



Innovation in Internet Content Services

REVISED

Prepared for NESTA/BERR

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Executive Summary

Introduction

The objective of this report is to provide recommendations to Ministers on how Government might stimulate and support innovation in and across service sectors to enable them to meet the global challenges of the future. This report is one of five sectoral studies commissioned by NESTA/BERR. Internet Content Services has been identified as an area where UK firms have demonstrated a capacity for innovation and growth.

- The internet content services sector is a market of global proportions in the rapid growth and take-off position within the business life-cycle.
- By its very nature, the sector is characterised by fast technological change in both processes and new product/service introductions.
- Defining the internet content services sector is a difficult task! The definition can be fairly narrow (applying to what might be referred to as 'publishing+') or very wide indeed – encompassing all content on the internet from any source or sector.

The research for this report has included extensive desk-based research, and a breakfast forum and ongoing discussion with members of the Internet Content Services Special Interest Group.

Background to the Internet Content Services sector

This is a difficult sector to define and measure because, by its very nature, it is constantly prompting transformational change within organisations and industry, and is characterised by its disruptive nature. Internet content services can be provided by any market sector and any size or type of organisation and so there is no clearly defined universe.

On the one hand, a definition of the sector can be fairly narrow, applying to what might be referred to as 'publishing+'. This would include print-based publishers who have moved to the web and are publishing existing content from the print world in a new format, and/or developing new products and services to suit existing and/or new customers. On the other hand, the definition of internet content services could be much wider. Would it not include any organisation, no matter how small, that puts content on the internet?

If we are to pursue the second, broader definition, a great deal of information gathering will need to take place. In the business sector, future effort needs to be directed towards working with sectoral trade associations to compile a picture of internet services activity in, at the very least, the main areas of UK commerce. This analytical understanding of internet services is essential for understanding the disruptive models that are turning established models on their heads.

This is a rapidly changing landscape where new market entrants without old business models to weigh them down can often innovate and meet market expectations much more effectively than established businesses.

Drivers of change

The internet content services sector is subject to significant drivers to change. Inevitably, these forces impact on the nature of innovation in this sector and this report has identified the most significant macro-environmental influences in a PESTEL analysis.

Perhaps the greatest driver of change in internet services is technology. A diagram (Figure 2) illustrates the rapid changes occurring in both a social context and an information context on the internet. The suppliers and the users of internet services will always be in transit. As change is the only constant, there is no catching up or falling behind – organisations and countries can ‘catch-up’ whenever they choose and leapfrog parts of the route map by investing in innovations further along the trajectory.

The impact of both the social and informational dimension of the web’s evolution will be felt by people in both their personal and professional lives. Many of the technologies at the front edge are British and European, with common research agendas. Although the US is thought to be ahead in effective use of IT, that is not to say that the UK cannot be a leader in internet content services. It has many strengths that warrant further investigation.

‘UK plc’ – the opportunities

This report outlines a theoretical combined SWOT analysis of UK plcs operating in the internet content services sector. It demonstrates that the opportunities for the UK internet content services sector are quite significant. Maximising those opportunities is the real challenge, but one that (looking at the strengths and weaknesses on balance), it is able to meet.

There are key differences in the ways in which public sector information is valued, accessed and traded in the US and the UK. This, in turn, impacts on service development and innovation potential.

Barriers to change

The Internet Services Special Interest Group (SIG) discern potential barriers to innovation or seek change which would enable more rapid and innovatory development in ten key fields.

Trust and identity - The barrier is the lack of transparent standards and protocols governing the way in which personal or corporate data is held, its permitted transfer to third parties at the owner’s validated request, and clear understanding of where ownership lies.

Access to Public Information - The SIG recognises the progress that has been made subsequent to the passage of the 2005 EC Directive on Public Sector Information (PSI) and its incorporation into a UK Statutory Instrument. Industry remains worried about the speed of

change and the lack of effective sanctions for non-compliance in an area which, if the US model is a valid analogy, could have an explosive effect on the level and intensity of innovation in internet service development.

Skills - SIG participants noted a number of skills gaps throughout the industry value chain. However, it was felt that competitive pressure, outsourcing and offshore development, and the global nature of many of the enterprises involved meant that many of these problems were being dealt with by the private sector and were not strictly speaking barriers to growth in the industry. More serious, however, were the need to develop a network-proficient workforce in industry and government, and to concentrate attention on the need for user skills in areas like search and workflow applications.

User behaviour - There are real issues surrounding the current lack of knowledge in depth on user behaviour. While a great deal of data is available, analysis is primitive. The industry standard requirement (knowing how users behaved in the minutes before and after using a service, and the decisions made about service attributes and choices) is very hard to fulfill in many sectors, and where data is available few centres, like UC London's Centre for Publishing, exist to decode user online decision-making.

Government information services procurement - As eGovernment takes hold, the SIG felt that government was in a good position to become an expert analyst of its own buying and usage patterns. Government as a "good user" supports the public-private sector partnership suggested in this report, while allowing government to proceed in flexible, iterative purchasing and analytical phases to help private sector vendors to develop and shape services, both for wider public and wider private sector usage.

Funding - Getting UK start-ups in this sector through the initial seed-corn phase is a continuing concern. Two of the case studies directly reflect this problem, and one SIG member expressed the concern that difficulties in securing funding caused delays that affected the competitive roll-out of new service developments. The greatest areas of difficulty were experienced in the sub £1 million seed-corn area, a real problem where services did not need a high level of initial start-up capital to get going.

Copyright and data protection - There was continuing concern during the investigation regarding the safety of intellectual property online, and the problems associated with data protection where that prevented content re-use which would be perfectly licit in other parts of the world. The group acknowledged that the current revision of EC Copyright regulation addresses some of these issues, but felt that business remained where regulation in global markets was locally unequal. However, the post-Gowers discussion is now producing further government input and industry consultation, and the SIG was satisfied that this debate was fully joined. It was noted however that the interests of the internet services market were not always in line with other media players.

UK technology strengths - The SIG demonstrated that UK service providers were insufficiently aware of centres of excellence in UK R&D. Particularly in AKBS (advanced knowledge-based tools) and associated areas in search and semantic web development, many UK institutions could claim pre-eminent developmental positions, but the relationships between them and the industry that potentially uses their output is seen as unstructured, badly informed and lacking deliberate policies to inform and advise.

UK internet strengths - Little public personality attaches to UK successes in this sector, though UK inventiveness and developmental skill is obvious once a little research is done. It is also already the view of the group that some fields of activity have more resonance than others in applying innovative techniques and establishing a UK leadership position. E-learning, where, according to the US industry, the UK is now two years in advance of the rest of the world as a "laboratory for change in networked e-learning" is clearly one.

Standards and benchmarking - For innovative products and services, standards are there to help accelerate "benefit". For example the creation of agreed vocabularies and terminology ensures effective communications about a developing area. Openness about methods and processes that can be enshrined in a standard can accelerate the adoption and development of comparable products and services. Informal benchmarking presents greater problems for the industry. It is currently difficult to define appropriate levels of penetration, or the state of readiness in UK industry and commerce for next-generation services and tools.

Measuring innovation in internet content services

The UK is not alone in attempting to define measures for innovation (the US Commerce Department is currently working on this area). It is difficult to measure innovation within technological areas because technology is not the innovation. It is the *use* of technology in the internet services sector that should act as a measure of how rapidly changes are being absorbed into business life.

Ultimately, it is possible to identify whether a content services company is innovative by looking to see whether and how they are integrating their content into technology, and the way they are deploying search and community.

Scope for effective Government intervention

The project did not feel that regulatory change was essential to stimulate growth and innovation. However, it did conclude that government's role as a disseminator of information and its ability to encourage neutral study of key market characteristics should be deployed in:

- Identifying the key issues surrounding *Trust and Identity* that will become the benchmark for UK applications in this area.
- In *User Behaviour*, government can pilot studies of its own and third party behaviour online, and disseminate evaluated results to encourage further market research and help develop appropriate analytical techniques.
- Government can take a lead in sponsoring studies of UK technology and market strengths to ensure UK supplier-user communications is optimised, and a currently under-informed marketplace has examples of effective market communication.
- Government can further encourage BSI in related standards setting, and support studies that help to benchmark the effects of innovatory developments.

However, the major recommendation that the group would like to put forward relates to access to public sector information and Government information services procurement. The release of government information suitable for e-trading is covered by the PSI Directive, and is an obligation on all of government, whether local or national. The evidence is that greater amounts of this content available in the marketplace stimulates the growth and innovation activity of the industry by increasing the areas in which new service values can be obtained by the competitive action of the private sector in adding value, adding other third party data, and developing new service targets not envisaged in the original data collection.

Finally, the recommendation that this sector be properly sized through ongoing work with sector-specific trade bodies is one that cannot be over-emphasised. Measurable markets will enable the Government to track growth and innovation and set benchmarks for organisations to work towards. And once other countries begin to measure their efforts, we will be able to get a better sense of the UK's position in this global market.

Conclusions

Current developments in internet content services will have a transformational effect in the creation of the networked economy and society into which the developed world is emerging.

This report indicates ten important areas of concern to service developers and users, as discussed within the SIG in the course of this investigation. The internet-based services and solutions sector is a complex one, since successful players often have legacy contributions from software development, network applications, content publishing of all types, and market service components to bring to bear. On the other hand, the sector is well-populated with small-scale start-ups, many of whom used publishing content models or created content from user or market interaction.

The sector has immense significance as the growth sector of the content industries. In this sector, the UK pressure to succeed is heightened by the importance of the services in export terms, the significance of the UK's software industry acting as the crucible for the developmental steps that will give the industry a global profile, and potential benefits arising from these activities in markets where major UK players are positioned for leadership positions. On the other hand, without a vibrant UK internet services marketplace, these market leaders and others will lack a skills base, domestic market infrastructure or the ability to capitalise on UK R&D.

The work programme now seeks a meeting with the Minister to put further argument alongside the brief recommendations outlined in this report.

Checklist for Government Action

The report concludes with six critical action points that, in the next six months, would re-emphasize the growing importance of internet services to the UK's service economy and bring government and industry together in an effort to exploit this potential.

Introduction

The internet content services sector is **a market of global proportions in the rapid growth and take-off position within the business life-cycle**. In this sector, geographical boundaries are sometimes irrelevant; barriers to entry remain fairly low; and competition is fragmented and comes in all shapes and sizes - as do the buyers/users of internet services.

By its very nature, **the sector is characterised by fast technological change in both processes and new product/service introductions**. The end user expects and demands ever increasing sophistication from the delivery of internet content, and is often spoilt for choice by the many and varied offerings available. Not all meet the user's needs, however, and it is this constant push to innovate and exceed the user's changing expectations that drives innovation in this sector. However, within the UK, there are barriers to innovation that this report will highlight and also offer suggestions as to how they might be overcome.

Defining the internet content services sector is a difficult task!

As discussed later in this report, the definition can be fairly narrow (applying to what might be referred to as 'publishing+') or very wide indeed – encompassing all content on the internet from any source or sector. This latter definition impacts on all areas of business and consumer internet use and might suggest that future effort needs to be directed towards working with sectoral trade associations to compile a picture of internet services activity in, at the least, the main areas of UK commerce.

The research for this report has included extensive desk-based research, and a breakfast forum and ongoing discussion with members of the Internet Content Services Special Interest Group. This document gives an overview of the macro-environment within which the sector sits, identifying the drivers and barriers to change and innovation, and highlighting what innovation is currently taking place through a series of case studies. The report puts forward a framework for measuring innovation and concludes with recommendations for effective Government intervention.

Background to the Internet Content Services Sector

Defining internet content services

This is a difficult sector to define and measure because, by its very nature, it is constantly prompting transformational change within organisations and industry and is characterised by its disruptive nature. Internet content services can be provided by any market sector and any size or type of organisation and so there is no clearly defined universe.

On the one hand, a definition of the sector can be fairly narrow, applying to what might be referred to as 'publishing+'. This would include print-based publishers who have moved to the web and are publishing existing content from the print world in a new format, and/or developing new products and services to suit existing and/or new customers. An example would be CMPMedica, part of United Business Media, whose case is highlighted, below. This definition might also include some of the new 'born digital' content providers such as Google and Yahoo, although they could also fall into the next category.

Case study: CMPMedica as a transformational web service

CMPMedica provides reference data, decision support solutions, news and education to communities of general practitioners, specialist doctors, pharmacists, nurses and patients in 26 countries. It produces a range of professional media including data-rich directories, electronic and online products, journals and face-to-face meetings. Its branded products are embedded in the daily workflow of many of the healthcare communities it serves.

CMPMedica is owned by a 'traditional' publisher, United Business Media, who took the innovative step of introducing vertical search to its online offering via SearchMedica. This is a next generation search tool developed by search specialist Convera.

SearchMedica is different from other search engines because results are focused specifically on clinical journals and web sites of interest to the medical professional. With a simple keyword search, SearchMedica delivers results from over 7 million web pages at more than 100 professional medical sites. SearchMedica is designed for the practicing clinician and so it provides important refinements to address unanswered clinical questions.

However, CMPMedica is an example of transformational activity in web services mainly through its move towards providing consumers with healthcare information via its consumer healthcare portals: www.automedication.fr, www.mydr.com.au, www.everybody.co.nz, and www.meine-gesundheit.de. Never having had a print history in providing consumer information, CMPMedica has moved into this market online and has created support for self-diagnosis and self-healing – government priorities in over-stretched healthcare systems.

www.cmpmedica.com

On the other hand, the definition of internet content services could be much wider. Would it not include *any* organisation, no matter how small, who puts content on the internet? What about individuals posting content on Web 2.0 sites such as Facebook? Surely internet content services reaches into each and every corner of our working and personal lives? The internet is changing people's lives faster than any other influence on society. We are seeing content as part of workflow integration and, once content providers move inside an organisation, they cease to be a media provider and encroach on territory that might once have been owned by enterprise software companies or the corporate librarian. This is at the heart of business-to-business activity and the commercial running of companies.

If we are to pursue the second, broader definition, a great deal of information gathering will need to take place. In the business sector, future effort needs to be directed towards working with sectoral trade associations to compile a picture of internet services activity in, at the very least, the main areas of UK commerce. This analytical understanding of internet services is essential for understanding the disruptive models that are turning established models on their heads. What future for the travel agent on the high street in a world of online booking? Or the estate agent in a world of e-conveyancing and property transfer? In each sector some will surmount the threat of disintermediation, but others will not.

This is a rapidly changing landscape where new market entrants without old business models to weigh them down can often innovate and meet market expectations much more effectively than established businesses. One example would be Complinet, whose case is outlined, below.

Case study: Complinet driving analytics and workflow integration

Complinet is an information publisher and software solutions provider for the international financial services industry that has really understood how its users want their data delivered and integrated into their workflow, and the support mechanisms (such as training and e-learning) that go hand-in-hand with the intelligent use of such data.. Complinet provides a combination of compliance expertise, market insight and technologies that its customers need to significantly reduce exposure to risk. Its solutions support firms' immediate regulatory concerns and allow them to introduce a culture of timely, proactive, and sustainable compliance.

Regulatory Insight: enables tracking and understanding of regulatory changes before they happen and assimilating relevant changes quickly and efficiently.

Policy Manager: enables companies to connect external regulatory change to internal policies; launch regulated products faster; communicate change across the enterprise efficiently.

Global Screening: enables customers to align AML, KYC, CIP and due diligence obligations, reduce the effect of false positive matches; satisfy regulatory and business risk requirements.

Complinet runs a global programme of community events and professional e-learning services.

The company has seen rapid growth and has continuously innovated its products and services to stay ahead, making it more than just an information provider. The company was founded in 1997 and now employs more than 200 people in its offices in New York, London and Dubai.

Complinet has won numerous accolades. The company was identified by Financial News as one of 21 companies with the potential to shape the financial services landscape in the 21st century. Citing Complinet's ability to deliver real-time compliance intelligence and services to end-users, Financial News included Complinet in the list that promises a 'glimpse of the future' by identifying innovative and influential businesses with the potential to significantly impact the industry. In addition, Complinet was awarded a Sunday Times Tech Track listing for the fourth year running in November 2006.

www.complinet.com

"Complinet had a huge initial advantage: it was never a print-based content player, and was thus able to allow its users to drive it towards the answers." Outsell, Inc

Working with existing data

To address the lack of informative sizing data in internet content services, we have provided instead, indicative data from the publishing and information industries who are currently the largest contributors to internet services. This is supplemented by some statistical indicators of drivers in this sector, such as the take-up of broadband, and evidence demonstrating confidence in the sector via the rise of online advertising. These figures can be found in the Appendices to this report.

Drivers of change

The environment

The internet content services sector is subject to significant drivers to change. Inevitably, these forces impact on the nature of innovation in this sector and this report has identified the most significant macro-environmental influences in a PESTEL analysis, below.

Political

- A move towards re-use of public sector information via OPSI
- Significant research funding
- Questions around the safety of sensitive information
- Strong links to, and influence from, US internet services activities
- A push towards transformational Government
- Possible short-term changes in Government?

Economic

- Rapid growth and take-off phase of business life cycle
- A drive to lower costs in all areas of industry
- Demand for faster, cheaper products and services
- Global nature of business in practically all sectors
- A rise in disposable income
- Rising budgets for internet services within business
- Relatively low unemployment
- Low barriers to entry/costs but shortage of seedcorn funding

Sociocultural

- Sophisticated and changing user needs and expectations
- Collective 'we' of online users – Web 2.0
- Increasing online spend
- Increasing time spent online
- All age groups now online

- Expectation to use technology at work
- Migration of workers across Europe – trend to working abroad (beyond Europe) for short periods
- Shortage of ICT skills

Technological

- Growth of broadband usage, particularly in the home
- The move towards the semantic web
- Research funding and science parks
- Information/communication over the internet is the norm
- Disruptive nature of new business models

Environmental

- Staff increasingly expect to use technology at work
- Growing culture of acceptance of need for ICT and its value
- Internet viewed as low-impact on the environment – cuts face-to-face time, promotes flexibility

Legal

- UK and European legislation – sometimes unclear, sometimes restrictive
- Consumer protection and trust
- Security – applies to business and consumers
- Low competitive regulation

Figure 1: PESTEL analysis for the Internet Content Service sector

Globalisation, low-cost technology, the internet and the massive flows of information they create are transforming our economies, communities and personal lives. The pressure on governments and businesses alike to meet demands for customer-centric services and real-time information is intensifying. They must change, and quickly. Agencies must become more efficient; economies and industry must be more innovative and competitive.

Source: Roadmap for Open ICT Ecosystems, The Berkman Center for Internet and Society, Harvard Law School

Perhaps the greatest driver of change in internet services is technology. The diagram on the following page illustrates the rapid changes occurring in both a social context and an information context on the internet. These changes impact the way we live our lives and how we do business.

It is important to note that search and discovery feature strongly on this diagram. Ovum sees development in this area as a key technology/trend to watch. Ovum also highlights security as 'key to the continued development of the content market.' (Source: *Value Chain Study: Content Industries Services, July 2005*) Trust, identity and security are concerns of the Sector Innovation Group assembled for this project (see below).

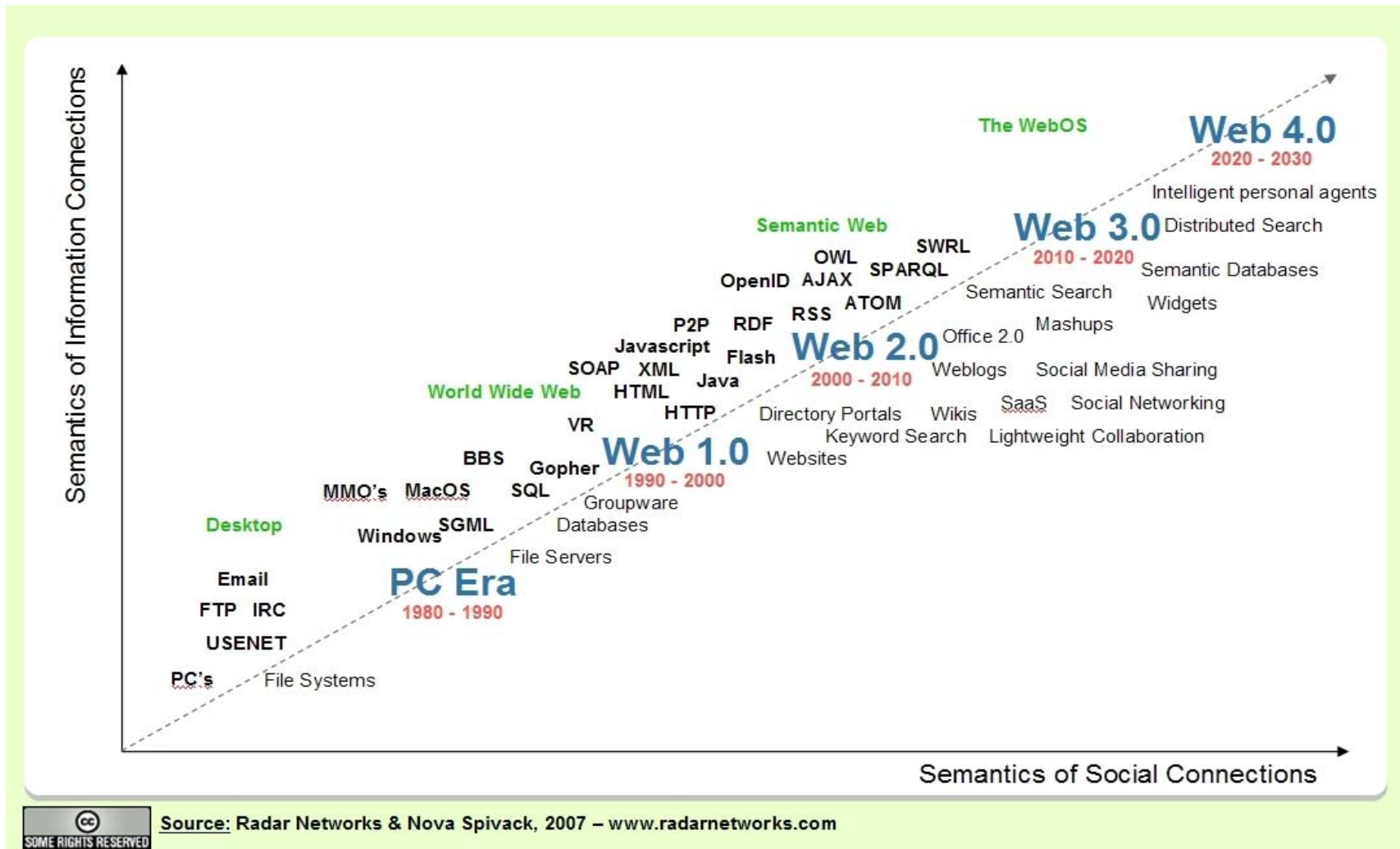


Figure 2: Semantics of Information and Social Connections

Whilst it is comforting to have a route mapped out for us as we travel from Web 2.0 onwards, it should be noted that change is the only constant in web technology. The suppliers and the users of internet services will always be in transit. The diagram on the previous page is an attempt to map technologies around society and the manipulation of information. As we move along the illustrated trajectory, information becomes more and more multimedia. PC Era content was text but now content embraces text, voice and video and, increasingly, 3D as we move into world of virtual reality.

Second Life is a 3-D virtual world entirely created by its Residents. Since opening to the public in 2003, it has grown explosively and today is inhabited by millions of Residents from around the globe. Residents retain the rights to their digital creations - they can buy, sell and trade with other Residents.

www.secondlife.com

The impact of both the social and informational dimension of the web's evolution will be felt by people in both their personal and professional lives. Many of the technologies at the front edge are British and European, with common research agendas. For example, Ovum notes that:

'Much exciting academic research is underway in search and discovery which promises to extend the current text-based search capability of the internet through meta-data search, visual search, semantic search and advanced taxonomies to name but a few possibilities. The AKT (Advanced Knowledge Technologies) project, involving the Universities of Southampton, Aberdeen, Edinburgh, Sheffield and the Open University, is a leading example such research.'

Case study: Nature.com avian flu 'mashup'

Using the new digital platform Google Earth, the spread of the H5N1 avian flu virus worldwide has been shown in a more innovative, comprehensive and much richer way than previous efforts by national and international agencies using existing web platforms.

In the construction of this 'mashup' file, a database was built that allowed the computation of outbreak data that had previously only been publicly available as text or limited graphs scattered across thousands of individual outbreak reports. The resulting maps have been acclaimed by both the public and scientific and medical professionals, testified to by the over a quarter of a million downloads of the regularly-updated maps since their launch in January 2006.

Previous web maps of avian flu used slow and clunky web interfaces, and limited themselves to presenting aggregate flat geographical distributions in 2-D maps, which moreover provided no associated data on outbreak severity that could be visualised in a geospatial context. In contrast, using Google Earth's richer functionality combined with a database-driven back-end the avian flu mashup was able to show the location of each and every human case of avian flu, with associated case data, as a clickable panel.

Ecologists have used the data, along with previous information about bird migration routes, to work out where H5N1 might be found next, as the virus is spread by wild birds before it is found in domestic poultry or humans.

The avian flu mashup file data is held in a central register that the user accesses with the file: hence, whenever the data is updated it is instantaneously updated for everyone – no one needs, or should have to, work with old information. Technical discussions are underway with the goal of letting accredited users contribute to the maps by editing and adding outbreak and geospatial data, thus transforming the project from an individual initiative to a communal resource for animal and public health experts.

The avian flu mashup has been an online publishing success for News@nature.com, a scientific breakthrough for animal and human health care experts, and a critical hit among bloggers, programmers, podcasters and other watchers of new and innovative digital publishing platforms.

The mashup has brought news@nature.com great exposure in demonstrating a publisher being willing to explore, adventurously, new digital platforms and in showing scientists the way forward when conservatism often rules the day.

Measure of success:

Recognition by the mapping industry for this effort came with a French GIS industry (Geographical Information Systems) prize in May 2006 for the best application for "informing the citizen/public."

263,372 downloads in Jan-July 2006.

Winner of the AOP Online Publishing Award for Use of New Digital Platform 2006

www.nature.com/nature/multimedia/googleearth/index.html

Source: AOP, November 2006

As change is the only constant, there is no catching up or falling behind – organisations and countries can 'catch-up' whenever they choose and leapfrog parts of the route map by investing in innovations further along the trajectory.

Although the comment in the box, below, puts the US ahead in effective use of IT, that is not to say that the UK cannot be a leader in internet content services. It has many strengths that warrant further investigation.

US owned firms in the UK are more successful in exploiting Information Technology (IT) compared to all other firms, and IT accounts for much of their productivity advantage. This is consistent with recent ONS data on international productivity comparisons, which show higher output per worker for the US compared to other G7 economies.

Source: ONS, 2005

'UK plc' – the opportunities

If a combined SWOT analysis of UK plcs operating in the internet content services sector were to be conducted, it might look something like this.

<p>Internal origin (attributes of UK plc)</p>	<p>Strengths</p> <ul style="list-style-type: none"> • High levels of technology investment e.g. the AKT projects • Valuable intangible asset: intellectual capital (ICT skills) • History of creativity and inventiveness in business • English language • Strong publishing and rights trading traditions in all media • Strong post-seedcorn venture capital market • Broadband reaches a wide spectrum of society 	<p>Weaknesses</p> <ul style="list-style-type: none"> • Lack of scale • Retention of ICT intellectual capital • Access to government information limited • Little access to seedcorn funding • Management skills – understanding of ICT relatively poor? • Educational system inadequate to prepare pupils for this emerging networked society • Broadband is inadequate in speed and capacity
<p>External origin (attributes of the environment)</p>	<p>Opportunities</p> <ul style="list-style-type: none"> • Services in English – global language, UK-based services could go global • Increased access to UK government information – building new services • Market in the rapid growth and take-off phase – room for new players and innovation • Low cost models across all sectors will require internet-based services to deliver to and support business • Rising disposable income in the consumer sector, rising online spend – ready market for new services • Broad-based market of users requiring numerous services – most UK businesses online and all age groups of society • Currently low competitive regulation – capitalise on freedom within the market to grow and acquire • Government as a user of internet services – a big customer 	<p>Threats</p> <ul style="list-style-type: none"> • The US – culture of entrepreneurship, availability of seedcorn funding • The rising markets of India and China – moving from fulfilling outsourcing needs to driving its own services into the market • Current concerns around trust, security and identity (not UK-specific) – will need to be tackled both in the consumer and professional sectors to prevent erosion of confidence • Tax and regulatory regime may become increasingly hostile to new service start-up

Table 1: SWOT analysis of the Internet Content Services sector

The SWOT demonstrates that the opportunities for the UK internet content services sector are quite significant. Maximising those opportunities is the real challenge, but one that (looking at the strengths and weaknesses on balance), it is able to meet. As was noted, above, there is no fear of being left behind in this sector as the pace of change enables leapfrogging up the route map.

However, one area where the UK (and other parts of Europe) might be disadvantaged relates to public sector information. For example, there are key differences in the ways in which public sector information is valued, accessed and traded in the US and the UK. This, in turn, impacts on service development and innovation.

“The US is an information society for which information is culturally embedded. Citizens see information as a tradable commodity and are prepared to pay for it. It could be argued that, in UK culture, information is instead equated with power and there is a greater reluctance to pay for it. The SIG members seek to follow the US model on price and availability.”

David Worlock, Outsell

That the US is an information society is reflected in its statute books. The US Freedom of Information Act (FOIA), in place since 1966, allows for the full or partial disclosure of previously unreleased information and documents controlled by the US Government. The Electronic Freedom of Information Act Amendments of 1996 (E-FOIA) stated that all agencies are required by statute to make certain types of records, created by the agency on or after November 1, 1996, available electronically. Agencies must also provide electronic reading rooms for citizens to use to have access to records. Given the large volume of records and limited resources, the amendment also extended the agencies' required response time to FOIA requests. Formerly, the response time was ten days and the amendment extended it to twenty days.

The more recent Paperwork Reduction Act of 1995, has seen US government departments develop the ability to trade information more easily and set prices. The Act's primary aim is “to ensure that information collected from the public minimizes burden and maximizes public utility.” In particular, it:

Requires each Federal agency to:

- (1) establish a process, independent of program responsibility, to evaluate proposed collections of information;
- (2) manage information resources to reduce information collection burdens on the public; and
- (3) ensure that the public has timely and equitable access to information products and services.

Prohibits agencies, except where specifically authorized by statute, from:

- (1) establishing exclusive, restricted, or other distribution arrangements that interfere with timely and equitable public availability;
- (2) restricting or regulating the use, resale, or redissemination of public information by the public;
- (3) charging fees or royalties for resale or redissemination of public information; or
- (4) establishing user fees that exceed the cost of dissemination.

The figure, below, highlights the differences between public sector information funding in the US and within Europe.

Funding of Public Sector Information United States vs. Europe

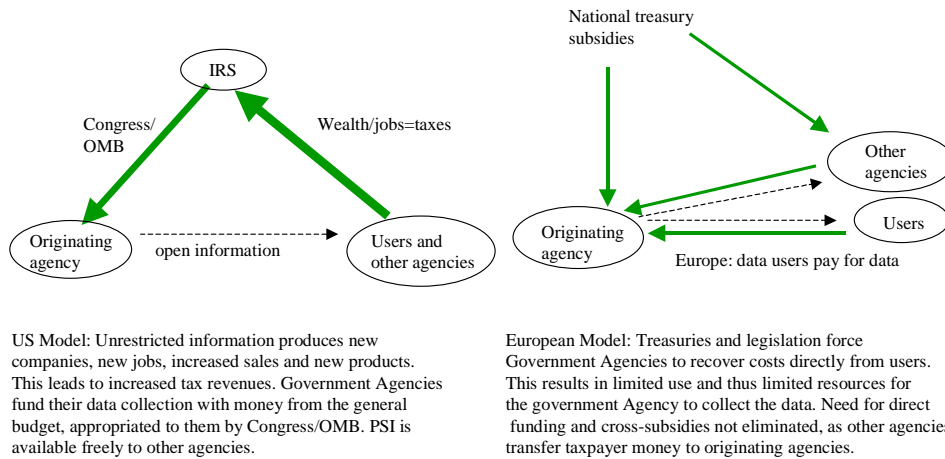


Figure 3: *Borders in Cyberspace: Conflicting Public Sector Information Policies and their Economic Impacts*, Peter Weiss, US Department of Commerce, National Oceanic and Atmospheric Administration, National Weather Service, February 2002

In comparison to the UK's Companies House, where users must pay to access UK company documents, EDGAR in the US offers information free-of-charge.

EDGAR, the Electronic Data Gathering, Analysis, and Retrieval system

All companies, foreign and domestic, are required to file registration statements, periodic reports, and other forms electronically through EDGAR. Anyone can access and download this information for free.

EDGAR performs automated collection, validation, indexing, acceptance, and forwarding of submissions by companies and others who are required by law to file forms with the U.S. Securities and Exchange Commission (SEC). Its primary purpose is to increase the efficiency and fairness of the securities market for the benefit of investors, corporations, and the economy by accelerating the receipt, acceptance, dissemination, and analysis of time-sensitive corporate information filed with the agency.

Access to public information as a barrier to innovation is addressed in more detail, below.

Barriers to Change

The ten fields in which the Internet Services Special Interest Group (SIG) discerned potential barriers to innovation or sought change which would enable more rapid and innovatory development were:

1. Trust and Identity

Internet service development is hampered by the need to establish identity unconditionally and create trading relationships on a reliable basis from the start. The SIG does not believe that government is the deciding partner in this matter, but the attitude of government to establishing and vetting independent trusted third parties to hold identity information on behalf of network users, and release it in whole or in part at their validated request is vital if the network is to become a reliable trading platform. Trusted third parties are now beginning to emerge in this context: users will want to know which ones they can trust. The barrier is the lack of transparent standards and protocols governing the way in which personal or corporate data is held, its permitted transfer to third parties at the owner's validated request, and clear understanding of where ownership lies.

2. Access to Public Information

The SIG recognises the progress which has been made subsequent to the passage of the 2005 EC Directive on Public Sector Information (PSI) and its incorporation into a UK Statutory Instrument. The Office of Public Sector Information (OPSI) and the National Archives have the full support of the industry in their efforts to bring these measures into full effect. Industry remains worried about the speed of change and the lack of effective sanctions for non-compliance in an area which, if the US model is a valid analogy, could have an explosive effect on the level and intensity of innovation in internet service development.

The UK industry is currently poised between the replicative phase of internet service development – putting formal media, like newspapers and magazines online and adding value to their classified advertising through search would be one example – and the re-invention phase, where service development exhibits the power to change real world business and value models. This is set to happen in areas like e-conveyancing (where non-release of government-held information is the retarding issue) as much as in more familiar areas like science and technology research, where private enterprise has taken the lead in ensuring a new generation of web service attributes for researchers, from abstracting and indexing to social networking. At every turn, and in both of these examples, governments have the power to release private enterprise energies to drive change, or inhibit them by inconsistent adherence to legislation and policy.

The work of OPSI is to be commended and supported, the SIG believes, especially where it moves us closer to a national policy on information release and availability which really does stand behind the expectations raised by the legislation referenced above. Consistent policy on exceptions and pricing, and the creation of more effective catalogues of what is available from national and local government, as well as from trading funds, would be important planks in such policy development, but the SIG members felt that the efforts of OPSI and others would be best supported within a national strategy for information sharing, which recognised fully:

- The role of government as a partner with private sector in providing content which, added to existing private sector content, would create new domestic services with higher content values and transformational effects on many current service marketplaces;
- The role of the private sector in creating wealth and employment in the information services sector through risk investment and technology adoption, widening the tax base in a critical area of UK developmental potential;
- The role of government as a user of many of these new services, adding efficiencies in government processes and workflow;
- The role of the private sector in creating a larger and more valuable royalty stream based upon the effective re-usage of government information.

Case study: Landmark Information's collaboration with OS and the Environment Agency

Landmark Information Group is a Daily Mail and General Trust company, and is the UK's leading supplier of digital mapping, property and environmental risk information.

It uses data from providers including Ordnance Survey, the Environment Agency, the Coal Authority and the British Geological Survey to offer current and historical environmental risk management information and desktop mapping solutions for the property industry.

Landmark has developed a comprehensive database built around a series of partnerships. Agreements have been made with a number of statutory and non-statutory organisations to take information and assemble Britain's leading database of property and land search information. Since forming in 1995, approximately £20 million has been spent establishing the Landmark database which exists as one of the largest geographical information databases in Europe.

As the result of a joint venture between Ordnance Survey and Landmark an extensive digital historical map archive has been created dating back to 1850 and consisting of more than half a million individual map sheets.

Landmark Property: the market leader in the development and supply of digital mapping and site specific information.

Landmark Legal and Financial: supplying environmental and planning information to property professionals.

Landmark Environment: supplying high quality data and planning information to environmental professionals.

Landmark Solutions: specialised geospatial services for the public and private sectors.

Customers include environmental and geo-technical consultants, surveyors, lawyers, lenders, property companies, insurance companies, and multi-site industrial and utility companies.

www.landmarkinfo.co.uk

Source: Landmark Information Group and Outsell Inc.

In a national policy which recognises this potential, the UK should be seeking a greater role in the growing global marketplace in network-based services, by virtue of using a strong domestic industry as a launch pad for wider service development in English. The barriers to unlocking this potential are found both at the policy level and at an attitudinal level. The SIG members sought a co-ordinated approach which would bring forward the important work done so far, create a policy context in which all parts of government could work, and begin to change the overly-protective view of non-personal content exhibited by many facets of government.

The SIG noted that there is currently no designated minister for PSI, no really effective valuation indicating the worth of PSI to the UK economy, and no national charging policy which includes all facets of the UK's production of PSI. These barriers need to be addressed, and upgraded into a national strategy before the UK content industry can begin to realise the benefits of one of the UK's last great natural resources – its information economy.

Case study: Psikey as a broker of European public sector information

This soon-to-be-launched innovative service will provide the key to identifying and, ultimately, accessing public sector information across Europe. Psikey will locate all Information Asset Registers across European Governments and create an online database (essentially a list) of all the information held. It will not hold the actual Information Asset but will note that it exists and who the owner of that information is.

Psikey users will, via the service, enter into a contract with the information owner to access and/or re-use the data. Psikey will provide a number of standard contracts (although there will also be scope for bespoke contracts, where necessary) so that there is a common practice and framework in place for trading information. Contract details will be recorded and Psikey will take a small percentage of the value of the contract (e.g. 1% of the contract fee), along with a small fixed fee. Further revenue will come from subscriptions, with different rates for set different time periods.

Psikey will act as a trusted escrow agent, collecting payments from users on the behalf of information owners, and allowing information purchasers to pay for assets at a central point, rather than making separate payments to numerous information owners. Psikey will take a cut of the amount paid to information owners. In this regard, Psikey will be acting as a rights society service. It will also monitor transactions and ensure that information purchased is delivered correctly. In many respects, Psikey will be the eBay of the government information world. Its aim is to “enable people to do business with confidence”.

Psikey's aim is to build a global clientele of information purchasers – some of these may be brokers acting on behalf of customers. Despite its reach and potential impact, the business will require approximately twenty staff, in addition to sales personnel.

3. Skills

SIG participants noted a number of skills gaps throughout the industry value chain. However, it was felt that competitive pressure, outsourcing and offshore development, and the global nature of many of the enterprises involved meant that many of these problems were being dealt with by the private sector and were not strictly speaking barriers to growth in the industry. More serious however were the need to develop a network-proficient workforce in industry and government, and to concentrate attention on the need for user skills in areas like search and workflow applications.

With schools now commendably producing a much more machine proficient workforce with a far larger knowledge than ever before of the role and importance of the computer in society, there is now a need to push forward to a recognition of the proper use of networked collaboration. Such skills development would in turn help students in future employment in real or virtual workplaces. SIG members also observed that it is hard to envisage this barrier being overcome in an educational system where, all too often, heads and staff have been slow to recognise the need for change in the school's own use of network applications, collaboration and e-learning to secure greater productivity, better decision-making and more effective compliance with policy and regulation.

4. User Behaviour

There are real issues surrounding the current lack of knowledge in depth on user behaviour. While a great deal of data is available, analysis is primitive. The industry standard requirement (knowing how users behaved in the minutes before and after using a service, and the decisions made about service attributes and choices) is very hard to fulfil in many sectors, and where data is available few centres, like UC London's Centre for Publishing, exist to decode user online decision-making.

5. Government Information Services Procurement

As eGovernment takes hold, the SIG felt that government was in a good position to become an expert analyst of its own buying and usage patterns. Government as a "good user" supports the public-private sector partnership suggested by (2) above, while allowing government to proceed in flexible, iterative purchasing and analytical phases to help private sector vendors to develop and shape services, both for wider public and wider private sector usage.

6. Funding

Getting UK start-ups in this sector through the initial seed-corn phase is a continuing concern. Two of the case studies directly reflect this problem, and one SIG member expressed the concern that difficulties in securing funding caused delays which affected the competitive roll-out of new service developments. The SIG recognised the role of RDAs and their funding partners, but felt that the current process was insufficiently well-informed on the role of benefits of the internet services economy. Members with experience in this area indicated that it sometimes felt as if an educational process on the use of the network and the emergence of a networked economy was necessary before each proposal could then be considered on its merits. This re-educative role was indicative of a young business, applied equally to private and public sector seed-corn funding mechanisms, and reflected once again the relative poverty in the UK of angel and HNWI (high net worth individual) funding network, as compared to the USA. The greatest areas of difficulty were experienced in the sub £1 million seed-corn area, a real problem where services did not need a high level of initial start-up capital to get going.

7. Copyright and Data Protection

There was continuing concern during the investigation regarding the safety of intellectual property online, and the problems associated with data protection where that prevented content re-use which would be perfectly licit in other parts of the world. The group acknowledged that the current revision of EC Copyright regulation addresses some of these issues, but felt that business remained where regulation in global markets was locally unequal. However, the post-Gowers discussion is now producing further government input and industry consultation, and the SIG was satisfied that this debate was fully joined. It was noted however that the interests of the internet services market were not always in line with other media players.

8. UK Technology Strengths

The SIG demonstrated that the UK service providers were insufficiently aware of centres of excellence in UK R&D. Particularly in AKBS (advanced knowledge-based tools) and associated areas in search and semantic web development, many UK institutions could claim pre-eminent developmental positions, but the relationships between them and the industry that potentially uses their output is seen as unstructured, badly informed and lacking deliberate policies to inform and advise.

9. UK Internet Strengths

Little public personality attaches to UK successes in this sector, though UK inventiveness and developmental skill is obvious once a little research is done. The SIG felt that a coherent attempt needed to be made to demonstrate that a new sector exists here, that it does need marketing to a graduate employment marketplace, and that it needs a profile which is recognisable to government, education, and industrial and professional users.

It was also already the view of the group that some fields of activity have more resonance than others in applying innovative techniques and establishing a UK leadership position. E-learning, where, according to the US industry, the UK is now two years in advance of the rest of the world as a “laboratory for change in networked e-learning” is clearly one. Others are computer games, which has a close relationship to the whole consumer market, and financial services where the UK has a strong position in networked compliance development, health and, very strongly, mobile content. The group concluded that these strengths needed to be borne in mind where discussion on the stimulation of networked innovation was taking place.

One perceived strength of the UK as a development area for new internet service environments over the past two years has been the relative speed with which the UK as a whole has moved to “broadband”. Many commentators, including the CBI, have noted the high penetration levels and the wide acceptance of broadband communication. However, there are now real fears that the UK needs to be careful not to neglect the requirement to continually push forward the speed and capacity of broadband networking. Since audio and video are now standard elements of service developments, and convergence to fixed and mobile platforms is fully engaged, it is now important to check that infrastructure tracks service operating requirements on a continual basis.

10. Standards and benchmarking

Standards are developed through a collaboration and consensus model that (with BSI) includes consumer and public interest inputs as well as the public consultation process. This approach means that standards are “market led” and hold high consumer/user acceptance.

Generic Standards provide for best practice in areas common to all organisations and enterprises, the most deployed of these cover quality management, environment management, risk management and business continuity. At an operational level they can (and do) focus on areas such as customer service, complaints handling, and data protection.

Standards also operate in specific settings and set out best practice for a particular process and product or service. Different types of standards cover performance benchmarking, technical specification transparency and interoperability. Interoperability standards can play a significant role in life-cycle management. This is becoming evident in the construction sector where standardised data created in the design and build stages can be used throughout the use and decommissioning of the structure.

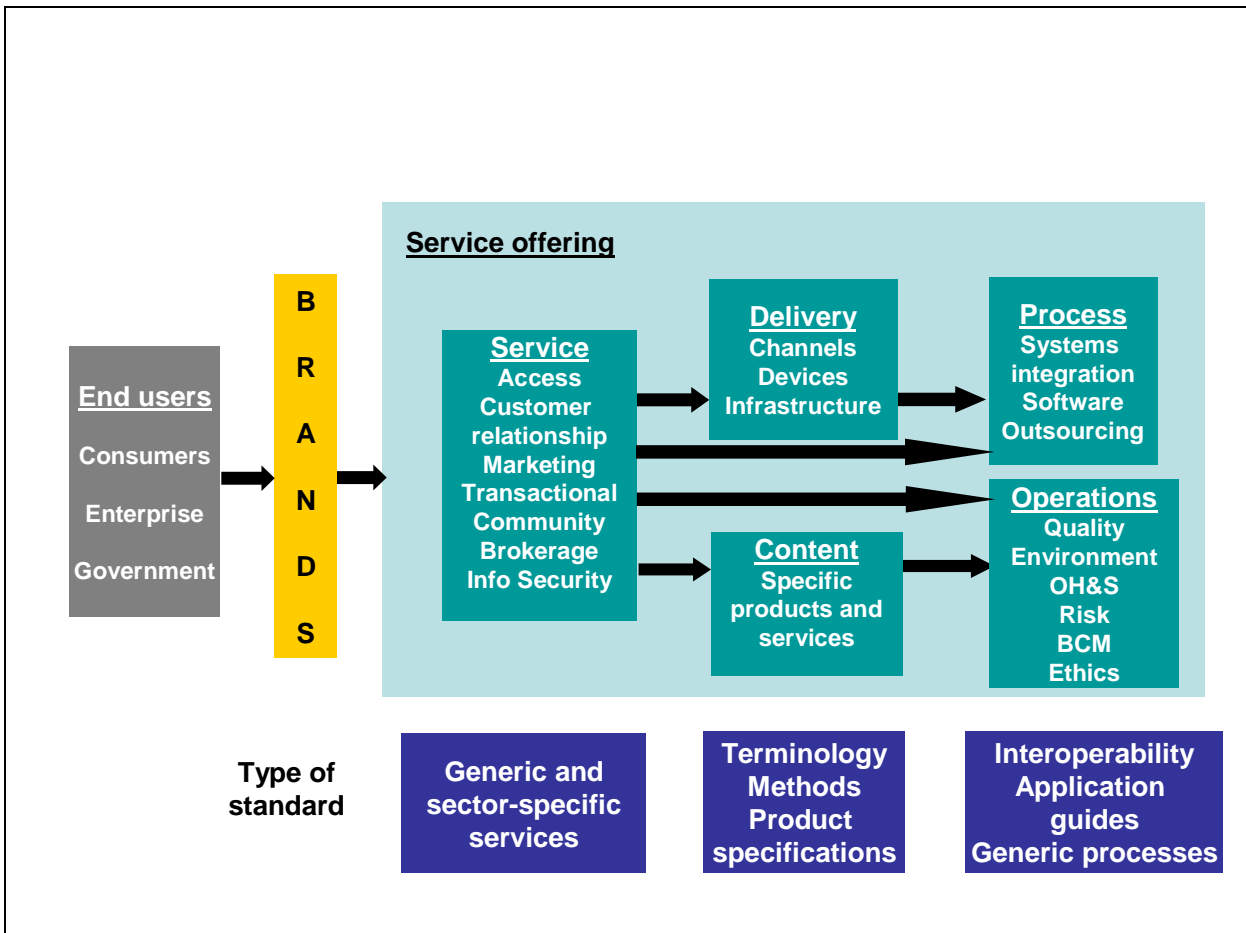


Figure 4: Value chain for services, showing different types of standard
 Source: Adapted by BSI from Ovum (2004).
 The direction of the arrow shows the flow of money through the value chain

For innovative products and services standards are there to help accelerate “benefit”. For example the creation of agreed vocabularies and terminology ensures effective communications about a developing area. Openness about methods and processes that can be enshrined in a standard can accelerate the adoption and development of comparable products and services. The take up of MPEG technology benefited from a combination of open standards and a “patent pool”.

Standards operate very effectively when incorporated into the supply chain. They become part of the value add process and in addition to targeting reliable quality they ensure interoperability. STEP, the international standards for the exchange of product model data, are used across most complex manufacturing industries, - and the programme is estimated to have a value of \$1 billion.

Standards bodies are already engaged with the internet services arena. A group made up of the foremost international standards development bodies are working on a suite of e-business standards to provide a comprehensive road map for coherent developments. This type of activity is important if standards are not to become a barrier, and the UK is fortunate that BSI takes a global English view of its marketplace.

Informal benchmarking presents greater problems for the industry. It is currently difficult to define appropriate levels of penetration, or the state of readiness in UK industry and commerce for next-generation services and tools. Benchmarking innovation in terms of readiness and implementation in this sector could include, in the services sector:

- Measures of raw investment in ICT and software as an indicator of ability to collect and manipulate information.
- Investment in training related to networked applications.
- Use of a business quality framework (ISO or EQF Business Excellence Model).
- Comparisons of service investment levels in ICT to performance indicators (value add per employee, operating margins etc).
- Use of SaaS (software as a service – see Appendices) environments to gain usage benefits in process and workflow without re-investment in systems architecture locally.

The fact that no single benchmark exists to demonstrate, in the private sector or in government, that most ICT developments, internet service applications amongst them, improve performance and profitability remains a real barrier for developers, extends the selling cycle for services, and means that case study and example remain too important in the process of embedding innovation.

Measuring innovation in Internet Content Services

The UK is not alone in attempting to define measures for innovation (see box, below). It is difficult to measure innovation within technological areas because technology is not the innovation. It is the *use* of technology in the internet services sector that should act as a measure of how rapidly changes are being absorbed into business life.

The US Commerce Department has put together a committee to define measures for innovation.

The committee, it seems, is faced with an almost impossible challenge because the views on the panel and the nature of their businesses are so wide-ranging. However, the Commerce Department believes the committee is up to the task.

“We believe the work of this group will have a lasting impact...whatever we do decide to measure will ultimately be something that drives the whole economy.”

In the service sector, there are arguably three measures that could indicate whether firms/sectors have the capacity to innovate:

- Investment in ICT and Software (as a proportion of turnover or value added to standardise for size) – this indicates whether a firm has the capacity to collect and manipulate data;
- Investment in training per head and Investors in People status – this indicates if it is investing in its people around the goals of the business;
- Whether it is working to a business quality framework in the form of ISO standards or the EQF Business Excellence Model, and;
- Value added per head and profit margins indicators that demonstrate whether the management team is putting the above capability together in the form of real business performance.

However, whilst these are very credible markers, some figures do not address the speed of change in the internet content services sector. It is sometimes useful to point backwards to a schema, such as the route map included earlier in this report, that will act as a benchmark of progress. Where a company is on the trajectory will indicate the rate of adoption of innovation.

The internet content services sector is such a broad area that it is difficult to conjure new measures of innovation. Below are some suggestions that would help to show whether a service is innovative by its impact on the user:

	Outcomes of innovation for users
Consumer internet services sector	Mass participation/community Changing value chain (removing or adding intermediaries with cost or service benefits)
Business internet services sector	Productivity Improved decision making (e.g. procurement) Shared community environments Facilitated/more efficient decision-making Compliance – it has become easier to support compliance content needs, educate users and audit results

Figure 5: Outcomes of innovation for Internet Content Services users

Ultimately, it is possible to identify whether a content services company is innovative by looking to see whether and how they are integrating their content into technology, and the way they are deploying search and community.

Case study: Newham Borough Council – an innovator and leader in local government ICT

Newham’s goal is to be "the leading UK centre for information and communication technologies in terms of both its commercial exploitation and its use to benefit the local community". The council is under pressure to improve services and lower costs in its rapidly expanding and multicultural borough.

Amongst its many innovative initiatives, Newham has recently launched a service, delivered by text, that alerts users to high levels of air pollution in the borough. This enables those at risk of e.g. asthma to manage their exposure to poor quality air. The council also runs Newham Neighbourhood Information Management System (NIMS), an online central data repository that enables local strategic partners (LSP) to share data. NIMS partners include the London Borough of Newham, Metropolitan Police, London Fire Brigade, Newham University Hospital NHS Trust, Newham Primary Care Trust, amongst others. Various users such as partnership agencies, voluntary groups, students, and businesses have also been using NIMS in their research reports and for general interest.

A third example of innovative practice at Newham is the adoption of a new e-Procurement and electronic trading environment for local government, known as the IDeA:marketplace, to improve electronic trading efficiencies. With an annual spend of over £300 million and more than 2,500 suppliers, the Council raises approximately 150,000 purchase orders a year.

Approximately 150 buyers within the Council are now live and a total of 250 buyers throughout the organisation will join the EGS Exchange with every major department enabled to buy online. So far about £3 million of high volume transactions are passing through the Exchange with up to half of the Council’s £300 million budget expected to follow over time.

“We trained 100 people in a traditional classroom style environment, but then moved to online training, which means our staff can now get trained without any manual intervention.”

The main benefits to be gained from e-Procurement are; increased procurement efficiencies, collaboration, and assurance of on contract spending. The Council also found EGS' IDeA:marketplace has had a significant impact on reducing error rates. Designed and managed by EGS specifically for local government, the IDeA:marketplace gives instant access to a wide range of contracts for products and services that have been negotiated locally, regionally, or nationally.

Buyers in the UK public sector raise over 50 million purchase orders per year and suppliers post over 100 million invoices per year. Shared Service e-Commerce environments help dramatically reduce the costs of these processes and underpin collaboration between groups of public sector bodies to get the best from national, regional and local collaboration.

Source: PublicTechnology.net, July 2007

The UK could evolve a template for what businesses should be getting from the internet content services environment and plot organisations along the innovation migration track.

Scope for effective Government intervention

The project did not feel that regulatory change was essential to stimulate growth and innovation. However, it did conclude that government's role as a disseminator of information and its ability to encourage neutral study of key market characteristics should be deployed in:

1. Identifying the key issues surrounding *Trust and Identity* which will become the benchmark for UK applications in this area.
4. In *User Behaviour*, government can pilot studies of its own and third party behaviour online, and disseminate evaluated results to encourage further market research and help develop appropriate analytical techniques.
- 8 and 9. Government can take a lead in sponsoring studies of UK technology and market strengths to ensure UK supplier-user communications is optimised, and a currently under-informed marketplace has examples of effective market communication.
10. Government can further encourage BSI in related standards setting, and support studies that help to benchmark the effects of innovatory developments.

However, the major recommendation that the group would like to put forward relates to topics 2 and 5. The release of government information suitable for e-trading is covered by the PSI Directive, and is an obligation on all of government, whether local or national. The evidence is that greater amounts of this content available in the marketplace stimulates the growth and innovation activity of the industry by increasing the areas in which new service values can be obtained by the competitive action of the private sector in adding value, adding other third party data, and developing new service targets not envisaged in the original data collection.

The process that the UK marketplace would like to see in place here covers both topics. The key areas of the recommendation are:

- The development of a UK government National Information Strategy (along the lines proposed by OPSI) that makes it incumbent upon all arms of government to issue catalogues, price lists and licensing rules for the release of re-usable content.
- The development of a national policy on charging and a better way of estimating increased returns to HM Treasury alongside the growth in the tax base through industry stimulation.
- The creation of an enforcement regime that ensures that the strategy and the Directive are consistently brought into effect.
- The extension of the OPSI IFTS and Click-Use regimes wherever they are appropriate.
- The preparation, within the National Strategy, of guidelines for government as a good buyer and a good user, and a mechanism for examining the implementation of this.
- The incorporation of public-private sector partnership in information service development as a formal element in the national strategy.

The project team and the SIG believe that the results of such policy development will be measurable in terms of:

- Enhanced earning power of UK internet content services industry, and greater returns on government information.
- The development of techniques, market development work and technology in the domestic market which can play a role in facilitating the UK's export potential in the sector.

- Public-private partnership which improves the quality of government through better information resources, while enabling parts of government who have struggled in this area to reach high standards of data preparation and availability, with all of the benefits for productivity, improved decision-making and regulatory compliance which flow from such content development activities.

Finally, the recommendation that this sector be properly sized through ongoing work with sector-specific trade bodies is one that cannot be over-emphasised. Measurable markets will enable the Government to track growth and innovation and set benchmarks for organisations to work towards. And once other countries begin to measure their efforts, we will be able to get a better sense of the UK's position in this global market.

Conclusions

There is now no doubt that current developments in internet content services will have a transformational effect in the creation of the networked economy and society into which the developed world is emerging.

The report indicates ten important areas of concern to service developers and users, as discussed within the SIG in the course of this investigation. The SIG placed particular emphasis on two of them, and recommendations on these two fields of activity as given in the section on potential government action. In addition, further development work was indicated in eight other fields, these are noted as part of these conclusions and recommendations.

The internet-based services and solutions sector is a complex one, since successful players often have legacy contributions from software development, network applications, content publishing of all types, and market service components to bring to bear. While the UK's business, consumer and professional publishing activity is mid-way through a progressive migration into web services, it is by no means clear that they will occupy the same niches as those they currently hold in real world content development, and many find the transition to a "services and solutions" mix difficult after a heritage of pure content provision. On the other hand, the sector is well-populated with small-scale start-ups, many of whom used publishing content models or created content from user or market interaction.

The sector has immense significance as the growth sector of the content industries. In the report we demonstrate the size and influence of the sector, and its global nature and coverage. The widespread use of English on the internet, while it is no longer the overwhelming factor that it was five years ago, remains important. The long UK market tradition of inventiveness and leadership in the publishing sector also carries over into internet services. And the internet tradition of disruptive business models, with far-reaching effects on real world business models, is also a marked feature of developmental activity in this sector.

As a result it is not difficult to place internet services in a catalytic role. In this sector, the UK pressure to succeed is heightened by the importance of the services in export terms, the significance of the UK's software industry acting as the crucible for the developmental steps that will give the industry a global profile, and potential benefits arising from these activities in markets where major UK players (Pearson and Reed Elsevier are obvious examples) are positioned for leadership positions. On the other hand, without a vibrant UK internet services marketplace, these market leaders and others will lack a skills base, domestic market infrastructure or the ability to capitalise on UK R&D.

The work programme now seeks a meeting with the Minister to put further argument alongside the brief recommendations outlined in this report.

Checklist for Government Action

Six critical actions in the next six months would re-emphasize the growing importance of internet services to the UK's service economy and bring government and industry together in an effort to exploit this potential:

1. Appoint a minister with responsibility for supervising the implementation of PSI policy across government, with powers to support OPSI and ensure that it is fully resourced to optimise its opportunity, and ensure that it is fully resourced to optimize its opportunity, co-ordinate a national information strategy including public-private sector collaboration, and harmonising charging and licensing policies for the release of government information.
2. Launch a major study, with private sector participation, on user behaviour and the changing cycle of demand in internet services, ensuring that its findings are updated and disseminated amongst participants.
3. Initiate a major survey, jointly with the industry, to improve industry definitions and collect sizing and scope data more effectively.
4. Develop a plan for making industry better aware of the powerful contribution made by the UK's publicly-funded research into knowledge systems development.
5. Issue guidance to RDAs and other seed funding bodies on the importance of the internet services sector in a strategy designed to grow and deepen the UK's share of global services markets.
6. Fund and develop a research body to benchmark success in innovation in internet services development, both in terms of commercial requirements for service operators, and in terms of the impact of internet-based services on other sectors, upon users, and upon UK participation in global services marketplaces.

The information, analysis, and opinions (the "Content") contained herein are based on the qualitative and quantitative research methods of Outsell, Inc. and its staff's extensive professional expertise in the industry. Outsell has used its best efforts and judgment in the compilation and presentation of the Content and to ensure to the best of its ability that the Content is accurate as of the date published. However, the industry information covered by this report is subject to rapid change. Outsell makes no representations or warranties, express or implied, concerning or relating to the accuracy of the Content in this report and Outsell assumes no liability related to claims concerning the Content of this report.



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Appendix

The size of the traditional UK content market

The UK has a strong heritage of generating and publishing content in any format that suits the market. According to BERR data, the UK has the second largest publishing industry in Europe, with a turnover of at least £18.4 billion, and 8,000 plus companies employing around 164,000 people. However, the University of St Andrews has sized the market, including both print and electronic products, in excess of £30 billion, with approximately 280,000 people employed nationally by 14,500 employers. They claim that, although 75% of publishing companies have no more than five employees, the majority of people are employed in the few organisations with over 200 staff. Publishers are prime contributors to the internet content services sector.

The GVA of the publishing industry has risen from £8,400 million in 2000 to £9,800 million in 2005. In 2000 it represented a 1.3% contribution to UK GVA, falling slightly to 1.2% in 2005 (Source: Annual Business Inquiry, ONS).

The impact of the global information industry

Outsell forecasts a \$448 billion global information industry by 2010. The industry (defined as firms that create and aggregate information and make it commercially available both online and offline) is expected to have a compound annual growth rate (CAGR) of 5.5% for the period 2007 to 2010. For 2006, Outsell estimates global electronic content generated revenues of \$150,231 million, [41.5% of total information industry revenues](#). [Within Europe, Middle East and Africa \(EMEA\), revenues in 2006 are thought to have topped \\$109,325 million, 30.2% of the global information industry market.](#)

These figures indicate a thriving online content services market, [characterised by large, established 'offline' players and smaller, more nimble players with e-DNA](#). Many of the latter are not recorded in any of the available sizing data as they do not fall into traditional industry sector categories. [Outsell believes that the challenge to traditional publishers and media companies is to maximise productivity while investing in the people and processes that will drive growth for the shift to digital. Success lies in publishers transforming into highly adaptive, agile solutions providers, with the new agile mindset and processes to meet the need for speed in today's environment.](#) These topics are addressed in more detail, below.

The importance of internet content revenues

The latest membership survey from the UK Association of Online Publishers, the AOP Census 2007, has demonstrated that UK digital publishers experienced an average 60% increase in turnover in 2006, and are predicting an average of 72% growth for 2007. Digital now contributes an average of 12% of members' overall revenue. This group sees broadband, mobile (and wireless) and communities as the biggest opportunities for the industry in 2007. The biggest threats identified were the number of new competitors, security, and Government/legal restrictions – mirroring the concerns of the Sector Innovation Group involved in this project.

The growth of video content

In addition to the type of content that traditional publishers produce, online content embraces video. According to new figures from Nielson Online (covering September 2006 to September 2007), 21 million people in the UK access TV, video and movie sites online, a 28% increase over the survey period. People are also spending longer on the sites. The time spent consuming online content has grown from 641 minutes in 2006 to 1.2 billion minutes by September 2007. The most popular site, YouTube, attracted 9.4 million UK visitors, who spent a total of almost half a billion minutes on the site. BBC TV and film sites were the next most popular, followed by Lycos Europe Movie, Sky, ITV, Channel 4, Google Video, Odeon, TV-links.co.uk and TV.com.

The rise of online advertising spending

The increase in internet usage (discussed further, below) and the resulting rise in internet content services revenue is reflected in the increase in UK online advertising spending. According to eMarketer, online advertising spending is well ahead of the U.S. and other developed nations', and it is forecast to account for more than half of all online ad spending in Western Europe in 2010, achieving a 52.6 percent market share.

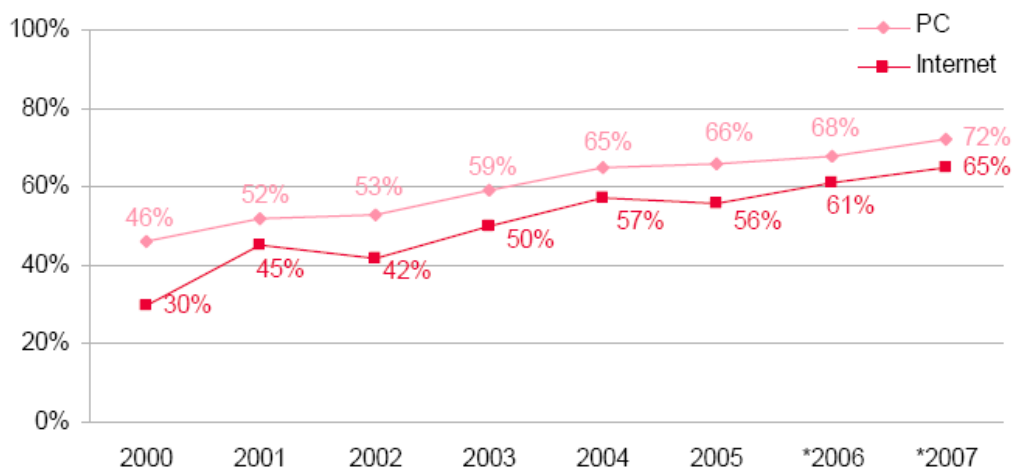
eMarketer states that steady economic growth, further advances in broadband, mobile internet access and associated ad-serving technology will help fuel this growth. Coming off 47% year-over-year growth in 2006, online ad spending in the UK will rise from £2.6 billion in 2007 (31 percent more than the £2.02 billion in 2006) to £4.5 billion in 2011, eMarketer forecasts. Online advertising is expected to account for 18% of all UK advertising spending in 2007 - more than double the percentage for other European countries and the US.

The take-up of broadband accelerates

The increasing penetration of broadband across the UK is driving more users to internet content services, hence the growth in online advertising. According to Ofcom's latest report *The Consumer Experience* published in November 2007, the average monthly cost of broadband was £29.83 in 2002, lowering year on year until 2006 when it hit a price point of £14.73. Other telecoms elements like mobile packages and landline calls have also dropped, though land line rental has actually increased by 23p over the four years. The report also compares UK broadband pricing for a 2Mbps service with a 5GB allowance to French, German, Italian and US broadband services. There is little difference between the European countries, but the US is the most expensive in the comparison.

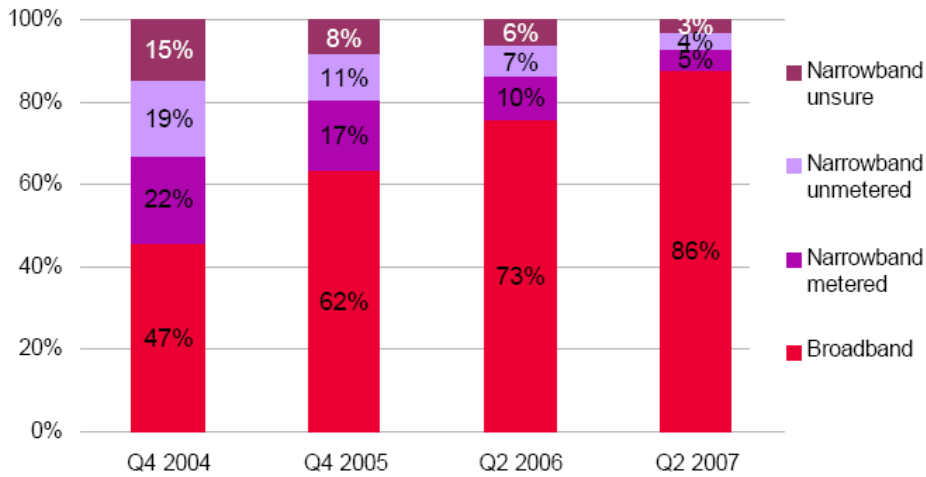
The following figures, extracted from Ofcom's report, outline the rapid growth in the take-up in broadband over the past few years.

Figure 25: Take-up of the internet at home



Base: All adults 15+¹⁰. *Q4 data for 2001 to 2005, Q2 data for 2006.
Source: Ofcom communications tracking survey

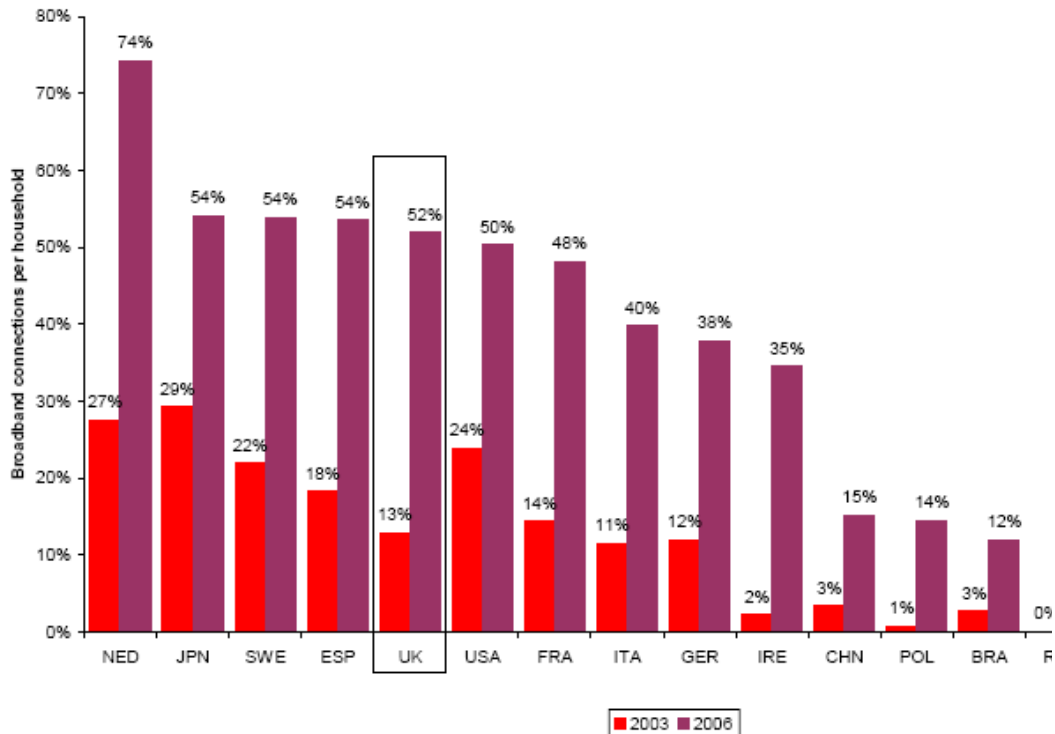
Figure 26: Trends in connection methods



Base: All adults who have broadband or narrowband as main connection at home
 Source: Ofcom communications tracking survey¹¹

The figures show that 65% of UK homes now have internet access, at least 86% of which are via broadband. The figure, below, shows that the UK is one of the leading European countries in terms of broadband access, eclipsed only by the Netherlands' impressive 74% broadband penetration levels.

Figure 30: Take-up of broadband – international comparisons



Source: Ofcom / national regulators 2006. Base: total population

The growth of the software market

The market for large enterprise software is set to grow at up to nine per cent a year until 2010, but the software support service will suffer a slump in growth, according to market research company Ovum. By 2010, the market for software in the UK will be £6.44bn, close to a doubling of the market size from 2003-2010.

Ovum believes that large industrial-scale software such as that produced by SAP or Oracle is the real growth area.

“In terms of some of the key growth areas within software, the business applications area is going to stay growing, that's going to make approximately nine per cent growth all the way through to 2010. Some of the areas that are growing less are the support services market. That's growing at about three per cent per annum through to the end of the decade; that's relatively flat. If you subtract inflation from those figures, that's a relatively static market.”

Source: The Register, November 2006

The rise of SaaS

Software as a service (SaaS) is a software application delivery model where a software vendor develops a web-native software application and hosts and operates (either independently or through a third-party) the application for use by its customers over the Internet. Customers do not pay for owning the software itself but rather for using it.

Source: Wikipedia

SaaS is an important software development to watch.

The amount spent on SaaS [in the UK] will increase by 19 per cent over the coming five years, it is thought. (Source: OneStopClick.com)

The percentage of businesses using at least one SaaS offering increased from 11% in 2006 to 26% in 2007. Within four years it is estimated that SaaS will comprise 30% of all deployed software, according to tech research firm [Saugatuck Technology](#).

Gartner expects the global SaaS market to triple between 2006 and 2011, growing to \$19.3 billion, while IDC predicts that SaaS will be worth \$10.7 billion by 2009.

SMEs have been enthusiastic adopters of software-as-a-service, a trend that will continue in 2007, according to AMI-Partners. It predicts that SMEs will spend \$2.44 billion on SaaS in 2007, up some 17 percent from 2006 spending levels. Among the biggest SME buyers of SaaS: the U.S. (\$1 billion), Germany (\$179 million) and Japan, Britain and France (a combined \$318 million). AMI-Partners expects to see strong growth in Canada and Sweden in 2007. CRM has been the most popular SaaS investment, showing growth of 22 percent in 2006. (Source: Tekrati, December 2006)

[Saas: The New Software Business Model Is Free](#)

By David Worlock - London, UK - Originally published in EPS INSIGHTS on May 12, 2006

The content community will be watching closely as the ASP (Application Service Provider) model gives way to SaaS (Software as a Service) environments. With more and more Open Source software available, software sales are increasingly made not through licensing agreements, but via service and support agreements governing software applications for the network.

This particular phenomenon is not about customisation, but about network applications written and intended as multi-user, one to many network applications. An ASP host could source Microsoft Office, or any other available package, and hire it to individual users on a monthly basis. A SaaS provider might be more like eMeta and the eRights Suite users, where content players like McGraw-Hill, New York Times, Wolters Kluwer and OUP use access control and eCommerce solutions which can alternatively be hired as a service in eRights WEB. Or it might be like Salesforce.com, with a similar sales environment (AppExchange), enabled through the acquisition of Sendia to allow users to extend their usage of the package to all types of mobile platforms. Or it could be like NetSuite (formerly NetLedger when founded by Larry Ellison and a former Oracle colleague, Evan Goldberg, and now reputed to be the second fastest growing software player in the US, according to Inc Magazine). NetSuite's NetCRM, NetERP and NetCommerce applications, all modules of Net10, can be made available on monthly, quarterly or annual support packages, as can the micro-business package NetSuite Small Business (NSSB).

This is all highly competitive territory, where Salesforce, NetSuite, RightNow and SalesNet have all pushed value up and prices down, at the expense of traditional CRM players like Siebel. However, the important issues here for the information content community concern not the powerful way in which this has happened, but the business model which has resulted from it. It is relatively easy now to envisage, in B2B markets, environments where these service activities also become invested with standard content sets - directory content and customisable classification systems - with the result that SaaS becomes a way of bundling and updating content as well as a services for hire environment. Nor is it impossible to imagine a future IaaS, an Information as a Service environment which extended content to small businesses in a managed context, alongside application software and other modular attributes.

Whether or when the content-derived industries will take the final step - open source content - is a moot point. As B2B and professional publishing pushes ever closer to workflow and process applications, it is possible to predict that the underlying content becomes less valuable than the service solution. Indeed, parts of the underlying content will need to be licensed in from third parties to provide complete solutions, and the content players managing these processes might find it valuable in deal-making terms to diminish the value of the content and accentuate the value of the service. As major current content players move this way, they will find themselves moving from low value content to software which is rapidly becoming free. Preserving business model sanity, let alone margins and revenues, in this melting pot will be very difficult: only the very stable and large players, and the very flexible and small players, will survive a metamorphosis which will cull the middle order players in many sectors.

[SaaS Implications for Work-Flow Applications Strategies](#)

By Mukta Ohri - Alexandria, Virginia - on June 29, 2007

The software business is evolving, with implications for publishers and information providers looking for new opportunities through user workflow and task applications.

Important Details: New [technology statistics](#) from IDC paint an interesting picture of how the software business is evolving, with implications for publishers and information providers looking to expand their own business opportunities through greater penetration of user workflow and tasks. Of particular interest is the growth of software-as-a-service (SaaS), with vendors hosting and operating web-native software for customers accessing via the internet. SaaS revenue comes from usage rather than unit or site pricing. [Salesforce.com](#), [WebEx](#), and [NetSuite](#) are amongst the best-known SaaS services.

SaaS services were once targeted almost exclusively at small and mid-sized organizations, but increasingly larger organizations are considering their options, especially with the development of hybrid SaaS models which offer both on-site and hosted options, or facilitate integration paths between SaaS applications and already installed applications. The percentage of businesses using at least one SaaS

offering increased from 11% in 2006 to 26% in 2007, according to tech research firm [Saugatuck Technology](#); within four years it is estimated that SaaS will comprise 30% of all deployed software.

For SaaS vendors, the future looks bright, with firms such as Gartner and IDC varying on the specific baselines but agreeing on expectations of continued double-digit CAGR. Gartner expects the global SaaS market to triple between 2006 and 2011, growing to \$19.3 billion, while IDC predicts that SaaS will be worth \$10.7 billion by 2009.

Implications: Despite lingering concerns over control, data security and service reliability, more organizations are expressing interest in SaaS with hopes of cost reduction, better resource allocation, and improved productivity resulting from remote “anytime/anywhere” access to key data and applications. The financial considerations can be significant, with customers citing the less-expensive and pro-rated user fees against the front-loaded costs of traditional deployment and integration. At the same time, many purchasers also feel that the SaaS model gives stronger, on-going leverage with vendors than a one-time sale in terms of relationship management; customers also find it easier to “transport” dollars to another vendor versus the cost and disruption of a new on-site installation. Similarly, SaaS can lower the risk profile associated with a complex software installation - where eventual ROI cannot offset the high load of initial investment and costs of deployment.

On a broad level, SaaS benefits publishers/providers with faster time-to-market capabilities and more seamless customer transitions (i.e, less drop-off) from initial implementation through version upgrades and releases. But transitioning to a pure SaaS or even hybrid model would be no easy feat, with necessary changes to strategic planning, business model development, sales and marketing channels, customer support, product development, and product life cycle management. Initial transition would also open complex issues including maintenance of different platforms and versions through transitions, as well as pricing across disparate models to avoid cannibalization.

Some traditional LTR players are already utilizing SaaS models, such as the [LexisNexis/NetDocuments](#) offering of web-based document and information management systems. Other providers are on the path of offering web-hosted software which is not web-native, but is rather traditional software made web-available under a model similar to SaaS - no installation, per user fees, et al; examples include [Thomson's LiveNote](#) product (offering both on-site and remote Web-based transcript services) and [BNA's Fixed Assets](#) web-hosted software product.

Despite the challenges, SaaS may be more in line with established publisher/provider strategies of moving from a commodity-basis toward a workflow-centered relationship, with a higher focus on building stronger client entrenchment utilizing on-point applications supported through on-going customer service. Unlike the often transactional nature of traditional software models, SaaS brings vendors and customers closer together during the length of the relationship, and creates greater opportunities to develop that connection into long-term business. At the same time, SaaS may provide a better margin picture for providers with operating expenses (especially R&D, maintenance, support) leveraged against many users on a common platform and with a more regular revenue flow from the user fees which may span multi-year contracts.

For publishers seeking to expand into workflow applications and electronic solutions, the role of SaaS/on-demand services is worth considering.

AOP Census 2007 – Perceived Threats and Opportunities

As part of its annual membership survey AOP asked its members to rate a number of factors (listed below) in terms of the extent to which they are seen as an opportunity or threat to their online publishing business.

Consistent with last year's findings (AOP Census 2006), the greatest opportunities were seen to be:

Opportunity/Threat	Average score (out of 5)
Broadband	4.9
Mobile/wireless	4.5
Communities	4.5

The lowest scores (i.e. the biggest perceived threat) were found to be:

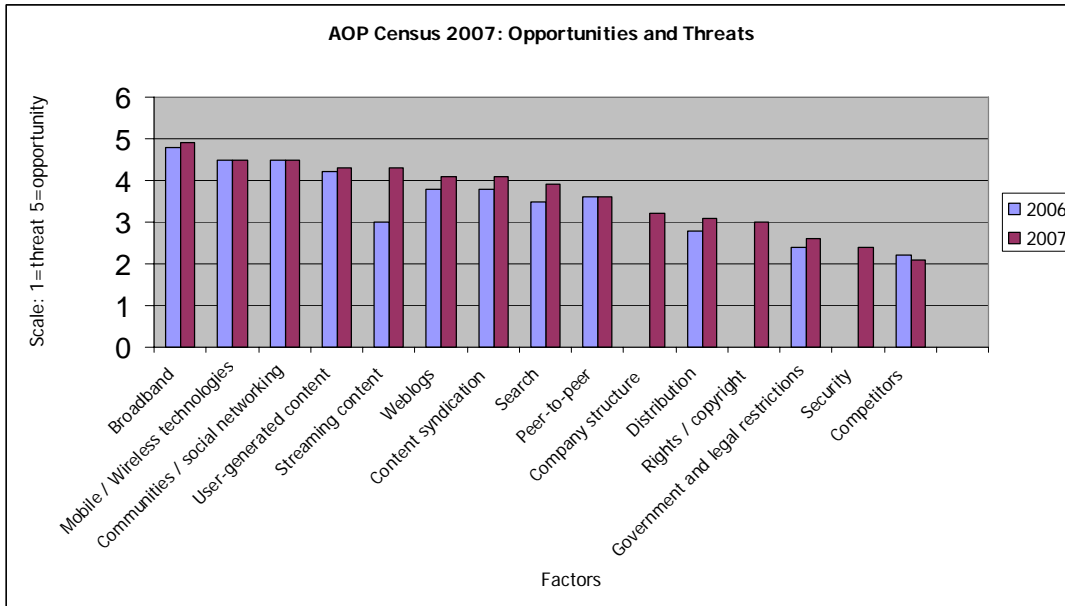
Opportunity/Threat	Average score (out of 5)
Competitors	2.1
Security	2.4
Government/legal	2.6

However, these scores are not so low as to indicate that these factors present a critical threats to our members' online businesses.

The one most striking difference between this and last year's surveys is that **streaming content** is seen as much more of an opportunity than it was a year ago.

Respondents were asked to rate the following factors using a scale of 1 - 5 (where 1 is a major threat and 5 is a major opportunity).

Figure 1.



Methodology

The fieldwork was conducted from 16 January to 16 February 2007 as an online survey by an independent research consultancy, Fox Insight. Fifty-seven AOP member companies completed the questionnaire.

About AOP

The UK Association of Online Publishers (AOP) is an industry body representing online publishing companies that create original, branded, quality content. AOP champions the interests of approximately 160 publishing companies from diverse backgrounds including newspaper and magazine publishing, TV and radio broadcasting, and pure online media.

AOP presents a unified voice to industry and Government, specifically to address issues and concerns relating to all areas of online publishing. AOP publishes original research, hosts forums, conferences and events, covering a range of topics from paid-for-content, subscription models and data protection, through to copyright, content management, new technologies and audience measurement.

Members include AN Digital, BBC, BSkyB, Channel 4, CMPi, CNET Networks, Condé Nast Interactive, Dennis Interactive, The Economist Group, Emap, FT.com, Future Publishing, GCAP Media, Guardian Unlimited, Haymarket Publishing, Hearst Digital Network, Incisive Media, Independent Digital, IPC Media, ITV Online, News International, Reed Business Information, Reuters Group, Telegraph Group Limited, Trinity Mirror Group and Which?. In addition, PPAi (Periodical Publishers Association Interactive) retains a corporate seat on AOP board: representing the interests of magazine publishers online. www.ukaop.org.uk

Are consumers the new brand managers?

02 Mar 2007

Alex White, director of AOP, takes a look at issues of trust and reputation in the era of Web 2.0.

Recent [research](#) from Booz Allen Hamilton has found that 41 per cent of UK internet users currently access Web 2.0 sites such as *YouTube*, *MySpace* and *Facebook*, and that this figure is set to increase. The management consultancy claimed that companies will need to take advantage of the social networking and video driven developments of Web 2.0 in order to win customers.

“Web 2.0 has already reached a critical mass - companies must now adapt to the new paradigm. The need to evolve existing business models by integrating the Web 2.0 environment is urgent,” said Booz Allen’s Dr Uwe Lambrette.

This provides them with a tremendous power and opportunity to alter the perception of brands to other consumers which marketers and media owners would be unwise to ignore.

Simon Waldman, chairman of the AOP and group director of digital strategy and development for Guardian Media Group, spoke of the importance of trust between brands and their consumer at a House of Commons debate recently.

“In the online age, consumers are the new brand managers,” he claimed, arguing that the management of brand was “irreversibly shifting” into the hands of the consumer. He explained that in a connected society, with the developments of Web 2.0 and the increased geographical reach of broadband, the consumer no longer has an individual one-way interface with the supplier; no longer does the advertiser speak to the consumer in a one-directional communication.

The consumer has become an empowered consumer, with the opportunity to talk back, not just in response to a supplier’s product or service but also to other like-minded consumers, creating a collective “we”.

He described the way consumers are scrutinising brands, sharing their opinions in a free and fast growing network of users. He explained that this electronic network is becoming increasingly trusted by the consumer and is becoming such a powerful resource that it is shaping and managing the world’s brands.

Media agencies are becoming only too aware of the risks and opportunities this creates for brands, and expect publishers to adapt their businesses in response.

Andrew Swinand, president and chief client officer of Starcom USA argued at PPA Marketing’s advertising conference held last October that publishers need to develop their business models “to ensure that their content is liquid and remains core to consumer lifestyles as we move from an age of information to an age of participation”.

Highlighting the need for brands to enter a two-way dialogue with consumers and the importance of a breakdown in traditional media silos, he stressed that “content has to be the focus. It has to be even more engaging and relevant. The channel is secondary”.

There is much talk across both the print and online contingents of the media industry about the battle for consumer engagement these days. While the web versions of magazines are seen by users as more convenient than their print parents, magazines are generally seen as being more satisfying than their online counterparts, according to research from AOP.

But, as online becomes more of an entertainment medium, powered by the growth of broadband and user-generated content, especially video, the amount of time spent online is only likely to increase, particularly among young adults.

Ofcom’s Communications Market [report](#) of 2006 found that more than half of 16-24s use websites where they can chat with people they know or contact people they have lost touch at least weekly.

User-generated content websites such as *MySpace*, *YouTube* and *Bebo* now enjoy the attention of an average 79.9 minutes per visitor, compared to an average of 33.2 minutes per visitor for the non-user-generated websites in the UK top 50, according to ComScore.

No wonder, then, that digital publishers are seeing an opportunity to build communities around their content, as a means to fostering loyalty and increasing their sites’ ‘stickiness’.

User-evaluated content has joined user-generated content as a powerful trend. *Wikipedia* is already the ninth most visited website in the UK. Set up in 2001, it was judged by *Science Journal* in 2005 to be as accurate as the *Encyclopedia Britannica*.

So with the emergence of these huge global players in the social networking market, should publishers be preparing themselves for huge losses in revenues as consumers ignore the views of editors and journalists in favour of likeminded individuals they've never met but whose opinions they trust?

Digital publishers should not lose sight of the fact that professional editorial (or 'head' content) remains their "centre of gravity", and is the main reason why users want to be part of their community in the first place, according to Suzie Daniels, head of business media for CNET Networks which publishes *ZDNet*, *Silicon.com*, *Builder UK* and *Atlarge.com*, speaking at an AOP [event](#) in January.

Daniels described how CNET Networks had based the recent relaunch of *ZDNet* on principles of Architected Participation espoused by web 2.0 guru Tim O'Reilly: aiming to engage the thought leaders and influencers within the user community.

She described the process of change management involved in redeveloping the site for user-generated content, particularly the importance of getting the editors and journalists on board: "As a digital-only publisher, our main investments are in technology and people. And if you get the people bit wrong, you have no business!"

ZDNet editors are expected to blog on the site as a matter of course, and are not allowed to hide behind the brand but are required to use their real names: "Users expect transparency and honesty," she said.

Daniels has hit the nail on the head: consumers are tired of the spin, they don't want to be managed or told what to think; the consumer is deciding where they feel most comfortable.

Perhaps today's biggest challenge for media owners and agencies is to make consumers feel comfortable spending time with their brands.

Forbes.com

Measuring Innovation

[Brian Wingfield](#), 02.23.07

WASHINGTON, D.C.

In the relative obscurity of a hotel basement here, Commerce Secretary Carlos Gutierrez assembled a curious band of corporate and academic minds to help solve a puzzling question: How can the government develop a measurement for innovation in order to encourage investment and competitiveness in the U.S. economy?

The meeting was the first of its kind for the "Measuring Innovation in the 21st Century Economy Advisory Committee," a group of 15 leaders picked by the Commerce Department to be a part of the national discussion on economic growth.

The committee comprises some of the best-known names in business, including **UPS** (nyse: [UPS - news - people](#)) Chairman and Chief Executive Officer [Michael Eskew](#); [John Menzer](#), vice chairman of **Wal-Mart Stores** (nyse: [WMT - news - people](#)); **IBM** (nyse: [IBM - news - people](#)) CEO [Samuel Palmisano](#); and [Art Collins](#), chairman and CEO of the medical technology company **Medtronic** (nyse: [MDT - news - people](#)). Another famous corporate face, **Microsoft** (nasdaq: [MSFT - news - people](#)) CEO [Steve Ballmer](#), is also a member of the panel, but was not at Thursday's session.

The origins of the group lie in the Bush Administration's interest in statistical analysis of growth and productivity, a Commerce Department official says. The committee has a charter of two years, and in that time, the government hopes that business and academic insight will help it devise a method for measuring innovation.

"If you can't measure it, you can't manage it," says IBM's Palmisano. He adds a central question that must be addressed: "How does the American economy continue to be innovative at rates that appear to be faster than other economies?"

Based upon the ideas tossed about during the meeting, answering this question will not be easy. First, there is the problem of defining innovation itself. How does it differ from productivity? How does one separate innovation from invention? Should innovation be based on business inputs or outputs? And if it is the latter, how can product quality be assured if output is increased?

Although many companies offer financial incentives for innovations, such as patents, it became apparent at the committee's meeting that none of the companies represented on the panel have a single standard by which to measure innovation.

According to Medtronic's Collins, two of the primary ways his company measures innovation are the medical outcomes and the cost effectiveness of the products the firm produces. But it would be difficult to develop similar standards for industry as a whole. And as Wal-Mart's Menzer points out, "Innovation is not always measured by success. ... Learning from failure can be a big part of innovation."

The problem here is that failure is an intangible product. Collins says that a good indicator of innovation is demand for a company's product, which is easily measured by market capitalization. "I would think that one measurement device by industry would be what percentage of the world market ... United States firms capture," he says.

And Palmisano suggests the committee focus on competitiveness, since this is the ultimate goal of innovation. "As a society, we want to be more competitive than other societies because capital and intellect flow to where there are opportunities," he says.

However, some of the committee's most insightful observations have come from its academic members. For example, Rajesh Chandy, a marketing professor at the University of Minnesota, points out that whatever method the U.S. uses to measure innovation, it will need to be compared with information from other countries as well. The U.S. will need to decide if it wants to use its own standards to measure the rest of the world's innovation, or rely on data from other countries, which might not be as accurate.

The committee, it seems, is faced with an almost impossible challenge because the views on the panel and the nature of their businesses are so wide-ranging. However, the Commerce Department believes the committee is up to the task.

"We believe the work of this group will have a lasting impact," Gutierrez says. "Whatever we do decide to measure will ultimately be something that drives the whole economy."

UK leads the new media way

Venture capital funding in the UK is double that of nearest EU rival

Neon Kelly, [Computing](#), 29 Nov 2007

The UK's next-generation content sector has secured £331m-worth of venture capital (VC) funding since the start of last year - a third of the European total and more than double that of its nearest rival, France.

Across Europe and Israel, new media [investment](#) is expanding rapidly. VCs have so far put up £499m this year, already more than the £487m total in 2006, says research from [Library House](#).

And the growth is predicted to continue.

"We expect the trend to maintain momentum for 2008 at least," said Library House head of analysis Darren Harper.

There are major economic implications if the UK can hold onto its lead, said Laurence Harrison, director at trade group [Intellect](#).

"Because of disruption in business models caused by convergence, there has been a shift of funds away from traditional channels into Web 2.0," said Harrison.

"If the UK is seen as a creative hub for investment in new media it will bring in investment and fuel the growth of small and medium-sized enterprises."

But predictions of continued growth are not without caveats.

There has been a frenzy of high-price deals across the world. [Google](#) bought [YouTube](#) for \$1.65bn (£811m) in 2006. And [Microsoft](#)'s payment of \$240m (£115m) for a 1.6 per cent stake in Facebook last month values the overall site at \$15bn (£7.2bn).

Experts are warning of a bubble reminiscent of the dot com era.

"I hope we are not seeing a repeat of what happened in the late 1990s," said Stewart Davies, board member at venture capitalist [New Venture Partners](#).

"Success comes from a business model that generates money, not the get-in-quick model that produces a strange idea and aims to sell it within three years."

UK dominance is also vulnerable to regulatory changes, such as the capital gains tax reforms proposed by the chancellor in last month's pre-Budget report.

"There has been a big potential turn-off in the legislation mooted for next year," said Davies.

"People in these [businesses](#) are taking huge risks, with their own money or with someone else's, so they have to be rewarded over the right period of time," he said.