombudsmann (adapted from [9], [10] and [11]).

Year	Number of requests	Number of cases managed	Percentage of acceptability
2007	8096	7456	92%
2008	7353	6471	88%
2009	10009	8808	88%

There are two aspects which should be noted for Médiateur du Net and Internet Ombudsmann: on the one hand, the fact that the percentages of cases accepted for mediation is becoming lower or remains the same; and on the other hand, the relation between the number of cases and the population of the country. Concerning the first aspect, there are two reasons stated in [8] that may explain the tendency of the percentage of acceptability:

- The number of companies in compulsory liquidation has increased due to the world financial crisis, so the service can not help the consumer and has to redirect him.
- The number of frauds has also increased, so the service can not handle these disputes and has to address them to the police or to courts.

Therefore, if the financial crisis and the increase of frauds have affected the percentage of acceptability, the number of requests should also have increased significantly. Nonetheless, it did not: the numbers for 2009 grew in comparison with those of 2008, but slightly with those of 2007. By this short and variable evolution, it

is hard to guess whether the providers will receive more complaints or on the contrary they will not. Probably, once the economic recession is far away, consumer income will be higher again so we will see a growth in the number of disputes.

With regard to the population of the countries and the number of requests, there are interesting figures to analyze. According to the Chamber of Commerce and Industry of Dijon, there were 278,000,000 online transactions in 2009 in France⁶. In that year, the French population amounted to 64,321,400 inhabitants⁷ and 45% of them bought or ordered goods or services for private use over the Internet⁸ (about 28,940,580 people). Taking into account the total number of inhabitants and comparing it with the 2003 requests received by Médiateur du Net, we can see that the provider only received 3.11 per 100,000 inhabitants. This figure is surprising, as the French General Direction for Competition, Consumption and Repression of Frauds, its regional services, the consumer associations and even the registers of the courts address, if possible, the complaints to this institution. As a result, the provider is well-known by the French and there is not a lack of information. So what is happening? We may think of the lack of specialization as a possible hypothesis: Médiateur du Net deals with B2C, C2C, P2P and domain name disputes. Later on we will devote a section to analyze the types of disputes, but we may already back up this idea looking at the figures of the Austrian provider.

The Internet Ombudsmann, only dealing with B2C disputes, received 10,009 requests in 2009. By that time, Austria had 8,355,260 inhabitants⁹ and 41% of them bought or ordered goods or services for private use over the Internet¹⁰ (about 3,425,656 people). Therefore, the Austrian provider dealt with 119.79 complaints per 100,000 inhabitants, which surpasses at length the figures of the French provider. We could think that another reason to explain this meaningful difference is that there are other institutions in France dealing with e-commerce disputes as the country has a long ADR tradition [12] and there are different ADR bodies depending on the nature of the dispute¹¹. However, to the best of our knowledge, both the European Consumer Centre of France and the French Direction for Competition, Consumption and Repression of Frauds only address e-commerce disputes to Médiateur du Net. Some complaints may also be submitted to the French e-Commerce and Distance Selling Federation (FEVAD) which may only intervene if the consumer complains about a company associated to FEVAD.

Consequently, even if the French are encouraged to try to solve their complaints by their own means before asking an institution for assistance, we may infer that there is a significant number of complaints in e-commerce which remain unresolved. In fact,

⁶ http://www.dijon.cci.fr/assets/files/pdf_information/e_commerce_france.pdf

⁷ According to the Institut National de la Statistique et des Études Économiques, http://www.insee.fr/fr/themes/tableau.asp?reg_id=0&ref_id=NATTEF02133

⁸ According to Eurostat, http://epp.eurostat.ec.europa.eu/cache/ITY_OFFPUB/KS-QA-09-046/EN/KS-QA-09-046-EN.PDF

⁹ According to the Bundesanstalt Statistik Österreich (STAT), <http://www.statistik.at/>

¹⁰ Ibid. Eurostat

¹¹ You may find Le Médiateur de la République taking care of individual conflicts with the administration, Médiateur de la Téléphonie dealing with commercial disputes between a consumer and a telephone company, Médiateur du groupe La Poste dealing with disputes between the French Post Office and its clients, etc.

the situation may be worse from now on as Le Forum des Droits sur l'Internet is going through a process of dissolution. The reason is economic: 85% of this organization has been funded by the government, but this funding will be stopped after 31st December 2010. Mediation services have already finished and the General Assembly of Le Forum des Droits sur l'Internet is considering the fact of keeping the document database at least for three years¹².

In any case, the situation in other European countries such as Spain lays far behind for initiatives such as the French and Austrian providers. Alternative dispute resolution does exist in Spain but, on the one hand, the bodies providing it (Arbitral Consumer Boards) have a stronger institutional nature than Internet Ombudsmann or Médiateur du Net and, on the other hand, the process is usually carried out offline. Nevertheless, the Catalan Consumer Agency¹³, an institution belonging to the Catalan Government, deals with consumer complaints in the broadest sense of the word and sometimes the processes take place online. It is indeed a good starting point but needs to be further implemented.

3.2 Type of Cases

The focus of the study was to take providers dealing with e-commerce disputes, especially those relating to B2C. RisolviOnline is the only one to formally accept B2C and B2B. The percentage of the first type (calculated over the total of requests) is much higher than the percentage of the second (see Fig. 1).

¹² <http://www.reseaux-telecoms.net/actualites/lire-le-forum-des-droits-sur-internet-sacrifie-22786-page-2.html>

¹³ <http://www.consum.cat/>

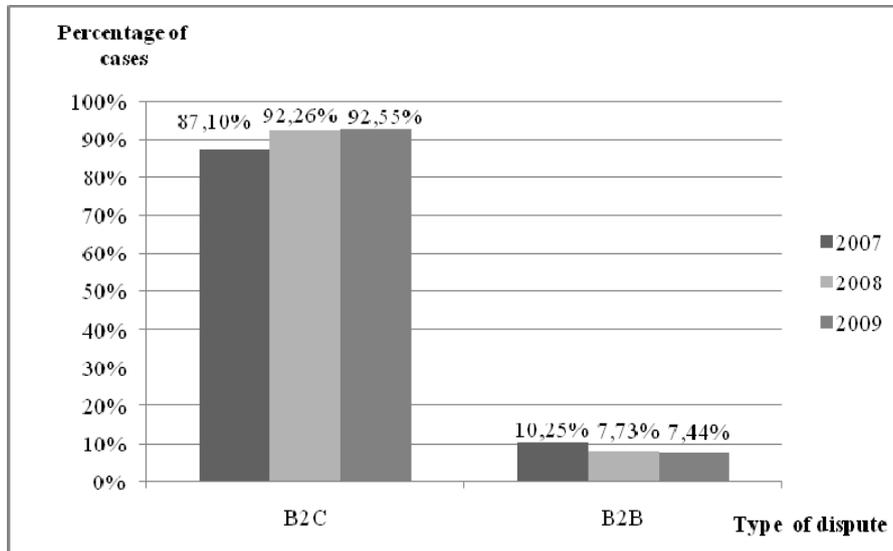


Fig. 1. Percentage of requests per year of B2C and B2B disputes for RisolviOnline (adapted from [5])

As [2] says, B2C are the most common disputes for all the institutions dealing with e-commerce issues. The vast majority of ODR providers worldwide agree that companies do not usually participate in online dispute resolution procedures due to the lack of trust. On the other hand, another reason that may explain this tendency is economic: a litigation process is much more expensive for an individual than alternative dispute resolution, so some companies which may afford the costs of going through the courts would find litigation more suitable to get more benefit.

We have seen very low figures for mediation in B2B. Nevertheless, if data about arbitration for B2B disputes was analyzed, we may observe different trends. Companies more and more include arbitration clauses in their contracts because they are binding [13], so the number of disputes settled in this way is increasing (as a matter of fact, the American Arbitration Association filed 138,447 in 2008). Nonetheless, even if arbitration is popular among companies, there are only 15 ODR providers offering arbitration and 13 of them are located in the USA [2]. This means that, at least in Europe, arbitration mostly takes place offline so further steps need to be taken to foster the use of online arbitration.

Next figure shows the percentage of cases managed by Médiateur du Net. Again, the percentage of B2C disputes (calculated over the total of cases managed) surpasses the others at length. C2C, P2P and domain names have constant figures, although their future would have been quite different if the provider was not about to disappear.

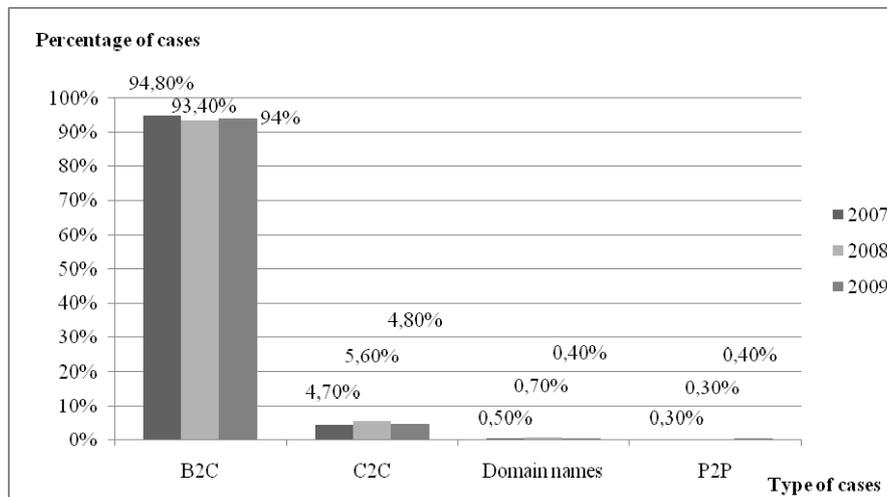


Fig. 2. Percentage of cases managed per year of B2C, C2C, domain name and P2P disputes for Médiateur du Net (adapted from [6], [7] and [8])

Domain names in Médiateur du Net would likely decrease in the following years if the organization continued its activity. In 2009, 4 cases were managed and the role performed by this provider was purely facilitative to restore dialogue and find out a solution [8]. In this field, there were other institutions managing domain name disputes such as the World Intellectual Property Organization (WIPO), the Centre of Mediation and Arbitration of Paris (CMAP) and the French Association for Domain Names and Cooperation (AFNIC) that delivered mediations or arbitrations. According to the AFNIC, there were 201 domain names that went through judicial litigation or alternative dispute resolution¹⁴ in France and were handled by these three organizations. So even if the roles of these three bodies and Médiateur du Net are not exactly the same, there is a notorious difference in the amount of cases that should be taken into account. In fact, Médiateur du Net often addressed disputes to the AFNIC [8] so that it rendered a decision on the case. As a consequence, Médiateur du Net would deal with less and less domain name disputes and people would prefer to go directly to WIPO, CMAP and AFNIC (even if they are not free of charge) to get their dispute directly solved.

On the other hand, C2C and P2P disputes would have a growing tendency during the following years due to the development of new kinds of interaction through the net; for instance, auction websites and social network interactions respectively. In the words of [14]:

“Every day, new types of interactions appear online that have the potential to generate disputes: harsh restaurant reviews on Yelp, privacy violations on Facebook, non-working music and movie downloads on iTunes, or faulty virtual tractor purchases in Farmville, to name only a handful. Unofficial estimates put the

¹⁴ According to *Rapport d'activité 2009*, AFNIC, <http://www.afnic.fr/data/divers/public/afnic-rapport-activite-2009.pdf>

number of online disputes into the hundreds of millions of cases per year, maybe even into the billions.”

The C2C model is proving to be one of the most successful developments in electronic commerce after the dot.com bubble burst which made Internet business change [15], so the possibilities regarding disputes arisen in this model are endless. However, the figures for C2C in Médiateur du Net (5 cases for 2009) are very low and the provider argued that these cases were difficult to handle. If we compare this number with eBay, we will see a huge difference because the nature of the institutions and the procedure to manage complaints is completely different. In any case, Médiateur du Net could have taken a look at eBay’s example if there was to be a future strategy. eBay –the most well-know auction website in the world—has a volume of 60 million managed disputes a year thanks to advanced tools that resolve the vast majority of cases without human intervention or to the eBay Community Court ¹⁵[14]. Médiateur du Net might not have a “crowd sourcing”¹⁶ option for several reasons but it might have thought of advanced tools to give faster outcomes to the complainants, as speed is one of the reasons why some ODR providers have limited success (complainants expect to have a solution in a matter of minutes)[14].

Finally, no figure is provided for the Internet Ombudsmann as all the cases they manage are B2C. However, C2C or B2B are accepted in special cases if there is enough time, for example when one side is inferior economically (one-man business against a telephone company)¹⁷. Unfortunately, as these are not the usual cases, there is no percentage about them.

To sum up, we cannot really see an evolution in the type of disputes managed by the three providers as data remain constant during these three years. A study comprising more years and more European and worldwide ODR providers should be carried out in order to have more data, compare it and present more precise future trends. Nonetheless, we have been able to note a significant difference in the number of cases managed when comparing one provider to another (see section 3.1) that we have linked with the type of disputes managed, so our hypothesis is whether specialization makes providers to be more successful to receive cases. It seems that complainants prefer to address their disputes to the “expert” in a particular kind of dispute. As a matter of fact, the Internet Ombudsmann had a high amount of disputes and it only deals with B2C disputes. Another example is Cybersettle which deals with insurance disputes. Over the past 10 years it has handled over 200,000 transactions and has facilitated over \$1.6 billion in settlements, including bodily injury and other

¹⁵ The Community Court is composed by jurors who were previously members of the eBay community and applied to be jurors. When there is a complaint, the buyer can upload images, text or other digital files to support his point of view. Then the Community Court contacts the seller, who has the same opportunity. The jurors look at the evidence they have and they say whether they agree with the buyer or with the seller. Then, the feedback is given by eBay and it is what more than half of the jurors said.

¹⁶ Crowd sourcing is the act of taking a job traditionally performed by a designated agent (usually an employee) and outsourcing it to an undefined, generally large group of people in the form of an open call (http://crowdsourcing.typepad.com/cs/2006/06/crowdsourcing_a.html)

¹⁷ According to Piotr Luckos, working at the Internet Ombudsmann in charge of information and advice, case management and dispute settlement.

types of insurance claims¹⁸. The figures speak for themselves but, in any case, we would need further research to prove this hypothesis and to get to know whether there are other causes which make the complainants submit their dispute to one institution or to another.

3.3 Nature of the Dispute

In [4], an effort was made to try to unify the nature of the disputes of Médiateur du Net and Internet Ombudsmann to see if there were shared causes of the disputes (RisolviOnline was not included because it did not have these data). It was found out that both providers had managed an important percentage of incidences regarding product delivery. However, we have now drawn two different figures (Fig. 3 and 4) as the focus is to work out the evolution of the providers and then, if possible, compare them.

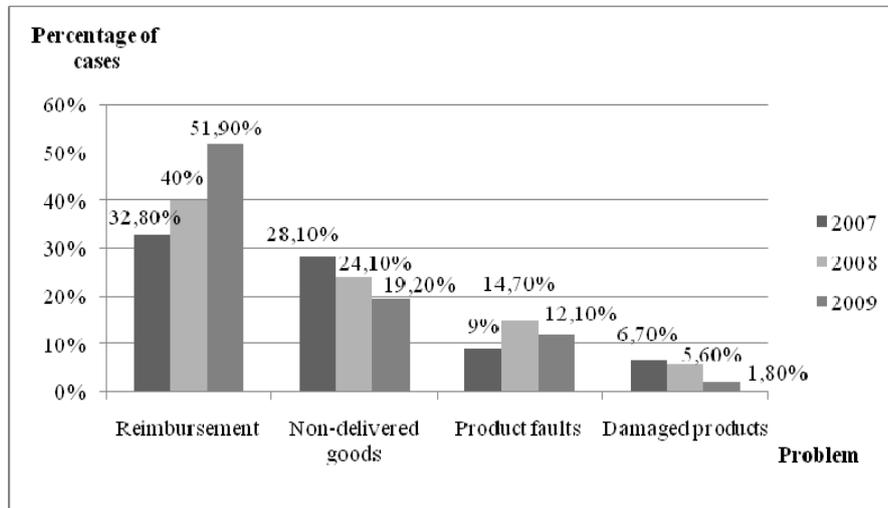


Fig. 3. Nature of the complaints submitted to Médiateur du Net (adapted from [6], [7] and [8])

As we can observe in Fig. 3, reimbursement¹⁹ is the most common cause of the disputes, followed by non-delivered goods. Nevertheless, their evolution is opposite: while reimbursement problems grew, the percentage of non-delivered goods diminished. If the service was to continue, the tendency with reimbursement problems would probably increase during the following years as the buyers have more and more offers and hence can be more demanding. On the other hand, non-delivery problems have decreased due to the French Act of 3 January 2008 for the competition

¹⁸ <http://www.cybersettle.com/pub/home/about.aspx>

¹⁹ According to Médiateur du Net, it happens when the buyer has received a product but is not happy with it. Then he wants to keep it and asks the seller for reimbursement.

development for consumer service²⁰ and the improvement of the sellers' delivery services [8]. More and more sellers try to implement their delivery services to get the buyer satisfied, so non-delivery problems would have a decreasing tendency. In this respect, damaged products by the courier were also less and less common and no constant trend is seen as regards product faults.

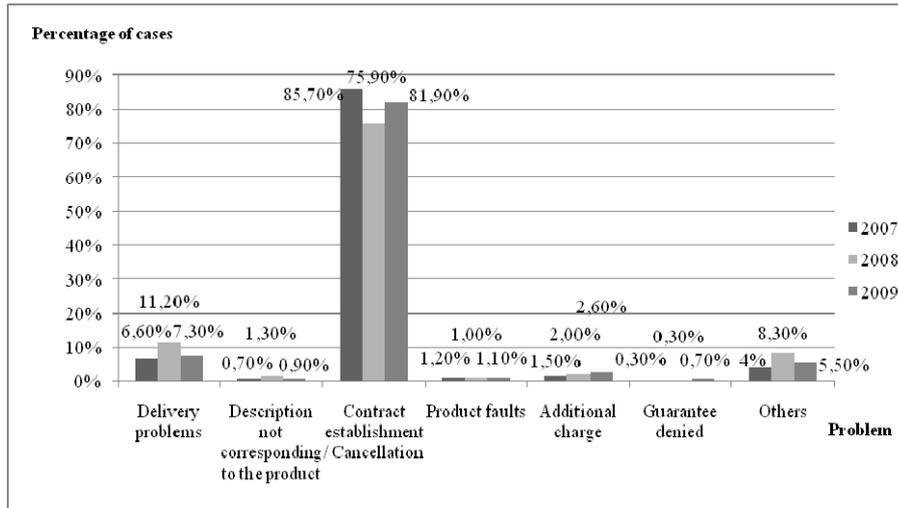


Fig. 4. Nature of the complaints submitted to Internet Ombudsmann (adapted from [9], [10] and [11])

For Internet Ombudsmann (Fig. 4), data is too variable to clearly guess its future evolution. Contract establishment or cancellation figures remain very high and include an important number of alleged “free offers”, so if no specific regulation on this issue is enforced, this kind of problem will continue to have high figures.

As mentioned before, we have observed that both Médiateur du Net and Internet Ombudsmann share delivery problems as the second most common cause of the disputes handled. The ECC-Net [16] points at delivery incidences as the most common cause of consumer complaints but with a decreasing tendency. This fact is related to the economic crisis, since consumers are significantly more cautious when ordering online. Nonetheless, the ECC-Net warns that the high amount of non-deliveries has a negative impact on consumer confidence and hinders the development of European cross-border e-commerce. Therefore, the relevant stakeholders of the cross-border e-commerce market should address this issue for the sake of consumers and traders.

²⁰ This act establishes that the seller must tell the buyer the deadline for the product delivery before the contract ends.

4 Conclusions and Future Work

In this paper we have studied the evolution of three European ODR providers – RisolviOnline, Médiateur du Net and Internet Ombudsmann – during 2007, 2008 and 2009. They were chosen because they only offer online mediation, they are owners of ODR technology [3], they manage e-commerce disputes and the main type of disputes handled is B2C. Our goal was to work out whether a development in these organizations had occurred to have an idea of how ODR has evolved in Europe, as they have been three representative examples. To achieve our objective, we took a look at the number of cases that the institutions had received, the type and the nature of the complaints.

First of all, we have to point out that three years is a short-time period to be able to see a real evolution and present clear future trends. However, we noticed that data was very variable for these years (most of the time data experienced a downward trend in 2008), so we may infer that we have gone through and we are still in an unstable period for online dispute resolution. Second, we can relate this instability to the financial crisis that is taking place right now. We can state that it has generally affected ODR providers as (i) their percentage of acceptability of complaints has decreased or, at the very best, maintained stable because a lot of businesses were in compulsory liquidation so consumers could not be helped by the provider; and (ii) less cases were received by the institutions because of the cutbacks in consumer income. The economic recession has particularly affected Médiateur du Net as the French government will stop financing the institution at the end of 2010, although some activities such as mediation have already finished some weeks ago. Therefore, other ODR providers receiving public funds may follow the same path if their country of origin is deeply immersed in the crisis; for instance, RisolviOnline.

As regards the types of disputes, it is worth to underline that C2C and P2P are an emerging and powerful market, so once the economic recession is away, this kind of disputes may increase. In connection with the nature of the disputes, the ECC-Net is quite concerned about the high numbers of complaints related to delivery problems and warns about the negative effect that this may have in consumer confidence and European e-commerce development.

Finally, we have also seen meaningful differences in the amount of disputes managed by the institutions. We have pointed out at the hypothesis of specialization as the reason why some providers have more success when receiving complaints than others. Looking at the examples of Internet Ombudsmann and Cybersettle, we may agree with this supposition but further research taking more providers needs to be carried out. In this study, we would include European organizations and worldwide institutions with a twofold purpose: on the one hand, we would have more data and a wider perspective on specialization issues and, on the other hand, we could see how the impact of the economic crisis on ODR providers from other continents has been. Hopefully, we will see a significant evolution of ODR in the following years once the global financial situation has returned to normal, since the EU is thinking of a common European alternative dispute resolution scheme that could be also used

online and the international community working in this field is making efforts to implement a global system for ODR²¹.

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Conflict Management Support in Electronic Negotiations

Alexander Dannenmann and Mareike Schoop

Information Systems I, University of Hohenheim, Germany
{Alexander.Dannenmann, M.Schoop}@uni-hohenheim.de

Abstract. Negotiation Support Systems (NSSs) offer a multidimensional support of negotiations through the internet. Different kind of conflicts – apart from the initial conflict – can occur during this process. This paper will give an overview of the current state-of-the-art in managing electronic negotiations with the help of NSSs and it introduces an advanced conflict management concept to resolve escalated conflicts during the negotiation.

Keywords: Conflict management, mediation, consultation, moderation, electronic negotiation, negotiation support systems.

1 Introduction

Through the fast developing information and communication technologies the software for supporting and automating electronic business negotiations has reached a point where a multidimensional support of negotiators is provided [1]. These so-called *electronic negotiation systems* allow parties to use internet-based systems to carry out their transactions. *Negotiation Support Systems (NSSs)* aim to support the users in their decisions and arguments and do not automate the negotiation process.

Especially in the B2B field, parties negotiate in an iterative communication and decision making process. They want to reach a goal that they cannot achieve alone [2]. As a consequence, a certain *initial* conflict is the basis for every negotiation [3]. The negotiation process is complex: negotiators exchange messages with arguments for their positions, formal offers or counteroffers and informal questions, clarifications, greetings, etc. with the goals of creating a common background and of building a relationship between them [4]. During this process, different types of *dynamic* conflicts (apart from the initial conflict) can occur and escalate. In turn, this can lead to a rejection of the negotiation and as a consequence to additional costs for the parties [3, 5]. Therefore, the negotiators try to minimize conflict in order to reach an agreement. The question is whether NSSs can offer conflict management support, i.e. to help parties resolve their dynamic conflicts during the process.

The purpose of this paper is to discuss the potential of NSSs for conflict management. Section 2 will discuss the specifics of conflict in electronic negotiations. Section 3 will introduce a conceptual framework of advanced conflict management support in electronic negotiations.

2 Research Context

2.1 Electronic Negotiations and Conflicts

Electronic negotiations in the context of this paper are negotiations between two parties, who “cannot achieve their objectives through unilateral actions, exchange information compromising offers, counter-offers and arguments; deal with interdependent tasks; and search for a consensus which is a compromise decision” [2]. Additionally, the negotiation process is restricted by at least one rule which “affects the decision-making, the communication process or the document management” [4]. This rule has to be enforced by the electronic medium [6]. In such a process it is very important, that negotiators can present arguments for their positions, objectives and/or beliefs [7]. This process can help to identify critical issues and to find a solution. There is an initial conflict (the reason for the negotiation) and with it a given conflict intensity. Inherently, conflicts do not have to be destructive. Different authors distinguish constructive and destructive conflicts [8] or functional and dysfunctional conflicts [9]. Within a certain level, they can motivate parties to have a constructive dispute and to argue with the other position. But conflicts can also develop dynamically and a profitable outcome is no longer possible. This escalation can be due to different interests, conflict attitude and abilities, norms and values of the society/culture or just different objectives [10]. If we want to be able to decide whether a conflict is constructive or destructive, we have to create a common understanding of what conflicts in B2B negotiations are.

Conflicts are in the focus of several different research disciplines [11, 12]. Each discipline focuses on different aspects, which is why no single definition or theory exists. Glasl argues that conflicts can be caused by different actions, can be examined systematically in different ways, and can be distinguished by the characteristics of the parties, their positions and the affiliated mutual relations [3]. To provide a frame of reference for initial conflicts, we will focus on the characteristics of the parties involved. Along this line, conflicts can be intrapersonal, interpersonal, intra-organisational, inter-organisational and international [3, 13, 14]. As we focus on electronic negotiations in a B2B context, we will only consider conflicts, which are intra- or inter-organisational. Tries and Reinhardt define conflicts as a given interdependence of actors who want to achieve a common goal through coordinated activities. This goal cannot be reached due to one or more obstacles which prevent the common activities (the so-called “target divergence”) and the actors do not have an attractive alternative [15]. This definition applies to our understanding of an initial conflict as a reason for a negotiation. But it also implies that the actors are aware of their target divergence which might not always be the case. Glasl [3] combines a variety of definitions in a separate - very concise - definition of conflicts. His definition will be the basis for our understanding of dynamic conflicts occurring during the negotiation process:

Conflict is an interaction between individuals, groups or organisations in which at least one party has a different perception, thinking, feeling and will than the counterpart. This difference in feeling, thinking and will leads to an interference with the other party.

This definition integrates the fact, that conflicts can be perceived differently. Therefore, only interactions, in which all conditions are met, are conflict situations. Interactions, in which this is not the case, can be described as incompatibilities in the cognitive domain, feeling, willing and conflictive behaviour [3].

Within electronic negotiations, the conflict behaviour is different compared to face-to-face negotiations. Through the restrictions of the electronic medium, the negotiators focus on selected aspects. Normally, gestures, tone of the voice and mimics can increase or decrease the perceived level of conflict during the communication process. These visual and acoustic attractions are missing. The negotiators have to rely on the written messages and the information provided by the NSS [16]. For this, we have to understand the current state of the art of NSS and their involvement in the negotiation process.

2.2 Classification of Negotiation Support Systems

A negotiation support system (NSS) is a software system which implements models and procedures, has communication and coordination facilities, and is designed to support two or more parties and/or a third party in their negotiation activities [17]. In contrast to, for example, email, the system supports the parties in different ways, namely by means of communication support, decision support and document management [18–21]. The level of involvement an NSS can offer has different levels. Kersten et al. [17] introduced the following three stages:

- 1st stage, passive involvement:
The NSS supports the interaction between the negotiators located in different places. Additionally it offers calculation support to help the negotiators to make a decision (utility functions). Different visualizations of the negotiation data help the negotiators to keep the process transparent.
- 2nd stage, active involvement:
This so called facilitation-mediation systems help parties to create offers. Advices for e.g. formulations of messages or possible new concession help to find solutions for the given problem.
- 3rd stage, pro-active involvement:
This class of NSS has the same functions than active systems but provides the possibility of proactive mediation intervention. The system has a certain artificial intelligence and monitors the whole negotiation process. It can evaluate the current status of the negotiation and provide specific advices, e.g. if a negotiator should accept an offer or criticize their activities.

The main difference between active and pro-active systems is that the negotiator asks in active systems for an advice. Pro-active NSS make “suggestions and critiques without any request” [17] based on an expert system or an artificial intelligence component.

Electronic negotiations realized with NSSs can allow on the one hand better outcomes than face-to-face negotiations and improve the exchange of multi-issue offers, but on the other hand they might need more time and can often end with impasses between the negotiators [1, 4]. Existing systems such as *Negoisst* [19], *SmartSettle* [22] and *Inspire* [23, 24] have their main focus on different components.

SmartSettle and *Inspire* belong to the so called decision support school. They focus on quantitative support with the objective to push the negotiators to a more Pareto optimal agreement. *Negoisst* provides a more holistic support for all relevant phases of the negotiation process. Especially the communication process is supported in several stages which is a key aspect in conflict management. Ambiguous communication can influence the conflict level (and with it the decision-making process) in negative ways. As a consequence, *Negoisst* provides the most sophisticated support and will be the focus in the following discussion. It is thus necessary to discuss the three components of *Negoisst* and the support of all three negotiation phases (pre-negotiation, negotiation and post-settlement) as to what their current contribution is to reduce initial and dynamic conflicts.

2.3 Current Conflict Management Concepts of *Negoisst*

Following again Schoop [4], there are three different schools of negotiation support: communication management, document management and decision support. An integrated and holistic approach combines all three schools. The following matrix will give an overview of the negotiation phases, the three different support approaches and selected functions which *Negoisst* offers to reduce initial and dynamic conflicts:

Table 1. *Negoisst* conflict management components in the context of the different negotiation phases

		Negotiation phases		
		1) Pre-Negotiation	2) Negotiation	3) Post-Settlement
Support Components	Decision Support	-Model Guide -Preference Elicitation	- Analytical Support - Dynamic Preference Elicitation	
	Communication Support	-Ontology Integration	-Ontology Integration -Explicit Intentions -Negotiation protocols	
	Document Management	-Contract Templates	-Automatic generation of contract versions	-Contracting Support

Decision Support:

Concepts for supporting the decision-making process are essential in supporting electronic negotiations. The main objective is not only to offer the negotiators individual or joint advices to evaluate offers during the process. Additionally, the negotiators' preference structures can be measured. *Negoisst* supports parties offering different negotiation protocols such as auctions, combined auctions, reverse auctions, bilateral negotiations etc [4, 5, 17, 24]. In context of B2B negotiations, the question is which kind of model should be used to solve the initial conflict in the context of the current business situation. Choosing the wrong model could lead to a higher initial level of conflict. The model guide helps negotiators on basis of a recommender system to choose the right one.

Before negotiations start, parties have to be sure about their preferences. Complete preferences are unrealistic. With different concepts of preference elicitations

(compositional and de-compositional), *Negoisst* tries to reduce a lack of clarity and helps parties to explicate their preferences. As a consequence, this leads on the one hand to an awareness of negotiators for the more or less relevant conflict issues before the negotiation starts and on the other hand it can reduce dynamic conflicts during the negotiation. Already, negotiating parties can use methods of dynamic preference elicitation to redefine their preferences within the process, e.g. when new information is available, when their preferences change etc [25].

A valid preference model is the basic for the analytical support during the process. It offers numerical indicators like the utility range of received offers or suggestions for possible new offers. Additionally a graphical representation of the negotiation history can display the progress of the negotiation and the integrative activities on negotiators side. All this functions allow to disclose concessions (as a sign of cooperation) and to evaluate the dynamic conflict behaviour.

Communication Support:

Communication is an essential part in the bargaining process. Communication problems can be caused by missing cues due to the medium used for the negotiation.

The objective is to reduce these possible dynamic conflict aspects to a minimum. Communication does not just describe something; it can also have a performative role [18, 20, 26]. As a consequence, *Negoisst* supports communication on three different levels with the objective to 1) structure the negotiation process, 2) create a joint understanding and 3) show the intentions of messages. All three aspects have in common, that they should prevent misunderstandings and in turn frustration (=level of conflict). The so-called syntactic support declares signs and rules for the communication process. A strictly alternating negotiation protocol prohibits belated changes or deletion of messages. The negotiation process becomes more transparent and future steps are clear. The semantic support reduces possible misunderstandings through the definition of the meaning of negotiation issues. Semantic enrichment - based on an ontology - connects the written communication with the agenda items and their values. The pragmatic support transmits intention to make clear how a message is meant to be understood.

Document Management:

To build up trust between the negotiators and provide traceability is indispensable to reduce the level of conflict within the process. Document Management in *Negoisst* links messages and documents by automatically creating a new contract version from each message. No modifications are possible, thereby enhancing trust in the system and in the partner [27].

2.4 Summary

In general, different methods exist to support negotiators in resolving their conflicts. We distinguish between initial conflicts and dynamic conflicts which occur and escalate during the interaction process. These dynamic conflicts are influenced by different aspects. Currently, most NSSs are more or less active systems but do not offer a holistic support. *Negoisst* is the only NSS supporting the communication

process, offering decision support and providing document management. However, based on the introduced definition of conflict, negotiations can also escalate due to different perceptions. As a consequence, qualitative aspects have to be considered in a holistic conflict management support, as the different aspects influencing the level of conflict show.

3 Advanced Conflict Management in Electronic Negotiations

As mentioned before, conflicts can be constructive and destructive. Additionally we distinguish between the initial conflict and the conflicts occurring within the negotiation process. It is necessary to divide between these two different aspects. In our understanding, the initial conflict exhibits the characteristics of a business negotiation scenario. Two parties already figured out that an electronic negotiation would fit their needs and could lead to a possible solution. They know the issues and in turn their agenda items. The dynamic conflict occurs during the dyadic written message exchange. Through the low media richness the level of conflict is influenced by 5 different aspects [3]:

1. The parties and their relationship and positions
2. The characteristics of each party
3. Their attitude concerning the initial conflict and the dynamic conflict
4. The conflict issues
5. The escalation process by itself

All mentioned aspects are necessary for a diagnosis and analysis of the conflict. A holistic concept starts with the recognition of the initial conflict and its consequences on the escalation process. The level of escalation can be divided into 9 stages [3]: 1) hardening, 2) debate, 3) action instead of words, 4) images and coalition, 5) loss of face, 6) threats, 7) partial destruction, 8) fragmentation and 9) elimination. There is a polarization and debate between the negotiators in the first stages. During the next stages, the conflict gets more intensive and the actors start to make threats. During these phase, conflicts can be constructive. As discussed, even in successful negotiations there are different positions and opinions. The parties have to exchange information to achieve a mutual understanding. With rising escalation, the conflicts are getting destructive and after stage 5 to 6, they cannot be resolved without the help of a third party any more.

A diagnosis can be of different levels of details. A very detailed diagnosis cannot be guaranteed due to lack of time or missing, distorted, or masked information. On the other hand, it is also not always relevant to include all aspects. In the context of electronic negotiations, the access to interpersonal factors is particularly difficult. The negotiators act in offset locations and communicate over time. For a possible third party, it is far harder to make a complete conflict diagnosis or to influence relevant aspects.

Concerning the introduced escalation model, there are different conflict resolution methods which can help de-escalation. We will introduce three of them briefly and

discuss them in the context of already given NSSs components.¹ Later we will connect them to the overall framework for conflict management support:

Moderation:

Moderation can be used on level 1-3 of the escalation scale [3]. The objective is to help participants to solve instantly problems of interaction and questions concerning the content and the process. This type of intervention is useful on lower escalation levels. Moderation can offer support to explain unclear terms and definitions. The creation of awareness for the joint objective can be forced by moderation. In turn, behaviour-oriented interventions or advices concerning tasks, roles and functions take center stage. Passiveness and restriction as an adviser are essential elements of moderation. Moderation does not have the force to push parties to accept an advice.

Similarities to the introduced components of NSSs are obvious. For example, the communication support (section 2.3) has the same objectives than the main ideas of moderation. Misunderstandings should be reduced (semantic and pragmatic enrichment) and the process structured (negotiation protocol). As a consequence we can summarise that the main components of *Negoisst* already fulfill the requirements of moderation. Dynamic conflicts on a low level of escalation are already handled in a common way.

Consultation:

On levels 3 to 5 of the escalation scale, consultation can be an option to resolve conflicts [3]. Consultation is active (the consultant helps negotiators to deal with their problems) and constructive (the negotiators understand the dynamic of the conflict and its influence). Negotiators ask for an advice, this advice should be perceived as motivating, helpful and not judging. Interventions of a consultant also focus on socio-psychological aspects. Parties have to control their emotions, thoughts and intentions and break out of the spiral of escalation. Consultation should prevent negotiation deadlocks and increase the flexibility. Additionally, the parties should create self-perception and reflect their situation. A consultant will not start a bilateral interaction between the negotiators at the same time.

To offer consultation, *Negoisst* and NSSs in general will need to be more active. The consultation process can be divided in three steps: 1) diagnosis, 2) analysis and 3) advice. *Negoisst* offers decision and communication support and advice but does not yet help the negotiators to reflect their positions and their self-perception compared to the image the counterpart have of them.

Mediation:

On conflict levels 5 to 7, negotiators cannot resolve the dispute without the help of a third party [3]. One or both negotiators are willing to reject the negotiation. Mediation can be defined as assisted negotiation through a third party [28]. It is used to assist the parties in their negotiation, not to negotiate with the parties. It is a communicative process between all parties with the objective for the parties to generate a solution themselves.

¹ "Arbitration" and „Authority“ are not discussed in the context of this paper as the negotiators have no choice to accept or reject a final advice given by the third party.

Mediation has 5 different principles which are essential [28]: 1) voluntary participation 2) no bindingness 3) neutrality of the mediator 4) disclosure of all information and 5) awareness of the mediation process.

The mediation process is similar to the negotiation and has the same sequences. The focus of mediation is on the negotiation outcome. A negotiation problem should be transferred into a successful and integrative agreement. The aim is not only to stop a “fight” but also to secure an agreement [29].

Negoisst does not offer mediation but has been combined with the mediating system Negotiator Assistant [30, 31]. To offer mediation components, the system needs to become pro-active. Mediation support would require the negotiators to reveal their preferences and goals to the partner as the mediator will try to find solutions that are acceptable to both parties. Such support must be an integrative support of decision making and communication/argumentation.

4 Conclusion and Future Research

Existing NSSs offer a multidimensional support for electronic negotiations. Most of them have a more or less active character and use different components, namely communication support, decision support and document management, to support B2B negotiations. Within this negotiation process, different types of conflict can occur, which are different to the initial conflict. Current conflict management theory argues that depending on the escalation level of a conflict, different conflict resolution methods exist.

In case of an advanced conflict management, we introduced a 3-stage intervention model for a holistic conflict management framework. It includes current existing functions up to the concept offering negotiators the help of a neutral third party, called a mediator. Between the two extremes of normal negotiations with a moderate level of conflict and assisted negotiations with the help of a negotiator at a totally escalated level, we suggest integrating a two-phase consultant. This consultant would firstly include a diagnosis and analysis component, helping the negotiators to reflect the process to the present point. Within this phase, the focus would be on issue aspects, e.g. reflecting the concession behaviour and give verbal suggestions e.g. redefining the preferences. In the second consultation phase, negotiators ask directly for a proper advice. To generate this advice, both negotiators have to agree to disclose their preferences. As a consequence, conflict awareness on both sides will be created and a proper advice for future offers is available for both sides.

We have discussed the three levels of intervention are reflected in electronic negotiation and in *Negoisst* as the system to support such negotiations. Moderation is already provided and consultation is implemented to a large extent already. We are currently developing the mediation component which will lead to an even more powerful system.

One of the overall objectives for future research is the creation of a conflict intensity measurement within electronic negotiations. It is essential to combine the individual perceived conflict level of a negotiator with his/her written communication (qualitative) and his/her concession behaviour (quantitative). Afterwards we can

define whether advanced support is necessary and, if so, in which way, i.e. quantitative, qualitative or both. Furthermore, the necessary consulting and mediation components have to be integrated into *Negoisst* and evaluated. This evaluation will focus on acceptance of such advanced conflict management and its added value to the final agreement.

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Using Asset Divider to Investigate the Israel – Palestinian Dispute

John Zeleznikow and Emilia Bellucci

School of Management and Information System, Victoria University,
Melbourne, Australia

{John.Zeleznikow, Emilia.Bellucci}@vu.edu.au

Abstract. Negotiation support systems can provide useful advice and allow disputants to more understand their goals and perform the trade-offs necessary to arrive at acceptable solutions. Whilst the Middle East conflict is a complex multi-party dispute, it might prove useful to examine it from the point of view of interest-based negotiation. Asset Divider is an interest based negotiation support system developed to support family mediation in Australia. When data about the Israel-Palestinian dispute was entered in the system, Asset Divider suggested that a Palestinian State should be created with East Jerusalem as its capital as long as the Palestinians recognised Israel, stopped or heavily limited terrorism and ceased asking for a right of return. Israel would also need to dismantle the fence and most settlements, whilst Palestine would need to discourage other Arab States and Iran from being belligerent towards Israel. Interestingly enough this suggestion is similar to the successful Camp David accords between Israel and Egypt, where Israel gave up territory for recognition and security.

Keywords: Israel-Palestinian conflict, interest based negotiation, negotiation support systems.

1 Introduction

There have been attempts to use computer modelling to resolve international disputes. For example, [1] have used the Adjusted Winner algorithm of [2] to advise upon the claims of China, Taiwan and four members of the Association of Southeast Asian Nations (ASEAN) – Vietnam, the Philippines, Malaysia, and Brunei to part or all of the land areas and surrounding waters of the Spratly Islands (a group of over 230 small islands and reefs in the South China Sea), which were believed to have major oil and gas deposits.

The Israeli-Palestinian dispute has a long history of conflict. It is not easy to exactly identify the parties to the dispute, let alone the attributes of the dispute or the goals of the disputants. And often the disputants use agents (or third parties) to attain their goals. And it is difficult to isolate the Israel-Palestinian dispute from other related issues such as the conflict between Israel and its neighbours in Lebanon, the

dispute over the Golan Heights and the Sea of Galilee (known as Lake Kinnereth by Israel) and the development of nuclear weapons by Iran.

According to [3], disputants can choose to focus on several different approaches to negotiate: interests, rights, or power. Focusing on interests means that the parties try to learn each other's underlying needs, desires, and concerns, and find ways of reconciling them in the construction of an agreement. A focus on interests provides the opportunity for learning about the parties' common concerns, priorities, and preferences, which are necessary for the construction of an integrative, or a mutually beneficial agreement that creates value for the parties. Focusing on rights means that parties try to determine how to resolve the dispute by applying some standard of fairness, contract, or law. A rights focus is likely to lead to a distributive agreement — one in which there is a winner and a loser, or a compromise that does not realize potential integrative gains.

Focusing on power means that parties try to coerce each other into making concessions that each would not otherwise do. A power focus also usually leads to a distributive agreement, and potentially can result in a desire for revenge or the creation of future disputes. In our examination of the Israeli-Palestinian dispute, we shall focus upon interest-based negotiation.

This has also been our focus in developing negotiation support systems. Our major development of negotiation processes has involved using trade-offs and developing online dispute resolution environments (see [4], [5] and [6]). Such disputes are very different than the Middle-East dispute because:

- a) Family disputes are micro disputes whereas the Middle East dispute is a macro one;
- b) Volume – there are a very large number of family disputes, whereas the Middle East dispute is unique;
- c) Number of players – family disputes are primarily two party conflicts whereas the Middle East dispute is a multi part conflict;
- d) Dispute resolution process – in Australian Family Law there is a well known transparent process. This is definitely not the case in the Middle East Dispute.
- e) Use of agents – in family mediations the parties represent themselves, in the Middle East the conflict is often conducted by intermediaries;

There are however some similarities, including:

- f) the need for all parties to live together during and after (hopefully) the dispute is resolved;
- g) the importance of a timely resolution of disputes;
- h) the need to sometimes manage rather than attempt to resolve disputes.

Our goal is to impartially and rigorously study, model, and analyse this conflict and provide insightful and practical conclusions that would help in enhancing our understanding of its underpinnings and possible ways for managing it. We believe that through using our experiences in providing decision support for family and commercial disputes, we can provide useful insights into understanding the Israel-Palestinian conflict. Whilst we are not arguing that we can provide a resolution to the dispute, we believe we can provide useful ideas for the management of the conflict, or at least to develop Islands of Agreement [7].

2 Interest Based Negotiation

Traditional negotiation decision support has focused upon providing users with decision support on how they might best obtain their goals. Such advice is often based on Nash's principles of optimal negotiation or bargaining [8]. Game theory, as opposed to behavioural and descriptive studies, provides formal and normative approaches to model bargaining. One of the distinctive key features of game theory is the consideration of zero-sum and non-zero-sum games. These concepts were adopted to distinguish between distributive and integrative processes.

Limitations of game theory in providing prescriptive advice sought by disputants and their advisers on one hand, and the developments in multicriteria decision-making and interactive methods on the other, provided the groundwork for negotiation analysis as discussed in [9]. Game theory has been used as the basis for the Adjusted Winner algorithm [2] and the negotiation support systems: Smartsettle [10] and Family Winner [5].

2.1 Interest Based Negotiation in Australian Family Law

Family_Winner [5] takes a common pool of items and distributes them between two parties based on the value of associated ratings. Each item is listed with two ratings (a rating is posted by each party), which signify the item's importance to the party. A rating in Family_Winner is a number in value from 0-100 (0 being of no importance; 100 to signify absolute importance). The algorithm to determine which items are allocated to whom works on the premise that each parties' ratings sum to 100; thereby forcing parties to set priorities. The program always checks this is the case, and if not, it scales ratings to ensure all sum to 100. The basic premise of the system is that it allocates items based on whoever values them more. Once an item has been allocated to a party, the ratings of the remaining items are modified (by firing trade-off equations) to ensure the items (and their associated ratings) are ready for the next round of allocation [11].

Family_Winner allocates items to one of two parties in the dispute. Family_Winner's method of decision support involves a complex number of techniques, including the incorporation of an Issue Decomposition Hierarchy, a Compensation and Trade-off strategy, and an Allocation strategy. The trade-offs pertaining to a disputant are graphically displayed through a series of trade-off maps, while an Issue Decomposition Hierarchy enables disputants to decompose issues to any required level of specification.

When evaluating the Family_Winner system, we were made aware of the limitations of using integrative negotiation for providing family mediation decision support. While both the evaluating solicitors and mediators were very impressed with the way Family_Winner suggested trade-offs and compromises, they had one major concern – that in focusing upon negotiation, the system had ignored the issues of justice [5].

For example, Australian Family Law is based upon the paramount needs of the children rather than the interests of the parents. In distributing property the wealth and needs of the family must be taken into consideration, as well as the contribution

each partner made to the marriage. Australian Family Law is one domain where interest-based notions of mediation can conflict with notions of justice¹. In such domains, the use of negotiation support systems that attempt to equally satisfy both parties is limited.

Whilst there are laws regarding international conflicts², they do not have the same influence as the Family Law Act has upon divorcing Australian families. Nevertheless, as [12]³ postulates, in the field of international conflicts, fairer negotiations are more enduring. [13] explore the relationship between principles of justice and the durability of negotiated agreements. Focusing primarily on peace agreements negotiated during the early 1990s, the study provides evidence for a positive relationship between a negotiation being just and that negotiation enduring over time.

We argue that because international negotiations are not heavily regulated by law, the parties more widely use integrative bargaining. Such negotiations are also more likely to rely upon Bargaining in the Shadow of the Law⁴ and the use of BATNAs⁵

Given that we believe negotiation support systems should incorporate issues of fairness as well as integrative bargaining, we now discuss the AssetDivider system which integrates both principles. Later in the paper we shall discuss how we used the AssetDivider system to offer advice upon the Israeli-Palestinian dispute.

2.2 Islands of Agreement

Blum [7] argues that protracted armed rivalries are often better managed rather than solved, because the act of seeking full settlement can invite endless frustration and danger, whilst missing opportunities for more limited but stabilising agreements. She examines in detail enduring rivalries between India and Pakistan, Greece and Turkey and Israel and Lebanon. She notes that in each of these conflicts, neither party is

¹ As [2] do in their work on *Fair Division, from cake cutting to dispute resolution* and [10] in their work on developing the SmartSettle system. Both research groups use game theoretic techniques to provide advice about what they claim are *fair* solutions. Their concept of fair negotiation does not coincide with the concept of legally just negotiations that we are considering. Both systems require users to rank and value each issue in dispute. Given these numbers, game theoretic optimisation algorithms are then used to optimise, to an identical extent, each person's desires. These algorithms are fair in the sense that each disputant's desire is equally met. They do not however meet concerns about justice.

² See the Avalon Project at Yale Law School (<http://avalon.law.yale.edu/about/purpose.asp> last accessed 8 August 2010) for a collection of law and related documents pertaining to international disputes.

³ At p. 276.

⁴ [14] introduced the notion of bargaining in the shadow of the trial (or law). By examining the case of divorce law, they contended that the legal rights of each party could be understood as bargaining chips that can affect settlement outcomes.

⁵ [15] introduced the notion of a BATNA - knowing your *best alternative to a negotiated agreement*. The reason you negotiate with someone is to produce better results than would otherwise occur. If you are unaware of what results you could obtain if the negotiations are unsuccessful, you run the risk of entering into an agreement that you would be better off rejecting; or rejecting an agreement you would be better off entering into.

willing to resolve the core contested issues but both may be willing to carve out specific areas of the relationship to be regulated – what she calls *islands of agreement*.

The concept of managing rather than attempting to resolve a dispute is an important one. For example, rather than attempting to resolve a family dispute, should we just manage it so that minimal conflict or disruption occurs? Eventually, the dispute might be more easily resolved or due to the progress of time, the dispute may no longer exist – such as when dependant children become adults. The development of islands of agreement in international conflicts, allows the protagonists to develop trust in each other.

As is the case with family disputes, in the case of condominium disputes⁶, the disputants often need to live in close proximity to each other and hence develop constructive relationships even whilst engaging in conflict. If condominium disputes are appropriately managed, there may be reduced tensions and no need for a final resolution.

2.3 The Asset Divider System

The AssetDivider system [17] incorporates the basis of Family_Winner's allocation and trade-off strategy to decide upon the allocation of assets based on interests and an item's monetary value. The monetary value in a family law property dispute may be compared to the relative importance of an issue in dispute in an international dispute. In a family property dispute one party may have a high emotional attachment to a record collection which has a minimal financial value. Similarly, in an international conflict, one party might be very interested in receiving an apology for a perceived injustice perpetrated by the other party, but otherwise there is minimal compensation for the proposed injustice.

AssetDivider accepts a list of items together with ratings (two per item) to indicate the item's importance to a party. In addition it also accepts the current monetary value of each item in dispute. We assume this dollar value has been negotiated (if necessary) before AssetDivider is used⁷. Hence, only one dollar value is entered per item. The proposed percentage split is also entered; this reflects what percentage of the common pool each party is likely to receive in the settlement. The system is not capable of determining the percentage split; this figure has to be derived from the mediator's knowledge in past cases or from computer systems.

AssetDivider's output consists of a list of items allocated to each party. All of the items (except one) on the allocation lists are provided in the intake screen by the disputants. The additional item is a "payout" item, which reflects the amount of money a disputant would need to pay the other party for the items they have been allocated.

⁶ Which we are also investigating, as can be seen in [16].

⁷ Sometimes the parties cannot agree on the monetary value of the item. In this case, mediators would reference standard objective tables and the like to reach a consensus. For example, if parties are arguing over the value of a car, then mediators may access websites that gave independent valuations, such as redbook.com.au.

The ratings of issues are normalised to sum to 100. A limitation of the Family_Winner system (arising from its adaptation of the AdjustedWinner algorithm) is the need for users to enter numerical values. Whilst disputants can probably linearly order⁸ the significance to them of all items in dispute, it is unrealistic to expect them to give a numerical value to each item. But it is not unreasonable for the users to assign a linguistic variable⁹ to each item. We thus use a seven point scale which can then be converted into points:

AssetDivider's allocation strategy works by allocating an item to the party whose rating is the highest ie to parties according to whoever values them the most. It then checks the dollar value of items it has been allocated previously (that is, their current list of items), the dollar value of the item presently allocated and the dollar amount permitted under the percentage split given by mediators. If by allocating the item in question the party exceeds its permitted amount, the item is removed from its allocation list and placed back into negotiation. In this case, the item has not been allocated to a party. If the dollar value of the item was within the limits of the amount permitted under the percentage split rule, then the allocation proceeds.

Once an item has been allocated to a party, the remaining ratings (of items still in dispute) are modified by trade-off equations. These modifications try to mimic the effect losing or gaining an item will have on the rest of the items still in dispute. The equations directly modify ratings by comparing each one against that of the item recently lost or won (each party's set of ratings are modified as a result of an allocation). The equations update ratings based on a number of variables - whether the item allocated was lost or gained, the value of the allocated item in relation to items still in dispute and the value of the item whose rating will change as a result. Only the 'losing party' in AssetDivider is compensated by the trade-off equations modifying ratings (whereas in Family_Winner both winning and losing parties were affected). The extent to which ratings were modified was determined through an analysis of data we collected from mediation cases provided by the Australian Institute of Family Studies. These are detailed in [11].

3 Using Asset Divider on the Israeli – Palestinian Dispute

Prior to using the Asset Divider system to provide advice about the Israel-Palestinian dispute, we need to examine the pros and cons of using the system. In section 1 we briefly described the differences between the Middle East dispute and traditional family disputes. We now discuss this issue in detail.

⁸ A set Y is linearly ordered if we can place it in the form $y_1 \leq y_2 \leq \dots \leq y_n$.

⁹ Describing in words how they value each item.

3.1 Contrasting Family Mediations with the Israeli – Palestinian Dispute

Differences between family mediations and the Israeli – Palestinian dispute

Volume: Whilst each year, there are over 20,000 family mediations in Australia each year (and many more in Canada, United Kingdom and United States), there is only one Israeli-Palestinian dispute. Hence in family mediation, we can learn from the successful resolution of past cases. And because there is such a high volume of such cases, Information Technology can be gainfully used to provide negotiation advice and as a forum for online dispute resolution [18].

There is however only one Israeli – Palestinian conflict (even though there are many side issues) with a long complex history. Hence there are very few similar international disputes from which we can search for suitable techniques for dispute resolution.

Micro vs macro: Essentially family law disputes are two party conflicts. Whilst the discussion should focus upon the children, the dispute is invariably between the parents. Grandparents and friends may offer advice and become involved, but only minimally.

The Israeli-Palestinian dispute is a very large multi-part dispute. Although there is an Israeli government with strong powers it is a coalition of the right, with further rightist ultra-nationalist parties, religious parties and one party on the centre left. By taking strong action the Israeli PM takes the risk of jeopardising the majority in the Knesset. Plus there are settler groups who act outside the parliamentary process. One of their members, Yigal Amir, assassinated the Israeli Labour Party Prime Minister in November 1995.

The Palestinian camp (for want of a better word) is even more complex. The Palestinian Authority is in control of the West Bank whilst Hamas control Gaza. These organisations are often in armed conflict. Hezbollah operates from Lebanon whilst there are numerous other groups (such as Islamic Jihad and Popular Front for the Liberation of Palestine), operating in West Bank, Gaza and other areas. And other non-state organisations such as Al Qaeda are involved in actions which they claim are related to the Israeli – Palestinian dispute.

There are also other interested nations (Iran, Syria, formerly Iraq) who threaten action. Then there are third parties who claim to have interests in resolving or at least diminishing the dispute – the United Nations, European Union and USA.

The use of agents: – in family mediation, the parties generally represent themselves. Lawyers can appear but are discouraged from doing so unless the case is heard by a court. In the Middle East, agents are often used. Indeed, often violence occurs against the agents rather than the party directly involved in the dispute. For example, many of the terrorist attacks on USA, for example the Al Qaeda attacks on USA, September 11 2001 were claimed to be as a reaction to the United States support for Israel. And the invasions of Afghanistan and Iraq are related to this issue.

Dispute resolution process: In Australian family law and family mediation there is a well defined transparent process. This not the case in international disputes, and in particular the Middle East conflict. One of the important factors in encouraging

negotiation is ensuring *fairness*: in family mediation fairness equates with justice¹⁰. In international disputes negotiations tend to focus upon interests: meeting the needs of the parties equally. Whilst there are UN and international courts which can theoretically intervene in international disputes, the ability of such organisations to intervene is very limited compared to family law.

There are however some important similarities between Australian Family disputes and the Middle East conflict.

Similarities between family mediations and the Israeli- Palestinian dispute

In both domains, parties *need to live together during and after (hopefully) the dispute is resolved* i.e. strengthen relationships. . This is also true in neighbourhood disputes but very different to business disputes, where if former partners are involved in protracted disputes then they are unlikely to collaborate at a later stage.

Time is important: in families children and relationships change, so it is important to resolve disputes quickly. In international disputes governments and attitudes change. Plus, the longer it takes to resolve disputes in either domain, the more intransigent the parties become.

In both domains it is possible to measure BATNAs and investigate Bargaining in the Shadow of the Law: in family law, participants use the potential court decision as a BATNA and for Bargaining in the Shadow of the Law. In the Middle East, the BATNA is that the prevailing conflict will continue and possibly escalate.

3.2 The Results Derived from Using Asset Divider on a Hypothetical Israel – Palestinian Conflict

Given that we wish to use the Asset Divider system to advice about the Israeli-Palestinian dispute, we need to decide

- a) what issues are in dispute; and
- b) how the disputing parties value each of these issues.

Of course making decisions about both a) and b) is a very difficult task.

From a historic examination of the Israel- Palestinian Dispute, we decided that the following were major issues of dispute, and now discuss how they affected the protagonists.

- 1) **Security** – One of Israel’s major concerns is the security of its citizens. In any final agreement, it would like to think that its partners in the peace process would not allow terrorist activities to come from their territory. The Palestinians do not recognise security as a major issue to them – they allow terrorists to operate to achieve their goals. They realise that any peace treaty would require them to ensure the security of Israeli citizens. The only difficulty would be for a Palestinian Government to ensure there would be no terrorist activities against Israel.

¹⁰ In Australian Family Law the sole measure of fairness is the paramount interests of the children

- 2) **Recognition of Israel** – In 1948, when the United Nations created the State of Israel, the Arab countries refused to do so. Since then, Egypt and Jordan have done so, but not the Palestinian Authority. Israel would like such a guarantee, although it is not as important as the security of its citizens (as it would also like recognition by Lebanon, Syria and Iraq – its neighbours). The Palestinians would originally have preferred a binational state, but would accept recognising the state of Israel as part of a satisfactory negotiation.
- 3) **Autonomy** – it is very important to the Palestinians to create their own state, and not remain under Israeli control or be part of another Arab State (prior to 1967, the West Bank was in Jordan and Gaza in Egypt). Whilst the Israeli government has professed support for Palestinian autonomy, it has neither agreed to timelines or the proposed boundaries. It would need to do so in any acceptable negotiation.
- 4) **Jerusalem** – Jerusalem and the right of return are perhaps the items on which the protagonists are furthest apart, and hence both parties value them very highly. Jerusalem was the capital of King David's Israel and has a revered place in the Jewish religion. The Knesset (Israeli Parliament) is in West Jerusalem.
 Jerusalem is the third most important city in Islam after Mecca and Medina. The population of East Jerusalem is majority Arab. The Palestinian nation wants East Jerusalem to be its capital. Hence we have divided control of East Jerusalem (it is accepted that the Western part will remain in Israel) into two sub-issues: whether it would be part of the new Palestinian state and if so, whether it would be the capital of that state.
- 5) **Right of return** – A large number of Arabs, fled Israel when the state was created in 1948. At that time, they were encouraged to do so by Arab states, who promised them that they would soon victoriously return to their homes. Whether these Arabs and their children should be allowed to return to Israel over sixty years later, is an issue of dispute. Israel does not want to allow more than a minimal right of return, since they are worried about Israel eventually having a non Jewish voting majority. Whilst the Arabs want to be able to return to the property they left, they may be prepared to forgo this right if adequately compensated. Hence we have divided the issue.
- 6) **The maintenance of nuclear weapons by Iran** – whilst this might appear to be irrelevant to the Israeli – Palestinian dispute, the Israeli government is very worried about Iran acquiring and using nuclear weapons. As a third part, Iran would not be privy to any peace treaty. However a Palestinian government might be able to encourage Iran to be less belligerent and hence make the Israelis happier.
- 7) **Dismantlement of settlements** – since 1967, Israel has built many settlements in both the West Bank and Gaza. In 2006, the then Israeli Prime Minister, Ariel Sharon removed all Jewish settlements in the Gaza Strip. The Palestinians would like the settlements dismantled. However the Israelis would certainly refuse to dismember some of the populous settlements (such as Ariel) and those close to the current border. However to actually

construct a Palestinian state, Israel would need to dismantle most of the smaller settlements

- 8) **Removal of the fence as a barrier between Israel and the Palestinian Territories** – to control the number of terrorist activities by Palestinians in Israel, Israel has constructed a security fence which divides the West Bank. This makes travel in the West Bank very difficult and can divide communities and farms. The Palestinians also see the fence as a barrier between Israel and an eventual Palestinian nation. Hence the Palestinians would like the fence dismantled.

Given the eight issues discussed above, we included them as attributes in the negotiation and entered ratings for both Israel and the Palestinians for each issue. Because we have used the current version of AssetDivider, we also needed to incorporate a percentage split (used in Asset Divider to meet issues of justice). As we did not want to bias the negotiations to either party, we made the percentage split 50/50. In Asset Divider, we gave each item in dispute a numerical value, to indicate its financial value. For the Middle East dispute we decided how important it was to both parties. So Right of Return was 85, Removal of Fence and Autonomy 80, Jerusalem 75, Security 70, Recognition of Israel and Dismantlement of Settlements 50, and Iran and Nuclear Weapons 30.

This data was entered into Figure 1 below.

Relationships Australia Queensland Evaluation version - Asset Divider - [Allocation Summary]

Main Reports Help

Case No: 8 Description: Second ME

Enter ratings for Israel

Item Name	Party A Rating
Security	70
Recognition of Israel	40
[BENUSALM] East - Jewish	00
[BENUSALM] West - Jewish	00
[BENUSALM] As Palest	80
Autonomy	80
[RIGHT OF RETURN] All	100
[RIGHT OF RETURN] C1	100
Iran no nuclear weapon	30
Demolishment of settlers	0
Removal of fence	30

Enter ratings for Palestinians

Item Name	Party B Rating
Security	0
Recognition of Israel	10
[BENUSALM] East - Jewish	00
[BENUSALM] West - Jewish	00
[BENUSALM] As Palest	80
Autonomy	80
[RIGHT OF RETURN] All	70
[RIGHT OF RETURN] C1	40
Iran no nuclear weapon	0
Demolishment of settlers	50
Removal of fence	50

Buttons: Delete Item, Refresh Grids, Divide Item, Allocate Items

Allocation Summary

Item Name	Item Dollar Value	Item Percentage	Value Allocated To
Security	\$70.00	10.29	Israel
Recognition of Israel	\$50.00	7.35	Israel
[BENUSALM] East - Jewish	\$80.00	11.76	Palestians
[BENUSALM] West - Jewish	\$70.00	10.29	Palestians
Autonomy	\$80.00	11.76	Palestians
[RIGHT OF RETURN] All	\$100.00	14.71	Israel
[RIGHT OF RETURN] C1	\$70.00	10.29	Israel
Iran no nuclear weapon	\$50.00	7.35	Palestians
Demolishment of settlers	\$80.00	11.76	Palestians
Removal of fence	\$20.00	2.94	Israel
PAVOUT	-\$20.00	-2.94	Palestians

Buttons: << Back, Print Allocation, Cancel

Allocation has not been run...

Fig. 1. Use of Asset Divider on the Israeli-Palestinian dispute.

The Allocation summary indicates the suggestions arising from the Asset Divider system, using interest-based negotiation for the Israeli-Palestinian dispute. To meet

the interests of both parties equally, Israel would need to give the Israelis a cash payout¹¹.

In this allocation it is suggested that Israel recognise a Palestinian state, with East Jerusalem as its capital. They would also be asked to dismantle the current security fence and evacuate those smaller settlements that are not in close proximity to current Israeli borders. To make such an agreement acceptable to Israel, the Palestinians would need to recognise the State of Israel and encourage other Arab states to do likewise. Palestinians would have to forgo any right of return to Israel (for which they would be compensated) and do their utmost to ensure no anti Israel terrorist activities emanated from Israeli territories. Further, they would need to encourage Iran not to develop nuclear weapons and not to make belligerent statements against Israel.

3.3 The Benefits and Drawbacks of Using Advice Given by Asset Divider on the Israel – Palestinian Dispute

Despite the drawbacks of using an interest based decision support system designed to support negotiation in Australian Family Law on the Israeli-Palestinian dispute, there are some major benefits to be obtained from the use of the system. The first important point to make is that a logical solution would be the creation of a Palestinian State with East Jerusalem as its capital as long as the Palestinians recognised Israel, stopped or heavily limited terrorism and ceased asking for a right of return. Israel would also need to dismantle the fence and most settlements, whilst Palestine would need to discourage other Arab States and Iran from being belligerent towards Israel. Interestingly enough this is similar to the successful Camp David Accords between Israel and Egypt in 1978, where Israel gave up territory for recognition and security. It should be pointed out that the Camp David Accords have not been used as a model for this process. But they too involved interest based negotiation and have endured for over thirty years. Clearly a solution that involves the transfer of land in return for recognition and security is a logical one.

However, whilst the Camp Davis Accords have endured, the then Egyptian Prime Minister Anwar Sadat, who signed the Accords was assassinated by an Egyptian in 1981. And the Israeli Prime Minister Yitzhak Rabin who signed the Oslo Accords in 1993, was assassinated by an Israeli in 1995. Clearly, any peace partner is at peril from dissidents on his own side.

The beauty about using Asset Divider is that the system can be used to trial hypotheticals. If the protagonists are not happy with the system solutions, they can change the items in dispute, how they rate these items or the value of the items and run the system on the new information. The ensuing advice might be more acceptable. If not, the disputants can ask themselves why they are obtaining undesirable results. Perhaps it is because they are not telling the system exactly what they want.

¹¹ The United States might financially support Israel to make such a payout

4 Conclusion

The Israeli – Palestinian dispute is an ongoing conflict that has caused grief not only to the disputants but numerous bystanders. It has a broad range of issues, some of which are not easily definable, let alone quantifiable. Nevertheless, we have chosen to use Asset Divider, a system which uses both integrative and justice based negotiation, to provide advice about the conflict.

We realise that there are many reasons not to pursue such a task: Family disputes are micro disputes whereas the Middle East dispute is a macro one; there are a very large number of family disputes, whereas the Middle East dispute is unique; family disputes are primarily two party conflicts whereas the Middle East dispute is a multi part conflict; in Australian Family Law there is a well known transparent process. This is definitely not the case in the Middle East Dispute and in family mediations the parties represent themselves, whilst in the Middle East, the conflict is often conducted by intermediaries.

Nevertheless, we believe the system can and does provide useful advice about the conflict. For example, after a long examination of the history of the dispute, we identified the issues in dispute and the parties goals with respect to these issues. When the information was input into the system, the suggestion was that a Palestinian State should be created with East Jerusalem as its capital as long as the Palestinians recognised Israel, stopped or heavily limited terrorism and ceased asking for a right of return. Israel would also need to dismantle the fence and most settlements, whilst Palestine would need to discourage other Arab States and Iran from being belligerent towards Israel. Interestingly enough this suggestion is similar to the successful Camp David accords between Israel and Egypt, where Israel gave up territory for recognition and security.

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An OWL Ontology and Bayesian Network to Support Legal Reasoning in the Owners Corporation Domain

Peter Condliffe, Brooke Abrahams and John Zeleznikow

School of Management and Information System, Victoria University,
Melbourne, Australia

{Peter.Condliffe, Brooke.Abrahams, John.Zeleznikow}@vu.edu.au

Abstract. The paper describes the development of a legal decision support guide for owners corporation cases in the state of Victoria, Australia that uses an OWL ontology and Bayesian Network to perform legal reasoning. The rate of growth of owners corporations (also known as body corporate or strata title properties) has increased significantly in the last two decades. Because of this growth, and the need to manage a rapidly expanding population, the governance and management of these entities has become an important concern for government. Conflict and its management within them is an essential element of this concern. Cases that can't be settled through negotiation are often referred to the Victorian Civil and Administrative Tribunal (VCAT). Using an OWL ontology we have systematically modeled legal arguments and outcomes of past cases heard by VCAT to facilitate both stand alone and Web based information retrieval, extraction and case based reasoning. A Bayesian Belief network is also used to deal with assumptions that tend to be prevalent in commonsense reasoning. Through our system we aim to provide negotiation decision support to help guide owners corporation disputants through the grievance process.

Keywords: OWL ontology, Bayesian network, legal reasoning, Victorian Civil and Administrative Tribunal (VCAT).

1 Introduction

The rate of growth of owners corporations (OC) in Australia, according to the Australian Bureau of Statistics National Census 2006 is about twice that of detached housing since 1981.¹ In the big population centers of Sydney and Melbourne they now comprise approximately a third of all dwellings. Because of this growth and the need to manage a rapidly expanding population, the governance and management of these entities has become an important concern for government. Conflict and its management within them is an essential element of this concern (see [1] and [2]).

Our research aims to promote better management of these conflicts by providing a negotiation decision support guide for property owner disputes that mirrors judicial reasoning practices so that disputants can negotiate more deliberately before

¹ <http://www.abs.gov.au/> Last accessed 3 September 2010.

proceeding to litigation. The system uses an OWL ontology to formalize legal arguments, and a Bayesian Belief Network [3] to infer judicial outcomes for cases heard in Victorian Civil and Administrative Tribunal (VCAT).

The paper commences with a discussion of cased based legal reasoning systems followed by a brief overview of recent initiatives involving the semantic Web and ontologies in the legal domain. Limitations of using ontologies for case based legal reasoning are examined and we describe how Bayesian Belief networks can help improve the inference capabilities. Specific aspects of the Victorian Owners Corporation Act (2006) are then described including the current legislative process for resolving disputes and the role of the Victorian Civil and Administrative Appeals Tribunal (VCAT). We identify factors considered by VCAT members in their discrete areas of decision making and show how these factors have been used to develop an OWL ontology and a Bayesian Belief network for the OC domain. Example queries are then used to demonstrate legal reasoning. The paper concludes with a brief discussion of our industry partner's involvement in the project and our future research plan.

2 Case Based Legal Reasoning

The ways in which past cases are used in arguments has long been of major research interest to practitioners and academics in the field of artificial intelligence (AI) and law. The current best known approach to Case Based Legal Reasoning is to represent cases as collections of factors favoring plaintiff and defendant, e.g. Cato [4] and HYPO [5]. Factors are described by [4] as stereotypical collections of facts that, experts agree, influence the outcome of a case. The presence a factor makes a case stronger or weaker for the plaintiff. These models help to clarify and test hypotheses about processes of reasoning with cases in the legal domain. They also provide a potential basis on which to build software applications [4]. Two key challenges faced in building cased based legal reasoning systems are (1) how to reason about the significance of differences between cases and (2) how to assess the relevance of precedent cases to a given problem situation. A number of approaches aimed at addressing these issues have been explored in the past with varying degrees of success. Hypo for example uses dimensions to generate arguments that compare and contrast hypothetical modifications of a problem, while Cato focuses on background knowledge about the meaning of factors to evaluate the similarity of cases at multiple levels of abstraction and from different viewpoints.

3 Ontologies in the Legal Domain

The Semantic Web is a Collective effort led by the W3C in which an evolved Web describes data in a shared and formal format to be useful for people and machines alike, allowing data to be shared and reused across applications, enterprises, and community boundaries [6]. This opens up new horizons for Web based legal systems

with new tools and services focusing on conflict prevention, conflict tracking, debate and negotiation. Ontologies are an essential component of the semantic Web. An ontology defines the basic terms and relations comprising the vocabulary of a topic area as well as the rules for combining terms and relations to define extension to the vocabulary [7]. In the legal domain ontologies have been useful in a number of applications to support information retrieval, extraction, integration and case based reasoning as demonstrated by [8] and [9].

The OWL language became a W3C recommendation for building ontologies in February 2004. The latest version is OWL 2 which provides more modeling primitives, greater cardinality and extended data type and annotation support than the original language specification. There are three sub-species of OWL called OWL Lite, OWL DL and OWL Full; each with increasing expressive power. OWL DL is designed to be classified using a Description Logic reasoner to automatically check for inconsistencies and compute an inferred hierarchy. While OWL DL is a natural framework for representing facts and reasoning about facts, like other forms of deductive logic [10] and [11], it is not capable of dealing with assumptions that tend to be prevalent in commonsense reasoning. An ontology based approach to case based reasoning works well when facts of a query precisely match the facts of outcomes stored in the case base. It is difficult to infer judicial outcomes, however, when some facts are known about a case but there is also incomplete information, or alternatively, where some facts are the same as in previous cases but other facts differ. This problem is known as the monotonicity problem [11].

4 Modelling Legal Arguments with a Bayesian Network

Modelling judicial reasoning with a Bayesian network addresses the monotonicity problem by allowing facts to be assertible and retractible based on what is known about a problem. Bayesian belief networks are graphical tools for specifying probability distributions. They rely on the basic insight that independence forms a significant aspect of beliefs that can be elicited relatively easily using the language of directed acyclic graphs (DAGs). Nodes in a DAG represent propositional variables and edges of the nodes represent direct causal influences among these variables [10]. The network is guaranteed to imply a unique value for each of the network probabilities and in effect forms its own assumptions to fill in the missing facts. Probabilities are then revisable upward or downward depending on what else is known.

5 Current Legislative Process and the Role of VCAT

Owners Corporation disputes that can't be settled through negotiation are often referred to the Victorian Civil and Administrative Tribunal (VCAT). Under *Section 162* of the Victorian Owners Corporation Act (2006), VCAT may hear and determine a dispute or other matter arising under this act or the regulations or the rules of

an owners corporation that affects an owners corporation including a dispute or matter relating to:

- a) *the operation of an owners corporation ; or*
- b) *an alleged breach by a lot owner or an occupier of a lot of an obligation imposed on that person by this Act or the regulations or the rules of the owners corporation ; or*
- c) *the exercise of a function by a manager in respect of the owners corporation.*

It is interesting to observe how the reported cases have managed this schema. The cases available through the Australasian Legal Information Institute (AustLII)² provides an overview of the most important and frequent matters coming before VCAT and the Supreme Court³. An analysis of these cases indicates at least twelve discrete areas of decision making or issues have emerged as follows:

- 1) Applications for Unpaid Fees
- 2) Conduct of Litigation
- 3) Vexatious and Frivolous Claims
- 4) Legal and Other Representation
- 5) Substituted Service of Proceedings
- 6) Costs
- 7) Joinder of Parties
- 8) Overturning Majority Decisions of an OC
- 9) Appointment and Termination of Managers
- 10) Issues with Common Property
- 11) Lot Liability
- 12) Licenses and Easements

For VCAT there is clearly a two step procedure. First is to determine that there is a “dispute” within the meaning of section 162. If there is such a dispute then section 165 provides that the decision be guided by the principle of “fairness” under which a number of further factors or considerations apply. A hierarchy of factors can thus be discerned which could be defined as a “decision or argument tree” for the guidance of the Tribunal. In this sense the plan of the Act provides a decision tree that could be represented as follows in Table 1. A more detailed discussion of the Victorian Owners Corporation Act (2006) and the role of VCAT in determining OC rulings can be found in [12].

² <http://www.austlii.edu.au/> Last accessed 3 September 2010.

³ Available at <http://www.austlii.edu.au/> (at this time approximately 85 in number).

Table 1. Principle factor.

Principle Factor: "Presence of a Dispute" per 162
Sub Factors
<ul style="list-style-type: none"> • <i>the operation of an owners corporation ; or</i> • <i>an alleged breach by a lot owner or an occupier of a lot of an obligation imposed on that person by this Act or the regulations or the rules of the owners corporation ; or</i> • <i>the exercise of a function by a manager in respect of the owners corporation .</i>
Principle Sub Factor – Fairness s165
Considerations
<ul style="list-style-type: none"> • <i>the conduct of the parties;</i> • <i>an act or omission or proposed act or omission by a party;</i> • <i>the impact of a resolution or proposed resolution on the lot owners as a whole;</i> • <i>whether a resolution or proposed resolution is oppressive to, unfairly prejudicial to or unfairly discriminates against, a lot owner or lot owners</i>
Specific Considerations – ss 5 and 122
<ul style="list-style-type: none"> • <i>good Faith</i> • <i>due Diligence</i>
Specific Considerations for Managers – s122
<ul style="list-style-type: none"> • <i>not to take personal advantage for self or others</i>

6 A Legal Decision Support Guide for OC Disputes

For the purposes of this paper the issue of what circumstances VCAT would overturn a decision of the OC (number 8 in the list above) is examined. In particular, we are interested in how the decision outcomes are arrived at so as to guide potential disputants in decision making. This category of dispute provides a good background against which to examine how the Tribunal is interpreting and applying the provisions of the Act and in particular the factors outlined in the argument tree in Table 1.

6.1 An OWL Ontology for Legal Reasoning

Our domain expert⁴ has modeled judicial reasoning for owners corporations cases heard by VCAT using an OWL ontology to capture the discrete areas of decision making and factors used in legal arguments identified in the previous section. The ontology which is shown in Figure 1 was created using the Protégé ontology editing and acquisition tool. We used the recently released version 4.1 Beta of Protégé which supports OWL 2.

⁴ Co-author Peter Condliffe is a Nationally Accredited Mediator and Advanced Mediator at the Victorian Bar and LEADR.

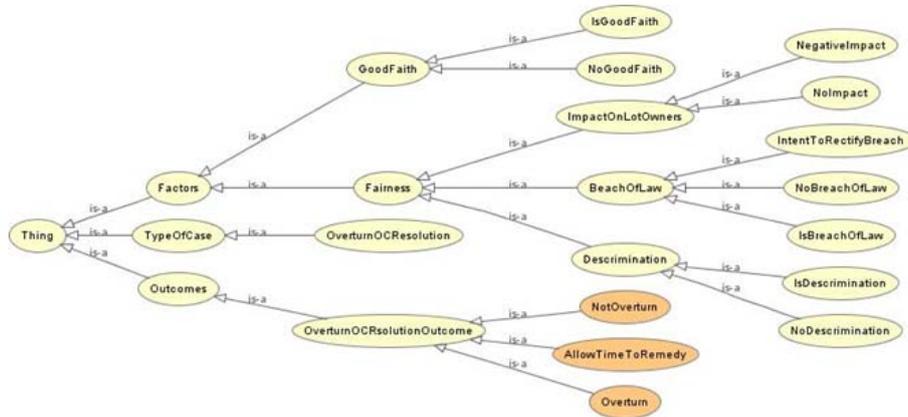


Fig. 1. OWL ontology for the OC domain.

To create a case base, outcomes of all past cases were modeled as *Defined Classes*. Facts of past cases are represented as *Necessary and Sufficient* class restrictions. A *Necessary* data property restriction “hasOutcome” is used to instantiate instances of this class with the string value “Allow time to remedy”. Figure 2 shows the defined OWL class “Allow time to Remedy”.

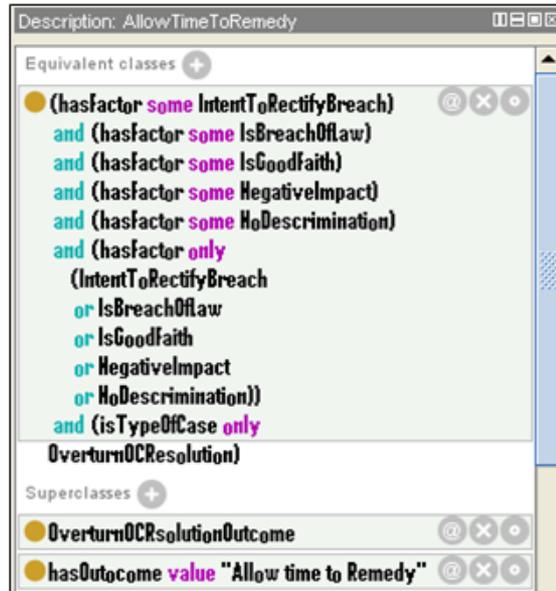


Fig. 2. OWL defined class “allow time to remedy”.

The axiom below which forms part of the *Necessary and Sufficient* conditions is called a closure axiom:

```
(hasFactor only
(IntentToRectifyBreach
 or IsBreachOfLaw
 or IsGoodFaith
 or NegativeImpact
 or NoDiscrimination))
```

Facts of a query must precisely match the facts of the closure axiom for the query to return the outcome. The reason for using a closure axiom is to prevent an outcome being incorrectly returned when additional facts may have invalidated the result. Figure 3 shows the creation of a query class. A query is created as a *Primitive class* meaning facts are entered as *Necessary* class restrictions.

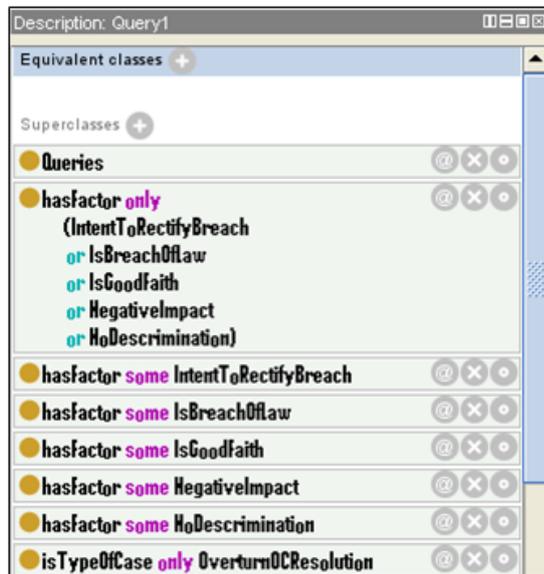


Fig. 3. Query class.

By running the reasoner and classifying the ontology to create an inferred hierarchy Query 1 below is now reclassified under the outcome class “Allow time to Remedy”. The *Boswell V Forbes* case describe in [12] now appears as an instance of the “Allow time to Remedy” class in the inferred ontology model and is thus instantiated with this outcome by the string data property restriction “hasOutcome”.

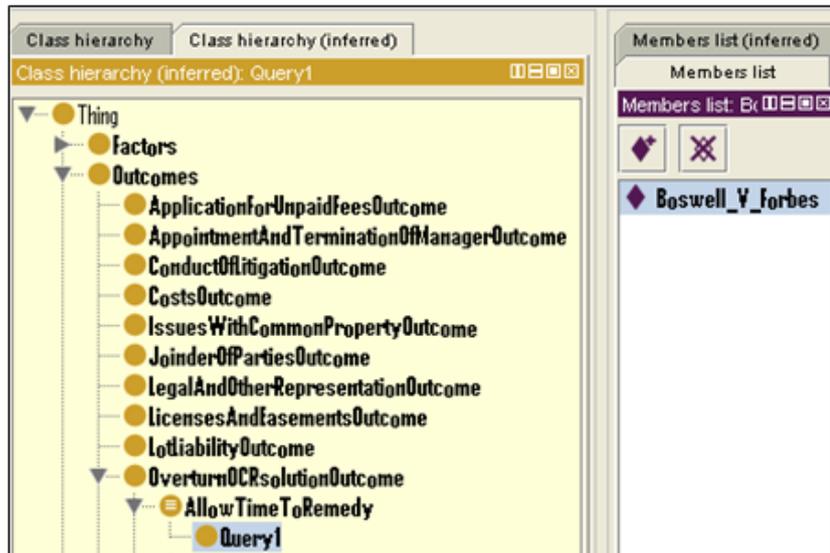


Fig. 4. Inferred hierarchy.

6.2 A Bayesian Network to Reason with Incomplete Facts

As previously noted, the ontology approach to case based reasoning works well when facts of a query precisely match the facts of outcomes stored in the case base. It is more difficult to infer outcomes, however, when there is incomplete information or when there are additional facts that do not match the facts of past cases. To query the case base and infer outcomes for non matching cases, a Bayesian Belief Network is used. Results of queries from the Bayesian network are then used to create *Defined* classes in the OWL ontology so that queries can be processed in the same way as in the previous example. We used the Samiam⁵ tool to create separate Bayesian networks for the discrete areas of decision making outlined in section V. Elicitation sessions were conducted with our domain expert⁶ in order to define the network structure shown in Figure 5 which differs slightly from that of the OWL ontology. Nodes in the network represent the decision making factors described in section V. Figure 6 is a DAG for cases involving the issue of ‘Overturning Majority Decisions of an OC’. The two nodes at the top of the graph ‘Overturn OC Resolution’ and ‘Allow OC to remedy’ are defined as ‘query variables’. They represent possible outcomes for cases involving a particular issue and are used to query the probability of each outcome occurring given the particular facts of a case. The nodes below this are called ‘evidence variables’. They are used to assert evidence (facts) about a case.

⁵ Samiam freeware version is available at: <http://reasoning.cs.ucla.edu/samiam/index.php>
Last accessed 3 September 2010.

⁶ Co-author Peter Condliffe is a Nationally Accredited Mediator and Advanced Mediator at the Victorian Bar and LEADR.

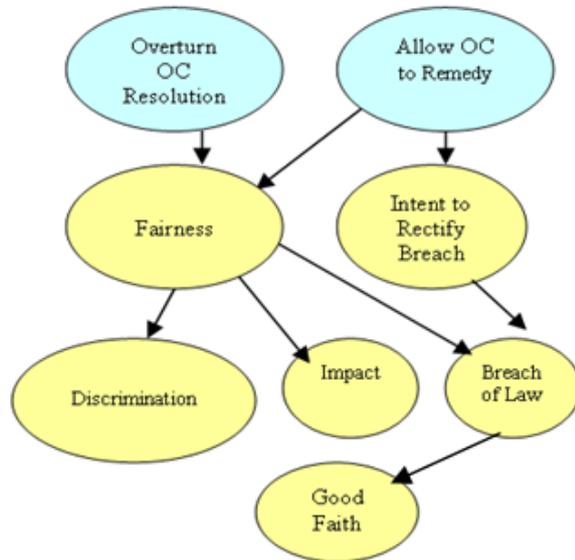


Fig. 5. Network structure

Our domain expert used his knowledge to develop a probability distribution to capture degrees of belief for each node in the DAG's so that Pr captures the probability of observing each value x of variable X with every instantiation u of its parents U . In this case, the variables x have been restricted to Boolean Yes/No values. More fine grained input values with varying degrees of belief can be used if need be. We now demonstrate the use of the network with a hypothetical scenario. Asserted facts for the case are shown in red and display a 100% input value. These are classified as hard evidence. Inferred facts (assumptions) are shown in green and are classified as soft evidence.

Asserted Facts

- There was discrimination against the complainant
- Overturning the decision would impact lot owners as a whole
- There was no breach of law.

Inferred Outcome

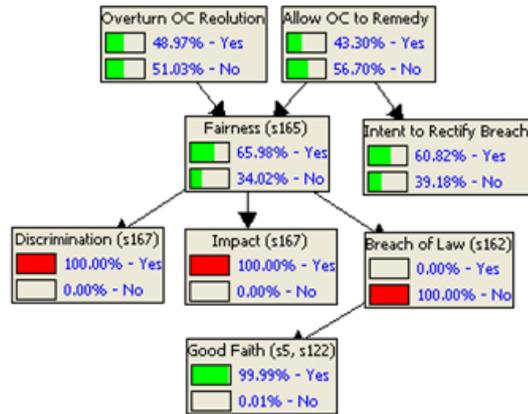


Fig. 6. DAG

In this example the DAG inferred that the resolution should not be overturned. Even though there was discrimination against the complainant, the fact that overturning the decision would impact on lot owner as whole combined with the fact that there was no breach of law tip the balance of probabilities in favor of not overturning the resolution. The inferred outcome can now be created as a Defined ontology sub-class of “Outcomes” in the OWL ontology by inserting the following code into the OWL file using string manipulation and a standard Java “println” command:

```
<owl:Class rdf:ID="NotOverturn">
  <rdfs:subClassOf rdf:resource="#OverturnOCResolutionOutcome"/>
  <owl:equivalentClass>
    <owl:Class>
      <owl:intersectionOf rdf:parseType="Collection">
        <owl:Restriction>
          <owl:allValuesFrom>
            <owl:Class>
              <owl:unionOf rdf:parseType="Collection">
                <owl:Class rdf:about="#NoBreachOfLaw"/>
                <owl:Class rdf:about="#IsDiscrimination"/>
                <owl:Class rdf:about="#NegativeImpact"/>
              </owl:unionOf>
            </owl:Class>
          </owl:Restriction>
        </owl:intersectionOf>
      </owl:Class>
    </owl:equivalentClass>
  </owl:Class>
```

Having inserted the above text into OWL ontology the outcome can now be processed as a *Defined* class in the same way as the “Allow time to Remedy” class in Figure 2.

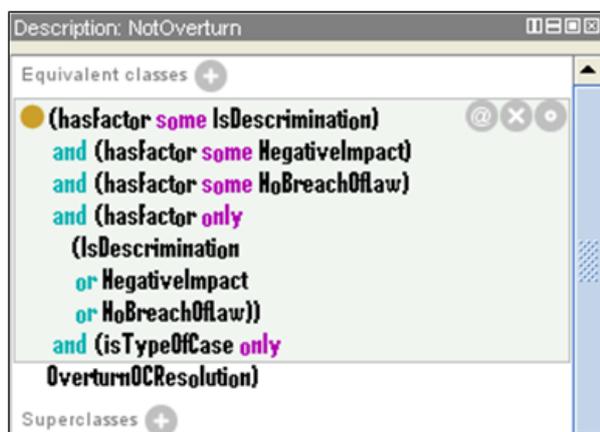


Fig. 7. New defined class

7 Conclusion

With the rapid growth of owners corporations in Victoria, Australia over the last thirty years, conflict and its management has become an essential element of concern. Current legal remedies, however, are widely seen as inadequate. Our research aims to assist with better management of these conflicts by providing a negotiation decision support guide for property owner disputes that mirrors judicial reasoning practices so that disputants can negotiate more deliberately before proceeding to litigation.⁷ led to the development of the OWL ontology and Bayesian Belief network to be used as a decision support guide for OC cases. Preliminary evaluations have shown the OWL ontology to be capable of precisely replicating the outcomes of past cases when the exact same facts of the real case are entered. Testing with hypothetical cases has also satisfied our domain expert that inferred outcomes obtained from the Bayesian Network are consistent with logical judicial reasoning. The next phase of the research will be to test the robustness of the conclusions drawn using a more formal technique called sensitivity analysis [11] where outcomes are checked against perturbations in the local probabilities. This will be an iterative process with the analysis expected to lead to further refinement of the network structure and adjustment of the conditional probability tables (CPTs). The system will then be deployed as a Web application using the Jena semantic Web framework. Members of the project team were previously successful in developing the Acontoweb [13] semantic portal using the Jena framework and Pellet reasoner.

⁷ <http://vbcs.com.au/> Last accesses September 4 2010.

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Providing Relevant Knowledge in Disputes: UMCourt Project

Davide Carneiro¹, Ângelo Costa¹, Paulo Novais¹, Francisco Andrade², José Neves¹

¹ Department of Informatics, University of Minho, Braga, Portugal
{dcarneiro, pjon, jneves}@di.uminho.pt

² School of Law - University of Minho, Braga, Portugal
fandrade@direito.uminho.pt

Abstract. Parties involved in disputes often lack the information they need to take rational decisions. As a consequence, they frequently enter into agreements that are not as advantageous as they could be. Having the right information in the right time would guide parties into taking more weighted and realistic decisions. Specifically, parties should consider their best, worst and most likely outcomes in litigation as well as all the possibilities in between. In this paper the importance of this information is highlighted and domain-dependent methods for compiling it are presented. Moreover, this work describes three case studies in which these methods are being applied with the objective of informing the parties, empowering their role in the dispute resolution process and helping them achieve more satisfactory outcomes.

Keywords: Online Dispute Resolution, Case-based Reasoning, Rule-based Systems, UMCourt.

1 Introduction

Conflicts arise in the most different scenarios and are present in our day-to-day since our first years of life. Essentially, conflicts are due to the competitive nature of our society, in which each individual wants to maximize his personal gain. A conflict is generally defined as an opposition of interests between two persons. When two persons with opposing interests clash, a dispute arises, that will eventually need to be settled. Each of these persons has ideas and values of its own that will guide and support his actions throughout the dispute resolution process.

Until just a few years ago, these conflicts occurred mainly between two persons that where on the psychical presence of each other. However, given the new information society that we now live on, this is no longer necessarily true. In fact, on-line activities, such as the use of e-commerce sites amazon.com and ebay.com, have led to the development of on-line disputes. We argue that if a transaction occurs online, then disputants are likely to accept online techniques to resolve their disputes. Thus, the development of e-commerce requires new ways of resolving conflicts that avoid courts. Different forms or methods of alternative dispute resolution for electronic environments have been pointed out by legal doctrine. Thus being, we can

now speak of Online Dispute Resolution (ODR) as any method of dispute resolution in which wholly or partially an open or closed network is used as a virtual location to solve a dispute [1]

A relevant issue, in a first moment, will be to inquire in what way (and to what point) traditional mechanisms such as negotiation [2], mediation [3] or arbitration [4] can be transplanted or adapted to the new telematic environments, taking advantage of all the resources made available by the newest information and communication technologies. However, technology can be used for much more important tasks such as strategy definition, information retrieval, solution proposal, among others. In order to develop such intelligent and efficient techniques to support Online Dispute Resolution, we must also consider the integration of Artificial Intelligence with Online Dispute Resolution [5]. This knowledge can be considered from two different perspectives: on the one hand, as a tool to help the parties and the decision makers to obtain the best possible results in solving commercial disputes and, on the other hand, considering a new way of autonomous dispute resolution through the use of autonomous and intelligent software, supported by a knowledge base and decision capabilities.

The work presented here develops around these two main ideas. We will therefore analyze to what extent technology can be used to help parties achieve more satisfactory solutions. Specifically, we will look at several methods for efficient and contextualized information retrieval as a way to provide meaningful information that is not available in traditional procedures. Moreover, we will look at three novel ODR prototypes developed with the objective of fastening and making more efficient dispute resolution processes. These prototypes are supported by UMCourt, an agent-based architecture that supports the development of ODR services [6].

Throughout this paper we will be guided by a main idea: there is not one single technological solution that can address all the problems. In that sense, techniques and procedures should be chosen and adapted according to each specific legal domain.

2 UMCourt

On-line dispute resolution methods can provide easy, efficient and fast ways for resolving disputes, contrary to the judicial path which is usually expensive and time consuming. First and second generation ODR [7], with agents performing relevant parts of the agreement procedure can be of inestimable use for the parties. UMCourt is a project being developed at University of Minho in the context of the TIARAC project (Telematics and Artificial Intelligence in Alternative Conflict Resolution) that aims to develop tools to help parties involved in legal disputes. Currently, four domains are object of study: labor law, consumer's law, divorce and heritage's share and conflicts in Virtual Organizations. In that sense, a high level architecture is being developed that can be used in the different legal domains.

This architecture is built on the notion of intelligent agent [8]. Thus, it builds on a group of autonomous software entities that are able to proactively make decisions and cooperate in order to achieve the objectives. Specifically, we are working with Jade platform which provides several interesting agent management and communication

services [9]. In order to be able to address different legal domain with as much functionality reuse as possible, a development strategy was followed that organizes the agents of the architecture into two categories: high level agents and low level agents. High level agents perform tasks that do not need explicit domain-dependant information. Low level agents are closer to the legal domain, thus have methods for representing domain-dependant information and procedures. In a general way, high level agents coordinate low level ones, i.e., the first tell the seconds the steps to follow in order to implement a given behaviour. Low level agents then have the knowledge that allows them to decide what to do in each step, according to the domain of the tasks. This knowledge is formalized in ontologies that encode the domain concepts, actions, constraints and rules.

This is possible to do because there are procedures that are independent of domain. Let us take as example a negotiation process. This generally consists on several consecutive rounds in which each agent states an opinion about the proposal currently on the table. And this is independent of the domain of the negotiation. Thus, high level agents guide the process and determine when a new round should start, the turn of the several agents or when the process should finish. Each low level agent then has the autonomy to choose among the several actions in the knowledge base, the one that corresponds to the current domain of the negotiation.

Following this approach increases functionality reuse and allows to have a single architecture supporting services in a wide range of domains. It also simplifies the task of adding a new legal domain. In fact, in order to do so, it is generally only necessary to develop the ontology of the new domain, with all the actions, rules, constraints and specific concepts. This will tell the low level agents how to act when they receive a task from this new domain.

Let us now move to a close description of the architecture. At the moment, it implements two high level functionalities: a case-based reasoning (CBR) [18] algorithm and a negotiation one. The CBR functionality enables a wide range of services used mainly to inform the parties based on other similar cases. The negotiation functionality allows two or more agents to exchange messages in order to iteratively modify a proposal for a solution until an agreement is reached.

All the agents and their roles are depicted in Table 1. These agents were defined after the specific requirements of this project, following an iterative cut-down process of increasing specification. Nevertheless, given the open nature of the architecture, it can be easily extended by adding new agents or ontologies, namely to address other legal domains or to implement new functionalities in a domain.

Table 1. The agents that build up the architecture and their roles.

	Agent	Role
high Level	Learning	Contains the rules for updating the memory structures in order to reflect the results of a learning process (e.g. new case, change in values of case).
	Retriever	Retrieves the cases more similar to a given one. This agent has the autonomy to change the search settings, the similarity parameters and the retrieve algorithms in order to perform a better selection of cases.
	Reuse	When requested by the Coordinator, performs the necessary

		actions to adapt a given case so that it can be used.
	Reviser	Looks at a group of cases in order to select an outcome/solution for a given case. Proposes the outcome to the coordinator as well as a justification and waits for the outcome. If the outcome does not comply with the one suggested provides a list of more probable reasons for the failure.
	Case Loader	Agents request case information to this agent. This agent provides the cases by interacting with the Parser agent. Each case that is requested is maintained in memory so that, should they be requested again, they are rapidly available in memory and do not need to be parsed again. This agent also checks constantly for changes in the files of the cases that are in memory in order to maintain them synchronized.
	Roles	Contains a list of agents and the actions that they are authorized to perform.
	Database	Is responsible for implementing services to implement all the interactions with the database. It is also responsible for the security and integrity of the database, making sure that only the correct agents perform the authorized operations.
	FSA	Contains a list of Jade FSM behaviors that describe the guidelines or steps necessary for an agent to perform defined actions.
	Indexer	Indexes new cases in the Database and creates the specific xml files in the correct system folders.
low level	Parser	Verifies the validity of XML files against the defined schemas. Valid cases are parsed and returned as a Java Object that can be handled by other agent.
	Rules	Embodies rules of type <i>if condition then action</i> that provide basic reactive actions for guiding agents in the decision making processes. Can be used to model a rule-based legal domain.
	Selector	Multiple instances of this agent exist that implement different pre-selection algorithms. Some have already been implemented, such as the Template Retrieval while others (e.g. Clustering algorithms) are now being developed.
	Settings	Defines several search and similarity settings according to which retrieve parameters can be changed.
	Similarity	Multiple instances of this agent embody different similarity algorithms.
	Interface Agents	This agent represents a group of agents that have as task to gather information from html forms. Then, they compile that information and forward them according to the defined format to the agents in the backend. As each html page in the frontend generally has, at least, one agent and they perform relatively simple tasks, we will not detail them further here.
	Extension	This agent receives requests from external agents and forwards them to the correct agents inside the platform, provided the external agents are trying to perform an action that they are authorized for.
control	Coordinator	Receives task requests from other agents (e.g. external agents, interface agents) and take the necessary steps (requesting tasks to other agents) in order to perform them. This agent maintains a list of active tasks and has access to a list of finite state

	automata that define the next action for each task, provided by the FSA agent.
Fault Manager	Starts all the necessary agents according to an editable XML configuration file. It then constantly checks the agent registry and, if any agent has crashed, restarts another instance of that agent.
Load Balancer	This agent controls the pending requests to specific secondary agents and starts new instances of agents that have a significant amount of work load.

The organization of this agents is depicted in Figure 1. In this figure, rounded rectangles represent agents and the lines represent the main communication paths. Note the existence of the DF agent (Directory Facilitator), an agent that makes part of the Jade platform and provides support for service registry and lookup.

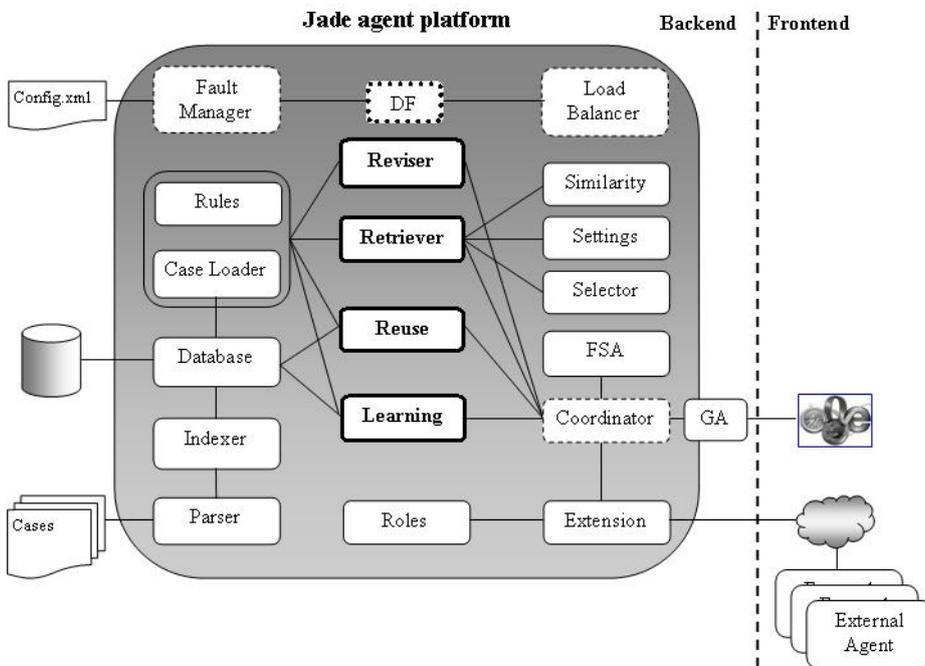


Fig. 1. The organization of the agents that make up the UMCourt architecture.

3 Compiling Relevant Knowledge

The ideal dispute resolution process is one in which the two parties are better at the end than they were at the beginning. Unfortunately, not all disputes have this conclusion. In order to improve this, we believe that it is of ultimate importance to: (1) provide the parties with more knowledge about the dispute and (2) potentiate the

role of the parties throughout all the process. In fact, parties that have poor access to important information generally end making bad choices or, at least, they hardly make the best choice. Moreover, parties usually have a reduced role on the resolution process, resulting in suspicion about the outcome, mostly because they do not understand how it was achieved. Thus, in this section we describe the approach followed in the development of UMCourt in order to attack these problems.

3.1 What Knowledge is Significant?

The first step is thus to identify the knowledge that is meaningful for the parties, according to the legal domain of the dispute, and then determine the methodologies suited for compiling that knowledge. On a first instance, it would be interesting for a party to determine to which extent is it reasonable to engage in a dispute resolution process. That is, are there significant advantages against a traditional litigation? This question can be analyzed from several points of view. On the one hand, alternative dispute resolution processes are generally faster, cheaper, more private and personalized [3]. There is however another important factor: the possible outcome reached through each of the processes. That is, will I reach a better outcome using an alternative dispute resolution process instead of litigation?

It would thus be really important for each party to know its BATNA - Best Alternative to a Negotiated Agreement, or the possible best outcome “along a particular path if I try to get my interests satisfied in a way that does not require negotiation with the other party” [10]. A party should then understand the notion of a BATNA and what role it should play in ODR. Doing so will, at least, contribute to the acknowledgement that an agreement may be disadvantageous [11]. In fact, the position of the parties may become much more unclear if they are not foreseeing the possible results in case the negotiation / mediation fails. “If you are unaware of what results you could obtain if the negotiations are unsuccessful, you run the risk of entering into an agreement that you would be better off rejecting or rejecting an agreement that you would be better off entering into” [12]. That is to say, the parties, by determining their BATNA, would on one side become “better protected against agreements that should be rejected” and, on the other side, they would be in a better condition to “reach an agreement that better satisfy their interests” [13]. But, besides that, a BATNA may play additional interesting features for the parties. For instance, it may be used as a “way to put pressure on the other party”, especially in dispute resolution procedures allowing the choice of going to court [13].

However, the use of the BATNA alone is not enough to take informed decisions as parties often tend “to develop an overly optimistic view on their chances in disputes” [13]. This may lead parties to calculate unrealistic BATNAs, which will influence later decisions, leading even to either reject generous offers from the other parties, or to stand stubbornly fixed in some positions [13]. It is thus important to also consider the concept of a WATNA, or the Worst Alternative to a Negotiated Agreement [10, 14, 15]. A WATNA intends to estimate the worst possible outcome along a litigation path. It can be quite relevant in the calculation of the real risks that parties will face in a judicially determined litigation, imagining the worst possible outcome for the party.

At this point, a party would be aware of the best and worst scenario if the dispute is to be solved in a court.

However, it could also be interesting to consider the whole space between the BATNA and WATNA as a useful element to be taken into account for making (or accepting) a proposal. If we consider for instance, in the labor law domain, the scenario of a worker being fired, litigation will most likely occur. Under many legal systems, a huge deal of legal parameters have to be considered, including antiquity, supplementary work, just cause for dismissal, among others. For the worker, the amounts involved are not irrelevant: being fired without good indemnities may be seen as a double sacrifice. But he might, on the other side, receive significant financial compensation. In order to clearly see the advantages of a proposed agreement, parties should thus also consider the spectrum between their BATNA and their WATNA. Of course, the less space there is between BATNA and WATNA, the less dangerous it becomes for the party not to accept the agreement (unless, of course, their BATNA is really disadvantageous). A wider space between BATNA and WATNA would usually mean that it can become rather dangerous for the party not to accept the ODR agreement (except in situations when the WATNA is really not inconvenient at all for the party). We can thus argue that knowledge about the space between the BATNA and the WATNA is also very important. This space is evidently related to the Zone of Possible Agreement proposed by Raiffa (1982) [16]. It is the zone where an agreement can be met that is acceptable to both parties.

Moreover, it would be interesting for a party to understand the region of this space in which an outcome is more likely. That is, if the parties are to solve the dispute through litigation, what is the most likely outcome? In fact, sticking only with the BATNA and WATNA may not be realistic as these are usually not the most likely outcomes but merely informative values that establish boundaries. Thus, an informed party should also consider the MLATNA – Most Likely Alternative to a Negotiated Agreement [15]. Using the same arguments, we can also conclude that the existence of metrics that measure the probability of each possible outcome could also be extremely useful for a party.

Concluding, in order for a party that is engaging in an alternative dispute resolution to take informed and rational decisions, he should consider knowledge about: (1) the best possible outcome in litigation; (2) the worst possible outcome in litigation; (3) the space between the two previous values; (4) the most likely outcome in litigation and (5) the probability of each outcome within the zone of possible agreement.

3.2 Domain-dependent Methods for Compiling Knowledge

Having seen the knowledge that a party should have in order to take rational decisions, let us now depict the methods for compiling that knowledge. Considering the BATNA and the WATNA values, we are using a rule-based approach. Rule-based Systems (RbS) are generally the simplest way of implementing intelligent behaviors [17]. Thus, RbS are a way to store, interpret and manipulate knowledge about a given domain (data and procedures) in the form of IF-THEN rules, in which each rule defines a small piece of the knowledge. Considering the legal domain, a parallel can be established as legislations and other legal concepts are built on the concept of rule.

In that sense, one can picture the development of rule-based systems that describe rules of specific legal fields that can then be used to determine which rules apply in a given case. Consequently, it is possible to implement rule-based systems that model specific norms in order to determine the values of the BATNA and the WATNA.

Let us take, as an example, the Portuguese labor law domain, as depicted in Decree of Law (DL) 7/2009 (Portuguese laws), considering a scenario in which a worker wants to end the labor contract claiming that the employer did not pay the last three salaries. According to Article 394th, nr. 2 a), the lack of regular payment of the salary constitutes a just cause for a worker to end the contract. Moreover, Article 394th, nr. 1 when there is a just cause, the worker can immediately end the labor contract. The first question is thus to determine the existence or not of the lack of payment, and thus, of a just cause for ending the contract. Assuming that this has been proved, let us try to determine the best and worst scenarios, from the point of view of the worker. The most important norms are found in Article 396th, numbers 1, 3 and 4. Number 1 states that, if Article 394th is true (there is just cause for ending contract), the worker is entitled to 15 to 45 days of salary plus indemnity for each year of contract. It also states that this value varies according to the degree of wrongfulness of the employer and that the total indemnity paid to the worker should not be inferior to three salaries plus indemnity. However, number 3 states that the indemnity paid can be higher whenever the worker suffered property damage or other damage, of higher value. Finally, number 4 states that, in the cases of a temporary employment contract, the value of the indemnity cannot be smaller than the value of the salaries that would be received until the end of the contract. We can thus formalize the computation of the BATNA and WATNA in the form of IF-THEN rules.

A simplification of the rules that allow the computation of the BATNA and WATNA values according to the Portuguese labour law. This example code considers only the case in which a worker ends the contract with a just cause. M_SALARY denotes the monthly salary; D_SALARY denotes the daily salary; M_REMAINING denotes the months remaining until the end of the temporary contract; +VARIABLE denotes an unknown value, higher than VARIABLE.

```

Def_Rule 396

if RULE_394 then
  WATNA := 3 * (M_SALARY + SENIORITY)
  if TEMPORARY_CONTRACT then
    if WATNA < M_REMAINING * (M_SALARY + SENIORITY) then
      WATNA := M_REMAINING * (M_SALARY + SENIORITY)
    if WATNA < 15 * (D_SALARY + SENIORITY) then
      WATNA := 15 * (D_SALARY + SENIORITY)
  BATNA := 45 * (D_SALARY + SENIORITY)
  if BATNA < DAMAGE then
    BATNA := +DAMAGE

```

There are some interesting advantages in following a rule-based approach. The main is that this is a relatively simple way of implementing legal norms, being also easy to maintain and update. Having defined the values of the BATNA and the WATNA, it is immediately possible to compute the range of the ZOPA: it is given by

the distance between these two values. More challenging is the determination of the possible outcomes and its corresponding likeliness.

In this case a purely rule-based approach would not be appropriate as it is necessary to evaluate a group of cases and categorize them according to their likeliness. Moreover, a mechanism to select cases according to its similarity is also obligatory. Therefore, following a case-based approach would be an appropriate choice [18].

In order to determine the possible cases, their likeliness and the MLATNA, UMCourt relies on the previously mentioned CBR algorithm. However, as our focus is merely on compiling information for informing parties rather than suggesting an outcome for the dispute, only the first stage of the algorithm is relevant [6]. In this first stage, the Retrieve one, the algorithm selects a group of cases according to its relevance for the current case, which is given in terms of the similarity. There are several techniques for retrieving cases. Unlike database searches that target a specific value in a record, retrieval of cases from the case base must be equipped with heuristics that perform partial matches, since in general there is no existing case that exactly matches the new case [19]. Moreover, we are not searching for an exact match but for a group of similar cases.

To do it, a hybrid approach is being used that combines a template algorithm with a nearest neighbor one [6]. The template retrieval narrows the search space so that the nearest neighbor algorithm performs quicker. The application of a template retrieval algorithm is possible as it is possible to know a priori which cases have the possibility of being similar and which ones do not (e.g. cases that address different norms cannot be similar). In that sense, template retrieval works much like SQL queries: a set of cases, that match a pre-selection rule, is retrieved from the database. These rules can be changed dynamically by the system whenever the results of the pre-selection don't match the system parameters. For example: one of the pre-selection rules indicates that cases should be selected if they address the same norm. However, the system can consider the norm at several levels: Article, Item or Number. The standard rule is to look at the Article. However, if too many cases are retrieved, the system is able to dynamically change this specific rule and retry the query with a more specific one.

In the next step, the nearest neighbor algorithm must only be applied to the set of pre-selected cases instead of applying it to all the cases in the case memory, a task that could be very time consuming as the nearest neighbor algorithm has linear complexity (equation 1).

$$\frac{\sum_{i=1}^n W_i * fsim_i(Arg_i^N, Arg_i^R)}{\sum_{i=1}^n W_i} \quad (1)$$

In this algorithm, the weights are, at this moment, determined by a law expert, based on the importance that, according to his experience, each of the components of the similarity measure has. However, it is our objective that, in the future, the system changes these values dynamically, looking at past iterations, in an attempt to select the most appropriate weights for each case.

The output of this phase of the algorithm is a list of similar cases, ordered according to their value of similarity with the current case. We only need to add the

main assumption of CBR: if a case is similar to another one, then its conclusion is also expected to be similar. Based on this, we can look at the solution of the retrieved case with the higher degree of similarity and assume that it is the most likely solution to the current case. Likewise, we can look at the region in which the similarity of the cases is higher and assume that the probable solution lies in that region, i.e., the MLATNA. Following the same approach, for each case retrieved a value of similarity is also provided to the user, which will indicate its likeliness to occur.

At this point, the worker has all the main information that he/she may need in order to make rational decisions throughout the dispute resolution process. It is possible to use a visual tool to represent all this information in a single and intuitive graphic that the party can consult. In Figure 2 a graphic for a fictitious case is presented. Each dot represents a case, with an associated value of similarity and an utility value, which represents the indemnity that the worker will receive. The case with the highest value of similarity is the MLATNA and tells the worker the most likely outcome if he decides to go into a court. The positions of the BATNA and WATNA are also represented, depicting the best and worst possible scenarios. The dashed line is given by a 3rd degree polynomial function and represents an overall view of similarity versus utility. Looking at this line, the worker can conclude that, if he goes into a litigation process, according to the known cases, the indemnity will most likely be between a value of 500 and 650.

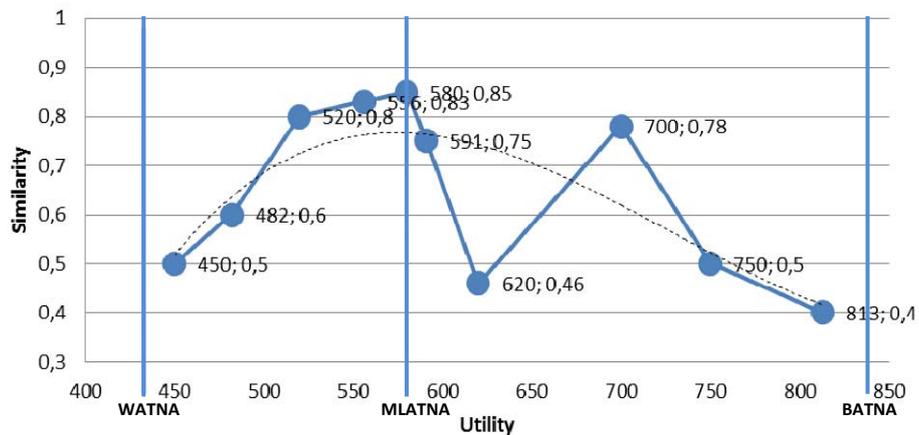


Fig. 2. Graphical representation of all the information compiled by UMCourt.

Combining cases with rules, it was possible to develop a methodology that compiles all the important information at the outset of the dispute resolution process. This will, in a first moment, help the disputant party decide if he/she should advance into litigation or if it would be better to continue with this process. At this point, the disputant party is able to weight the consequences of his possible decisions, assess its chances of success, determine its consequences and thus achieve more satisfactory outcomes.

4 Three Case Studies

Let us now depict three case studies in which the techniques depicted in this paper are being applied, all focusing on the Portuguese legal domain.

4.1 UMCourt Divorce and Heritage's Share

UMCourt Divorce and Heritage's Share [20] addresses property division in two scenarios: divorce and heritage's share. It is based on the Adjusted Winner algorithm (AW) [21] in order to define the share. This algorithm allows the division of n items between two parties in conflict. AW uses techniques from the game theory field and deals with the Nash equilibrium concept. It also makes use of a blind attribution of points to the items that are being divided by the parties. Each party must distribute a total of 100 points by the items, designating how much they want it. The points allocated are then submitted to a mathematical manipulation that determines the division of the properties by the parties. This process, as it is, may be considered envy-free because each party receives the items according to the preferences that were assigned, i.e., they receive the items or the most valuable half (according to the subjective evaluation), which makes each party feel satisfied and without greed about what the other party received. Division seems fair because each party receives at least 50% of the intended items. Moreover, each party believes his half of the property is more valuable than the other half (and subjectively it is in fact).

However, the parties may not be completely honest when assigning the points. As an example, if one of the parties makes the allocation of points considering the monetary value of the items, and the other party doesn't have a notion about the prices or simply assigns the points according to the preferences (unaware of the bad intention of the other party), the second party is in disadvantage. In order to address this fair division problem, considering the monetary perspective, this work introduces some changes in the AW algorithm: the Adjusted Winner by Value. Therefore, a component depicting the monetary value of each item, in which the arithmetic manipulation is performed, was added.

Although the division presented by AW by Value may be considered fair according to the preferences and the values of the items, the parties may choose not to accept it as it was proposed. In order to address this issue, a negotiation mechanism that can mediate the process and present other alternatives was developed. This mechanism is supported by the techniques presented in this paper. In that sense, parties can access other similar cases, know their best and worst scenarios, know the most likely scenario and thus cooperate in a more rational and realistic way in the negotiation process.

4.2 UMCourt Commerce

The legal domain of this case study is the Portuguese consumer law. Because this domain is a quite wide one, we restricted it to the problematic of buy and sell of consumer goods and respective warranty contracts. Thus, concrete solutions for the

conflicts arising from the supply of defective goods (embodied mobiles or real estate) were modeled. Financial services are also considered, as well as the cases in which there are damages arising out of defective products. Regarding the legal boundaries established, solutions for conflicts are being modeled as they are depicted in Decree of Law (DL) 67/2003, as published by DL 84/2008 (Portuguese laws).

Using this system, an unsatisfied buyer can use a web site¹ or a mobile application (Figure 3) in two different ways: for simulating a defect of a product that he intends to buy or for asking for a solution for a dispute arising out of a defective product already bought [22]. For deciding on an outcome, the system relies on rules that model the necessary legal norms. Thus, in this case, given the clear and relatively simple nature of these norms, the MLATNA is given by the rules, as well as the BATNA and the WATNA. However, the buyer has also access to similar cases, provided as mentioned above, concerning disputes with similar characteristics.

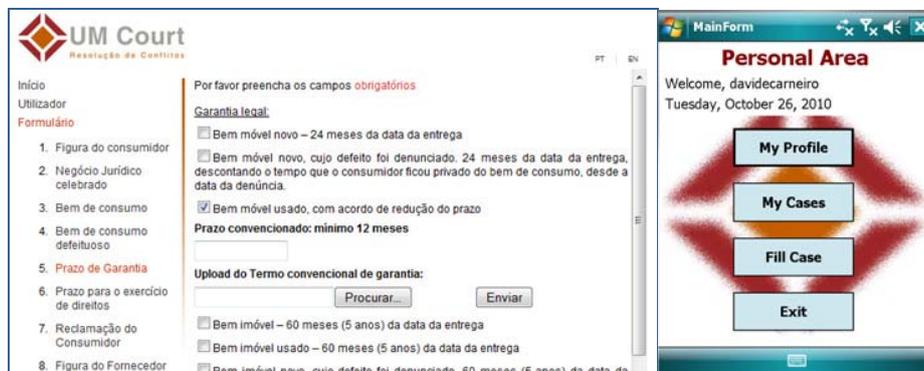


Fig. 3. An excerpt of the web interface (left, in Portuguese) and a screen from the mobile application (right).

4.3 UMCourt Labor

Given the current global crisis, labor disputes are more and more frequent. This case study deals with the issue of an employer being dismissed or wanting to end a work contract. Under legal systems such as that of Portugal, a huge deal of legal parameters need to be considered: (1) the antiquity of the worker in the company, (2) supplementary work, (3) night work, (4) justified or unjustified absence to work, (5) the possibility of a “just cause for dismissal” being declared by Court, (6) the existence (or not) of a valid and legal procedure of dismissal, (7) the possibility of dismissal being accepted without indemnities or (8) of it being accepted but accompanied by indemnities that could range from a very low to a very high amount of money. This, together with a relatively complex legislation on this subject, may make it difficult for workers to take rational decisions.

¹ The UMCourt Commerce site is available at <http://tiaracserver.di.uminho.pt/odr>

In that sense, the information mentioned above can help workers throughout such processes. Specifically, a worker can consult past similar cases and know the likeliness of their solutions in his dispute, know his BATNA and WATNA and know his MLATNA. Moreover, a multi-party negotiation tool supported by the CBR mechanism is also available (Figures 4 and 5). The main purpose of this tool is to support effective negotiation between two or more parties involved in a labor law dispute. The tool starts by proposing the solution of the MLATNA and the parties engage in a sequence of turns in which, in each turn, all parties can accept, change, ignore or refuse the current proposal for solution. In each round, if there is no consensus, the system will build a solution from the suggestions of the parties (if possible) or will suggest a solution from a similar case. The process goes on until a consensus is achieved or the system runs out of suggestions for solutions. In this case study, not only the party has access to the information described above but can also use a negotiation tool that will improve the efficacy of the alternative dispute resolution process.

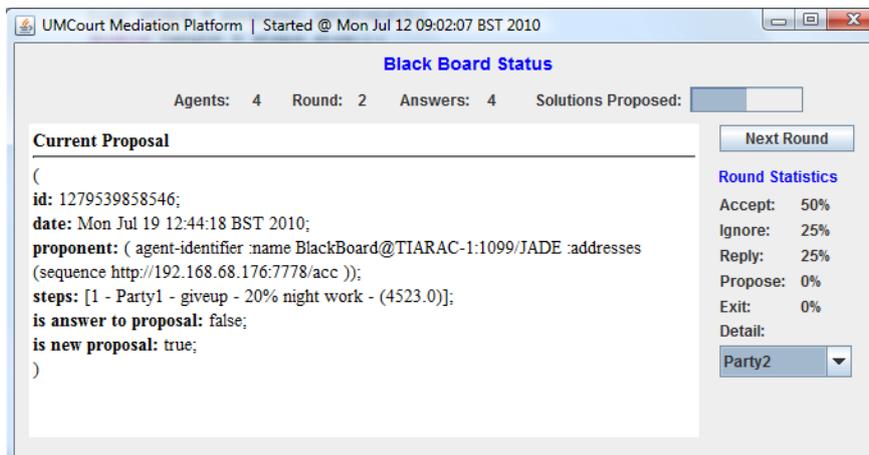


Fig. 4. The administrator interface which shows the state of the negotiation platform, including statistics for the current round and information about the current proposal on the table.

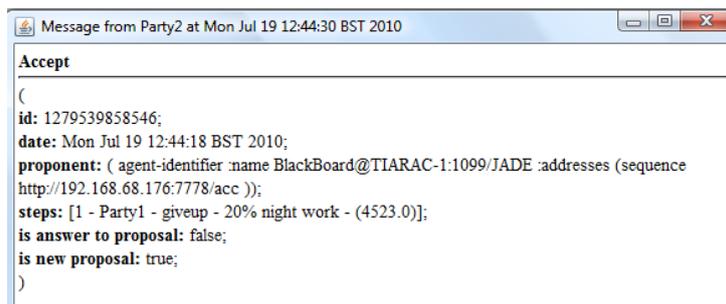


Fig. 5. The interface that depicts a message from a participant of the negotiation.

4 Conclusion

The main idea that is present throughout this paper is that informed parties are in a better position to take weighted and rational decisions. Concretely, a party should consider, in a first moment, the usefulness of entering into an alternative dispute resolution process. In order to take this decision, concepts like the BATNA, WATNA and MLATNA are of utter importance. Moreover, the party should also be aware of all the possible outcomes and their likeliness, in order to have a clear picture of all the possibilities. In this paper we identified the relevant knowledge for taking rational decisions and pointed out to domain-dependent methods for creating that knowledge. In a parallel work, we are developing an abstract architecture that implements these concepts in several legal fields by using ontologies. In this approach, agents are abstract entities that provide services useful for all the domains addressed. However, a service is implemented differently in each domain, according to the specificities of the legislation. In order to implement the services for each specific domain the agents use domain ontologies, which define how each action should be implemented. This approach results in simpler architectures in which functionality reuse is maximized.

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Building Trust Online

How to Adapt Mediation and Negotiation Techniques to the Virtual Environment

Graham Ross

The Mediation Room
218 Strand, London, WC2R 1AT

G.Ross@themediationroom.com

Abstract. This paper is developed from one section of the course which deals with the problem of how a mediator can develop the necessary level of trust when communicating online and overcome what may at first sight appear as barriers to delivering online the benefits of mediation.

Keywords: Online mediation, trust, online mediator, platform, confidentiality.

1 Introduction

Mediation is a 'person-to-person' process. Experienced mediators will claim that it is not possible to mediate in the truest sense except when in the physical presence of the parties. That is fair and understandable comment but misses the point that mediating online may often be the only option, e.g. when the parties are in different countries, when disability prevents attendance by one party or where the value of the dispute does not justify the cost of an in-person mediation. Additionally, online mediation can offer mediation services in urgent situations that need commencing immediately e.g. if a dispute with one contractor in a large building project holds up the work of other contractors, or when a ship is locked out of port due to a dispute. There are also some situations, e.g. in disputes between former spouses, in which the personal relationship between the parties is such as to trigger so many negative reactions when each are in the presence of the other that avoiding an in-person mediation can help the parties focus better on the issues than on the emotion. An online mediation also offers solutions and facilities not available in-person, e.g. blind bidding, anonymous brainstorming and dispute analysis not to me. Most important of all, the lower costs associated with online mediation as well as the facility to run two or more mediations in parallel, can enable a mediator to earn the same net fees for his time as he does for in-person mediations whilst, nevertheless, charging a lower rate per case and thus, in this way, widening economic access to mediation as a whole.

Given that mediation online may be the only, better or preferred, option available to the parties, then what are the challenges that present themselves to the mediator in developing the level of trust in himself as mediator that will enable him to perform to

an optimal degree? Trust is the key element in mediation. Without it, the task of the mediator becomes extremely difficult. Associated with that question is one about how the mediator can avoid misunderstandings, and provocative discourse that can be negative to the process. These are the issues to which my six years of experience in this field of online mediation has given me answers for sharing in this paper.

2 The Preliminary Stage

The first step is for the mediator to introduce himself as fully as possible to all the parties and to allow them to do likewise. In traditional mediation, this usually takes the form of a CV being sent by the mediator to all parties and possibly a telephone conversation. In the case of the introduction of the mediator it covers primarily the professional career, the nature of his practice within his profession and his particular experience in mediation, especially cases similar in nature to the one in question. An introduction in real terms to the mediator as a person is usually not fully carried out until the beginning of the mediation meeting when the previously provided written information is expanded on at a personal level. Without the benefit of any personal meeting, the advice in online is to expand the written introduction to add a little more of the person, e.g. home location, family circumstances, interests and hobbies etc. Uploading a photograph or perhaps even a small video will help the parties get to know the mediator better. How much information to give is up to the mediator but obviously it should not be too much. Just enough, perhaps, to enable the parties to begin to identify a real person in whom they can then begin to trust.

It is equally important for the mediator to take additional steps to begin to 'get to know' the parties. TheMediationRoom.com offers mediators use of a personality profiling module that will help identify relevant traits of the parties e.g. whether submissive or assertive by nature. The profiling is entirely voluntary and the parties receive a copy of the report. The parties are then asked the extent to which they believe the report is accurate. It is this aspect that can be very revealing to the mediator. How far you go to find out about people (searching them on social networking sites and forums etc) really depends on the nature of the case. A straightforward small consumer dispute over a product will not require as much personality enquiry as for a dispute between directors of a company. The more the dispute is affected by personality, such as family or boardroom, the more helpful it is to understand the people you are dealing with and, importantly, what drives them and how they themselves deal with people and emotions relevant to the dispute.

As well as understanding as much as you can about the parties, it is also important to try to find out as much about their experience in using the Internet and technology. Ask how competent and comfortable the parties are with the technology and communicating online. Make a note of the response and ensure you keep that in mind when conducting the mediation. Demonstrating concern that the parties understand the technology will help show concern and, in turn, this will reinforce trust.

Try to find out as much as you can about their working environment. When conducting mediation in-person the mediator knows and controls the environment. He will ensure simple rules are followed, such as mobile phones and MP3 players being

switched off, and that the room contains as little distraction (such as posters on the walls) as possible. This is not as easy to achieve when mediating online. How do you know people are not watching TV whilst responding to your messages? Whilst this may be OK for general email and web surfing, make it clear to the parties that mediation requires total focus and commitment. You cannot prevent such multi-tasking, but can at least set the ground rules and seek specific promises of compliance with them.

When mediating in-person you will know if one party has been drinking alcohol to such a degree as to affect his judgement and level of communication. How can you tell online that one party has not spent an evening in a bar or enjoying a bottle of wine at home, before logging on to the online mediation? The alcohol may well have raised emotions to such a degree that he responds aggressively and without due thought and consideration? You cannot prevent this, of course, save that you can raise the issue at the outset, set down a clear rule and try to identify any such effect such as from the nature of the response or the lateness of the hour when a message has been posted.

Ensuring the parties fully understand mediation and its objectives and purpose so as to approach it in a positive spirit is a key element in any successful mediation. In an in-person mediation, if the approach taken by one or more parties is not good at the outset, then not only will this become readily apparent to the mediator, but he will then be able to address it at an early stage. This lack of a positive attitude may not be so apparent when mediating online, until, perhaps, much later on by which time it may be difficult to change the approach.

Care should be taken, therefore, to assess the attitude of the parties in the early stages such as by asking questions focused on approach and attitude. Any negativity should then be addressed. One advantage here is that the exchange and outcome will be 'on the record' at least to the party concerned and the mediator. This gives the mediator opportunity later into the mediation to refer the party to what was said by way of a reminder and so as to reinforce a positive approach.

3 Adapting Discourse

One of the main problems with mediating online through text is the greater risk of misunderstandings. The Irish playwright, George Bernard Shaw, once famously said of the United States and the UK at "two nations divided by a common language". Words can often have different meanings in to different people. British solicitors will usually come home from their first visit to the USA proudly showing off photographs of signs outside houses saying 'Solicitors Keep Out'. In the US the term refers to door-to-door salesmen. In negotiation, 'my ultimate offer' may or may not mean 'my final offer' or may or may not mean 'my best offer' depending on the respect for literal interpretation by the person using the phrase. If when asking one party what he feels about a proposal from the other party and he replies with the word "that's wicked" you might be forgiven for thinking that he did not find the offer attractive. However, if he is a follower of hip-hop music, that phrase would mean the offer was very much acceptable. The advice is to check carefully for words that can have a double meaning and then check the precise meaning intended by rephrasing and seeking confirmation.

Another problem to address is the difficulty, in asynchronous online discussion, of identifying any hesitancy by a party in answering a closed question. Should, in an in-person mediation, a person hesitate before answering say 'no' to a question from a mediator as to, for example, whether an element of a proposal presents any difficulty for compliance, the mediator can then question the reasons for the hesitation with a view to a potential modification to the proposal that may lead to a more emphatic answer. However, if a party has this hesitation online, the mediator does not notice it when he reads the typed word 'no' in the response which may lead to problems further ahead. The advice for the mediator is that, whenever a closed question of importance is raised, to ask the party to scale his answer e.g. 1-10. A less than 9 or 10 can then open up discussion as to why that is the case.

You may receive a strange response at some stage from a party to the mediation. Always check back with the party, such as by echoing their remarks, especially when words with double meanings have been used. The message with various exclamation marks and gibberish may not be rejection of a proposal in angry terms but just a child let loose on the keyboard!

You'll need to assure the parties that the process in which they are engaged is a positive one. The task can be made all the more difficult when a party's anxiety about both ODR and the possible outcome may even manifest itself in mistrust of you, the mediator. Mediators need, therefore, to be completely transparent both during and before the process, so that there are no surprises. Due process matters online as well as off. If something comes up in the dispute resolution process that is a surprise to one party or the other it can completely undermine the trust they have that the process is fair. Mediators need to make clear commitments and keep them. Under promise and over deliver can be your motto.

It is important to keep to any commitments on time and priority that you have made to the parties and make it clear that you demand the same from the parties

You should clarify in detail how confidentiality is maintained both on the platform you use and in the procedures you adopt. You should never assume that the confidentiality of the system is always trusted by all parties at all times. Constant repetition and confirmation of the privacy of each discussion is important to reassure the parties.

One of the problems of asynchronous online conversation is controlling the number of messages. It's best to encourage a 'speak when you are spoken to' discipline. This will not only speed up the process but ensure people remain, through the disciplines of brevity, focused on the central issues. The mediator should set the rule at the outset that, save in exceptional circumstances where something important has been overlooked, the parties should not post a message unless in direct response from one from the mediator.

The exchange of visual and aural clues in a meeting can transfer 'information' that is not expressed in words. Elements can, therefore, be missed when mediating online. Whilst you will want to control the number of responses they make, encouraging the parties at the outset of the online mediation that, when they do respond, to post messages that give as much background detail and as much expression of their feelings as possible will help ensure as much as possible has been included.

The same should apply to the mediator. When mediating in-person the parties can readily sense when the mediator is fully empathising with, and understanding, their

position. It may be by a physical acknowledgement or other visual or aural clue. Awaiting for disjointed messages in response on an online file may not so easily give that sense of understanding. In order, therefore, to ensure the parties sense fully that they have been carefully listened to and understood, the mediator should take care to respond with messages that fully reflect all he has been told.

One issue for mediators generally is the extent of his intervention. Whilst mediation processes may vary, most allow the mediator the opportunity to encourage direct discussion and negotiation between the parties. This is especially useful when there is an underlying relationship between the parties the preservation of which after the mediation has been completed may be a desirable outcome. Consideration is also given to whether this direct negotiation should be undertaken in private and without the presence of the mediator. Given that in an online mediation the mediator does not have control to prevent the parties contacting each other direct in any event, it may be wise to address this directly and set up space for direct contact. In this way the online mediator can then ask the parties to report on the result. Dependent on the platform used the mediator may have the opportunity to watch over these direct discussions and thus gain more out of them than can an in-person mediator outside of the conversation.

It is important for the online mediator to make extra effort to try to heighten the feeling of 'presence' with the parties. Whilst asynchronous discussions may offer the benefit of enabling the mediator to work 'in his own time', little touches such as trying as best you can to respond at a time when the party to whom you are posting a message is more likely to be online and available will help reduce the sense of dislocation. This will also assist you by ensuring replies to your message come while you also are working on, and more 'in tune with', the case without having to re-read earlier messages. It is recommended, therefore, that you ask the parties at the outset for an indication of what times of the day or evening they are likely to go online to deal with the mediation and keep a note of it. If you are in a different country then try, as best you can, to work within the relevant time zone of the party to whom you are sending a message.

In in-person discourse, any need for clarification of words used is requested at the time - "what do you mean by..?". In asynchronous messages the disjointedness of the discussion can delay understanding. Be careful, therefore, not to use words that may require explanation or 'beg a question', without including the explanation at the time. If you criticise a party for using inflammatory language then do not wait for him to ask what are the precise words you take exception to but clarify in full when you make your initial comment. This avoids the party beginning to lose trust because he feels you do not empathise with his thinking and emotion simply because he has not fully understood why you used the words in question.

Whilst it may be normally important sometimes to seem to ignore comments made by a party in order, perhaps, to avoid opening a discussion that may inflame the situation, this is a tactic that should be less employed in online mediation as else the party may think the comment was overlooked. When he says, in the presence of the mediator, that the other party has told a lie he knows he has been listened to and he has made his point. But if he includes such a comment within a message and the mediator says nothing, the party may feel it has been overlooked. Its important, therefore, and even when you feel the party is raising an irrelevant or damaging issue

(e.g. the alleged false statement relates to an entirely irrelevant matter) to respond in your message to each and every such comment by asking the party to clarify identify each statement he believes is false and why. If the issue is irrelevant then of course this can then be stated. In this way whilst you may disagree with the party as to its relevance, you can ensure at least that he knows he has been heard.

In an in-person mediation all parties are together in the same building over a fixed period of time. No-one goes absent. Their commitment to the process is clear. In online mediation, people may have to go away at times or have appointments that may delay their responses. This may give the wrong impression to the other party of a negative reaction to comments/proposals they may have made or, worse, to the process as a whole. If one party senses the other is not interested in the mediation that can be a strong trigger for him to downgrade his interest. He may question why he should be involved in attempting to resolve the dispute if the other party shows less than full interest. To minimise these effects, you should press the parties to declare advance notification of any absence, however short, so as much as possible everyone can maintain a sense of continuing and mutual involvement. If there seems to be a delay not declared in advance, give the person a telephone call. It is advisable to obtain mobile/cell phone numbers for each party for just this sort of eventuality.

In in-person mediation, the mediator is able to control the level of civility. A recognised threat to civility in online discussion, however, is the dynamic of insulting comments posted to forums and social networking sites ('flaming'). It is very much provoked by the apparent permanence of adverse comments posted by others and driven by self image and 'ego'. If an adverse comment has been posted, it is understandable that the target will wish to post a rebuttal. The very fact that the comment is posted and constantly available leads to the target of the insult brooding over it more than would be the case if delivered verbally. The rebuttal inevitably threatens the credibility of the original poster, so he, in turn is provoked to defend himself by renewing, and possibly extending the original insult. This 'tit for tat' exchange can easily develop into a highly damaging thread. The mediator should both impose a rule against gratuitously insulting comment as well as an additional rule that, should it, in his eyes, be broken by any party, that party has to withdraw, issue an apology and reframe the comment. The mediator can reassure the parties that any adverse comment cannot be read by those outside of the mediation. Clearly parties should be free to express their thoughts to include criticism of the other party where appropriate but should do so in a civil manner. In a case in which the mediator fears difficulty in avoiding such insults, then he should consider the options that may be available in the platform he uses that will enable him to prevent the parties from posting comment seen by the other party save after review by himself.

4 Conclusion

I hope that, whilst recognising that, for many mediators, the problems of generating trust and avoiding misunderstandings when mediating online may seem, at first, to negate the validity of the process, that this paper encourages them to take a broader view and understand that, not only does the online medium have a validity of its own

that enables mediation to apply to disputes that otherwise would not have the opportunity for such skills, but that the problems that may at first sight arise can often be overcome with a little care and adjustment to technique.

Online Arbitration Definition and Its Distinctive Features

Farzaneh Badii

Faculté de droit, UNI MAIL, 40 Boulevard du Pont d'Arve
1205 Genève, Switzerland
farzaneh.badii@gmail.com

Abstract. Online arbitration is different from traditional arbitration not only because the process may be held online, but also because the core elements of its definition may be different. The differences may change online arbitration definition, however, they do not, hamper the validity of online arbitration. Online arbitration can be defined and used in a very flexible approach because of its core advantages such as speed, accessibility and cost-effectiveness. In an attempt to provide a precise and inclusive definition of online arbitration, in this article different elements of traditional arbitration definition have been considered. Mutual consent to arbitration, due process and binding decision are some of the elements that may not exist in online arbitration or may be formed in a different manner.

Keywords: Arbitration, online arbitration, mutual consent, choice of arbitrators, due process, binding decision.

1 Introduction

Online arbitration is different from traditional arbitration. The common thought that online arbitration is just the combination of online mechanisms and traditional arbitration is not true. The main thesis of this article is that online arbitration is different from traditional arbitration not only because it is held online or partly online but also because its definition elements may vary from those of traditional arbitration definition. The article aims to provide an inclusive and precise definition of online arbitration and extract different types of online arbitration from the definition accordingly.

In order to define online arbitration accurately, it is helpful to look closely at the component elements of traditional arbitration from which it evolved. Naturally, there is much commonality across the two forms, but also relevant differences in the detail of component elements of both. Moreover, some component elements may not be shared at all, belonging uniquely to just one form of arbitration. A study of the component elements of both forms is therefore necessary to provide a definition of online arbitration.

2 Online Arbitration and Elements of Traditional Arbitration

Arbitration elements often vary in different legal systems and thus hamper attempts to provide an accurate and singular definition which applies everywhere [1]. Nonetheless, some elements of arbitration are broadly similar in the majority of legal systems.

By considering the varying definitions of arbitration, the common elements of arbitration may be revealed. Numerous definitions exist but perhaps the following are of most use to us:

“Two or more parties, faced with a dispute which they cannot resolve for themselves, agreeing that some private individual will resolve it for them and if the arbitration runs its full course... it will not be settled by a compromise, but by a decision.” [2]

“Arbitration is a device whereby the settlement of a question, which is of interest for two or more persons, is entrusted to one or more other persons - the arbitrator or arbitrators- who derive their power from a private agreement, not from the authorities of a State, and who are to proceed and decide the case on the basis of such an agreement.” [1]

Born presents a definition of arbitration which draws from the definitions above. He defines arbitration as: “a process by which parties consensually submit a dispute to a non-governmental decision-maker, selected by or for the parties, to render a binding decision resolving a dispute in accordance with neutral, adjudicatory procedure affording the parties an opportunity to be heard.” [3]

From the foregoing definitions it may be concluded that, for a process to be recognized as arbitration, it should comprise the elements below:

- Mutual consent to submit to arbitration
- Choice of arbitrators
- Due process
- A binding decision

2.1 Mutual Consent to Submit to Arbitration

Mutual consent is considered one of the fundamental principles of traditional arbitration and is crucial to the legitimisation of the arbitration process [4]. In arbitration agreements, due consideration, valid offer and acceptance, and intention to create legal obligations should exist [5]. It is a well-established ruling that the parties should not be forced to arbitrate unless they have freely agreed to that particular mode of dispute settlement [6].

Nevertheless, entering into an online (or non-traditional) arbitration agreement may not be always consensual. In some circumstances, the participants may not have truly consented to the arbitration clause and entering into an arbitration agreement may have been forced indirectly. Some commentators have gone even further and stated that in many situations, the freely consenting party is a legal fiction [7].

For example, lack of genuine choice may lead to non-existence of consent to arbitrate online or offline. Such lack of choice may be evident where there is a monopoly of power or where there is a pre-dispute arbitration clause in Business to Consumers (B2C) agreement. In such cases, the weaker party has to choose between entering into an arbitration agreement or forgo contracting¹ [8]. Due to power imbalance in such cases, the parties may be considered to have been indirectly forced to enter into an arbitration agreement.

The question here is whether non-existence of consent to arbitrate would invalidate the arbitration clause.

Some academics argue that, where there is lack of choice to enter an arbitration agreement, it is more desirable to accept that consent to arbitrate does not exist, but that other requirements such as fairness may reasonably have replaced consent [8]. Thus it may not be very productive to place emphasis on the existence of true consent in arbitration agreements. Rather than focus on contract formation, the fairness of the process should be insisted upon².

In conclusion, where there is a power imbalance between parties, the weaker party may not truly have consented to arbitrate, however the non-existence of consent may not invalidate the online arbitration agreement if some other requirements such as inexpensive arbitral procedure and fairness of such procedure have replaced consent.

2.2 Choice of Arbitrators

Arbitrators in traditional arbitration are not government representatives [9]. They are not state judges and they are funded by private means [10]. Decision makers in arbitration are usually chosen by the parties or on behalf of them³ [11].

In arbitration the arbitrators chosen by, or on behalf of, the parties should be independent and impartial [9]. The term independence is defined as “one which measures the relationship between the arbitrator and the parties personal, social, and financial relation. The closer the relation in any of these spheres, the less “independent” the arbitrator is from the party [12].

¹ An appropriate example of power monopolisation may be Internet Corporation for Assigned Names and Numbers (ICANN). ICANN is the ultimate regulator of the domain-name, which has imposed a requirement on each domain-name registrar to incorporate the UDRP into their contracts with their customers. The UDRP is a Quasi Arbitration procedure, designed to solve disputes between a trade-mark owner and a domain name registrant. Since any domain-name registrar regardless of where it is based is regulated by ICANN, the domain-name demander is forced to accept the arbitration clause or forgo registering the domain-name.

² Alan Rau and Edward Sherman question “whether it is really productive to worry too much about the existence of true ‘consent’ to arbitration” they argue that rather than focusing on contract formation, the law should “place the highest priority on regulating the arbitration process itself.” Rau , A., E Sherman, E., *Arbitration in Contracts of Adhesion* 6 (1994) (unpublished manuscript, on file with the Hofstra Law Review), cited from Ware. S., *Employment Arbitration And Voluntary Consent* 25 Hofstra L. Rev. 83(1996)

³ The power to choose the decision maker is one of the main differences between arbitration and litigation. In litigation the judges are imposed on the parties whilst in arbitration the arbitrators are chosen by or on behalf of the parties.

The independence of the arbitrator can be determined prior to holding arbitration and it is an objective test to establish whether or not the arbitrator can arbitrate between the parties independently and with courage to displease⁴.

Impartiality is a subjective notion referring to the absence of bias in the person of the arbitrator resulting from a privileged relationship with the matter to be decided [13].

Independence and impartiality are pivotal elements of any arbitration definition. This is due to the fact that arbitration is an adjudicatory process. Arbitrators cannot be parties' representatives, and they have to remain impartial and independent, otherwise they cannot adjudicate between the parties with "full legal authority" [14].

In a definition of online arbitration, independence and impartiality of the arbitrators should be considered as two of the main characteristics of such a definition. In any arbitration process, strict compliance with procedural principles is required⁵. Independence and impartiality is so central to the process that online arbitration cannot be characterized as true arbitration without the independence and impartiality of arbitrators - and such elements should not be compromised unless agreed to by both parties [2].

2.3 Due Process

Due process is necessarily a vital component of any arbitration definition since a procedure which lacks due process may not be recognized as arbitration [15]. Due process in arbitration relates to the right to be heard, the right to adversary proceedings and the right to be treated equally [16].

In online arbitration, however, full compliance with all requirements of due process may adversely impact upon the cost effectiveness and speed of the online arbitration process⁶ [17]. Speed and cost effectiveness are two of the advantages

⁴ Lalive defines independence as follows: "Independence implies the courage to displease. The absence of any desire, especially for the arbitrator appointed by a party, to be appointed once again as an arbitrator" Lalive, *Conclusions in the Arbitral Process and the Independence of Arbitrators*, ICC publishing (1991) p.121. , cited in Binder, P., , *International Commercial Arbitration and Conciliation in UNCITRAL Model Law Jurisdictions*, 3rd ed. Sweet and Maxwell, London (2010) 184, For more discussion on the matter of impartiality and independence refer to , A Redfern M Hunter, *Law and Practice of International Commercial Arbitration* ,4th ed. Sweet and Maxwell, London (2004) para 4-52 et seq, Donohay, S., *The Independence and the Neutrality Of Arbitrators*, 4 *Journal of International arbitration* (1992) 32

⁵ One of the procedural principles of arbitration is to appoint independent and impartial arbitrators. Complying with such principle is very important when the parties' consent to online arbitration is affected. Kaufmann and Schultz argue that where there is no consent other requirements such as fairness may have replaced consent to arbitrate online. In such situations, it is paramount to strictly comply with procedural principles [9].

⁶ A limited due process is in favour of the parties in some cases, especially when more process raises costs to the point that parties who deserve to win on the merits cannot get access to adjudication and thus lose. Therefore limited due process which may provide a full access to justice is better than a full adjudicatory process which may be a barrier for the parties to have access to justice

(according to [8] and [17]) which make online arbitration a more desirable means of dispute resolution than litigation or traditional arbitration.

While due process is an essential element in online arbitration, keeping the process affordable and speedy are also important factors. Thus, while due process is considered a vital element for any definition of online arbitration, the degree of compliance might be variable [8]. Some “short cuts” might be taken to keep the process from stalling and costs from rising. Some academics argue that due process is a flexible principle [18] and the degree of required due process may vary dependent upon the case or the category of cases, and that the arbitration tribunal or institution may adjust the degree of compliance commensurate with the nature of disputes [8].

2.4 Binding Decision

Binding decision, in traditional arbitration, is one of the most important elements determining whether the proceedings constitute arbitration. By agreeing on arbitration, parties give arbitrators a judicial role [15] to adjudicate between them and to issue an award that is as effective as a court’s decision [13]. The binding decision distinguishes arbitration from other dispute resolution procedures, and it is the purpose of such process [2].

Decisions in online arbitration may not be always binding [8], in such process the arbitration award may be non-binding for either of the parties, or it may be unilaterally binding.

Where an online arbitration award does not bind either of the parties, the process cannot be recognized as true arbitration since the decision is unlike a judgement, and the arbitrator does not have a judicial role⁷.

Where the binding nature of arbitration depends upon one of the parties’ intention, the process may be true arbitration if the party admits that the award has a binding effect after the award’s issuance. Some legal systems explicitly allow the parties to agree that the arbitration awards have a different effect i.e. be conditionally binding⁸ [19]. In other judicial systems, conditionally binding arbitration may be recognised as true arbitration if the procedural standards applicable to arbitration have been met [20].

⁷ Parisi v Netlering inc , 139 F. Supp. 2d 745-751 (E.D .Va .2001) , Dluhos v. Strasberg 321 F.3d 365 C.A.3 (N.J.2003) (in both cases it was established that non-binding arbitration does not constitute arbitration under the Federal Arbitration Act).

⁸ Section 58 (1) of the UK arbitration law 1996 states that “unless otherwise agreed by the parties an award made by the tribunal pursuant to an arbitration agreement is final and binding both on the parties and on any person claiming through or under them.” As this is a non –mandatory provision, the parties may agree that an award should have a different effect.

3 Online Arbitration

3.1 The Exclusive Feature

Online arbitration proceeding is either conducted totally online by online means of communication or partly online by a combination of online and offline means. In totally online arbitration the entire process is conducted online by the use of email, video conferencing and web based communications. Partly online arbitration is conducted using a combination of the above mentioned communication means and offline features such as live in-person hearings and use of fax and post for the submission of evidence, communication between the arbitrators, and deliberation of the award.

3.2 The Definition

Having given consideration to the elements as discussed above, online arbitration is defined as:

Online arbitration is a process by which parties may consensually submit a dispute to a non-governmental decision maker, selected by or for the parties, to render a binding, non-binding or unilaterally binding award, issuing a decision resolving a dispute in accordance with neutral procedure which includes due process in accordance with the parties' agreement or arbitration tribunal decision. The online arbitration process may be conducted entirely online or partly online by the use of internet technology.

Therefore online arbitration may be categorized as:

- Totally online binding arbitration
- Totally online non-binding arbitration
- Unilaterally binding online arbitration
- Partly online binding arbitration
- Partly online unilaterally binding arbitration
- Partly online non-binding arbitration

4 Conclusion

Online arbitration is not merely the combination of traditional arbitration and online means of communication. There are major differences between the core elements of online arbitration and traditional arbitration. These differences have a direct affect on the definition of online arbitration and as it was seen, the definition of online arbitration is not the same as traditional arbitration.

It is important to emphasise on the existence of some elements in online arbitration such as impartiality and independence of arbitrators whilst it may not be necessary for other elements to exist in online arbitration, or the degree of compliance with such elements may be different.

This, however, may not hamper the effectiveness of such process in resolving the disputes. Online arbitration can provide a very flexible means of dispute resolution that can be tailor made in accordance with the parties needs and at the same time be recognized as a legally valid process.

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