

¹⁶ HM Courts & Tribunals Service, Lord Chief Justice speech: 'IT for the Courts – Creating a Digital Future', (29 May 2014) <http://www.judiciary.gov.uk/announcements/it-for-the-courts-creating-a-digital-future> (accessed 26 June 2014)

¹⁷ United Kingdom Supreme Court, 'Practice Direction 14: Filing Documents in the Registry of the Supreme Court by electronic means', (January 2012) <http://supremecourt.uk/docs/practice-direction-14.pdf> (accessed 27 June 2014)

Biography

Rebecca Herle is the Head of Sales and Marketing at ICLR, one of the three that make up the senior management team, and responsible for operations. Rebecca has worked in professional publishing since 2001, previously at Wolters Kluwer UK.

Legal Information Management, 14 (2014), pp. 168–173

© The Author(s) 2014. Published by British and Irish Association of Law Librarians

doi:10.1017/S1472669614000401

TECHNOLOGIES AND E-RESOURCES

Re-Emerging Technologies: What's Hot and What's Not!

Abstract: Three years ago James Mullan delivered a presentation called “Emerging technologies” and followed this up with an article in *Legal Information Management* (LIM) called “Making mountains out of molehills: a look at some emerging technologies”¹ Two years further on and the Editor of LIM asked him to re-visit the issues and to write a follow-up article on the subject. As a result this paper looks at the current state of play with those technologies and identifies some of the significant technological developments to have taken place since his original article.

Keywords: information architecture; internet; emerging technology; social networking

INTRODUCTION

The last two years have certainly been interesting both in terms of the technological developments that have taken place and the opportunities for law librarians to take advantage of them. One concept in particular has become a buzzword both within the IT world and within the information community and was the subject of a number of discussions at the recent BIALL conference. However, before we talk about that and the other “new” technologies, I am going to look at some of the technologies that I mentioned in my original article.

GOOGLE PLUS

On the 28 June 2011 Google launched ‘Google Plus’, a social networking site offering a number of interesting

features, which Google hoped would draw users from Facebook. These features included the concept of ‘Circles’, as a way of managing contacts, and ‘Hangouts’, a video chat service, which is the major draw of Google Plus; and there is also a great way to manage photographs using Google’s own tool, Picasa. Whilst much was written about how Google plus was going to be a “Facebook killer” it has definitely not lived up to this reputation and in fact recent reports have declared Google Plus a “ghost town” much to the annoyance of those individuals who use Google Plus regularly.

Whilst Google Plus still only has a fraction of the users that Facebook does (300 million visitors a month at the last count) it still serves an important purpose. Especially for those individuals who are interested in photography, video chats and “hanging out” with people they don’t know who have similar interests. I think there are

many opportunities for law firms and other organisations to use Google Plus, especially in relation to marketing their business and, of course, for search engine optimisation (SEO). Greater visibility in Google is a key concern for any organisation and to that end, building a profile on Google Plus, linking back to your organisation's website, other social media accounts and '+1ing' your favourite posts is bound to have a positive effect on your search engine rankings.

THE CLOUD AND CLOUD COMPUTING

The Cloud, or Cloud Computing, is not new but it remains a major buzzword in the business and technology world. For anyone not completely familiar with the idea of the Cloud, it basically refers to two things:

- Storing data outside your computer (or phone)
- Undertaking computing tasks using software and applications that are not installed on your computer (or phone)

So instead of storing or undertaking computing activities on our own PCs, with the Cloud we are able to use other computers that are connected to our computer via a network (such as the internet). Here are some examples of what using the Cloud means in real life showing how ubiquitous our usage of Cloud Computing has become.

If you back-up your documents and photographs over the internet using services such as Dropbox² or Google Drive³ then these documents will be stored in the Cloud, meaning they are sent via a network to a server (which can be anywhere in the world) where your documents will be saved.

If you are an iPhone user and have enabled iCloud⁴, then your photos, apps, music, etc. will be backed up to a computer managed by Apple. The data will be transferred to that outside computer using the internet.

If you are using services such as Gmail⁵, Yahoo or Microsoft Exchange Online⁶ for your emails which is very likely, then you are basically a Cloud Computing user. These software applications are not installed on your computer but are used over the internet.

If you use Facebook, Twitter or LinkedIn, then you are also a Cloud Computing user. These services are provided via the internet and your updates, photos, videos, etc are stored on their computers. This means, Cloud Computing enables us to increase our storage capacity without the need to buy new hardware. It also enables us to use applications or access music, TV programmes, and the like, on demand, via the internet.

In my original article I wrote about how law firms and other organisations will use the Cloud or Software as a Service (SaaS). I refer to this in my article for many of the same reasons that individuals will use Cloud Computing tools. So, one of the most significant reasons why organisations will use the Cloud is because the

applications an organisation wants to use will be hosted within the Cloud. This means that the organisation does not have to purchase and maintain its own servers or licences and install software on every individual's PC. Organisations can also save time and money using Cloud Computing techniques because the provider will maintain the hardware and software. Using the Cloud or Cloud Computing also provides organisations with more flexibility as users can access the applications they need to use from any computer that is connected to the web, regardless of their location or time-zone.

For law firms, Cloud Computing has significant advantages over traditional ways of providing IT services. However, it does not come without some risks and the Law Society of England and Wales⁷ and the Law Society of Scotland⁸ have both recently published guidance around the use of Cloud Computing tools and techniques. In my original article I indicated that the Cloud and Cloud Computing would provide a lot of opportunities for law librarians. I still believe this is the case, but the exact tools that law librarians can use within their organisations will depend on decisions made strategically rather than in the law library. Having said that, I still believe there are opportunities for law librarians to take advantage of some of the Cloud Computing tools that are available especially around collaboration and sharing of knowledge.

The Cloud Computing market has definitely matured over the last couple of years and we have seen more and more organisations, especially in the legal sector take advantage of the benefits Cloud Computing provides. Cloud Computing will continue to affect the way we work, both on a personal and a professional level, and as such we need to remain aware of the many potential opportunities.

MOBILE TECHNOLOGIES

One of the technologies I talked about a lot in my original article was the massive improvement in mobile phone interfaces. In particular, I write about how user interfaces with windows, icons, menus and pointers have been slowly and surely replaced by mobile-centric interfaces which emphasise touch, gestures, search, video, ease of use and voice commands. The latter has become especially important given Google's move to natural language searching and their hummingbird algorithm⁹. These combined changes have encouraged the development of mobile applications and the Google Play and Apple stores.

For legal professionals there are still some fantastic mobile applications available and I expect these to continue to develop as the expectations of these practitioners will be for applications and resources to be made available on their own devices (more on this later). Law Librarians and legal information professionals should also be reviewing the services they provide in the context of the continued development of mobile devices. If law

librarians do not do this they risk being seen by smart device-wielding users as outdated, redundant and ultimately irrelevant.

THE INTERNET OF THINGS

Recently, David Cameron announced that he was going to provide an extra £45 million funding boost¹⁰ for companies that are developing 'Internet of Things' technology. But have you heard of the internet of things? Well if you have not do not worry because I am about to explain exactly what it is and how it is going to affect you.

In a nutshell, 'the Internet of Things' describes the fact that many everyday objects, from fridges to self-driving cars, have (or will soon have) the ability to send and receive data via the Internet. This is highlighted by the fact that in 2008, the number of devices connected to the internet surpassed the number of people using the internet. Today rough estimates suggest that there are approximately 10 billion devices connected to the internet and by 2020, this is predicted to rise to 50 billion. But what does this mean in reality?

Well, one of the things it will mean is that we will have access to more data than ever before and we are likely to have data about most things on the planet pretty soon. This huge increase in the amount of data available means that we can use it to create a smarter world. In this smarter world, buildings will be able to sense and predict outside temperatures and adjust heating, or air conditioning, systems as a result. Self-driving cars are already a reality¹¹ and we are beginning to see electricity and water grids self-diagnose problems¹², alarm clocks that monitor your sleep patterns and wake you up at the right time¹³ and nappies that will send you a tweet when they need changing¹⁴. Some of these examples might sound like the world has gone mad, but all of above are already here today.

For individuals, wearable devices like the FitBit¹⁵, UpBand¹⁶ and others, collect data on how many steps they take, how well they have slept, how many calories they have consumed and much more. In addition to this, Smart Watches have been launched and will increasingly collect data on almost anything – an individual's location, their speed and their body functions. Once synced to an iPhone or table, individuals will be able to use this data to analyse how they 'performed' during the day and the impact certain activities have on their body.

We are also increasingly seeing wearable devices being used to monitor our health, our weight and our wellbeing. Other companies are now working on pills with in-built sensors, so when you swallow them, they take information from the inside of your body and submit it to devices such as smart phones. These pills will be able to alert you or a doctor to any medical problems you may have. We can already buy sensor mats that can be placed under a baby's mattress to monitor their health. These sensors detect breathing patterns and the heart rate and can alert the parents if anything is wrong.

As you will have read, the potential for the 'internet of things' is huge and the £45m funding boost by David Cameron demonstrates just how important the UK considers this area. However, whilst the possibilities created by billions of internet enabled devices, that are talking to each other, are both amazing and slightly scary, there are lots of practical issues that need to be considered. Law firms, in particular, having taken a keen interest in the internet of things, given the privacy, patent and technological requirements and I expect this to be a developing area. As for the impact for law librarians based in law firms and other organisations, would it not be interesting to know when a book had been removed from a shelf and where it might be now?

BIG DATA

In my introduction to this article I referred to a concept which was taking the IT world and legal community by storm. This is the idea of 'Big Data'. If you attended the BIALL Conference at Harrogate you would have been lucky enough to hear from Adrian Weckler about the impact of big data. If you were not at the BIALL Conference then don't worry as I will take a quick look at what big data is now and the potential opportunities for legal information professionals.

In a nutshell, big data is a term that is used to describe a seemingly vast amount of data that organisations need to somehow manage. The O'Reilly Strata blog published a useful introduction to big data¹⁷ in 2012, which explains what big data is and how valuable it can be for organisations. Put simply big data is data that exceeds the processing capabilities of conventional database systems. The data might be too big, might move too fast or does not fit the structure of the database an organisation is using. Big data is different from other data because of four key elements; volume, velocity, variety and, perhaps most importantly, value¹⁸

So what do these elements describe? Volume should be obvious; this is the amount of data being created—think Wal-Mart (a million sales an hour) and Facebook (1bn users) and you'll understand the size of the problem facing organisations. Velocity describes the rate at which the data is being created, which in terms of big data usually means a lot of data very quickly. Variety describes the type of data being created, so big data will include traditional transactional data but will also increasingly include data from social media sites like Facebook, Twitter and LinkedIn.

Last but not least is value, which involves organisations looking at how they can integrate big data within existing systems and use it to make better business decisions. Unfortunately big data is not just about designing a database and then populating this database with the data. Big data requires huge databases, powerful software and insights from experts to have a real impact on how products are sold and services delivered.

Now you might be thinking that the opportunities for legal information professionals to get involved with big data are minimal. But actually there are two opportunities presented by big data. The first is that big data will need to be 'surfaced' and one of the most obvious ways to do this is through an intranet, which many legal information professionals already manage.

In an article on his website¹⁹ James Robertson of Step two Designs discusses how intranets can be used to do this. James describes how intranet dashboards can be built which bring "key charts right to the front of the site" making the intranet a "powerful tool that...highlights the key information that drives activities, and a powerful message, reinforcing the importance of numbers". For intranet managers big data certainly presents an opportunity to surface information that is essential to the business, though unfortunately the sheer scale of big data means that it is unlikely that it can be distilled down to a few graphs and figures.

The second is around 'information literacy' and the potential for information professionals (business analysts, researchers, etc) to have a role in training other users on how to interpret the big data that is being surfaced. Without adequate training on how to use the data that is being presented to them there is a very good chance that someone in an organisation will make a poor decision.

In summary, big data is pretty big. But making big things happen with big data will only happen if the data is presented and used in a way that works for the entire organisation, not just a small subset. Big data also needs to be carefully managed in order to be effective, especially where it is being used to analyse usage of collaborative tools by employees or when it is being used by law firms to mine data sources to help them increase productivity.

BRING YOUR OWN DEVICE (BYOD)

The next emerging technology I would like to discuss is not strictly a technology but a concept that is being adopted by many organisations as a way to let users access email and other resources in a way that suits them. If you are not familiar with the concept, BYOD refers to the idea of employees bringing their personal equipment (devices) into work and using them to undertake work. BYOD has become more popular in recent years because smartphones have become smarter, tablets and iPads have become the norm and internet access, including free Wi-Fi, has become ubiquitous. Effectively this means that no matter where an individual is, be that on a train, plane or sitting in a cafe, there is the opportunity to undertake work using a Smartphone, iPad or tablet.

BYOD has also become more popular because individuals expect the tools that they use in their personal life to be available to them at work. So if an individual uses an iPad at home and finds it easy to use, why would they

want to use a Desktop PC at work if software exists that allows them to use their iPad? For an organisation one of the benefits is that they avoid the cost of having to buy a device for every employee and employees work with a device they want to use. Allowing employees to bring their own devices also provides IT departments with some flexibility around how they provide services and to promote IT as a service rather than being just a department which provides tools. However, BYOD does come with some unique challenges.

Perhaps the biggest challenge for any organisation that is considering allowing employees to use their own devices is security and the need to secure corporate data on an employee's personal device. For devices that are owned by an organisation locking a device down that has been lost or stolen is relatively simple. Locking down a device that is owned by an employee is much more difficult, although there are a number of tools that will allow organisations to do this.

Another issue is whether an employee is happy with having limits imposed on what they can and can not do on their brand new iPhone or iPad. Organisations may also ask individuals to download additional tools to help secure their devices and to check some of their device settings in order to try and make them less vulnerable. There may also be issues around licensing of applications, data protection issues and HR policies. As a result organisations will need to look closely at the policies that currently exist and update these as necessary. Another concept which allows individuals to access emails and other applications on the device of their choosing is Corporately Owned Personally Enabled (COPE).

COPE is very similar to BYOD with one significant difference, the employer (company) buys the Smartphone or tablet and the employee is allowed (within reason) to install whatever programs they feel are necessary to get their work done. In theory COPE gives both employers and employees the freedom of BYOD, while offering a number of benefits to each party. Perhaps most significantly, COPE allows IT Departments to wipe or disconnect devices on the corporate network, and provides pre-established security, just like the pre-BYOD days. This is where COPE has a big advantage over BYOD if a device is mislaid, lost or stolen. With BYOD that data is essentially 'gone' and could be used for any purpose. Whilst with COPE once the lost device has been reported any data on the device can be wiped.

Whilst COPE has many benefits compared to BYOD, there are still going to be users who will want to use their own device and will want to do it their own way. Getting over this challenge is one of the many issues with COPE that organisations have to solve. Both BYOD and COPE have grown in popularity over the last couple of years, particular as the number of smartphones and other devices have increased. My feeling is that more organisations will allow their staff to use their own devices and, whilst there are a number of challenges

associated with doing so, the benefits will outweigh the challenges.

GAMIFICATION

Another buzzword that has become ubiquitous in the last two years is gamification. For anyone not familiar with the concept, gamification is the use of game design techniques and game mechanics to make technology more engaging. In simple terms, gamification means applying some of the features we enjoy in video games to businesses, or indeed to any non-game-related area. The rationale being that people like playing games; and they lose themselves in games for hours on end. Successful games such as 'Grand Theft Auto', 'World of Warcraft' or even mobile app games such as 'Candy Crush Saga' have millions of passionate players who spend hours playing them each week.

Outside of actual games like these, the best example of a technology that uses gamification is Foursquare²⁰. Foursquare is a location-based social networking website for mobile devices. Users 'check-in' at venues using a mobile website or a Smartphone application by selecting a list of venues the application locates nearby. Each check-in awards the user points and sometimes 'badges' if users have completed certain 'tasks'

The gamification concept behind Foursquare is that users are rewarded for doing things that help promote a venue by checking into it. This might be through a discount when they next visit or a prize. In this context Foursquare has been 'gamified' extremely well. Other examples of gamification would be an airline or supermarket loyalty program, where customers are rewarded and recognised when they make a certain amount of purchases.

There are also a number of very popular games within Facebook, which use the gamification concept. Perhaps the most well-known of these is Farmville. Despite being quite boring (at least to outsiders) and repetitive, nevertheless millions of Facebook users spend hours farming fake crops. Why? Well, ultimately because players' achievements and accomplishments lead to increased social status and become a part of their in-game identity.

It might not seem obvious how gamification can be used within an enterprise, but gamification does have some potential uses. Within an enterprise gamification, at its simplest, is about designing business applications that incorporate the techniques and mechanics from game design to increase the adoption and use of new technologies. The theory is that if you can make a technology more engaging, ultimately you will encourage employees to master skills and complete tasks using that technology.

Gamification is often perceived as a different way to increase employee engagement within an organisation. Usually this is done by assigning points to individuals when they reach certain goals, or when they undertake

particular activities using new or existing technologies. In combination with a leader board which highlights the top competitors, this can be a good way to encourage competition within an organisation and also encourage other individuals to use the same technology.

An example of a technology that is already using gamification principles to some extent is Yammer²¹, which is now partially integrated with SharePoint 2013. Within Yammer there is a leader board on which all users will appear. This displays the users who have created the most posts, been most liked and have received the most replies. Other collaborative software like Confluence²² and SharePoint²³ also now display who has created the most posts, added the most comments, etc. Publishing leader boards showing this information could act as an incentive to increasing the quality and quantity of contributions by other users to these social networks.

Naturally with any new concept especially gamification, there are some perceived risks. By far the most significant of these is that by encouraging individuals to think of using a new technology as part of a game you are going to deter them from using it. Calling a new technology a 'game' might do more harm than good and could perpetuate the common misconception that social networking is simply a drain on an organisations time.

Another issue is that an organisation could start to encourage inappropriate behaviour, for example an employee might be so determined to get to the top of a particular leader board that they spend hours and hours trying to do so and neglect other aspects of their job. Finally, no one reward or prize is going to appeal to everyone in an organisation. A bonus might be very appealing to a large number of people, but applying that fairly across a large organisation could become difficult.

When it comes to gamification, we need to remember two things. It is not a magic wand so if employees do not like what they do or the tools that they have to use, turning elements of their work into a game is not going to help. Finally, encouraging the use of any new tool and especially a social networking tool within an organisation is a serious business and has the potential to deliver significant benefits. Calling it a game might not be the best way to encourage adoption.

WHAT ABOUT WEB 3.0 AND WEB 4.0!?!?

In my previous article I wrote about how the term Web 2.0 had been made almost completely redundant by the use of social and collaborative tools. I also discussed how we are likely to see the development of new versions of the internet, e.g. Web 3.0 and Web 4.0.

In my mind we are only just getting going with the 'third age of the web' I think the 'internet of thing' is

beginning to demonstrate what can be done on the web with the right data and the right tools to analyse it. Google Driverless cars, the smart grid to run home appliances from electric vehicle batteries, defining bus routes in Africa²⁴ based on mobile signals and the rise of the Bitcoin²⁵ Digital currency are all early examples of changes in the way the web operates, but we are not quite at Web 4.0 yet and it remains unclear how long it will take us to get there.

FINAL COMMENTS

This has been a bit of a whistle-stop tour of some of the technologies I talked about in my original article. I have not touched on eBooks and eReaders because this market still appears to be developing and will continue to do so. There are also many other new technologies which could have been included in this update, but I have concentrated on those which I believe are the most relevant.

Footnotes

- ¹ Mullan, James. (2012) Making molehills out of mountains: a look at some emerging technologies. LIM 12(1), 51–55
- ² <http://www.dropbox.com>
- ³ <https://drive.google.com/>
- ⁴ <https://www.icloud.com/>
- ⁵ <http://mail.google.com/mail>
- ⁶ <http://www.microsoft.com/exchange/2010/en/gb/exchange-online.aspx>
- ⁷ <http://www.lawsociety.org.uk/advice/practice-notes/cloud-computing/>
- ⁸ <http://www.lawsocot.org.uk/rules-and-guidance/section-e/division-b-the-management-of-files,-papers-and-information/advice-and-information/cloud-computing---advice-for-the-profession>
- ⁹ http://en.wikipedia.org/wiki/Google_Hummingbird
- ¹⁰ <http://www.bbc.co.uk/news/business-26504696>
- ¹¹ http://en.wikipedia.org/wiki/Google_driverless_car
- ¹² <http://analysis.smartgridupdate.com/transmission-distribution/self-healing-smart-grid-technologies-poised-market-spotlight-fol-lowing-une>
- ¹³ <http://online.wsj.com/news/articles/SB10001424052702303592404577361962413693708>
- ¹⁴ <http://www.ibtimes.com/digital-diapers-huggies-tweetpee-app-tweets-parents-when-baby-wets-diaper-1251101>
- ¹⁵ <http://www.fitbit.com/uk>
- ¹⁶ <https://jawbone.com/>
- ¹⁷ <http://strata.oreilly.com/2012/01/what-is-big-data.html>
- ¹⁸ <http://www.publictechnology.net/sector/central-gov/what-makes-big-data-different>
- ¹⁹ <http://www.steptwo.com.au/columntwo/using-intranets-to-surface-big-data/>
- ²⁰ <http://www.foursquare.com>
- ²¹ <http://www.yammer.com>
- ²² <http://www.atlassian.com/confluence>
- ²³ <http://office.microsoft.com/en-us/sharepoint/sharepoint-2013-overview-collaboration-software-features-FX103789323.aspx>
- ²⁴ <http://www.bbc.co.uk/news/technology-22357748>
- ²⁵ <https://bitcoin.org/en/>

Biography

James Mullan is the KM Systems Manager at Field Fisher Waterhouse where he is responsible for the firm's intranet, enterprise search, wikis and other knowledge systems. James was BIALL President in 2012/2013 and was previously a BIALL Council member and the Chair of both the BIALL Web Committee and Legal Information Group (LIG). James has spoken at the BIALL Annual Conferences of 2006, 2008, 2010 and 2011 and has presented papers on the use of social media and social networking tools by law librarians for the City Legal Information Group (CLIG) the Scottish Law Librarians Group (SLLG) and the Solos Librarian Group. In 2009 James was presented with the Wildy BIALL Law Librarian of the Year Award.