

The Virtual Courtroom and Online Dispute Resolution

By

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1. Introduction

The Global Legal System is changing as the world moves towards the information society. Most lawyers, Judges, legal administrators and participants are regular users of IT in their daily life and increasingly expect to rely upon modern systems in their daily practice. Even the court room, which is often thought of as the last bastion of antiquated working practices is opening its' doors to new technology.

Despite concerted efforts by Judges, Professional bodies and Courts Administrators, the UK still faces a body of lawyers and litigants who are reluctant to embrace new technology. This desire to ' carry on as before' may be one reason why the universal adoption of Alternate Dispute Resolution has been slow to develop in the UK, despite the increasing use in the USA.²

Although the benefits of ADR and ODR are clearly set out in other chapters of this publication, there is one area where traditional litigation holds the advantage. The civil courts can cater for all types of litigation, from a simple possession case, through to complex multi party High Court trials taking many months such as the Lloyds Names litigation.

The growth of Online Dispute Resolution, (ODR) is well documented in other publications, (see for example 'Online Dispute Resolution for Business', Colin Rule).³

At present the vast bulk of these cases arise from consumer on line purchases and are by definition simple and easily managed. Some services have been established which offer a high degree of sophistication in negotiation and settlement skills, often relying upon artificial intelligence - see SmartSettle.com which uses mathematical algorithms to help find a resolution to disputes that maximizes benefits to both parties.

As ODR gains the confidence of the litigant, cases that are conducted will become more complex and lengthy, often involve great volumes of paper and multi parties often in different jurisdictions. New levels of computing capacity with accompanying levels of service will be required to support the demands of the global on line litigant, whether they turn to traditional litigation or ODR methods to resolve their disputes.

The ODR movement is at a critical stage in its development. If lawyers around the world, purchasers of goods on e commerce sites, multi national companies or government departments engaged in multi jurisdictional disputes are all prepared to turn to ODR before thinking of traditional litigation, then an escalating series of facilities and services has to be offered, from the simple exchange of complaint and answer, though blind bidding and artificial

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² The American Arbitration Association handled more than 150,000 cases in 1999 and the Better Business Bureau dealt with 450,000 cases in 2000.

³ John Wiley & Sons 2002.

intelligence systems, to the Virtual Trial, capable of supporting bulk documentation, remote location of parties and sophisticated used of graphics.

This chapter seeks to set out a short history of the introduction of IT into the legal system in the UK and USA, the challenges that arise, the development of the Virtual Courtroom movement by Courtroom 21 and Court 21, a review of new enabling technologies and the security implications that arise.

2. Background

As Barristers and Judges consider dispensing with the wig and gown in order to do justice in a contemporary fashion, the move towards the paper free court - or the virtual trial is gathering pace behind the scenes. To computerise the legal system, it is critical to computerise the courtroom. As Professor Frederick I Lederer wrote in 1997,

'The Courtroom is a place of adjudication, but it is also an information hub. Outside information is assembled, sorted and brought into the courtroom for presentation. Once presented, various theories of interpretation are argued to the fact finder who then analyses the data according to prescribed rules (determined by the Judge through research, analysis and interpretation) and determines a verdict and result. That result, often with collateral consequences is then transmitted throughout the legal system as necessary. The courtroom is thus the centre of a complex system of information exchange and management. .

Ultimately, because lawyers and judges deal continuously with 'data', high technology courtrooms exist and virtual courtrooms are possible.⁴

Litigation is a dispute between two or more parties, resolved by a Judge, Jury or Arbitrator following argument, usually by counsel. To prove facts in dispute, counsel present evidence. Witnesses are called, their accounts listened to and their demeanor studied. Physical evidence is considered - physical items, photographs, plans, schedules and video evidence considered. Most of these legal processes can be supported by the use of IT.

3 IT and the Courts.

It is now a matter of routine in Courts in the UK and USA for live evidence to be called by use of video link (in the case of vulnerable witnesses). As civil and criminal litigation wrestles with cases of increasing complexity, courts are increasingly prepared to consider evidence served on disk rather than in hard copy. But as the infrastructure behind the various participants to litigation varies, a strange hybrid now exists in many jurisdictions, where the bulk of the evidence is prepared on paper and copied to all parties, but much is copied, circulated and annotated by some Counsel and Judges on disk.

There has been a considerable drive towards technology in the courts in many jurisdictions. Lord Justice Brooke, Senior Judge in Charge of Modernisation traced the history of the introduction of technology in the UK from 1992 to the present day in a recent address to Court

⁴. Frederick I Lederer, The Courtroom as a Stop on the Information Superhighway, REFORM, Spring 1997, at 4,4

21 at Leeds University. There were the ad hoc use of electronic presentation facilities in high profile cases such as Kevin and Ian Maxwell. The work has now been expanded under the Crown Court Programme now called the CTMP. Pilot courts have been cabled for Electronic Presentation of Evidence (EPE), digital recording (DAR) video conferencing and electronic delivery of progress of the trial (EXHIBIT). More recently there has been a pilot of the 'virtual plea and directions hearing.' In civil cases, the most dramatic success has been an e-filing project called MCOL 'money claims on line', which was launched in February 2002.⁵

Unlike the UK, the United States does not have a unified system of Courts administration, so progress develops according to many local factors. Electronic filing of evidence, electronic case management, the creation of multi- media legal briefs, an electronic court record and electronic presentation of evidence is now commonplace. In 1998 the Judicial Conference Committee on Automation and Technology released the results of their assessment of certain technologies used in federal courts. 83% of Judges felt that video evidence helped them manage court proceedings better, and 90% of jurors felt that they were able to see the evidence clearly and follow attorney presentations.⁶

Remote witness testimony has been implemented in a number of Lab Trials conducted by the Courtroom 21 project from its McGlothlin Courtroom, the worlds' most technologically advanced courtroom. In May 2003, together with participants from Court 21 project in Leeds and Brisbane, legal submissions were made simultaneously to Judges in the 3 jurisdictions by counsel in Australia and rulings made to permit the admission of evidence, said to be covered by solicitor/client privilege.

4. The challenges.

As the new technologies are adopted throughout the legal profession, great cultural change will need to occur. It is not only a question of professionals working on disk rather than paper, rather a re- engineering of business processes in all of the agencies involved in doing justice that is required. For example, the proposed UK exchange being constructed by Criminal Justice Information Technology [CJIT]⁷ to link the various stakeholders in the Criminal Justice system will not only require all agencies to re evaluate their business practices, but serious consideration will have to be given to security training of all employees, so as to prevent the leaking of confidential material into the public arena.

At present many of the organisations involved in the CJS are unable to communicate with one another by email securely. The Government Secure Intranet (GSI) and the Criminal Justice Extranet (CJX) form part of the Government Secure Community (GSC) and provide the basis

⁵ See Lord Justice Brooke address to the '21st Century Digital Court' at Court 21, 28th May 2003, <http://www.lcd.gov.uk/judicial/speeches/ljb280503.htm>.

⁶ Courtroom Technology Draws Positive Response. THE THIRD BRANCH (admin OFF of the US Cts, Washington D.C.) Aug 1998 at 9.

⁷ CJIT is a tri-lateral government organisation operating across the three justice departments. Its purpose, in collaboration with the major CJOs is to deliver the vision of a modernised, joined up Criminal Justice IT system. This vision, set out in the Government's White Paper Justice For All (JFA) has led to a cross-CJS IT programme, coordinated by CJIT, being established with responsibility for delivering several targets; the present main one being by 2003, all criminal justice professionals (police, probation, CPS, court clerks prisons and YOTs) will be able to securely Email each other.

for secure email between the 6 Criminal Justice Organisations [CJOs]: Crown Court, Crown Prosecution Service, Magistrates Court, Police, Prisons and Probation. YOTs and other CJPs, such as Solicitors and Barristers, will never be able to connect to either of these systems.

As IT becomes more prevalent across the whole of the Criminal Justice System, there is an increasing need for CJOs to communicate with each other and their 'external' partners in a secure manner electronically. No such national service exists at present and it is the responsibility of CJIT to deliver a 'cross CJS secure email system' and to support the realisation of the benefits this can deliver within the CJO community

The backcloth to the introduction of technology into the UK legal system is the unfortunate well documented failure of a number of high profile Government IT programmes, including the Inland Revenue system to process tax credits, the online self assessment web pages which last year suffered security breaches allowing the tax details of more than 700 people to be viewed by others on the Internet and the Defence Stores Management solution for storing the army's inventories which was suspended in January 2002 after consuming £140m of taxpayers money. In the Criminal Justice arena, such public embarrassments have resulted in the abolition of an inter-departmental group known as IBIS and a loss of confidence amongst IT professionals as to whether or not such the task ahead presents too steep a mountain to climb.

Of more importance is the effect of the failure of these recent initiatives, which have in the main occurred, not through lack of good intentions, effort or funding, rather a failure to fully understand the scope of the work that is required in re engineering of business process in the various agencies. The lesson that is now being learned in the Medical profession has equal validity in this market: what is required are systems designed for the profession by the profession.

Because of the climate of uncertainty, prevarication and delay that is now endemic in government procurement, compounded with the collapse of the 'dot com' bubble, the private sector is reluctant to invest in this market. Rather than supporting the development of new and innovative ideas, IT systems integrators are only prepared to react to government procurement projects, projects with potential to overrun, as being the only route to maximising profits in difficult market conditions.

The question of who should develop and finance the new technology for the legal system is one that has often been considered. Professor Richard Susskind believes that there are compelling reasons in the UK at least for proposing that new technology should NOT be financed and developed from within the public sector, bearing in mind the current climate of strict control of public expenditure and the long term nature of the change required. He called for a 10 year vision and commitment by Government to support the vision a call that was recognised in the Auld report, published in October 2001.^{8 9}

It is therefore of no surprise that the driver for initiative in this area has come from the academic world. The Universities have the authority, computing power, integrity and ability to react quickly to recent developments in technology. More importantly, they often tend to have all required disciplines under one (rather large) roof. This paper acknowledges that two disparate

⁸ Transforming the Law, Essays on Technology, Justice and the Legal Marketplace, Professor Richard Susskind 2000.

⁹ The report by Lord Justice Auld on the Criminal Justice system. See paras 92 - 114, pages 352 to 366 on IT calling for the abolition of IBIS, and the establishment of an implementation plan for an integrated information technology system for the whole of the criminal justice system

academic movements, the Virtual Courtroom and the ODR community have developed, and seeks to identify the advantages that can arise from convergence.

5. The vision of the 'Global Virtual Courtroom'

Collaborative work in the arena of remote video conferencing of trials over a number of years has resulted in a conclusion that litigants around the world require a trusted global infrastructure, which is specifically designed to support the conduct of complex litigation. This trusted solutions provider needs to be available to both traditional litigation -ie access by individual court jurisdictions and the emerging community of Online Dispute Resolution - ie mediation and arbitration. This will be a commercial service, designed and supported by the Courtroom 21 project, Court 21 and CourtCom Ltd, which will engage with other companies and agencies for example the Institute of Arbitrators.

As the take up for ODR develops around the globe, the volume of contested cases will grow. SquareTrade.com, an ODR service allied to Ebay, reports over 10,000 cases per week. Although it is generally accepted that 80% of cases are settled by ODR, the balance of the 20% that do not resolve could be catered for by the Virtual Courtroom. It is therefore proposed that convergence between the ODR and the Virtual Courtroom be promoted, so that an 'end to end' service is offered.

5.1 Courtroom 21

Unveiled on September 13, 1993, the Courtroom 21 Project is an ongoing international demonstration and experimental effort, which seeks to determine how technology can best improve all components of the legal system. It includes, in the College of William & Mary Law School's McGlothlin Courtroom, the world's most technologically advanced trial and appellate courtroom.

A joint project of the Law School and the National Centre for State Courts, the Courtroom 21 Project, "The Courtroom of the 21st Century Today," is a 1997 recipient of a Foundation for Improvement of Justice Award for its efforts to improve the administration of justice through technology. The Project includes two full-size traveling, high technology Courtroom 21 Portable Courtrooms, which are in great demand for professional conferences.

The project is the world centre for courtroom and related technology information and experimentation. The Courtroom 21 Project has been covered by CNN, ABC, CBS, NBC, the Discovery Channel, and Court TV in addition to numerous newspapers-- including the Wall Street Journal, Washington Post, Christian Science Monitor, National Law Journal, and the Australian, and magazines such as the American Bar Association Journal and Trial.

Most of the Chief Court Administrators and Chief Justices of the states have visited. In addition to the federal judges and court administrators who have toured the Courtroom, the Project has also hosted the Automation and Technology Committee of the United States Judicial Conference and Chief Justice Rehnquist and Justices O'Connor and Ginsburg. Project Staff members regularly make presentations at major national and international conferences and meetings. Numerous lawyers, including American Bar Association, state, and other professional association presidents and officers, and numerous members of the Department of Justice have also visited the Project. The Project has hosted meetings such as the Department of Justice's First Conference on the Use of Technology in Litigation and Investigations.

In April 2002, Courtroom 21 conducted the first ever use of immersible reality techniques in court in a lab trial before United States District Judge Nancy Gertner, District of Massachusetts. Wearing special goggles, witnesses were able to walk around the recreation of the scene of the alleged offence, a hospital operating theatre. Once the witness had placed other participants at the correct position in the scene, a 'virtual pyramid' was used to calculate the precise view that the witness would have had from that position.

Other techniques were also demonstrated at this event, including the use of a hologram, which had been used to create a 3 dimensional view of the victim's heart.

The McGlothlin courtroom is presently being re designed to incorporate recent developments in court technology. The networking of the court is to be based on Digital Fiber Optics. This represents a secure, state of the art solution to the signal acquisition and distribution needs of the court. Digital transmission & switches/routers work in concert to provide the best and most flexible high quality distribution network available. This development incorporates technology developed for the telecom industry to provide a high quality high reliability communications network.

The advantages of such an approach are:

- that there is less disruption to the courtroom in the installation
- the core infrastructure will permit a wide range of video/audio/data variations and upgrades, thereby making considerable future savings
- a higher level of security to permit highly sensitive trials to be conducted than with conventional copper based cable
- Digital transmission allows for multiple distribution paths via routers/switches.

5.2 Court 21



Court 21 is a unique academic partnership between the Departments of Law, Computing and the Business School at Leeds University, together with the Courtroom 21 project and CourtCom Ltd.

The aim of Court 21 is to establish the European Centre of Excellence in Courtroom. Court 21 has participated in 3 annual Courtroom 21 Lab Trials and in 2001 conducted a live simulated mediation where the use of 3 D graphics in ODR was demonstrated to a live audience including the senior Judges, the Professions and the Courts Administration.¹⁰

On May 28th, 2003 Court 21 held its first international conference on Courtroom technology entitled the 21st Century Digital Court. Speakers included Lord Justice Brooke², senior Judge in charge of Modernisation of the Courts, Matthias Kelly, Q.C. Chairman of the Bar of England and Wales, Professor Lederer, and Professor Galves from the University of California.

A new post of Chair of Courtroom Technology will be created, with teaching modules being prepared in all three disciplines to start in the academic year 2004. The new electronic moot courtroom is being developed in the Law Faculty. This will act as the main hub of the project, which is presently conducting the bulk of its activities in the Informatics Research Institute.

5.3 Courtcom Ltd

CourtCom Ltd was established in 2000 by a group of lawyers and academics including the Author, Jeremy Barnett who is Chairman of the Bar Council IT panel and Professor John Oakland. It's aim is to turn the vision of the paperless Courtroom into a reality, by promoting more efficient and effective processes in the interchange of trial papers and developing an integrated court technology solution.

The founders believed that a business had to be created which not only developed appropriate services for the marketplace, but could also "deliver" the Profession and a workable commercial model to the key decision makers. CourtCom's solutions are designed "by the Profession, for the Profession". The Company aims, step by step, to transform and improve each component of the legal system via the introduction of technology solutions and the necessary associated change management and has unrivalled experience in extensive project management, change management, as well as information and information systems security, information management and systems strategy.

As CourtCom believes that email is an unsatisfactory medium for the exchange of confidential and complex legal case papers¹¹, the company has developed 'Custodian', an independent web enabled, centrally accessible, secure, electronic document repository for use by all stakeholders to a set of criminal or civil legal proceedings. This has been designed on a scaleable, modular basis, thus allowing a phased roll out and phased capital expenditure which minimises cost exposure; Custodian will be a 'workbench for the profession' and will sit above individual stakeholders internal document management systems to provide an interface

¹⁰ See below 'Virtual Artefacts to Support Negotiation within an Augmented Collaborative Environment for Alternate Dispute Resolution', Peter, Dew, Aphrodite Galata, John Maxfield and Daniela Romano, University of Leeds.

¹¹ See 'Email and the internet, a concise guide to the legal issues' by Stephen Mason [Parrio Communications 2003], which sets out details of liability, misuse, monitoring, storing of email.

between all stakeholders and the profession for the transfer of case material.

As the use of broadband, Wi Fi and G3 mobile computing increases, lawyers will increasingly discover the advantages of using of web based management of legal case and source material in both in the office (or chambers) and in court.

5.4 Leeds University School of Computing

The University of Leeds is making a major strategic commitment to cross - disciplinary informatics activity involving departments from across the campus and industrial partners from Leeds, the UK and beyond. To support this activity the Informatics Network has been built to co ordinate informatics teaching and research across a diverse multi-disciplinary range of academic groups.

The core areas of the Informatics network are scientific understanding (eg through the Government's e- science programme), management of knowledge and informatics resources and understanding new e- Businesses. The Director of Informatics, Professor Peter Dew ¹² has been most influential in driving the formation of Court 21 at Leeds, and has brought his research, focused around the design of software architectures for the construction of collaborative virtual environments, knowledge transfer and support for virtual organisations involved in the design of physical artefacts to the arcane practice of Law.

The White Rose Consortium is an association of three major research Universities in Yorkshire, Leeds, Sheffield and York. The combined research power of the consortium is equal to that of any institution in the UK. The White Rose Computational Grid is a first of kind metropolitan grid that will provide service from researchers from the 3 universities, to deliver stable, well managed HPC services and to demonstrate the benefits of Grid technologies.

The WR GRID will be integrated into the future with emerging national and international computational grids and grow into a Regional Grid Node in collaboration with Yorkshire Forward.¹³

Leeds University is a member of the Worldwide Universities Network, an international partnership of leading higher education institutions to develop significant research led collaborations in rapidly developing interdisciplinary areas of global significance.¹⁴ WUN has formed an international planning group to develop a worldwide University GRID, to build upon the experience of the WRG.

5.5 Leeds University Department of Law

The Department of Law at Leeds is recognised as one of the leading UK law schools and one of

¹² http://www.comp.leeds.ac.uk/cgi-bin/sis/ext/staff_pub.cgi/dew.html?cmd=displaystaff

¹³ see <http://www.yorkshire-forward.com/>

¹⁴ see <http://www.wun.ac.uk/>

the oldest departments within the University. The Head of Department, Professor Clive Walker, through his interest in Cyber Law, has been a champion of the Court 21 project and has been instrumental in the development of the new Electronic Moot Courtroom in the Department.

The Cyberlaw Research Unit¹⁵ aims to develop, co ordinate and pursue research and study into the impacts of information technologies upon legal systems, legal professions and legal science. Modules include IT Law and Society which focuses on the 'legal nightmare' created by cyberspace and cybercrimes (the darker side of cyberspace, cybergovernance, cyberspeech and cybertrade.

Dr David Wall, who is Director of the Centre for Criminal Justice Studies is the cyber law course Co Coordinator and co author with Professor Walker and Yaman Akdeniz of The Internet, Law and Society, published London by Longman.¹⁶

5.6 The Leeds University Business School

The Leeds University Business School is now ranked among the UK's top 15 Business schools (FT Dec 2001) with some 1.300 undergraduate students and 500 postgraduate students. The School has internationally recognised centres of research excellence and a wide range of degree programmes at undergraduate, taught postgraduate and research degree levels, situated in purpose built state of the art facilities on the site of the former Leeds Grammar School, representing an investment of over £10 million.

The European Centre for Business Excellence (Ecfor BE) was formed by Professor John Oakland who is also a director of CourtCom Ltd and Chairman of Oakland Consulting Plc. It conducts pragmatic research into organisational management and shares knowledge of best practice primarily through research publications and executive development programmes.¹⁷

The recent history of Government IT programmes in the UK criminal justice area is a matter that has caused a great deal of concern in the industry. For example, the Libra Caseworking project for the Magistrates Court which was estimated to cost £156 million, will end up costing taxpayers £390 million. As the Legal system is second only in size to the National Health Service, it is felt that a number of lessons should be learned from that arena. A recent survey has highlighted the fundamental weakness in the way in which NHS officials are managing the £2.3bn national programme for IT.¹⁸

Over 75% of the 1000 doctors who took part in the survey wanted local working practices aligned with new NHS systems before the technology is introduced. The parallels are there, a recent trial of electronic records in Cornwall for example called for processes to be re - engineered. It found that computerisation caused increased workloads for data entry, which reduced the quality of care given. Trusts in the county found that the parallel use of paper and

¹⁵ <http://www.leeds.ac.uk/law/clrunit/clru.htm>

¹⁶ <http://www.cyber-rights.org>, a non profit civil liberties organisation

¹⁷ see <http://www.ecforbe.com>

¹⁸ See the report of the National Audit Office 2003. The contract for Libra was awarded to ICL (now Fujitsu Services) in 1998 after EDS dropped out of the race. The LCD decided to renegotiate the contract with Fujitsu who will continue to provide the national IT infrastructure but the contract to supply the core case management software has gone out to tender again..

electronic files ' adds a huge burden to staff who duplicate data collection".¹⁹

It is critical in the Legal System to fully understand the underlying business processes which are by their very nature complex before attempting to introduce technology, it is for this reason that the Leeds University Business School joined the Court 21 project, so that it could develop an unrivalled body of learning as to the needs of the customer - ie the Judges, lawyers and clients who participate in modern litigation.

As we move to a global legal market, a deep understanding is required of the disparate legal systems around the world. Any attempt to introduce technology into the trial process, whether it be criminal or civil, adversarial or negotiated must be accompanied by an equivalent commitment to Change Management, so that the IT solutions develop to their full potential, rather than becoming simple tools introduced on an ad hoc basis into a traditional method of preparation.

The great advantage that the ODR community has over existing Litigation methods is that the rules of engagement for ODR are still being developed in line with the advances in technology ie the two bodies of learning, IT and Change Management, are growing side by side. It is therefore reasonable to predict that ODR will succeed in its attempts to gain universal adoption, and will soon be in a position to challenge traditional litigation methods throughout the world as ODR offers a streamlined, seamless service, while traditional litigation limps from one IT initiative to another, much to the frustration of many of its main participants.

5.7 The use of Virtual Artefacts to support negotiation

See Virtual Artefacts to Support Negotiation within an Augmented Collaborative Environment for Alternate Dispute Resolution, Peter, Dew, Aphrodite Galata, John Maxfield and Daniela Romano, University of Leeds.

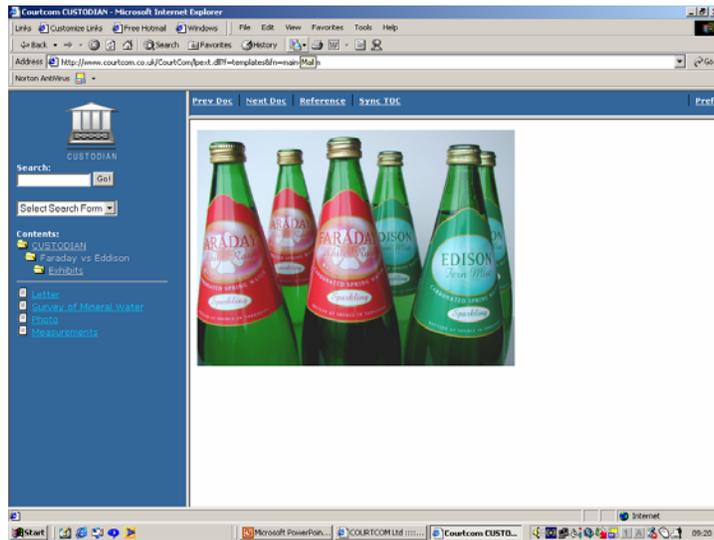
On 11th September 2001, Court 21 staged its first lab (mock) trial before an invited live audience consisting of senior members of the judiciary, the legal profession and the courts administration. The aim of the experiment was to investigate whether an augmented collaborative environment could provide a realistic alternative to face to face meeting for the purpose of mediation proceedings. The proceedings were conducted by Andrew Paton, one of the UK's leading mediators and the parties represented by practicing members of the legal profession, Counsel were Simon Bickler of CourtCom Ltd and Professor Frederick Lederer.

The dispute concerned a potential passing off action in relation to the design and labeling of two green bottles of sparkling water, between mineral water manufactures, one based in the UK called Faraday Ltd and one based in the USA called Edison Corp. The scenario envisaged that the parties, rather than agreeing to meet in one country, agreed to litigate from their home towns, and collaborated in the production of a virtual 3D model of both parties bottle, by the host [Court 21].

The documents for the case, including photographs of the bottles, market research and original letters of complaint. were indexed and imported into CourtCom Custodian and were available to both the Mediator and the parties in remote locations.

The dispute focused on the similarity in shape and design of the bottles, which their respective sparkling water were sold. Both bottles held one litre of water, were made of dark green glass in a distinctive teardrop shape, had a coloured cap and a similar label.

¹⁹ See Computer Weekly Tuesday 1st July 2003



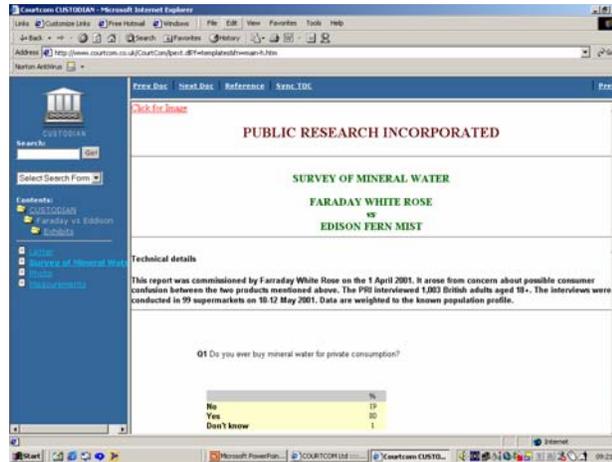
Faraday lodged a complaint with Edison, alleging that their own distinctive bottle was known throughout the world and had been deliberately copied so that consumers would be unwittingly lured into purchasing the competitors product. Faradays case was that the bottles were almost identical and that Edison had infringed its copyright. They hoped to persuade Edison that the two were so similar that a negotiated redesign of Edison's new product line would avoid the need for expensive and time consuming litigation.

The Faraday case was based on showing that the dimensions of the bottles were similar, whereas Edison sought to demonstrate that there were sufficient differences between the bottles as to make it clear to any purchaser that they were a different product. Whereas Faraday relied upon the general feel and colour of the bottles, Edison were able to demonstrate by placing one virtual bottle inside another and changing its colour, thus demonstrating that there were clear differences in shape and colour between the two items.

The virtual artefacts were blended into the live video stream using a real time video signal mixer, and then at one stage superimposed over the feed from the US, so that the advocate appeared to have the bottles in his hand as he made his submissions to the mediator. To support this negotiation, a collaborative environment was constructed using existing technologies wherever possible. The environment was based on a standard H323 video conferencing system supporting communication over 3 dedicated ISDN pairs (up to 384k). A second computer was also used to generate the virtual artefacts (the bottles) using an Interactive Virtual Prototyping system (IVPS) developed through previous research at the University of Leeds .²⁰

The documents in the case, ie the draft pleadings, photographs of the bottles, market research and letters of complaint were imported into CourtCom Custodian and available

²⁰ M Thomason, J Maxfield and PM Dew, Interactive Virtual Prototyping, In Proc of Eurographics UK '98 , pp107.



for use by both parties in remote locations, and also to the Mediator.

An evaluation of the views of the participants was effective and some even felt that it enhanced the scenario as it concentrated the parties mind to the key facts in issue. Many practical issues were raised, the main factor to emerge was that although there might be great savings then conducted and the conclusion was, the method of conducting the negotiation was practical, in the time associated with travel to and conduct of litigation, a fundamental shift will arise in the process of preparation for a virtual trial/mediation rather than a traditional paper based litigation.

A key issue that arose was whether or not the parties would seek to challenge the accuracy of the virtual artefact, a matter that was resolved in this case by a pre hearing agreement. Such would depend upon whether the virtual reconstruction or artefact was prepared by a trusted third party, giving each party the opportunity to experiment with the core material and prepare different scenarios by alteration of critical parameters, or alternatively each side was free to create their own presentation.

The question of 'equality of arms' or a 'level playing field' in litigation and mediation is an issue which will no doubt emerge as parties seek to introduce IT reconstructions or artefacts into presentations. The fundamental principle in traditional litigation is that each side can prepare itself to the best of its ability in an adversarial situation (save in criminal cases where the state often intervenes to ensure equality of funding so that an oppressed defendant can receive adequate representation by counsel and experts).

There is therefore the danger that a wealthy litigator may well resort to expensive sophisticated high tech reconstructions or computer models to bolster a weak case. Conversely, in an ODR environment, if the 'trusted host' is also charged with the task of building the IT model for use by both parties, then there is more likelihood of the parties reaching a negotiated settlement which proves satisfactory to each party.

The conclusion of the advocates who participated in the test was that in this particular case, the use of the technology favoured one party - ie Edison Corp. Had the case been conducted under traditional methods, Farraday would probably have had the stronger case, as the bottles felt and looked similar to hand and eye. However, detailed points of difference based on tolerances and use of the 3d graphics clearly strengthened Edisons case.

A final 'winning point' was made by the Edison team as they place the bottles onto a document camera to demonstrate that with appropriate lighting, the glass used by their client was of a

wholly different colour to that used by Faraday. Such a point is often called a 'jury point' by practitioners, the definition being a point which appears at first unanswerable, but does not bear the close scrutiny of an experienced (and often cynical) tribunal. Practitioners are often the last to embrace technology in the courtroom for fear that their skills as advocates will become redundant. This test showed demonstrated that provided the advocate is prepared to embrace modern technology as one of the weapons in his armoury, his skills as an advocate will always be in demand.

5.8 The Bar Council Video Conferencing Studio

Although Leeds is the second most important Legal Centre in the UK and conveniently located for access to the entire country, it is recognized that the Court 21 network will need a presence in London to assist with its development. The General Council of the Bar has provided videoconferencing facilities since 1993.

The studio hosts 200 – 250 mainly legally based conferences every year of which some 30% consist of taking evidence from a witness, usually abroad. It is centrally located, adjacent to Lincoln's Inn and capable of hosting up to 30 people, the number required when a criminal trial is convened with a jury, defendants and the public. The facilities are based on a 'keep it simple' principle and use large gas plasma screens to ensure clarity of image.²¹

6. New technologies

6.1 Security

Lawyers hold a great deal of confidential information on their servers, both internal material relating to the management of their practices, but also client material, which is often highly sensitive and confidential. The move to online storage and exchange of information between lawyers and both their clients and other lawyers, creates a whole new area of working practice that has to be addressed by all professionals, that of security evaluation and protection.

Even the best designed end to end secure networks are vulnerable to attack by 'social engineers', ie hackers, who engage upon attacks on networks for numerous reasons, from economic blackmail to disgruntled ex employees who wish to cause maximum damage where ever possible. It is generally accepted that the reporting of such hacking attacks is limited as banks, e - commerce businesses and professionals wish to avoid public loss of confidence by disclosure of unsafe networks. Reformed hacker Kevin Mitnick said,

'As developers invent continually better security technologies, making it increasingly difficult to exploit technical vulnerabilities, attackers will turn more and more to exploiting the human element. Cracking the human firewall is often easy: requires no investment beyond the cost of a phone call and involves minimal risk'.²²

The advent of emerging technology enhances the ability to litigate on line, by document exchange and use of web based video conferencing. As systems become more sophisticated,

²¹ Contact jbradley@barcouncil.org.uk

²² Kevin Mitnick & Simon, Controlling the Human Element of Security, Wiley Publishing 2002.

advances in both software and computing capacity become increasingly attractive to the legal professions.

6.2 Web Services

Web Services represent the next phase of distributed computing, building on the shoulders of previous distributed models. Whereas early Internet applications helped individuals communicate with each other, Web Services are focused on helping applications communicate with each other by the speedy creation of virtual organisations.

Web Services can be adopted to support interaction between the various members of the ODR community and the Virtual Courtroom, so that users take full advantage of the most recent advances in technology. For example, the participants in a potential worldwide aviation class action might build a 'virtual organisation' to support multi user video conferencing, blind bidding and the building of a virtual simulation of the accident.

As service requests go through perimeter firewalls, into application servers and applications sitting at the heart of corporate networks, it is therefore critical to introduce end to end security into Web Services application.

' No longer is the 'back office' hermetically sealed from the outside world. In exposing critical business functions to the Internet, Web Services can expose valuable corporate data, applications and systems to a variety of external threats. These threats are not imaginary. They range from random acts of Net vandalism to sophisticated, targeted acts of information theft, fraud, or sabotage. Either way the consequences can be catastrophic to the organisation'.²³

6.3 GRID computing

GRID computing, most simply stated is distributed computing taken to the next evolutionary level. The goal is to create the illusion of a simple yet large and powerful self managing virtual computer out of a large collection of connected heterogeneous systems sharing various combinations of resources. This form of computing which has developed through distributed computing and Open Grid Software Architecture [OGSA], will permit the growth of virtual organisations and can help enforcing security rules among users.

The standardisation of communications between heterogeneous systems created the Internet explosion. The emerging standardisation for sharing resources along with the availability of higher bandwidth are driving a possibly equally large evolutionary step in grid computing GRID. Other advantages include resource balancing, brokering individual resources and enhanced reliability.²⁴

²³ Mastering Web Services Security, Hartman, Flinn Besnosov and Kawamoto Wiley publishing 2003.

²⁴ see The IBM Redbook, to Grid Computing with Globus, first edition December 2000 www.ibm.com/redbooks

Machines participating in the grid may include ones from multiple departments within the same organisation, known as an intragrid. When grids cross organisational boundaries, the highest levels of security are usually required to prevent possible attacks and spying.

In most organisations there are large amounts of under used computing resources, most desktop machines are busy less than 5% of the time, many have enormous unused disk drive capacity. Grid computing harnesses this unused resource. The massive parallel CPU capacity is driving new use in the bio medical field, financial modeling, oil exploration, motion picture animation and many other areas. The Court 21/ Courtroom 21 global ODR platform will provide the first legal based resource to exploit this form of technology.

Court 21 will collaborate with Professor Brian Collins, who becomes Professor of Information Systems at Cranfield University in August 2003. His current personal research interests centre on the design and engineering of structured, secure and dependable knowledge and information management processes and systems using next generation ICT.²⁵ The potential use of the GRID to provide ubiquitous computing services throws up a number of new security challenges for service providers and technologists. They include,

- Complex, dynamic heterogeneous user base. Separation of users within and between services becomes a very complex management issue with no clear technical solution to support its resolution.
- Lack of control of heritage applications – the applications that run on the GRID must have some level of provenance at run time to ensure a safe shared environment.
- Separation of services and duties between service management and administrative role holders.
- Data and information integrity from shared distributed platforms – a mixed user environment must be created that ensures data and information are only accessible to those users and programmes that have appropriate permissions.
- Service metadata security
- Trustworthiness must be demonstrated to all users.

The issue of trustworthiness can be demonstrated by the story of Jonathan Lebed, told by Michael Lewis in 'Next, the future just happened' ²⁶. AskMe.com was a web site that offered expert advice on many subjects and users graded the experts in a league table. LawGuy1975 was a lawyer who gave excellent advice to 500 'clients' per week and was eventually voted expert number 3 in criminal law, beneath him were 125 practicing attorneys and ex policemen. When it transpired that LawGuy was in fact a 15 year old boy who had learnt his law from watching Court TV, his ranking collapsed until he disclosed his age and later rebounded to obtain the number 1 ranking.

6.4 CourtCom Legal Certification Authority (CA)

²⁵ see the DTI GRID Outreach conference 15.10.03 www.gridoutreach.org.uk/docs/archive/20012015.htm

²⁶ published by Norton 2002.

As an unsecured grid provides potential for viruses and Trojan horse programs, security is a main requirement of any GRID resource. Best practice usually requires authentication by a Certification Authority, in this case to be provided by CourtCom Ltd on behalf of the Global network.

The main practical technology by which large numbers of people can authenticate themselves to each other in a secure manner is called Asymmetric Public Key Cryptography. Each party has two keys, a disclosed and published 'public' key and a never disclosed 'private' key, which are mathematically related to each other. Sets of protocols are known as Public Key Infrastructures, an important element is a body known as a Certification Authority, which takes responsibility for 'publishing' the public keys of companies and individuals.

The primary responsibilities of the Certification Authority are to positively identify entities requesting certificates, issuing, removing and archiving certificates, protecting the Certificate Authority server and serving signed certificates to those needing to authenticate entities.

Security requires three fundamental services: authentication (the process of verifying the validity of a claimed individual and identifying who he or she is), authorisation and encryption. There are a number of actual and potential CA's in existence, but no current dominant CA exists for lawyers and the courts. CourtCom intends to collaborate with Peter Sommer,²⁷ from the FIDUCIA project of the London School of Economics Computer Security Research Centre, to develop a Legal C.A., which will inter – operate with other authorities such as those created by central government, professional bodies and also non UK bodies.

The message is clear; as law firms and clients go online, a fundamental review of business practices is required, to assess the risk of security breaches, and implement training programmes so that all members of the organisation, from the senior partner to the office cleaning service are made aware of the potential weaknesses in the procedures that have been put in place.

7 Conclusion.

As ODR techniques adapt to the emerging technologies, those who wish to resolve their disputes online will no doubt wish to bring increasingly complex disputes for resolution. These disputes will often be based upon matters of the utmost commercial sensitivity, so the requirement for a trusted solutions provider operating in a secure environment, becomes increasingly necessary. It is critical for there to be a simultaneous development of these 'back office' functions in line with the 'front office' technologies such as blind bidding and the use of Artificial Intelligence by such sites as SmartSettle.com, if consumers and litigants are to be persuaded to turn to ODR to settle their differences.

Significant progress has been towards establishment of the 'Virtual Courtroom' as first envisaged by Professor Lederer. ODR is now moving into a critical stage where, consumers and litigants must learn to trust this alternate form of dispute resolution. An alliance between the new global network and the ODR community will help build that trust and facilitate the introduction of emerging technologies to enable complex disputes to be resolved online.

²⁷ Peter Sommer was the specialist advisor to the Commons Trade and Industry Select Committee for its scrutiny of electronic commerce policy and legislation. See <http://csrc.lse.ac.uk/>

Jeremy Barnett. 30th July 2003.

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