

## **Overview**

### ***Our unique perspective***

As an international law firm that has grown from a London base to now operating from 23 locations, at Bird & Bird LLP we have worked for many years at the intersect of business, policy/regulation and technology. The work we do for our clients is about resolving and managing the tensions inherent in that mix so we are well-placed to give a view on how industries develop from a base of new technology and where government involvement helps and hinders the prospects for growth of businesses large and small.

### ***Beware marketing jargon***

In its Call for Views and Evidence on the UK Government Information Economy Strategy, the Information Economy Strategy Team has identified five "sectors" it considers to be most important to the Information Economy – smart cities, cloud computing, internet of things, big data and e-commerce. We would agree that these are amongst the key areas our clients are talking about and investigating. However, in truth these are all marketing terms coined to provide catchy handles for trends in ICT. What really makes a difference is how technologies are being applied in new industry sectors to transform the way they work.

The use of information technology, like information on its own, only really makes a difference once it is applied. We strongly believe that the focus of any information economy strategy should be on the application of technology in other sectors – energy, transport, life sciences, financial services, retail, aerospace & defence, the public sector, manufacturing. Only once customers understand what technology can help them achieve will business grow from the opportunities that exist.

The UK's expertise in terms of the Information Economy comes in the areas where our industries are the most successful as that is where technology has been applied to best advantage – our financial services companies depend upon super-fast, super-reliable data centres, our supermarkets and retailers use customer data to improve their relationships through targeted offers that benefit everyone, our creative industries make world-class use of technology to develop content and to market and advertise brands (via social media, e-commerce, etc). Our Information Economy strategy should be about identifying what we do well and then selling that expertise to the world rather than identifying buzzwords and trying to keep up with marketing trends.

### ***UK excellence in security***

One area missing from the list where the UK does have leading companies is in cyber security. The extensive use of ICT in a range of sectors in the UK where security is paramount, such as financial services, health care and the public sector, means the UK has also developed an extensive industry in information assurance and cyber security. As part of the EEA, the UK is also part of the world's most mature data protection regime and, as a result, seen as a good place to hold sensitive or personal information. The pragmatic approach of the Information Commissioner's Office also gives the UK a competitive edge over some other jurisdictions. Looking at the 5 headline topics identified, security and privacy protection can also be a key differentiator for UK service providers in smart technologies, cloud platforms, data analytics and e-commerce.

### ***Keep traffic moving & the lights on***

We believe one of the main problems facing governments when defining their role in the Information Economy is that the information economy is global by default. It is no respecter

of jurisdiction and so legal systems defined by national or territorial boundaries are poorly equipped to regulate it. This, more than any political inclination over the role of government, means governments should tread very carefully before trying to regulate the Information Economy. Of course, governments have a responsibility to keep their citizens safe so there is a role for personal data and consumer protection legislation, as well as counter-terrorism, anti-money laundering and crime prevention measures but, as far as possible these should not be targeted at particular industries, technologies or sectors. There is also a role in achieving international trade arrangements, promoting British businesses and lobbying against international regulations that inhibit the Information Economy.

The Information Economy, and increasingly all business, is absolutely dependent on the availability, speed and reliability of the internet. The UK government's biggest influence over the Information Economy will be in ensuring the communications infrastructure continues to be able to cope with increased demand, both from the areas of growth identified here but also continued growth in consumer and business use of mobile and broadband internet. Equally important will be the need to ensure the reliability of power supply to end users but also to back-end data centres – the heavy lifters of the Information Economy. Any view in the market that supply in either of these two areas is at risk will deter any long term investment in the UK and impair the development opportunities for UK Information Economy suppliers.

## **Cloud Computing**

The UK is probably the most developed market for cloud computing in Europe. We have seen rapid adoption of cloud computing across a number of sectors, including financial services, retail, aerospace & defence and, of course, the public sector (with its G-Cloud frameworks). The most important thing to note about cloud computing is that it is not a single, standard thing. The term covers the provision of software, platforms and infrastructure as a service and public, private, hybrid or community clouds.

### ***Customers are not unique***

A key challenge for both customers and suppliers has been to identify the correct commercial and contractual "wrap" for the solution or service being deployed. This is invariably an arbitrage of risk, cost and control with the emphasis being to avoid lengthy negotiations or variations from the supplier's standard term but is absolutely something the market is best placed to determine. In the past enterprise IT services have been heavily bespoke based upon customers' individual requirements. True cloud services are more akin to products that have been designed and positioned to serve specific market segments. Cloud services may be positioned as cheap or fast or secure or reliable - or a combination of those or other things - and different services will appeal to different customers.

In order to support this standardisation and commoditisation of IT, customers should be able to rely more on independent third party review or accreditation of cloud services. Data protection legislation and guidance from the ICO suggests that, in order to comply with the 7th principle, all data controllers need to do their own annual audits of the IT infrastructure on which their data is held or to have access to the underlying infrastructure to verify stated security measures are in place before adopting a solution. We think the point is not so much that data protection law needs changing but that what constitutes compliance should be re-considered or clarified. The 7th principle requires the data controller to ensure appropriate technical and organisational measures are put in place to protect personal data. Is it "appropriate" for companies to identify cloud services that are appropriately secure for the type of data they intend to store on it and can customers comply with the 7th principle by relying on trusted independent third party accreditations of the security in place?

A continuation of a strictly customer-by-customer approach to data security is inconsistent with the multi-tenancy nature of many cloud services. In fact, as well as being costly, it may present a security risk by requiring cloud providers to publicise their security arrangements and accommodate multiple audits (including penetration tests) against shared infrastructures. The ICO guidance on cloud computing goes some way to recognising this but there is room for further improvement.

The government should allow companies, particularly SMEs, to rely on the greater security expertise of IT suppliers and/or security audit reports provided by third parties (there may be a growth opportunity for financial auditors or security consultancies in providing such services). Private companies should also be able to take account of the accreditations being awarded under the government's own G-cloud framework (although any form of mandatory government accreditation would create a bottle-neck, add cost and inhibit innovation by creating barriers to entry). Money spent unnecessarily on security audits by multiple customers is money that is not being invested in core business or growth opportunities.

### ***Credit where credit's due***

In order to encourage investment in state-of-the-art data centres and cloud services, suppliers who increase their own energy consumption (through running larger, multi-tenancy cloud platforms) but enable customers to cut their own need to be eligible for relief

from carbon reduction commitments. The correct package of incentives will allow suppliers to take on customers data hosting needs, etc and then use cloud and virtualisation technologies to drive increasing energy efficiency.

### ***Keeping clouds moving***

As noted in our overview, cloud computing is one of the trends driving increased internet traffic and dependency of business on the UK communications infrastructure. Ensuring the UK's capabilities in this space keep pace with demand is absolutely critical.

## **Internet of Things**

The Internet of Things is a broad and imprecise concept. In fact, this is the point. The Internet of Things is about allowing devices, buildings and other physical objects to be connected with people and/or other devices via a network so that they can interact with each other and allow innovation to spawn new and unforeseen benefits in the way the world we live in works as a result.

This is not a new concept. For example, vehicle tracking services have been around for some time. However, the increased interest in the Internet of Things is a result of a heightened sense of possibility about how its applications may be deployed on a widespread and transformative scale. Indeed, there is no better example than that of 'smart cities', a city which is interconnected and operates more effectively as a result in energy consumption, traffic flow, healthcare and local services. Ultimately, the Internet of Things is about enablement and empowerment – its impact will be in how it is applied to transform other sectors.

### ***The Internet of Things as an enabler of Government efficiency***

Government provides a range of services across a range of facilities on a local, national and international basis – both to its own staff and to its citizens. The Internet of Things has the potential to help change the effectiveness with which these services are delivered and the costs of doing so. We hope the Government investigates the potential in this area through its various procurement activities. Of course, large operators have a role to play in integrating systems and taking risk on large projects but the real innovators in smart technologies are in the SME space so Government deployment of Internet of Things applications on a pilot basis and then supporting larger deployments has the potential to boost this fast growing sector.

Upfront cost allocation is a key issue. Many Internet of Things applications will have an economic justification on the basis of efficiency gains or avoided costs over a medium to long time frame but require capital expenditure. The Government estates, subject to appropriately addressing security concerns, can provide a test environment for many Internet Of Things applications where the business case is still theoretical and technologies need to be deployed live to fully understand the benefits they can bring.

### ***Regulatory calibration and technical innovation***

Whilst something of a truism, the Internet of Things requires the Internet. For Internet of Things applications to be successful, the Internet must be available on an open and widespread basis. Government policy initiatives with respect to broadband deployment and spectrum management are essential parts of the levers to promote the infrastructure platform from which the Internet of Things will be built.

Openness refers not only to the Internet connectivity, but also some degree of standardisation amongst Internet of Things devices so that they can interact with each other. As the Government acknowledges in the Consultation Paper, there is a risk for an 'Internet of Silos' to emerge. This risk can be mitigated through harmonisation including by institutions such as the International Telecommunications Union but also industry standards – the 'network effects' of Internet of Things services hopefully providing sufficient incentives for such standards to emerge.

Government will also need to be mindful as to how technical standards are coupled with Internet of Things devices and applications – are providers of Internet of Things services or devices able to get access to and rights to use necessary technical protocols on reasonable terms to deliver services to end users? Are there appropriate incentives for those innovators to develop new standards? There have been a number of exciting developments in spectrum technology in recent years, including the use of 'white space' and the continued evolution of mobile capability. This type of innovation is essential to delivering an Internet of Things enabled world and the United Kingdom remains a world-leader in this regard. Government policy should continue to focus on developing the United Kingdom's significant intellectual capital in this area.

A related issue that will emerge is who will be the aggregator of Internet of Things services. Internet of Things services will be of most benefit when delivered to a consumer who is able to have a single point of access to their Internet of Things services – it remains to be seen whether the provider of these services will be telecommunications network operators, utilities or providers of content services. Government needs to understand who bears this relationship and where appropriate ensure openness in the deployment of Internet of Things services.

### ***Keeping things safe***

Safety, privacy and security are major challenges for the Internet of Things. As technology becomes increasingly intertwined with everyday life, society as a whole must consider whether there are appropriate protections in place – in particular with regard to safety, privacy and security. There are many risks, including the disclosure of significant amounts of personal information, fraud and other crime (e.g. the unauthorised take over of a car, access to a home's electricity service to deactivate security alarms in order to commit a burglary, knowing whether someone is at home or not).

Europe has a robust data protection framework which plays a crucial and legitimate part of the Government's response to meeting public expectations of privacy. However, it is also fair to acknowledge that the European data protection framework may hamper the deployment of certain Internet of Things applications given its highly prescriptive approach.

## **Smart Cities**

Bird & Bird has been acting as a thought leader in relation to Smart Cities for some time and is well aware of the potential for Smart technologies to benefit UK business, exports and society.

With more than half of the world's population already living in cities and the urban population likely to nearly double in the next 40 years, Smart urban technologies are likely to have a significant potential to contribute to creating a new UK economy. As one of the world's most innovative economies the UK can both contribute to, and benefit from, those exciting new market opportunities.

### ***But why just cities?***

Unlike Smartphones or Smartcards, the "Smart City" is a marketing buzz word or policy label, rather than a coherent technological change or solution. It also overlaps almost entirely with the Internet of Things and Big Data (few Smart City projects would not also fall into one or more of those categories). We welcome the fact that the Consultation Paper has clearly defined the objectives it would wish Smart Cities to achieve (i.e. where "Smart" means ICT enabled). Nevertheless, we suggest that Government critically re-examine whether a focus on Smart "Cities" is better than approaching ICT-enablement from a perspective that is not so specifically tied to solely urban terminology.

The phrase Smart Cities usually serves as a catch-all for all manner of potentially beneficial ICT deployments, some of which may have special relevance, in an urban environment, such as those designed to combat traffic congestion. However many, perhaps most, Smart City solutions would seem equally relevant in sub-urban or rural areas (Smarter Grids, for example, can assist in load balancing in cities, micro-generation in rural areas and demand side reduction in both) or may even have greater relevance to rural or sub-urban locations (such as e-learning or telemedicine). It may be that UK policy should focus on Smarter Communities rather than Smart Cities.

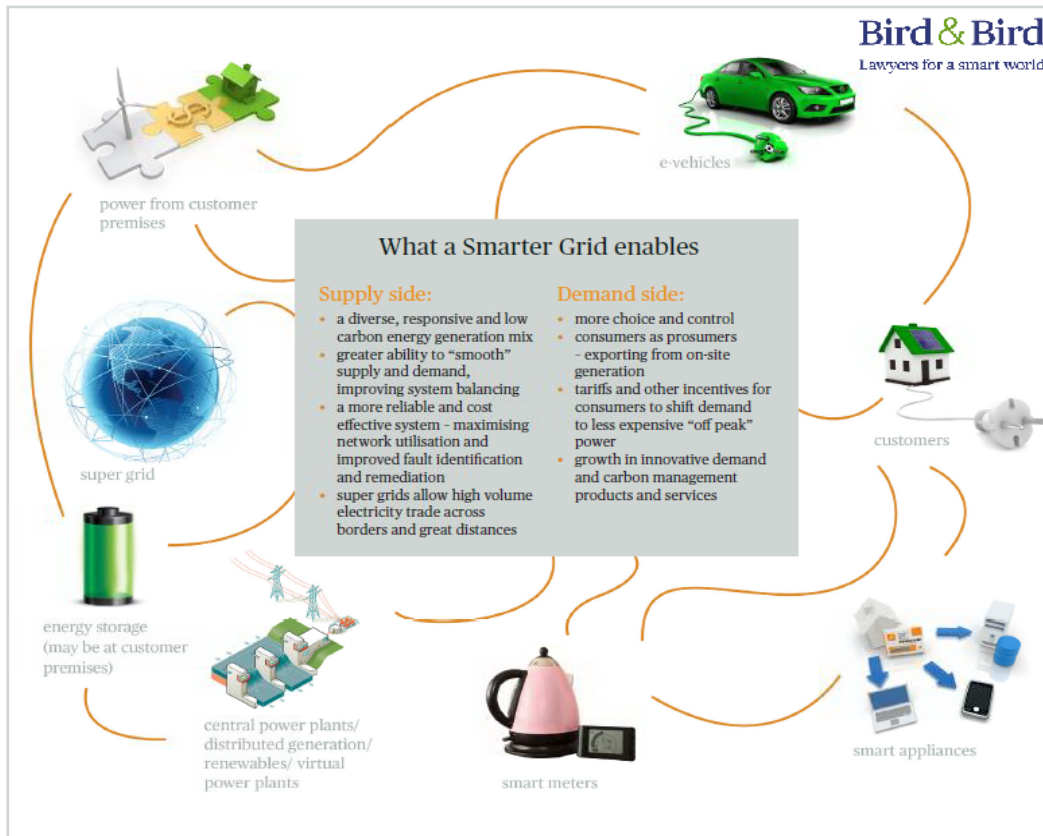
An often overlooked example of how the UK might become a global Smart tech hub is provided by a region, rather than a particular city. For example, the SMART Cornwall initiative, supported by Cornwall Council, has a clear vision of making Cornwall the heart of a new Smart energy eco-system.

### ***Why can't we be smarter?***

The key barriers to Smart projects in the UK and EU include incredibly robust planning, environmental and green belt laws; low levels of population and city growth (in Europe less than 1% of housing stock is replaced every year); existing highly developed infrastructure that reduce incentives to replace adequate with Smart; and, poor future prospects for economic growth or increased public investment. Many of these "barriers" exist arguably for good reason or, in any event, are unlikely to be alterable in the short to medium term.

There has been a history of cost overruns, disappointing returns and deflated hype on a number of private and public sector "Smart" projects. Also, as we have indicated in other areas, one key challenge for Government and operators in the Information Economy is varying degrees of consumer resistance to potential privacy and/or civil liberties implications. Smart City projects inherently allow civic authorities and collaborating businesses to collect and process more data about individuals. Holland's plan to introduce Smart metering was derailed in 2009 by a public backlash and insensitive handling of public concerns. This will need to be handled sensitively in the UK and a strong, public case made for any smart technology deployments.

One of the most interesting challenges faced by Smart projects is that of collaboration. Large projects usually require collaboration by a large number of suppliers and stakeholders who will usually have divergent business drivers and objectives. There is opportunity here for Government to explore new models of public-private collaboration and gain-sharing. Smart Grids are just one aspect of Smart Cities but even the concept of a Smart Grid would include a significant number of separate concepts, each of which, in turn, includes a large number of potential technology and investment avenues (as the following diagram demonstrates):



### ***Being smarter requires focus***

For Government there is a challenge of deciding where to focus support, and the risk that incentives and initiatives produce a large number of small projects with no overall strategic plan or outcome. It is important that any UK strategic vision for "Smart Cities" has a focus.

The UK should look to build on the foundations of existing commercial success and of comparative advantage. Many Smart City technologies, such as those that may revolutionise healthcare or distance learning, have strong synergies with sectors in which the UK is already a world leader (such as pharmaceuticals or higher education). Access to often significant EU smart project funds (the EU's Smart Cities and Communities Innovation Partnership has a €365 million budget for 2013) may also represent one such competitive advantage which the UK should ensure its firms and local governments make the most of.

In our view Government intervention in the economy (whether directly through spending or indirectly through regulation or deregulation) is most likely to be beneficial, welcomed and sustainable where it creates the widest possible benefit across government and society. The areas that produce direct social benefits will often overlap with sectors in which the government is already a major player whether directly (e.g. health spending) or through regulation (e.g. energy). Government should consider how to make best use of such existing 'tools'.

## **Big Data**

In many ways Big Data is not a new concept having existed for many years in the guise of operational research and analysed mostly by governments in connection with war efforts or public health programmes. Recent years and the “information revolution”, however, have seen an exponential increase in the sources and uses of Big Data. Machines, devices and networks are constantly producing data which are often of simply too great a volume for any human interface to consider or analyse. This incredible and continuous production of – both structured and unstructured – digital data coming from the widespread use of digital devices and on-line systems is pushing both governments and businesses to seek to define Big Data strategies.

Big Data is likely to drive innovation through software companies, service providers, internet-based businesses and similar service offerings, all the way up to large holders of Big Data. Increasingly, the Big Data itself and its analytic usefulness turns out to be the core asset of many business transactions. These transactions and the associated need to manage the Big Data and carry out the analyses is turning into a major point of interest for CIOs and a focal point of attention at Board level. Providers of software solutions are growing exponentially in this dynamic segment of the IT industry, with smart innovators competing against large multi-nationals to provide scalable and integrated Big Data solutions. The continued growth of data volumes is also one of the drivers of the increasing global demand for data centres and related services.

### ***Ownership of Big Data***

Key to being able to exploit Big Data is whether and to what extent anyone can claim proprietary rights in Big Data – be that the data itself or a database comprising that data. There is no simple answer to this as it will often depend on the nature and source of the data, whether or not is structured and who has done that structuring. Existing legal frameworks in respect of confidential information, trade secrets and intellectual property rights – most specifically copyright and database rights – are all relevant, but without providing definitive answers. This is not an issue specific to the UK as many jurisdictions are only now awaking to the fact that their legal systems do not provide sufficient guidance on the proper protection of Big Data.

The value of an organisation could be substantially increased where it actually owns, has access to and is able to use and analyse Big Data in compliance with the law. Clarity over the assessment of the proprietary rights and the legal framework around their exploitation is vital for any kind of trade or evaluation of Big Data and therefore a pre-requisite to any investment being made. By seeking to establish some certainty in this area the Government would likely encourage such investment.

### ***The role of Open Data***

Our comments above should not be taken to mean that all Big Data should necessarily be subject to ownership rights that will result in more general access to and use of that data being restricted. One of the key roles of the Government will be to balance the value to be gained from Big Data being a valuable asset which can be exploited and monetised – not just by private enterprise, but by universities and other public bodies, too – with the potential benefits of certain data being publicly available and usable as espoused by the Open Data movement.

As the Consultation Paper notes, Open Data is a concept most usually (but not always) associated with data held by public sector entities. Public sector entities generate and possess



enormous amounts of data which can in many cases be sensitive or secret in nature. This obviously needs to be managed correctly and utilised effectively, both to improve public sector performances and help generate savings and also to be able to provide open data to citizens and business entities.

The Government is already heavily involved in this area having published its Open Data White Paper last year and established the Open Data Institute. This emphasis on demonstrating the commercial value of Open Data and working with the private and public sector and academia in its exploitation is to be welcomed. However, the Government should not lose sight of the need to dovetail initiatives such as this with the assessment of the appropriate proprietary rights as mentioned above.

In a number of circumstances public bodies could benefit as much as private bodies from being able to exploit the data that they hold and in some instances (e.g. the National Archives) are already generating significant revenue streams from commercial exploitation of public sector data. The Government may wish to consider whether and in what circumstances this approach should be justified. Additionally, the commercial exploitation of Big Data could be extremely valuable to academic and other research institutions. Accordingly, part of the balancing act will be to identify how and what legal frameworks – be that in respect of proprietary rights, Open Data or a combination of the two – should apply to whom and indeed whether a differentiation depending on the source of the data is justifiable.

The Government approach in respect of Open Data is also to be welcomed as the need for common standards and compliance with a Code of Practice is well recognised. However, given the multitude of sources of data it seems likely that significant investment will be required before all applicable public sector data resources can conform. We would encourage the Government to make such investment if it really is determined to add value to the success of Big Data analytics. Failure to do so will pass the associated costs on to the private sector which will hinder their involvement particularly for SMEs and innovative start-ups that will likely be at the heart of a thriving Information Economy.

### ***Big Data Protection***

While Big Data is not always affected by data protection issues – in many instances personal data plays no role at all – privacy concerns are likely to be an obvious factor in any Big Data strategy. The multitude of sources feeding into Big Data, related issues of data controllership and the applicable law result in regulatory complexities which are very difficult to resolve. The controversial areas of user sentiment and social data analysis, cross referencing and mixing of data obtained from various and diverse sources trigger high demand for a safe and secure legal framework that can protect both data users and suppliers.

Clarity and certainty in this respect is always to be welcomed. However, there is already a sophisticated legal framework in place and so the Government's role is unlikely at this stage to need to involve significant additional legislation. Instead the Government should seek to guide and inform users as to how the existing framework applies, particularly as developing technologies continue to identify new uses for the data in question. The Government should also have a communications role in respect of raising public awareness of the potential benefits brought about by Big Data, such as better health outcomes and lower prices, and also of the safeguards that are already in place as a result of the UK data protection regime.

## **e-Commerce**

'e-commerce' began as the buying and selling of products and services online but now includes a bewildering array of digital content, streaming and subscription services. It is another broad term covering almost any commercial transaction concluded online.

We believe that there are three key areas which the Government could focus on to further stimulate the expansion of e-commerce within the UK. The first is increasing confidence in the key rights and obligations of online buyers and sellers; the second is ensuring access to reliable, fast and affordable connectivity to as wide a market as possible in the UK to continue to support the constant innovation happening in this space (particularly in the creative and media space where the UK is again a world leader).

### ***Rights online***

In our experience, there are still many potential buyers and sellers within the UK who are dissuaded from utilising e-commerce due to a lack of confidence in the method of transacting and fear of what happens if things go wrong.

Particular concerns for buyers (particularly consumers) include security of personal data, the risk of fraud, lack of trust in the seller and fear of being bombarded with spam following a sale. These fears are often compounded when the seller is located outside of the UK.

Similarly, potential sellers have concerns around the rights which are afforded to purchasers, fraud and potential unknown costs. Again, many sellers are concerned when the buyer is outside of the UK.

However, many of the concerns are unfounded and arise due to the ignorance of the protections which are already afforded by UK law to online buyers and sellers. For example, many buyers are unaware of the protections offered, for example, under the Consumer Credit Act [1976], the Data Protection Act [1998] and the Consumer Protection (Distance Selling) Regulations 2000. Similarly, many sellers are unaware of the "country of origin" principle enshrined in the Electronic Commerce (EC Directive) Regulations 2002 or that many consumer rights throughout the EU have a consistent origin via EU Directive (or that consumer rights across Europe will take on a further level of harmonisation in December 2013 when the new Consumer Rights Directive comes into effect).

We believe that there is little need for further legislation in this area. Instead the Government could do more to both (i) consolidate and develop the online information available to potential buyers and sellers – particularly to ensure that relevant information is grouped together in a logical and easily accessible manner; and (ii) publicise to consumers and businesses in the UK that this information is available.

For example, whilst information regarding data protection can be found on the ICO website, and there is a wealth of information regarding 'Consumer Rights and Issues' on the BIS website and the OFT gives guidance on the Consumer Credit Act, we are not convinced that buyers and sellers know where to look for this information. Even when accessed, it is, at times, not particularly user friendly. We note that the Citizen's Advice Bureau "advice guide" site is useful [www.adviceguide.org.uk](http://www.adviceguide.org.uk) but not particularly widely publicised.

In much a way as the Digital Switchover was extensively publicised, and the annual tax filing deadline receives a great deal of media coverage, we believe that confidence in e-commerce could be enhanced by a simple campaign highlighting the existence of the various rights and obligations and informing potential buyers and seller of where to get more information.

### ***Slick shopping online***

The quality and robustness of the UK's broadband and mobile infrastructure are key to encouraging further uptake in e-commerce activities. Many current initiatives undertaken by the Government are to be welcomed, particularly the recent announcement of the £100m investment in the UK's first ten "Super-Connected Cities" – and the subsequent £50m investment which is scheduled.

Whilst we accept that, given the population distribution, it is logical to focus this investment in major cities, we also believe that e-commerce will become a more viable prospect for many if there is also encouragement to roll-connectivity target coverage of 100% of the population. Accordingly, whilst we also welcome the Rural Community Broadband Fund and hope that the fund achieves its aims, it is worth remembering that many SMEs and consumers are located in medium sized towns, which may fall between the Government's investment scheme aims. We would encourage the Government to take a holistic approach to encouraging investment in underlying digital infrastructure nationwide.

We have also seen a shift from our clients in the last few years from concluding e-commerce transactions using PC towards a rapid uptake in m-commerce (using mobile devices to conclude transactions) – particularly in relation to the use of downloading and streaming mobile content. We also welcome the recent 4G auction awards – and hope that the Government will encourage the winning bidders to swiftly roll out their solutions and to seek to achieve as wide a population coverage as possible in a short period of time.

### ***Encouraging Tech Start-Ups***

A significant proportion of tech start-up companies engage in e-commerce activities. Whilst the current Government has actively promoted the tech start up environment in a variety of initiatives more can be done to encourage this sector.

One of the key differentiators between the tech start-up environment in the UK , as compared with the US West Coast, is the demand for the start-ups to develop a positive revenue stream within a very short space of time.

Many successful recent US tech start-ups have taken some years to develop a revenue stream (eg. Facebook and LinkedIn). It is unlikely that if these companies had started life in the UK that they would have been encouraged to develop to the same extent as in the US. The "Freemium" approach to building a customer base through free services has become an accepted business model in the US.

This is not just an issue of the statutory framework in which start-up companies operate. The more significant issue is the desire of the UK funding community to see a positive revenue stream developing almost from the first day the start-up opens for business. This places strains on UK tech start-ups so that a greater proportion of UK tech start-ups do not succeed through their early years.

The Government should review the tax environment and incentives for investments in tech start-up companies so that the UK funding community focuses more on capital growth and eventual long-term profitability, rather than shorter term revenue generation.