

Information Society in the United Kingdom

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Abstract

Just where is the UK in the race to an advanced information society and what role does the UK, as the first industrialised country, play in the evolving multinational society which we see today?

As a country which embraced the industrial revolution and advanced the societal and technological change of that era, the UK has confronted change over time with unmatched zeal but in doing so faces the problems which being first often creates. Having developed the first information highways has left an infrastructural base which evolved rather than being planned and is in need of replacement to compete in the newly emerging information society. Although the UK has embraced IS and has become the biggest user of CCTV in Europe it has done so on the back of legacy infrastructure which is unable to support the high speeds which other countries have come to accept as the norm. This paper examines how the UK has faced these circumstances and how is IS developing in the UK.

Keywords

Information Society; e-Government, e-Commerce, e-Learning

Information and Communications Technology: the state of play

I. Internet access

We live in an increasingly connected society, with the rapid advance of information and communication technology (ICT) in business and in the home. But by no means has everyone joined in the digital age. There is a clear divide between small and large businesses, while in the home, ICT ownership and use is closely linked to household income. Having said that high speed internet access continues to grow in popularity although the quality and speed of the service varies widely both by location and supplier. Fifteen million households have internet access with the South West and London being the regions with the high density of access. Of those with access 84% had access through an 'always on' broadband connection. These figures show continued growth in the availability of internet service to the home. With broadband availability already exceeding the predictions made as recently as 2005 (Euromonitor, 2005) it is expected that the rate of growth will slow in the near future.

Growth in the broadband market has been supported and driven by Local Loop Unbundling (LLU) which has enabled new entrants into the telecommunications market to maintain control of their network which they take over from British Telecom. In this way suppliers are able to update small sections of the network without the costs inherent in developing an entire network. Despite the ability of suppliers to replace local lines under LLU the majority of broadband supplied is still across legacy infrastructure with copper cables carrying the telephone and broadband signal. Making use of legacy infrastructure in this way means that high speeds seen elsewhere in Europe are unusual in the UK and the condition of, especially, the broadband signal deteriorates as the distance from the exchange increases.

ONS reports (ONS, 2007a) that between 2002 and 2006 the proportion of adults in the UK who had used the Internet in the last three months increased by one-quarter, from 48 per cent to 60 per cent. Almost sixty per cent of Internet users aged 16 and over went online every day in 2006, while 4 per cent went online less than once a month. Internet use is more common among the young, and declines with age. In 2006, 84 per cent of people aged 16 to 24 had used the Internet within the last three months, compared with 52 per cent of people aged 55 to 64 and 15 per cent of those aged 65 and over, leading to accusations of a digital deficit by age and potentially excluding those of age from the information society and, with increasing dependence on technology, governmental services.

For users aged 16 and over the most common location to access the Internet was at home. In 2006, 85 per cent of Internet users aged 16 and over who had accessed the Internet in the previous three months had gone online at home. For those who did not have household access to the Internet, the most common places to go online were at work and at another person's home (both 46%). The report (ONS, 2007a) goes on to tell us that searching for information and using email were the two most common online activities being undertaken by 85% and 81% of adult users respectively. Only 44% of respondents reported that they had ever bought items through the internet for private use. Of those who had bought on line the most common items bought were travel and holidays (51%), followed by films, videos and DVDs (42%). 18% of Internet users had sold goods or services over the Internet and this was memorable in that it is more than double the proportion in 2003/04. By far the majority, 70%, of those who had shopped online had not encountered any

problems doing so. For those who had, the most common problem was that delivery took longer than expected.

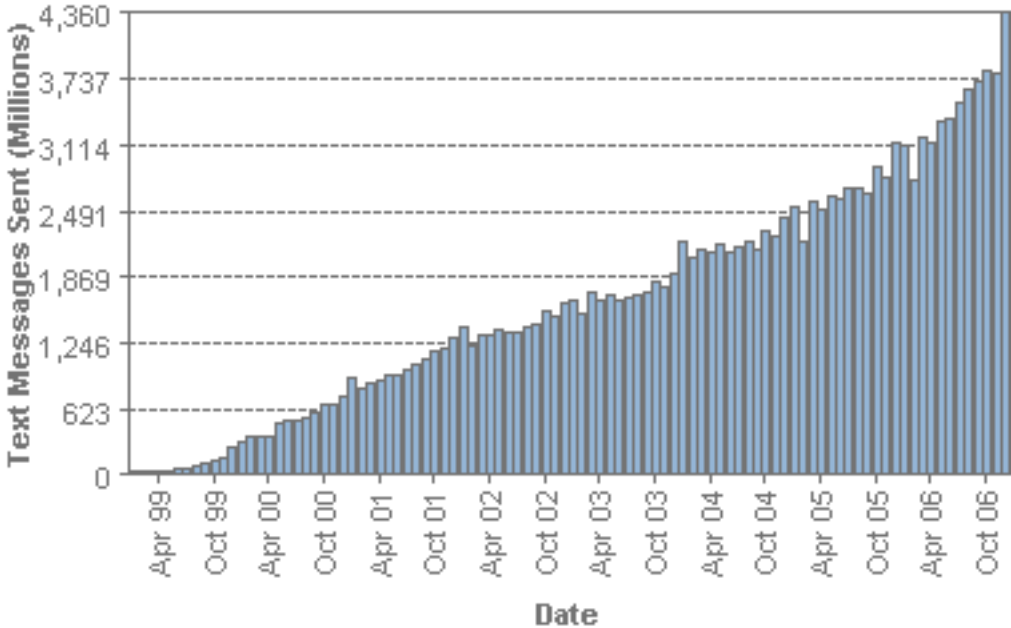
2. Telephony

The first telegraph system in Great Britain was invented by Sir Charles Wheatstone in 1837 and telecommunications have developed rapidly since Alexander Graham Bell invented the first telephone in 1876. However, home telephones have only become commonplace in the majority of homes over the last two decades. In 1970 around a third of all households in the United Kingdom had a home telephone rising to 95% 1999.

Very few households are now without a home telephone, and mobile telephones are becoming increasingly popular and to many are now the dominant mode of telephony. The proportion of households with at least one mobile telephone almost trebled from 16% in 1996-97, the first year for which data are available in ONS datasets, to 44 per cent in 1999-00 and growth has continued from the turn of the decade to a situation in which the Office of Communications (Ofcom, 2007) report that 93% of adults lived in a household with at least 1 mobile telephone and that there were, at the end of 2006, 69.7 million active mobile telephone contacts demonstrating a market penetration in excess of 100% (actual penetration is 1.16 phones per head of population)

Mobile telephones are now more than a communication tool used to talk to other people. Technological advances have allowed people to send and receive short messages by text on phones with the Manchester Evening News reporting, in 2005, that 93 million messages were being sent a day (Manchester Evening News, 2005) producing an annual total for 2005 of 93 million messages, an increase of 23% from 2004. Although this seems like a high number of text messages the use of this feature continues to grow with the Mobile Data Association reporting that the 4 billion message/month barrier was broken in December 2006 with Christmas day seeing in excess of 8 million messages each hour (Mobile Data Association, 2007a).

1st Figure: UK Monthly count of Text Messages



Source: Mobile Data Association, 2007a

Services available through mobile telephony continue to increase with email becoming increasingly popular and the service becoming extended to offer internet access through 3G technology.

Services available through mobile telephones continue to increase. Basildon's Evening Echo reported on 11/26/2007 that railway company C2C would start to offer 'real time' text messaging to commuters advising of delays and offering alternative travel advice. This service is to begin on 1st January 2008 and will be offered to commuters free. Already we see text message ticketing for rail journeys and theatre as well as offering the ability to pay for parking spaces by text. As mobile telephones dominate communications there is clear potential for a new range of information poor since it has already become impossible in some parts of London to park unless you have a mobile phone, the ability to text and crucially the credit to use the network, maybe it will soon become impossible to operate in society if we are 'cash rich, mobile credit poor'.

Ofcom (2007) report that a larger proportion of people from EMG (ethnic and minority groups) report the mobile phone as their main mode of receiving incoming phone calls with 44% of EMG respondents reporting the mobile as their primary telephone against 31% of other respondents. The report goes on to identify further differentials between ethnic groups with both Pakistani and Black African respondents having the highest take up of mobile phones (88% of the population)

While prepayment of mobile phone charges continues to be the dominant mode of payment at 65% of all users (perhaps due to the age distribution of ownership) a considerable difference is seen between ethnic groups with 45% of Asian respondents to the Ofcom research reporting that they used contract and only 53% paying in advance. Mobile telephones continue to offer an interestingly competitive marketplace with offers proliferating across the market and this competition is seen to be driving the number of phones connected to networks with offers of free handsets and free use against small monthly payments easy to find in the UK. While charges in the UK remain low and subject to high competition between suppliers charges for overseas use (roaming) continue to be of interest to the regulator (Ofcom) with limitations on charges and investigations ongoing at the time of publication.

3. Security

CCTV

As the home of the first CCTV camera (the first being installed in Guys Hospital in London in 1949 by EMI) the UK is still leading the field in the use of this technology. The UK is said to have the highest density of surveillance cameras in use of any country with the Information Commissioner reporting 4.2 million CCTV cameras in operation in 2007 (Sunday Times, 2007a). This total for CCTV in the UK contrasts strongly with the rest of the EU which has a total of 6.2 million cameras if the UK is excluded from the total.

The origins of CCTV provision for public space in this country lie in the early 1980s. Since then the use of CCTV systems has expanded gradually but significantly. The earliest systems were funded by the police, local businesses, or by local authorities. Subsequently Central Government funding took over and between 1994 and 1999, under £38.5 million was made available for some 585 schemes nationwide. Central Government funding continued to be made available for CCTV with £170 million being available to local authorities between 1999 and 2003.

The developments are largely in the form of passive cameras which can track individuals and which are monitored, although often not continuously with cameras often placed in areas of high yet low level crime. A typi-

cal location would be in a shopping area to monitor and track shoplifters or pick pockets. Other areas in which publicly funded CCTV operates is for public safety in areas such as transport hubs and stations.

While passive CCTV is the norm experiments have taken place in Middlesborough where not only cameras but speakers have been positioned around public areas so that operators can comment in real time on the activities of those engaged in anti social activity so that low level 'crime', such as dropping litter, can be commented on and the offender socialised through peer (or in this case speaker) pressure.

With CCTV also available at cheap rates to commercial enterprises the potential for avoiding being recorded on a general visit to most town centres is unlikely and this has led to the UK being described as a modern day panopticon (the panopticon being designed by 19th century lawyer Jeremy Bentham as a prison system in which inmates would be fooled into believing they were under continuous surveillance). The panopticon can only operate if the object of attention (in this case a casual shopper or visitor) is made aware of the potential to be viewed and tracked – they have to be made aware of the observation and convinced that they are being observed. Since the Data Protection Act (1998) requires that a sign is displayed providing this information and the name of the data collector citizens can be left in no doubt as to the potential for being observed, indeed the entrance to many shops advertises the use of CCTV by showing images of shoppers entering the store.

The overall impression has been created that CCTV is operational 24 hours a day and that it is useful in detecting and pursuing crime while the quality of the end product does not always support this view with The Daily Telegraph (2007) reporting that '80 per cent of the images from existing CCTV cameras are "far from ideal"'. The use and disclosure of photographs and CCTV images of an individual will normally fall under the remit of the Data Protection Act and other legal restrictions such as the common law and the Human Rights Act. Many of the same considerations apply to CCTV data as they do to any other form of personal information.

Motoring surveillance

Alongside the growth in general CCTV Britain's major roads are also under continual surveillance by the state by cameras to record events and monitor traffic flows (now undertaken by the Highways Agency) and to enforce regulations. Traffic flow monitoring is also undertaken by private companies, most notably TrafficMaster, to provide real time advice to motorists on delays on major routes through subscription services.

More than 3000 cameras are deployed to monitor speed and infringement of the local speed limit is followed by a fine which is sent to the registered keeper of the vehicle. In addition to the 3000 fixed sites for 'safety cameras' an additional 2000 are available for mobile deployment. While these safety cameras are able to record date/time speed and also take a digital image of the offending vehicle they are passive in that they do not communicate in real time with a control centre. The police have available cameras which are able to interact with the Driver and Vehicle Licensing Centre to identify in real time vehicles which are not taxed &/or insured through number plate recognition. No details are available regarding the availability of this technology but it is understood to be widely deployed.

Legal issues

The wide area of the law and Information Society has given rise to an acceptance that the increasing use of computers and especially the internet requires regulation above that of 'fair play' and that self regulation cannot be allowed to dominate the information society. Increasingly state regulation is being introduced which codifies law in this area.

While many forms of regulation simply mirror that which is in force in general society the use of computer mediated communication and commerce brings new challenges for regulators and existing regulation requires interpretation to identify the extent to which new law is required. The UK has a complex web of regulation which applies, or may apply to those in the information society, including, especially, copyright and intellectual property rights, defamation, data security, computer misuse and consumer protection as well as important areas relating to child welfare and disability equality.

I. Copyright/Intellectual Property Rights

These areas can broadly be defined as:

- Copyright for various types of works including literary and artistic material, music, films, sound recordings
- Patents for inventions, meaning new and improved products and processes capable of industrial application;
- Trade marks used to provide brand identity of goods and services allowing distinctions to be made between different traders;
- Design rights relating to product appearance; the whole or a part of a product resulting from the features of the product itself and/or its decoration.

Source: CEDARS, 2002

The UK has longstanding regulation regarding the rights of producers of both intellectual and physical property legislation upon which has 'stood the test of time' with the Copyright Act dating back to the 1600's, although with considerable amendment resulting in the current legislation – Copyright, Design and Patents Act 1988. The original intent of the Copyright Act was to protect the rights of authors and printers but as technology has changed the ability to copy and distribute items has increased and the ability to disseminate information electronically has posed challenges to society since dissemination in this way is difficult to monitor and enforcement is complex. In an attempt to deal with the illicit copying and distribution of physical media the Copyright, etc. and Trade Marks (Offences and Enforcement) Act 2002 introduced the right to seize and destroy illicit items and also extended this to encompass decoding equipment which might be used to support such trade.

Copyright in the UK does not have to be declared since it is assumed to be an inherent part of the creation of new/novel creation. As such copyright extends automatically to the creation of web and internet materials and restricts their use and dissemination.

2. Defamation

Law relating to defamation is again an extension of existing legislation and extends to all activity whether mediated through the IT network or otherwise. Lillian Edwards (Edwards, 2007) points out in her article 'Law and the Internet - Regulating Cyberspace' that defamation 'on line' is difficult to prove since it may be transitory in nature (by virtue of the medium) and poses questions as to the place at which the defamation took place and therefore challenges regulators to identify the jurisdiction under which enforcement may take place. In identifying these problems in relation to defamation Lewis is also identifying a wider problem of regulation which challenges and will continue to challenge regulators as information society develops and transnational integration continues.

3. Data security

The security of data is an area which concerns users greatly and which challenges those who hold data. In the UK the Data Protection Act (1998) seeks to produce a framework which guarantees data security creating a clear framework within which data can be collected and regulating resultant use of such data.

Eight basic principals are identified by the Data Commissioner, data retained must be:

- fairly and lawfully processed;
- processed for limited purposes;
- adequate, relevant and not excessive;
- accurate;
- not kept longer than necessary;
- processed in accordance with your rights;
- kept secure;
- not transferred abroad without adequate protection;

and the provider of the data (citizen) has the right to inspect the data, against a charge, to ensure the accuracy of the data while the person maintaining the data (data controller) has to show that it is relevant and legally collected and maintained.

While data may be held securely the transfer of data has been shown to create problems in terms of security. In 2007 HMRC, Her Majesty's Revenue and Customs, sent the personal details of all claimants for a benefit by ordinary courier and in an unencrypted form between offices. The loss of the disks containing this data led to concern that names and addresses with banking details had been lost and might fall into the hands of fraudsters. This breach of data protection affected all those with children of school age – a considerable percentage of the population. Data is thus seen as a physical good which, like other goods, is tradable and can be kept securely but is most vulnerable at the point of transfer.

4. Computer misuse

The Computer Misuse Act (1990) became law in August 1990 and attempts to regulate the act of 'hacking' which became a criminal offence as did the deliberate spreading of computer viruses and computer fraud. The new law introduced unlimited fines and a five year prison term for those convicted of computer misuse.

The Act identifies three specific offences:

- Unauthorised access to computer material (program/data).
- Unauthorised access to a computer system with intent to commit or facilitate the commission of a serious crime.
- Unauthorised modification of computer material

This Act works in parallel with other regulation since it is an offence to simply gain access to another computer without correct authorisation – so 'guessing' a password and gaining access would of itself be an illegal act regardless of whether any action were taken once access had been gained.

5. Consumer Protection

The seamless nature of the web makes it difficult for consumers to know where a transaction is being undertaken when using the web as a shopping medium. While UK law enshrines considerable protection for consumers (Sale of Goods and Services Act, 1982) this Act does not extend extra territorially and thus a transaction which is undertaken in the UK but with a foreign supplier does not afford the full protection of UK law. While the full protection of the Sale of Goods and Services Act does not extend to all web transactions the consumer does have some protection for goods costing over £100 and bought using a credit card since the Consumer Credit Act (2006) requires that the provider of credit and the supplier of goods or services are equally liable for any failure of the goods/services supplied. Through the Consumer Credit Act the UK sees to provide some degree of protection to consumers and extends the rights which were previously only available to transactions completed entirely within the UK extraterritorially.

6. Child protection

Through the wide ranging government initiative 'every child matters' an awareness programme has been started to make parents aware of the activities of children on the internet. It is estimated by the Child Exploitation and Online Protection Centre (CEOP, 2006) that more than 25% of child internet users frequent adult areas of the internet (chat rooms &/c) and that parents need to have greater knowledge of the activities of children while using the internet. CEOP states that the creation of child abuse images has been illegal since 1978 and legislative changes introduced in the Sexual Offences Act (2003) which came into force as of May 2004 shares the responsibility for the use/viewing of pornography and especially illegal images of children between the user and the provider of the service (ISP/company) although 'it seems the majority of organisations are still unaware of legal implications, liability and responsibility around internet use and especially potentially illegal images of children viewed or held on their networks' (Internet Watch Foundation, 2004).

Disability discrimination

The Disability Discrimination Act (2005) requires providers of services make reasonable provision for disabled people to be able to gain access to services. This act may require revision of internet and web based services to ensure that they are available to all regardless of disability and care needs to be taken in the design of, especially, web based services to ensure that they do not exclude specific member of the community. 'Under the DDA, it is unlawful for service providers to treat disabled people less favourably than other people for a reason related to their disability' (Direct.gov, 2008), and the act extends to cover areas such as education and employment where ICT resources may require adaptation in order to comply with the requirements of the Act.

Governance

With the role of government an increasingly important factor in everybody's lives and with access to information technology increasing central to the receipt of information government, at all levels, have taken steps to provide a unified, single access, information area providing information on services and functions of government with the aim of being able to provide 'up to the minute' information in an easy to access form. Where previously governmental departments were encouraged to develop web areas dedicated to their specialism the reformation of departments and the move toward agency provision has allowed and encouraged the development of this single portal to avoid confusion and difficulty in locating information.

Direct.gov.uk is the immediate response of the state to the provision of information. With more than 87% of the adult population identifying as computer users and with increasing access to the internet and the web this portal is able to reach an increasingly large part of the population and provide rapidly updated and accurate information across a wide range of services. With a single, common, interface for users direct.gov.uk enables access to information without the necessity of detailed knowledge of the provider agency or department. The removal of 'insider knowledge' of the working of government is increasingly important as functions move between departments, as departments change title and as devolved roles become an increasingly important factor in British politics.

While all central government departments are being brought together under the direct.gov.uk umbrella many of the services which affect everyday life are not provided by central government. These services, many of which impact directly on a citizen's 'lived experience' are the responsibility of a complex local government area. Parish, District, County, Borough or Unitary authorities all have responsibilities in provision of local services and while links are provided from direct.gov.uk to local authorities the commonality of service provided through the portal fails at this level with local authorities maintaining individually designed websites which offer various levels of service.

E-information services continue to grow and this is often seen as the dominant form of communication between the citizen and the state and so there is increasing concern for those who are not able to access the web. The e-excluded members of society, for whom access to information becomes questionable as the flight to a paperless administration continues have to be a concern and access to information by various means continues to be a necessity although this area is often not seen as an essential service.

While development and introduction costs vary between areas innovation continues to take place, often providing services which are simple to enact and which 'add value' to the citizen and provide the chance for increased interaction or time saving over traditional modes of delivery. Examples of such services are simple e-payment solutions such as the renewal 'on line' of vehicle excise duty and television licensing. While these payment systems are simple to enact, removing as they do the necessity for visits to agencies to make payments, overhead costs are reduced and some improvements in speed delivery of services may be evidenced. Most e-commerce transactions simply replicate the traditional mode of payment and fail at the level of delivery since they continue to rely on paper based systems to deliver the evidence (the 'certificates' are posted to the user).

E-commerce solutions proliferate across the e-government area with payment options being increasingly dominant in a wide range of service areas including payment of local government taxation. Within the area of taxation one major change has been the movement towards electronic declaration of tax returns by individuals. HMRC (Her Majesty's Revenue and Customs) encourages tax payers to file on line and says that:

- It is secure, accurate and automatically calculates your tax.
- You get immediate acknowledgement and faster repayment if we owe you money.
- You can view your liabilities and payments in an online Statement of Account.
- You can choose to receive notices and reminders by secure email or text messages.

Source: HMRC, 2007

Following from suggestions made within the Carter Report (2006) the HMRC system enables a tax payer to file tax returns on line but provides services which reach from the simple through to the interactive providing the opportunity to 'save and return' to a form, receive advice on line and to receive communications electronically.

Lord Carter (2006) says that

“there has been a sea change in attitude and practice: now more than 60% of small employers file PAYE online and nearly 25% of Self Assessment returns are made electronically”

And went on to say:

“We found general acceptance of the use of online services going forward and we were encouraged by the success of the recent Online service which was able to provide a continuing high quality response even at the peak filing period.”

While HMRC are moving from a paper based to an electronic system it is still largely a replication of existing modes of interaction.

The National Health Service meanwhile is seeking to move away from paper based systems toward a wholly e-solution to patient information handling through the introduction of a computer network which will bring patient records on-line and provide dynamic access to patient records across the UK. Already the NHS provides a data sharing network, N3, which provides high speed data and voice services across the NHS using various infrastructure companies to provide and maintain the network (NHS). This network has been extended to allow VOIP connectivity and hence remote access, seamlessly, to the network facilitating home and remote working and enhancing access and communication (Cable and Wireless, 2004).

The NHS has ambitious plans to enhance and develop the network to provide access to electronic patient records as well as developing systems to store and enable access to diagnostic tools, such as CT and MRI scans, electronically. Named 'Connecting for Health' (NHSa) this project is linked to this is the notion of 'consumer choice' whereby the patient is able to choose where and when to receive treatment through enhanced information services and on line booking of appointments. Given the wide variety of services provided by the NHS and the large number of service points this is seen as an ambitious project although some of the innovations are starting to become available, such as choose and book. Despite increase choice and access to information the innovations are not universally welcomed with over half the GP's cited in a survey for The Times newspaper slating the system as being 'poor' or 'fairly poor'.

Although originally costed at £6.2 billion (US\$12 billion) the scheme is currently projected to be £12.4 billion (NHSb, 2007) and Government Ministers have said that the full cost is likely to be nearer £20 billion. Alongside the substantial increase in cost the project is also two and a half years behind schedule which reflects the complexity of developing the electronic record for 50 million patients and connecting primary care areas such as pharmacies and local doctor surgeries to a network of specialist care centres and hospitals.

Welfare provision in the UK goes well beyond provision of a Health Service. With a highly advanced welfare state having been introduced in 1948 the UK requires a highly developed support mechanism within government to provide services both as devolved systems to deliver local services (say in a local doctors surgery) and centralized systems to deliver long term benefits (like pension payments).

Over time the welfare state has developed a large number of cash payments to support citizens. These include long term payments such as Child Benefit and Pension payments (Social Security, 2002) and short term payments such as Jobseekers allowances. Since the introduction of the welfare state in 1948 the payment of regular benefits across the welfare arena has been effected through governmental agencies (The Post Office) against simple paper warrants while larger 'one off' payments were effected through National Girobank warrants. Although control of Girobank passed to the private sector in 1990 this system continued. Citizens were offered the chance to transfer payments from this 'cash collection' model to electronic banking options with some considerable number taking this option and eliminating the necessity for regular visits to a Post Office. The increase in bank transfer increased the cost of traditional modes of delivery of state benefits and the option for cash collection against warrant was ended by Statutory Instrument (Statutory Instrument, 2002 No. 2441) in 2002 with all subsequent payments made by bank transfer (BACS).

I. Passports

The British Nationality and Status Aliens Act 1914 came into force in 1915. As a result, the first modern British passport was introduced that year. It was a one-page document folded into eight with a cardboard cover. The new passport was valid for two years and could be renewed for further two-year periods.

The passport contained a photograph of the holder. It also showed their signature and contained a detailed personal description, covering:

- shape of face (e.g. long);
- complexion (e.g. fair);
- features (e.g. forehead: broad, nose: large, eyes: small).

Although many changes have taken place to the passport, not least British membership of the European Union, through international agreements the basic document has remained paper based through history. Changes in technology and the, relative, ease with which purely paper based documents can be reproduced have led to changes in the appearance, content and issuance of passports to British citizens.

Since the British passport is used as a sole means of identification the state sees the security of this document as being of paramount importance and changes have taken place to enable the embedding of electronic information within the passport. Already by 1998 the change had been made to digital imaging and signatures within the document and a transition is now underway which will see the introduction of, first, electronically machine readable data through the use of an embedded chip and aerial and over a ten year period a further transition to biometric recognition which will, it is suggested, increase security.

Transition to biometric identification will require the recording of facial identifiers for recognition as the primary biometric with iris and fingerprint as backup. This standard has been adopted internationally through the International Civil Aviation Organisation. The British government's passport Agency says that the adoption of this standard will 'link a person to a passport and can help to counter identity fraud' and that 'biometric information is also used for the following purposes:

- to allow automated immigration checks in the future;
- to ensure that British citizens can continue to benefit from visa-free travel to the USA;
- to avoid disadvantaging British passport holders as other countries switch to biometric passports.’

Source: Identity and Passport Agency, 2007

2. Identity cards

Traditionally British residents have not been required to carry Identity cards except in times of national crisis (for instance during the Second World War). As part of the plans announced within the Queen's Speech on 17 May 2005 the government introduced plans for the development of a voluntary identity card and the subsequent Identity Cards Act received royal assent, becoming law, on 30 March 2006.

Plans are being developed for the introduction of biometric ID cards which will be available for issue from 2009 with residence permits for foreign nations (non EU citizens resident in the UK) from 2008. While there are no announced plans for identity cards to be mandatory it is suggested that they will be provided as a means of proving eligibility to certain state benefits, through the welfare state, and thus it will become essential to have such a card in order to gain access to a full range of citizenship rights.

3. Security

The UK governmental systems are an hoc collection of systems which have evolved over time and reflect the previous paper based operation of government with little or no movement towards interoperability and co-operation between governmental departments and agencies.

This lack of interoperability means that data is collected and recorded in ways in which lack clarity and while the systems may be seen to be fit for the purpose for which they are intended allow little scope for data exchange and which encourage fraud and data theft since there is no single system which protects the data.

The Sunday Times (2007) reported the main places in which government holds personal data:

- **NHS medical records database:** As already discussed this is a £ multi billion system in creation to hold the medical records of 50m patients. Some GPs and campaigners fear it is insecure with few, if any, restriction on practitioners accessing medical records even where they have no relationship to the patient.
- **DNA database:** The UK has the largest DNA database in the world holding details of 4.25m people and this record is growing at a rate of 30,000 a month. The database contains records of everybody arrested by the police and this includes those who are subsequently not charged or not convicted of an offence. The data held extends to all those arrested including minors.
- **Police records:** The UK has a central police record system, created after the Police and Criminal Evidence Act 1974 which currently holds 96m pieces of information, including criminal records and details of arrests. It is accessible 24 hours a day and is available to police, court and Criminal Records Bureau staff.

- **Driver Vehicle Licensing Agency database:** This database holds the names, addresses, driving licence and vehicle details of 42m drivers as well as details of all the vehicles registered in the UK. While this database is primarily used to monitor licensing of motor vehicles and drivers it is also available to private agencies to enforce parking regulations off the public highway.
- **Her Majesty's Revenue and Customs (HMRC):** As might be expected the agency responsible for the collection of taxation has a wide ranging database which includes the names and addresses of 6m people who make tax credit claims. Above this HMRC also stores the names, addresses and National Insurance and salary details of the 30.5m people who pay income tax.
- **Benefits computer:** Includes full income and personal details of anybody in receipt of benefits, including 11.5m with state pensions, 2.65m incapacity benefit claimants and 4m who claim either pension credit or income support.
- **Passport database:** Holds the names, dates of birth, passport and immigration details of 45m UK citizens. Private firms can pay a fee to check the details of a person opening a bank account.

COMING SOON:

- **ContactPoint:** This will hold the name, address, gender and date of birth of every child in Britain and can also include information on sexual history, mental health and substance abuse. It will be accessible by NHS staff or by social services.
- **E-borders:** A £1.2 billion scheme to monitor passengers on entry to and exit from the UK. Data will include credit card details, holiday contact numbers, travel plans and e-mail addresses.
- **National Identity Register:** The £5.6 billion identity card project, set to be introduced in 2009, will hold your name, address and biometric information along with numbers for National Insurance, passport, driving licence and any other "designated document".

Derived from Sunday Times, 2007

Commerce

I. E-sales

With increasing presence on the web stores are having to reinvent themselves in an age of increasing information and electronic society. The emergence of e-commerce as a driving force for sales has seen a considerable shift from the traditional mode of shopping towards, what is seen as, convenience shopping from home through the web.

e-shopping sees not only the unusual or sought after items being traded in the virtual environment. Day to day goods such as groceries also figure highly in the change to e-shopping with Ocado, the grocery delivery partner of The John Lewis Partnership showing a continuing rise in weekly deliveries which has helped to reduce the losses of the company. Business within Ocado is reported, by the John Lewis Gazette, as growing by 30% annually (John Lewis Partnership, 2007). Many, if not all, of the major high street grocery shops now offer the opportunity to shop on line and to have goods delivered within a predefined 'time slot'.

The Guardian (2007) reported on 24th October 2007 that British shoppers would 'spend a record-breaking £14billion on their Christmas shopping online this year'. This represents a substantial year on year increase since the birth of the web in 1992. Britain is reported to be the largest internet marketplace with 27million people or almost 50% of the population expected to buy something over the internet this Christmas (2007).

While internet shopping continues to have the drawback of postal delays and delivery costs which mask the true cost of purchases store groups are rapidly changing the format of their sales floors to accommodate those who wish to combine the convenience of online shopping with rapid delivery which can only come through 'contact' shopping by encouraging shoppers to purchase online and then pick up the goods instore. As internet shopping allows consumers to view and compare goods and prices in a way which was unimaginable in the past it is inevitable that prices for many high costs goods are being forced downward in a competitive marketplace. The Office of National Statistics reported in October that prices of electrical goods are falling at the fastest rate since records began (ONSb, 2007).

Price deflation is encouraged by the proliferation of 'price comparison' websites as well as the ease of searching. Major department stores, including John Lewis who have the tag line 'never knowingly undersold' in their stores are reluctant to extend this offer to online sales even though they compete strongly in this marketplace. Naturally retailers are always seeking ways in which to gather information regarding the shopping habits of their customers and this can link to the trend towards JIT, (*just in time*), replenishment of stores. While once stores were operated by a knowledgeable manager who would watch trends within the store and enact an experienced 'guess' as to the stock required and then order this from a supplier, the ordering and replenishment process has been largely automated with each store being analysed and stocked accordingly. The use of bar coding has become widespread with computers monitoring the stock levels within stores. While multiple stores may appear identical in design stocking is undertaken on the basis of customer preference and this requires high levels of analysis to ensure that stocking levels and style are maintained.

Customer loyalty incentives were introduced in the form of simple stamps in the 1960's and this idea has been extended into customer loyalty cards which deliver a small return (typically 1%) to the shopper. Loyalty cards not only offer a return to the customer but allow a store to monitor the shopping habits of the cus-

tomers by recording date/time and as well as the items purchased. Offering multiple cards for a family also allows a holistic view of the shopping relationships between the family members. While loyalty cards can be seen as passive, voluntary, means of data collection other experiments have been made in UK stores to track goods. Experiments with RFID (Radio Frequency Identification Tags) allow goods to be tracked within the store and outside – they could, for instance, be used to track customers between stores, to see the route which customers follow around a city centre, as well as to track stolen goods.

2. Small purchases

Typically card and electronic transactions have been limited to those transactions above a threshold (limited by either personal preference or by the retailer). Payments by card have changed from requiring a signature to being verified by a personal identification number (PIN) to increase security but this change does not, of itself, increase the speed at which transactions are undertaken.

With the introduction of an electronic payment card to London Underground (Oyster card) the potential has been recognised to extend the payment system to enable small payments without verification. These developments mirror similar developments overseas, such as the very similar Octopus Card in Hong Kong, with additional functionality and services developing over time. Cards other than Oyster are starting to appear in the London area, London Standard's Eros card for instance, although Oyster which has teamed up with Barclays, the bank which first introduced cash machines and credit cards to the UK, seems most likely at this stage to become the dominant player in this market place.

3. E-finance

All but the smallest banking operations in the UK offer some form of electronic banking ranging from 'simple' electronic access cards to full scale online banking facilities. With a wide range of everyday banking operations now possible via the internet the traditional relationship between a customer and bankers is diminishing and being replaced by an electronically mediated relationship which is supported by a branch banking network and call centres rather than being seen as a secondary activity in an area dominated by personal relationships.

Although now seen as an everyday part of the High Street cash dispensers have been introduced into the banking arena in recent lived history and the UK was the first to introduce cash dispenser machines with Barclays Bank Ltd (now Barclays Bank plc) introducing the first machine to the Enfield branch in July 1967. The first withdrawal from the cash machine was a £10 withdrawal by actor Reg Varney on 27th June 1967. Early cash machines delivered cash against a plastic voucher which was retained by the machine and required a branch visit to retrieve the 'card' before further withdrawals could be made. This basic form of machine quickly evolved into the complex system which we see today with interconnectivity worldwide through a complex clearing system.

From 1967 with a small network the interconnected system has grown to more than 1.6 million access points worldwide in 2007 (Barclays Bank, 2007). Interestingly cash machines have developed further than simple cash dispensing function with many now fulfilling some of the functions of bank branches from accepting deposits through to supporting electronic sales and crediting of mobile telephones.

In 2006 APCS (the Association representing clearing houses, banks, in the UK) reported that:

- Cash machines supplied 63% of all cash requested by individuals from banks and from that total 96.7% of transactions were fee free.
- The total of cash withdrawals from cash machines was £180 billion (US\$360billion) in 2.75 billion transactions giving and producing a mean average of £65 per transaction. Although this level of transaction represented a mean average of 87 withdrawals per second and is still increasing the rate of increase has slowed to 2% year on year.
- 60,428 cash machines were available and the availability of machines continues to grow, an increase of 3.7% in 2006 and bank machines continue to dominate with 93.6% of all withdrawals being from bank owned machines.
- Within the UK there were 164.1 million cards capable of operation with a cash machine representing a mean average of 3 cards for the whole population.
- Regular users of cash machines continue to grow and in excess of 58% of the population are reported as being regular users making 78 withdrawal a year and around £100 per week.

Source: APACS, 2006

After a steady take-up of online banking services between 2000 and 2005, growth has slowed in the last two years with customers increasingly less likely to move from bank based services.

While internet and remote banking are growing in the UK a report by The Forrester Group (2007) shows the UK as an 'online banking laggard' with 31% of adults banking on line against higher density use in France and Germany. This low, relative, level of use is despite the internet being more widely available in the UK. Projections see the use of internet banking services likely to continue slow growth reaching 44% by 2010.

Despite familiarity with the technology only 46% of regular internet users are regular users of internet banking services (15 million) and this compares to those who shop online (74% of internet users). Forrester Research (2007) suggests that security is not a major issue in the decision not to bank on line and further verification technology is cited as not being likely to increase banking in this mode. The Forrester research itself is open to dispute with LloydsTSB Bank reporting that 68% of its customers used internet banking. This disparity of research may reflect the nature of the UK's banking industry and the way in which some banks are able to drive technology use through other change (closure of branches or movement from UK call centres for instance).

In 2005 Cahoot (an online bank) commissioned a report from Future Foundation (Cahoot, 2005) which showed that the gender divide in internet banking has now disappeared with men and women equally likely to use the technology. As regards age the typical internet banking customer is likely to be aged 35-44 with an increasing number of 'silver bankers' in the 55-64 age group. Half of those surveyed in the 55-64 age group preferred to bank online compared to 68% of those 35-44. The Future study shows a wide variation between regions with those resident in London and the South east most likely to make use of technology to undertake banking transactions (67%) and fewer supporters of technology as you head north where just 39% of those in Scotland likely to do so.

Culture and Heritage

The UK has begun the long road to enabling access to the plethora of documents which make up part of the history and heritage of the country. While these documents have long been in the public domain use of such data has been restricted to those who are able, and willing, to travel to depositories to gain access.

With the introduction of fast scanning and digitising techniques fragile documents can be both preserved more effectively and made available for public inspection in ways which have never been possible before. This data includes paper based public records as well as more recent records such as television and cinema broadcasts. While work is underway to produce a historical record which is accessible and searchable contemporary works are also being made available on line as they are published. The accessibility is reducing the costs of data collection and analysis and increasing the ways in which publicly collected data is used.

Examples of the development of a digital heritage collection is the record of The National Archive which has made available the Census records from 1841 to 1901 allowing on line searching of records and the printing of digital copies of documents. Although the registration of births, deaths and marriages has been required in England and Wales from 1837 (Births and Deaths Registration Act, 1836) there is no central record of the entire country with records being held in local registration offices. These documents have been photographically recorded on microfiche and are in the process of being digitally recorded to make the record searchable.

With a diverse heritage many agencies are responsible for the care and development of the built heritage of the country. English Heritage and The National Trust are both major 'players' in the support and development of the country's historical heritage. Both of these organisations exist to preserve and develop the historical legacy of the country and each is developing additional ways to convey a heritage 'message' to visitors. The main route for this development is through interactive guides provided at each historical location to provide historical background by means of local digital broadcasts. These broadcasts are received by a hand held receiver carried by each visitor. This development is a long project which will take a considerable time to become fully embedded in the heritage 'business'.

Digital libraries continue to grow in importance and allow remote access to resources with information sharing becoming increasing possible and data access costs reducing. In the UK the universities are linked through a common network (JANET) which provides high quality internet access and which links all academic institutions.

Alongside the physical infrastructure JISC (Joint Information Systems Committee) has a mission which includes developing e-research, e-learning and e-resources. A considerable amount of data is already available through JISC including access to archive material from news agencies (newsreel) and early TV broadcasts as well as links to contemporary resources and searchable research paper indices with delivery of research papers on line through agreements with publishers.

Alongside developments within academe to create virtual, searchable and accessible resources other areas are also moving forward with digitisation of resources. Not least of these developments is the creation of a digital record of 19th century newspapers based at the British Library. Although this resource is currently limited to 19th century newspapers plans are in place to extend the record to include newspapers from 18th and 17th century's

I. Television and radio

While work is underway to produce accessible, online, historical records by far the largest growth in virtual culture is the growth in the volume of broadcast media which is being made available through the web. All of the major broadcasters in the UK have developed web portals which support the dissemination of broadcast over the internet. The BBC especially has developed a range of 'view again' and 'listen again' options which enable the public to access programmes for a short time after public broadcast and which then become part of an increasing archive for the future. Where full programmes are not available an edited podcast of shows is also often made available.

While these developments are 'one way' the development of the web as a cultural media has also enabled the BBC to develop programming which is responsive to consumer comment and can be largely consumer directed and scripted. These developments mirror early developments in radio which saw listeners taking part in 'phone in' programming. The flagship programme of the BBC for listener online participation is iPM, broadcast on a Saturday evening which is a demonstration of how an integrated broadcast can operate with input from listeners through a blog and the programme evolving rather than being strictly scripted.

The BBC has developed a large web area which is used as a portal for the whole of the BBC's activity including TV and Radio and this is mirrored by the other large 'free to air' UK Broadcaster, ITV. These two broadcasters effectively provide not only a 'free to air' but a 'free to internet' television service. While free to air broadcasting in the UK has, since inception in 1936, been analogue, first on VHF (FM) and then UHF broadcast the change has begun to transfer all free to air broadcasts to a digital service. The UK will convert to digital television by ITV region with the Border region being the first to become entirely digital with the analogue signal now being withdrawn. Other areas will follow until the final region, London, is transferred to digital in 2012.

The move to digital transmission offers the opportunity to enhance the number of channels available to consumers and to offer a digital radio service on a common platform. As a technological rather than a consumer led change there is some discussion about the costs of transfer to digital broadcasting especially regarding the cost involved in the replacement of non life expired equipment, however as demand for converter boxes (set top boxes) increases the price has fallen and consumers are now able to obtain a conversion box for as little as £10.

From inception the UK's broadcasting network has always had a 'public service' remit with a 'free to air' service provided from both BBC and ITV. As the move to digital takes place the availability of terrestrial channels will offer the opportunity for subscription services to become available without provision of additional equipment, either satellite receiver or cable network connection. Interestingly although a fee is payable for reception (or rather the ability to receive) live TV broadcasts from whatever broadcaster mediated through any technology reception of 'time shifted' TV programmes does not require any such license and so movement to IP mediated broadcasts will become increasingly attractive as more options become available both in terms of personal choice and cost.

Education

State education in England is governed by two departments: the Department for Children, Schools and Families (DCSF) for primary, secondary and special education, and the Department for Innovation, Universities and Skills (DIUS) for tertiary education (ENG, 2007). Each of these set policy within their own particular sphere. Scotland (SCO, 2007) and Wales (WAL, 2007) have independently managed education systems and Northern Ireland (NIR, 2007) as a whole is also governed separately.

I. Primary, special and secondary education

Primary, special and secondary education, and to some extent tertiary (further) education is supported by the British Educational Communications and Technology Agency (BECTA). BECTA has considered the uptake of ICT and the development of e-learning under four headings, as follows:

Access to ICT

This is measured as the number of pupils per installed computer and the coverage of broadband by institution (see 1st Table).

1st Table: Access to ICT (2005)

	Pupils per Computer	Broadband coverage(%)
Primary	7.5	30
Special	3.0	40
Secondary	4.9	68
Further (Colleges)	8.2	100
Higher (Universities)	7.8	100

Source: BECTA, 2007

Staff Skills

Hardware, software and communications infrastructure is only useful to the extent that users are able to exploit their capabilities for the purposes of teaching and learning so the second aspect concerns the development of appropriate staff skills and an examination of how these are employed to promote learning. BECTA measures the level of confidence that teachers have, as computer users (see 2nd Table).

2nd Table: Confident Users (2004/5)

	Percentage of Confident Users
Primary	85
Special	86
Secondary	81
Further (Colleges)	77

Source: BECTA, 2007

ICT Usage

BECTA also reports on the use to which ICT has been put in the classroom. Apart from courses in ICT as a subject itself, in 2004 both primary and special schools reported English as the subject where ICT was most used (about 60% of classes) whilst in secondary schools it was in the sciences (48%). In the 2005 survey, further education colleges were asked about the different modes of learning where ICT was employed. 43% of reported usage was classified as ‘Supporting Learning’ – using the Internet for research or computer packages for skill-building exercises. Another 24% was tied in with ‘Blended Learning’ programmes and just over 20% with ‘Traditional’ classroom use – mostly data-projectors or interactive whiteboards in lectures.

ICT Impact

Clemens et al (2003) (cited in ONS, 2007) has reported that attainment in primary schools judged by the Office for Standards in Education in England (Ofsted) to have ‘good ICT learning opportunities and resources’ was higher overall than in other schools judged to as less good. This was true even when socio-economic factors and management quality characteristics had been taken into account. Likewise, when household wealth has been discounted, Schmitt and Wadsworth (2004) in a Centre for Economic Performance paper (cited in ONS, 2007) reported that secondary pupils with access to a computer at home were more likely to achieve satisfactory school-leaving qualifications, provided that the computer was primarily used for education rather than entertainment. In addition, ICT was found to improve motivation in both primary and special schools, especially for students who were either disaffected or else disabled. Finally, around 10% of all schools surveyed reported that effective application of ICT granted a substantial reduction in their administrative and management workloads and a high proportion reported some reduction. However, another 10% reported a perceived increase in workload resulting from the use of ICT.

Policy

Government policy in respect of ICT applied to education is revealed in the strategy document ‘Harnessing Technology’ (DFES, 2005) whose scope runs 2005-2011. The strategy identifies four themes – see 3rd Table.

3rd Table: Education Department e-Strategy

Strategy	Current Outcomes
Fit-for-purpose technology, systems and resources	
All learners and practitioners have access to the appropriate technology and digital resources they need for learning. Every learner has a personalised learning space to enable them to learn when and where they choose. Technology-supported learning environments are secure, supported and interoperable. There is a dynamic, vibrant and responsive technology-for-learning market that can meet the needs of the system.	In order to provide a pan-European comparison, the measures taken are the mean number of installed computers and of Internet-connected computers per 100 pupils per school. For 2006, the EU15 figures are 12.1 and 10.8 whilst for EU25 they are 11.3 and 9.9. The UK figures are 19.8 and 18.5 which ranks it in fourth place in Europe.
Capability and Capacity of Providers and Learners	
Leaders have the knowledge and skills to ensure technology for learning can be	The strategy proposes the concept of e-maturity as an indicator of the

<p>harnessed for the benefit of learners.</p> <p>Institutions and providers plan and manage technology for learning effectively and sustainably.</p> <p>Practitioners exploit technology consistently to offer engaging and effective learning experiences.</p> <p>Practitioners, parents and learners can share and use information and data effectively for the benefit of learners.</p> <p>Improved learner capability in using technology to support their learning.</p>	<p>integration of ICT with all aspects of educational practice. Measures of e-maturity combine measures of ICT infrastructure and provision, organisational coordination and engagement with learners. This compares with European measures of embedding which attempt to capture access, competence and motivation to use ICT. Here the UK comes out on top with more than 60% of schools reporting all three indicators against an EU15 figure of 37% and EU25 of 33%.</p>
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Efficiency, Effectiveness and Value for Money

<p>Learning providers collaborate and share information and resources.</p> <p>The management and administration of learning and institutions is more efficient.</p> <p>There is a greater level of effective, learner-focused assessment for learning.</p> <p>Practitioners collaborate and share good practice and learning resources.</p> <p>There is good use of information to support learner transitions between institutions and sectors.</p>	<p>This theme focuses mainly on the administrative uses of ICT within schools and colleges. By 22007 nearly half of all secondary schools were managing pupil attendance by means of integrated electronic registration systems. By contrast, the same proportion of primary schools depend on paper-based systems, although about one third of primary schools are using optical mark readers for this task. Many teachers find that ICT can save them time and effort in lesson planning and delivery assessment and record keeping. However, a significant minority (approaching 20%) believe that ICT hinders them specifically in lesson planning and record keeping.</p>
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<p style="text-align: center;">Improving Learner and System Performance</p>	
<p>There is greater choice in learning opportunities and modes for all learners.</p> <p>Learners have increased motivation for engagement in learning.</p> <p>Fewer learners under-perform or fail to succeed in education.</p> <p>An improvement in the quality of learning provision is accelerated.</p> <p>There is improved child safety and child protection.</p>	<p>As the strategy unfolds the goal is to improve performance in four areas, namely opportunity, motivation, attainment and safety. Most of the existing use of ICT for learning is in support of whole-group teaching (80% of primary teachers and 53% of secondary teachers report this use for more than half of their lessons) whilst small-group sessions and individual work involve much lower usage. So these are clearly areas where opportunity can grow. In addition, a substantial majority of primary school teachers consider that ICT has a positive impact on pupil motivation with boys (98% of teachers report) benefiting more than girls (86%). Comparable figures for secondary schools are 92% and 82% respectively.</p>

	<p>In terms of attainment, both primary teachers (83%) and secondary teachers (77%) believe that ICT most positively assist pupils with special educational needs and least positively assists girl pupils (67% and 66% respectively). 'Safety' is mostly about establishing and propagating acceptable use policies and the picture across the sector is presently far from uniform.</p>
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Source: DFES, 2005

2. Higher education

Higher education (HE) institutions have much more autonomy in all aspects of provision than do the primary and secondary sectors. Thus the scene is much more heterogeneous and the impact of any policy initiative is much harder to discern. Nevertheless, two national bodies exist which play a role in supporting HE in the ICT area.

Joint Information Systems Committee (JISC, 2007)

For many years JISC has provided a nationwide internetworking platform (JANET) for universities to exchange information and to access online resources worldwide. In addition, a number of specific projects support important educational elements, like TechDis which is for promoting disability inclusion and TurnItIn, the plagiarism advisory service. JISC also has an e-learning programme with activities prioritized towards

- e-assessment – the development of techniques and tools designed to promote the use of online assessment practices;
- e-portfolios – techniques and tools designed to enable the online capture and construction of individual performance and attainment portfolios;
- learning resources and activities – assembling best-practice in resources and materials to share the benefits for learners and staff;
- e-administration – techniques and tools which can assist the development of efficient yet responsive administrative procedures and systems;
- technology-enhanced learning environments – the analysis and evaluation of virtual learning environments.

Developments in these areas occur against a framework defined by the following themes: Strategy and Policy; Learning and Teaching Practice; Technology and Delivery Standards.

Higher Education Academy (HEA, 2007)

The Higher Education Academy aims to be the professional body of higher education professionals in the United Kingdom. Amongst other things, it sponsors a wide range of *Centres of Excellence in Teaching and Learning*. Many of these have projects or activities which involve ICT peripherally or utilise ICT applications, but the Centres focused most directly on e-learning include

- Centre for e-Learning (Ulster University)

- The Blended Learning Unit (Hertfordshire University)
- SOLSTICE (Edge Hill University)

Recommendations for future research

The foregoing has provided a snap-shot of the UK Information Society but it is a dynamic scene and advances and adjustments are constantly being made by players ranging from public sector entities through the ITC industry giants to both corporate and individual consumers. In the near future there will be some special topics demanding the attention of researchers and regulators.

1. Internet access and infrastructure

- Regulation of content – covering various issues including the protection of consumers from viruses, spam and other malware, and censorship of internet traffic at the hands of governments or multinational commercial interests.
- Intellectual property rights – copyright protection of user-generated content; intellectual property within virtual communities of practice, like the open-source software movement; rights and wrongs of peer-to-peer sharing.
- Impacts of the Internet – impact of the internet business model on commercial enterprise and the economy; environmental impact of large internet stakeholders – especially data-centres.

2. Governance

- E-democracy – new ways of hearing the people's voice; securing the trust of the e-populace.
- Reform of e-administration systems – especially where paper-based systems have been inadequately replaced with insensitive electronic clones.
- Rollout of the public health (NHS) record system.
- Governance of the DNA database held by the Police.

3. Education and scholarship

- Digitisation of artefacts and other cultural resources – measuring the impact and penetration of digital archives.
- Promotion and dissemination of web-based humanities and social science research – building large, collaborative information- and data-oriented research systems.
- E-Social science – Investigating the social dynamics of ICT innovation.

4. Digital culture

- Personal social interactions on the internet and crossovers into non-virtual life – for example, internet dating.
- Enabling and promoting ethical or environmental consumer behaviour.
- Digital enfranchisement of aged, illiterate and disabled members of society.

Summary

As the first industrialised nation the UK might be seen as the best place to see the Information Society in action. The UK has long seen technological innovation and change as merely part of a continuation of historic change and part of everyday life to be embraced and assimilated into the culture and operation of the country. In some ways the change to an information society has come as a shock to the UK with new modes of working and communicating being forced on the country from outside rather than the UK taking the dominant role.

While some elements of information society are hampered by legacy infrastructure, the UK has taken the lead in some areas, most notably the deployment of CCTV. The UK is the most televised and recorded country in the European Union and increasingly deployment of IS technology plays a role in policing in the UK as nowhere else. The development of CCTV both by the state and individuals has led to the necessity of regulation and new laws have been developed to regulate and control these developments.

Although new regulations have been introduced specifically to address some areas of IS, other areas, such as publishing, are well established and existing regulation has been seen to be sufficient to cover the newly emerging forms of publication, most notably the web.

Ever since Napoleon was reported as saying "L'Angleterre est une nation de boutiquiers." (www.phrases.org.uk, 2008), the UK has revelled in the reputation of being a nation of shopkeepers and never more so than on the web. The UK has embraced the idea of internet shopkeeping and especially of internet shopping with an increasing dominance of web shops and mixed mode shopping becoming evident. This change to web mediated shopping is driving change on the high street and providing increased opportunities for entrepreneurial and innovative shopping styles.

The UK is driving ahead with developments which support and encourage information society. IS is being moulded to a British style with emphasis on the rights of the individual and security of information with consumer driven developments to increase and enhance communication speeds and enhanced choice of technology providers.

Information Society is changing Britain, the relationship between the state and the individual as well as between individuals. Britain has embraced the changes to an information society and has taken mobile communication and online shopping to its heart. How much and for how long its legacy infrastructure will support such an embrace remains to be seen.

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