

Comments on the strategy set out in

## Transformational Government

from

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### **Introduction**

HMG has published *Transformational Government: enabled by Technology* and invited comments.

The author of these comments has been deeply involved with information and communication technologies for more than 40 years. He was a member of the Information Technology Unit in the Cabinet Office from 1981 to 1983 and of the CCTA's Strategic Assignments Consulting Service in the 1990s. He speaks only for himself with the freedom made possible by independence from vested interests.

The report is a missed opportunity. Technology could enable us to transform our nation's position in the knowledge economy but to do so it has first to transform government's attitude to technology. As well as the ability, there must be a willingness to achieve such a transformation. That willingness in turn depends on seeing the vision as a goal worth striving for, not as a fate to be avoided.

These comments are selective. The response wastes no time on applause for the many sensible proposals. It focuses on the flaws. Section 1 addresses some internal inconsistencies – a common symptom of drafting by committee. Section 2 points out that information *technology* cannot enable that which information *science* has proved to be impossible. Section 3 criticises the persistence of a world view from the latest generation of information technology in the last century. Section 4 concludes that the needs of government have taken precedence over the opportunities for the United Kingdom. Quotations from the report are in grey boxes, pared to the minimum necessary to illustrate the point.

Two themes are interspersed with the main argument. The first is Geographic Information Systems (GIS) where past success threatens to lead to failure in the future. The second is the 2012 Olympics which is visible on the horizon, its physical infrastructure planned, under construction and appraised for its impact in the Thames Gateway but its collision with the advancing knowledge economy hardly considered. Many other examples could have been used. The author is currently directly interested in these two. These themes are in un-shaded boxes.

Technology enables transformation; transformation raises issues in the domains of science, technology, business, economics, politics, law and ethics. Globalisation is a reality for science, technology and much of business. Our economics and politics are constrained, and our law and ethics strongly influenced, by the rest of the world. The Death of Distance is a reality. Change is accelerating. Transformation is inevitable but we have some choice on where it takes us and how we get there.

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## 1. The report is internally inconsistent

### 1.1 The appetite for change is limited

The Prime Minister supplied the foreword.

#### Foreword

*The world is changing around us at an incredible pace due to remarkable technological change.*

*This process can either overwhelm us, or make our lives better and our country stronger. What we can't do is pretend it is not happening.*

*.....*

*What delights me most though is that this strategy has come from the ground up. It shows that there is a real appetite for change and modernisation within the public services themselves.*

Yet the cultural shift needed for that *real appetite* requires the achievement of a major cultural shift by strong leaders.

*40. The Shared Services agenda is a major cultural shift for the wider public sector.*

*To implement it:*

*(1) Ministers, Permanent Secretaries, Councillors and Chief Executives must give strong leadership.*

Without coherent, joined-up leadership, the appetite on the ground will not develop. It will remain an enthusiasm of a few eccentrics.

*42. Coherent, joined-up leadership and governance across government are essential to ensure the vision and programmes set out in this strategy are achieved and that the opportunities for technology to enable change continue to be identified, communicated, managed and delivered effectively. Complex reform requires consistent pressure to be applied across the whole system for a number of years.*

Leadership is needed to introduce innovation. Technological innovation develops from scientific invention and is hard to suppress. However, business and administrative innovation has to overturn cherished practices. Bureaucrats in particular are wary of change. Information and communications technology has not merely enabled transformation, it has driven it. However, the transformation is more evident outside government where market forces reward innovation than within it where the capacity to resist change is robust.

### 1.2 Knowing what is enabled by technology and making it happen are two very different things

*51. There must be effective processes to ensure continuing innovation. ... [T]he CIO Council should ... work strategically with the Department of Trade and Industry in their support of research, knowledge transfer and international partnering in relevant business and technology areas.*

*21. Achieving the vision will require three key transformations:*

*....*

*(3) There must be broadening and deepening of government's professionalism in terms of the planning, delivery, management, skills and governance of IT enabled change.*

Achieving the vision will require not just three, but **four**, key transformations.

*(4) There must be broadening and deepening of understanding by elected representatives and officials of the extent and rate of change caused by information technology and of the threat from abroad if we are slow to take advantage of it.*

“Transformational” government still thinks in twentieth century terms, where economies of scale were needed to make computers economic. It needs to think how its systems can collaborate with other systems serving users here and abroad to deliver greater wealth and welfare. In effect, it needs to update its vision and get the leadership to recognise it.

The technologies which underpinned the agricultural and industrial revolutions spread slowly because the systems, such as settlements and factories, were not themselves changed mainly by improvements in the underlying technology; social and economic developments determined the rate of change.

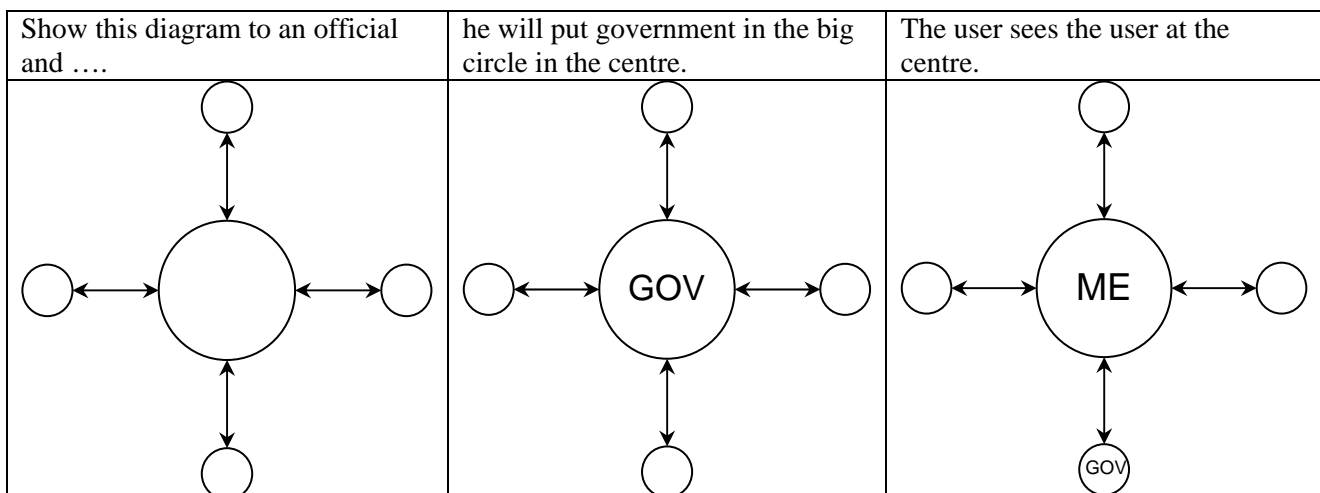
Information technology is used to improve information technology which is why Moore’s Law has held good for half a century: the cost of the capacity to process a given amount of information halves every two years or so. With better computers, we can design even better computers so the learning curve is indeed strictly exponential. Most of the computers in the world are now idle most of the time; most of those which are not idle are used for entertainment. There is no need to use them as efficiently as we did half a century ago when users made appointments for computer time.

The consequence of very cheap IT is a transfer of relative power from the centre to the periphery, from supplier to customer, from government to citizen. When knowledge is recorded into software, or music into digital files, it can be shared with insignificant consumption of labour, energy or materials. With better software, we can make still better software; we can share knowledge and the tools to use knowledge. In particular, in a transaction between government and a user, the user may know more than government. Successful businesses have been enabled by IT to use their users’ knowledge.

### 1.3 User-centric services come from thinking like, not merely about, the user

*21. Achieving the vision will require three key transformations:  
(1) Services enabled by IT must be designed around the citizen or business, ...*

The authors of the report talk about putting the users at the centre of the system, but by “user focussed” they mean clearer exposure of their target so they can hit it more easily. They do not mean to let the user choose how, let alone whether, or by whom to be hit.



18. ... In the last five years progress has been made towards addressing some of these issues:

...

- *Customer centred delivery: Directgov and Business Link have started to introduce a different way of looking at online services, with the focus on customers rather than the service provider.*

The examples, DirectGov and Business Link, illustrate the point. Try saying what you want instead of looking through what is on offer<sup>1</sup>. The service delivery model is still based round the organisation and its remit from government, even though it has organised the information around the citizen or service rather than the provider.

Government is in a competition for access to the citizen and its competitors are winning. It has to understand that technology has already transformed the 20th century relationship between the citizen and the state. It has changed travel, entertainment, finance, manufacturing, agriculture, education... so why should government be any different? Could it be because officials see ministers or, in local government, elected representatives as their most important customers? Becoming user-centric is counter-cultural if the user is not the customer. The market is the best source of feedback from the customer but most officials are uncomfortable with the discrimination inherent in the market mechanism for rewarding success and penalising failure.

#### 1.4 Government must not only learn from other sectors and countries but act on what it learns

22. *Services need to be designed around citizens and businesses ...*

.....

*(a) Systematically engage with citizens, business and front-line public servants to understand and then specify the transformational changes which service providers need to meet - learning from the best practice already within the public sector, from other Governments and from the private sector.*

Information technology affords opportunities to the citizen and to business, not merely ways of meeting needs. Public funds are voted to meet needs, not to provide opportunities, so the providers of public services are at a disadvantage. They need to learn from their users without the benefits of price signals from the market place.

33. *To improve efficiency, effectiveness and customer value, action is required to improve government's use of these channels, including:*

....

*(5) Improvement in the use of search to access the government's web information, including exploring the potential for co-branded solutions with major search providers. This will learn from the way people now use the wider internet.*

In order to “do it differently”, it is essential first to think differently.

20. *So the challenge ahead is not just to "do IT better" in the context of the past models for delivery of public services. It is also about "doing IT differently" to support the next phase of public service reform - building services which are more joined-up, more personalised, more efficient and more effective in terms of policy outcome. This requires difficult, long-term, strategic change in the services of government, how they use technology, and how technology and skills are provided to support them.*

<sup>1</sup> Try, for example, to find out how you will have to dispose of old business computers from your home office when the WEED directive comes into force.

Users are not the same as “usees”. In a call centre, for example, the staff are users but the callers-in are usees. Users are consulted, trained and motivated in well-run organisations. Usees are not. During the last decade, usees have acquired technology, particularly PCs and mobile phones, which have transformed their relationships with businesses and each other. e-Bay is enabled by technology in the hands of usees, turning them into users. Unlike most users, they can exercise choice without having to change jobs. They can also find and combine with other usees to exercise market and political power. They have achieved strategic change in how they use technology and acquired new skills; they are enabled to make choices which were impossible a decade ago.

## 2. The proposed strategy flouts basic principles of information science

### 2.1 Technology cannot enable the impossible

King Canute demonstrated to his courtiers that government had no authority to repeal the law of gravity which governs the tides. No legislature can repeal the second law of thermodynamics, enable a perpetual motion machine and thereby resolve the energy crisis. No information systems professional would set out to build in practice a system which is impossible in theory. Yet this is part of the vision described in “*Transformational Government*”.

It recognises the problem.

33. To improve efficiency, effectiveness and customer value, action is required to improve government’s use of these channels, including:  
 (1) at least 130 major call centres in central government alone...  
 ...  
 (3) ... over 2500 government websites.

It also recognises that there are alternatives to bringing everything together by “rationalising”.

33  
 ..  
 (5) Improvement in the use of search to access the government’s web information, including exploring the potential for co-branded solutions with major search providers. This will learn from the way people now use the wider internet.  
 (6) Innovation with broadcasters and other content and infrastructure providers on the potential opportunity for delivering service directly to people’s homes, further fuelled by the digital switchover in broadcasting.  
 ...  
 (7) Giving citizens online access to their records and data held by government,...

It notes that modern government is dependent on reliable, timely information but not explicitly that modern users and businesses also need it.

10. Modern government – both in policy making and in service delivery – relies on accurate and timely information about citizens, businesses, animals and assets. Information sharing, management of identity and of geographical information, and information assurance are therefore crucial.

Ashby’s Law of Requisite Variety<sup>2</sup> states that “only variety (in the regulator) can destroy variety (in the system being regulated)”. If you cannot distinguish between two things, you cannot handle them

<sup>2</sup> LAW OF REQUISITE VARIETY was formulated by W Ross Ashby

(1) the amount of appropriate selection that can be performed is limited by the amount of information available.

(2) for appropriate regulation the variety in the regulator must be equal to or greater than the variety in the system being regulated. Or, the greater the variety within a system, the greater its ability to reduce variety in its environment through regulation.

differently. Conversely, if two things are meant to be identical, a difference indicates that one of them is wrong.

For an information system to be reliable and accurate, it must be able to check the information it holds against an independent source. The most obvious example is checking who is the perpetrator and who the victim of an identity theft. Scientific research is checked by other scientists repeating the experiments and by different kinds of experiments which should yield comparable results.

### **GIS: Getting the address right.**

Addresses are fundamental to social, political and economic activity. Unlike the co-ordinates of a place relative to a spatial reference frame, they are not the measured value of a physical attribute, such as longitude relative to the Greenwich meridian. The global positioning system measures the time it takes for radio signals to travel at the speed of light from the known locations of a few orbiting satellites to the receiver. By solving three or four simultaneous linear equations, the location can be determined. Nobody has intellectual property rights to the answer but they may have patents in the devices and the right to switch off the signal without notice.

Addresses existed before governments had any interest in them. People either knew where to find each others' homes, the church, inn, manor house or gaol, or asked someone who did. The Post Office was a government department from the 17<sup>th</sup> century and it found it convenient to record and later to standardise addresses. It collaborated with local authorities who needed addresses for censuses, voter registration, planning, taxation, inspection and so on. Mission creep followed. Instead of asking people where they lived or worked, government told them. This did not stop the owners renaming their houses. Authority over information led to responsibility, to work, to cost and eventually to value which had to be protected by copyright. Computerisation raised costs, improved quality, opened markets and produced revenue. It also showed that the same place could have different addresses or different spelling and that some places had no address although the people living there knew where it was and told others. Linking occupants to addresses to co-ordinates is administratively convenient ("joined up government") and useful to commerce. Standardisation of formats and spelling helps greatly.

New technology enables the transformation of address systems. In particular, it can bypass the IP defences of the *de facto* monopoly suppliers by collecting and collating data from many sources. Address users can share data compiled by delivery services, mobile phone users, community groups, political canvassers, aerial surveyors, estate agents and the public at large. Mobile phones will know if they are at home and their home address and could respond automatically to short messages. Web-cams can survey shop fronts on streets and report the names over windows. Shoppers can point to their homes on a screen to show where they want their purchases to be delivered.

These developments are in the interests of users but not of the monopoly suppliers. The OFT is considering the OS monopoly. The plan for a National Spatial Address infrastructure is being reconsidered. The ID card bill calls for registration of the addresses of all card holders. It is clearly time for a fundamental rethink in the context of new technologies enabling new address services.

In particular, competition will improve quality through redundancy. When there is only one source and it is wrong, how can an error be corrected?

A corollary of the Law of Requisite Variety is that the response time of the controlling system must be shorter than that of the controlled system. Government was slow to change its systems to reflect the spread of the internet. The public procurement process for IT has a characteristic response time of a few years from recognising a need to full roll out of a system. The need to change the procurement system was recognised two decades ago but the system for changing it takes even longer<sup>3</sup>.

<sup>3</sup> When I worked on the development of SIMAP, the Systeme d'Information pour le Marche Publique, more than a decade ago, it had to be based on the French model from the nineteenth century. This model does not tolerate a variety of approaches for different kinds of deliverables, only for different kinds of purchasers such as military or civil.

Sir Tim Berners-Lee<sup>4</sup> describes the web as a platform: a fabric across sites that are co-operating. Individual sites harness collective intelligence. “Mash-ups<sup>5</sup>”, named after hip-hop mixes of two or more songs, are websites programmed to pull together content from a number of sources. They are as quick and easy to set up as blogs and their creators often ignore intellectual property rights. By the time governments can agree on changes in the law on IPR – the controlling system reacting to a change in the system to be controlled – they will be as common as e.g. pornography on the internet.

Bill Gates, talking to members of the British Computer Society last October<sup>6</sup>, said that “web services protocols that embed XML let us think about software development in a new way - service oriented architectures”. Sites built in this way enable other sites to “mash-in” their functions, not just their data: knowledge is shared, not just information. HM Government is still preoccupied with data sharing. It has yet to come to terms with the “idea of creating a web-site for collaboration, rather than sending dozens of e-mails back and forth between members of a group, [which] will enable people to work together in ways that suit them”. Technology enables transformations outside government faster than the government’s regulatory system can control.

Government, like business, must “learn to let go”<sup>7</sup>. *“Companies outperforming their peers today -- and not teetering on the edge of the flattened globe -- have adopted an approach to building the 21st-century business in which they find their place not by strengthening their command and control posture, but by focusing on core expertise, collaborating with partners in innovative ways that drive value and growth for all participants, and strategically sourcing the rest.”*

## 2.2 Relative costs of the factors of production in information systems continue to change rapidly

*14. Moreover they increasingly fail to meet the needs of modern government and the rising expectations of customers:*

- *Many systems and processes are still paper-based and staff-intensive. The underlying assumption is that customers will fill in forms and that staff will process them by routine rather than by risk-managed exception.*

When computers were expensive and slow, it made economic sense to centralise the information and ignore the consequences of errors. It was also sensible to use forms to reduce the variety exhibited by the real world to a standard subset which the system could handle. The loss of information was tolerable because the gains in efficiency were substantial. Likewise, high volume, low variety mass production and interchangeable parts spread the benefits of the industrial revolution.

Inevitably, the capacity to process variety as well as volume led to mass customisation: treating people as individuals not as members of a large class. Users are used to being treated as individuals by business and expect the same of government. They will not understand why government wants simultaneously to classify them into Customer Groups, reducing variety, while introducing an ID card system to recognise that each is different, thereby increasing variety in the system to cope with the

<sup>4</sup> “The web is more a social creation than a technical one. I designed it for a social effect - to help people to work together. The ultimate goal of the web is to support and improve our web-life existence in the world. We clump into families, associations and companies. We develop trust across the miles and distrust around the corner.”

<sup>5</sup> The Wikipedia entry defines a ‘mashup’ as: a website or web application that seamlessly combines content from more than one source into an integrated experience.

<sup>6</sup> ITNow Jan 06 p17

<sup>7</sup> Linda Sanford, **Business Week**, 2006-01-09. Linda Sanford is an IBM senior vice-president who leads the company's internal business transformation. She is author of the new book “*Let Go to Grow: Escaping the Commodity Trap*” (Prentice Hall), written with Dave Taylor

inherent variety of people. A “whole customer view” is needed at delivery time (“case work”); a group view is needed for service planning (“policy making”).

In the old systems, data were collected once in anticipation of need and re-used many times. Encyclopaedists and lexicographers tried to do much the same in the XVIIIth century. Today we use our personal computers to gather information when we need it from many sources, using search engines, comparison shopping services, hotel and flight listings and the like. The Internet and world wide web enable billions of people to collate vast sets of information in seconds; software helps them to extract knowledge from the collection. Standards, particularly for marking up data so software can process them for human readers, underpin the collating process. The semantic web will take a further step: allowing software to understand the meaning of data, either from mark-ups or from context. Web services are being developed as resources that other web services can call upon without prior arrangement. In particular, they enable data sharing on demand and the routine comparison of the contents of one file with another. For example, a newly submitted CV could be checked immediately against registers of qualifications to confirm a claim.

Collaborative systems of this kind have the capacity to evolve in response to changing needs. A new requirement, such as a check on job applicants for police cautions as well as convictions in the UK or abroad, can be handled by adding a question to an existing system. Intermediaries will run web services which know where to look for answers (as human librarians do), often by calling web-services which work for other users. (The banks’ clearing systems work this way and have developed, e.g. procedures for handling cheques that bounce.) New web services will enter the market where gaps need filling.

### 2.3 Technology transforms intermediation

One of the most visible changes brought about by IT is in “intermediation”. LastMinute.com has put travellers in touch with suppliers, bypassing travel agents; Google has bypassed librarians for some types of research; Amazon bypasses book-sellers; Oyster cards obviate ticket staff; cash dispensers cut out cashiers. At the same time, new intermediaries make price comparisons, advise citizens, arrange dates, provide market places and auction rooms, check references and credit, and so on. The Official Journal of the European Union is an essential intermediary in public procurement. It is so large that it has in turn spawned intermediaries, for example to alert potential suppliers of new invitations to tender.

A user-centric intermediary is the opposite of a “portal”. It helps the users to find what they seek whoever might provide it; a portal improves access only to the offerings of suppliers selected by the portal operator. (Contrast independent financial advisers who work for their clients with insurance salesmen who work for their employers.)

*33. To improve efficiency, effectiveness and customer value, action is required to improve government’s use of these channels, including:  
(6) Innovation with broadcasters and other content and infrastructure providers on the potential opportunity for delivering service directly to people’s homes, further fuelled by the digital switchover in broadcasting.*

Broadcasting uses a one-way signal and provides access to an audience. It is sender-centric. If the government wants to use technology to transform government services by making them more user-centric, it should exploit the new forms of intermediation made possible by the developments in ICTs at the end of the last century.

When members of the public look at services on offer, they see a great variety; when service providers see customers, they also see variety. Either can reduce the variety with which it must cope by going through an intermediary. Most patients go to hospital courtesy of an intermediating general

practitioner who has told the hospital what to expect and may have helped the patient to select a consultant. When paying by cheque, both payer and payee use intermediaries. The transport of goods in international trade from manufacturer to purchaser may involve several intermediaries. So does much public purchasing. Users often use banks as intermediaries to pay government and other creditors or go through the Citizens Advice Bureau rather than traipse round Town Hall or Whitehall.

Government services should be made available through many intermediaries, not just through many technologies<sup>8</sup>. Users can select their intermediaries who represent their interests, not those of their suppliers. In the pre-IT world, there were lawyers, men-of-affairs, agents, bankers, brokers, priests, physicians, friends at court, tutors and others who acted for individuals who could afford their services. ICT has made intermediation affordable to the many, not just the few.

ICT-enabled intermediaries could hold personal information (as banks hold money), obtain information from government, provide proof of identity, prepare and present claims, pilot their clients through the unfamiliar shoals of bureaucracy, share knowledge and provide advice. The users would have a choice of persons, both natural and legal, who would represent their interests against powerful organisations. Government would avoid the cost of systems which could cope with the full range of user needs.

## 2.4 Systems which compete in the marketplace must either improve or die.

This is an evolutionary process which no amount of intelligent design can surpass. The price mechanism is still important for feedback but other user behaviour can be observed, such as hits on a website. Government needs to use competing channels for distribution, not to grant monopolies. The PSI regulations of 1 July 2005 specifically mandate equal terms for all re-users. It follows that, as in the commercial world, government should not compete with its own distributors. Ofcom had to step in when BT charged broadband service providers more to use its lines than it charged its own broadband business. Technology enables competition to transform the quality of information services. The strategy should not protect public sector monopolies.

*48. A further programme of work on the management and control of technology enabled business change will be put in place to build upon the foundations established by the Office of Government Commerce. This will ensure that not only the successful delivery of major projects but also confidence and controls to ensure the reliability of successful delivery. In particular:*

*(4) The development of a new technology enabled project methodology and control tools drawing from best practice in the private sector.*

*...*

*(6) A "continuous improvement" approach to learn and disseminate emerging best practice.*

Information technology has caused time to contract. New products replace old in the market for mobile handsets in a year but cars have models which change only marginally in a decade. New releases of software arrive annually and the basic system is obsolete in five years. Planning horizons have to be shorter in order to cope. Procurement cycles need to be transformed. The Official Journal process takes so long that some costs might drop by 50% and some may rise unexpectedly between submission of tender and award of contract. As with the military, in the real world plans do not survive contact with the enemy. Success depends not on delivering to plan, but on changing the plan quickly in the light of new information and thereby achieving the goal.

<sup>8</sup> See the Report of the Strategy Project Team, Annex B, particularly paragraphs B3 and B7. The latter picks up a proposal from the Cabinet Office IT Unit from 1982 (IT year).

## 2.5 Information assurance depends on redundancy

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*(6) Information Assurance: despite the difficulties of a fast moving and hostile world, underpinning IT systems must be secure and convenient for those intended to use them.*

Since well before the time of double entry book-keeping, getting to the truth has required the comparison of one view of it with another. Identity theft and fraud can be detected only by comparison of one claim with another. A single system allows history to be rewritten.

Identification depends on linking a unique biology (determined essentially by a person's DNA) with a unique biography (gathered by interactions with other people in various places). Biometers measure biology; information systems record parts of biographies. ID systems bring the two together. More or less fallible memories provide one means of checking the biography. Other information systems now offer an alternative, making biographies more difficult to falsify and incorrect links between biology and biography more difficult to create and sustain.

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*(7) Identity Management: government will create an holistic approach to identity management, based on a suite of identity management solutions that enable the public and private sectors to manage risk and provide cost-effective services trusted by customers and stakeholders. These will rationalise electronic gateways and citizen and business record numbers. They will converge towards biometric identity cards and the National Identity Register.*

Identification is a service to citizens and customers. It should be provided by competing intermediaries, not by government. Like the services which look after peoples' finances, ID services should be regulated by government but provided by businesses. They should be sold around the world; British is a trusted brand in the marketplaces of the knowledge economy. My identity service would hold my biography and biometrics in accordance with government standards; it would answer questions as required by law and as instructed by me; it would protect my privacy; it would check my claims and vouch for them to others; it would indemnify users of information about me against the consequences of errors; and it would fight for the rights of its customers against government or business if necessary. Among the records which I would entrust to such a trusted third party is my medical history. And you, the reader, could check the annex to this paper "about the author" automatically as you read this on the screen.

*39. A new Shared Services approach is needed to release efficiencies across the system and support delivery more focussed on customer needs. Technology now makes this far easier than ever before. Shared services provide public service organisations with the opportunity to reduce waste and inefficiency by re-using assets and sharing investments with others. Tackling this will be a major challenge as government prepares for the 2007 Comprehensive Spending Review*

IT enables government to ensure the provision of services to the public without providing them itself. Government should share services with the private and voluntary sector and with the user.

### 3. The world view is rooted in the last century

#### 3.1 The current view has not caught up with the future vision

*99. However the vision is not just about transforming government through technology. It is also about making government transformational through the use of technology - creating and retaining the capacity and capability to innovate and use technology effectively as technology itself develops. This is the only way in which public services can keep up with a continually changing, globalised society.*

Equating the **delivery of public services** to the **delivery of services to the public** was a common mistake until the end of the 1970s. All governments since then have accepted that their role is to ensure that essential services are provided, not necessarily to provide them. Since other prosperous states have a different split between public and private provision, there is evidently no one correct formula.

In a continually changing, globalised society there are, and will increasingly be more, opportunities to sell services to foreign publics. Public funds are voted for services to the UK public, precluding the public sector from venturing abroad except in specialised niches when organised as a trading fund. The UK Hydrographic Office is a rare example.

*55. Beyond 2011 should be a period of further radical change in the delivery of public services, enabled by technology. The cycle of technological advancement is rapid and hard to predict.  
(5) The market and other governments will have set new citizen expectations and created new opportunities for government in the UK to exploit.*

Some things are predictable; indeed the DTI's Foresight Programme publishes valuable predictions about technologies and their applications<sup>9</sup>. HM Treasury also makes regular predictions. Forecasters rely on the recurrence of cycles and the persistence of trends. They also know that unexpected events are to be expected: Tsunamis, terrorist strikes, stock market crashes. They understand risk and probability. The insurance industry flourishes. So do most bookmakers most of the time.

There are cycles in technological advances but they are quite long<sup>10</sup>. To the observer at the time, the growth part of the cycle looks like a trend. ICTs have been advancing for sixty years on the back of electronics, particularly of semi-conductors. We can reliably forecast the development of ICTs by the 2012 Olympics.

#### **2012 Olympics – spectators' personal digital assistants.**

Most of the spectators in the Stratford Stadium in 2012 will carry PDAs which combine several features into one device: mobile phone, wallet, identity card, ticket holder, maps, positioning system, messaging, camera, medical record, language translator, internet access, games console, TV screen, diary. They will be dependent on it to find their way to a seat, get access to the stadium, understand the action on the track, place bets, buy food, find friends and keep in touch with home.

<sup>9</sup> See for example: [Intelligent Infrastructure Systems](#), launched 26 January 2006 or the earlier project on [Cyber Trust and Crime Prevention](#). The report of the Strategy Project Team has a good short Appendix A on Technology Futures but does not address the issue of how officials and their political masters should learn enough about them.

<sup>10</sup> Students of economics will be familiar with the controversial theory of half-century long "super-cycles" described by Soviet economist Nikolai Kondratiev who stated that Western capitalist economies were susceptible to high performance volatility. He claimed to have predicted in the 1920s the stock market crash of 1929, also known as Black Thursday on the basis of the market crash of 1870.

Some of the cameras, for example, will be almost as capable as an outside broadcast camera today. It's images can be transmitted by wireless broadband, combined with those from thousands of others, mixed with advertisements and delivered to a few interested viewers among an audience of billions. The traditional broadcasters and the IOC's intellectual property rights will prove unenforceable.

The security authorities will be able to locate individual spectators in the stand from their seat reservations, point their surveillance cameras at them and talk to them via their mobile phones. In effect, they will have them tagged. They can link an individual to a record in an international identity database, so they know when and where they crossed international borders and how they travelled.

The biggest opportunities are not those which government in the UK could exploit, but those which businesses in the UK can exploit by extending to the world the services which they supply to the public in the UK.

### 2012 Olympics – sports medicine.

Olympic athletes get injured occasionally and their fitness is crucial to their success and livelihood. Their preferred doctors may be in their home countries; so too may be their medical records. During the 2012 Games, they may need to consult both urgently.

Tele-medicine is well-established, for example by the military who dare not risk scarce medical specialists in the front line. In 2012, clinics in Docklands could be networked with sports medicine specialists around the world, delivering care locally on the basis of remote guidance. The UK team in Beijing could demonstrate this (in reverse) in 2008.

The global market for such services will be worth £billions per annum. If they are to be delivered from the UK to a global network of clinics by our medical services industry, rather than by those of our competitors' in the knowledge economy, then our information systems, legal and insurance arrangements, training and marketing have to adjust to global operations. In particular, we must be able to handle foreign medical records, not only for athletes but also for visitors. Our systems could manage billions of health records on behalf of citizens of other countries, not just when they are abroad.

The current NHS information systems projects are focused on the domestic needs, not the global opportunities.

## 3.2 The lowest cost to government may not be the best value for the nation

*34. Overall government should steer citizens and businesses to the lowest cost channels consistent with meeting policy objectives and customer acceptability.*

The policy objective should embrace the Lisbon Agenda<sup>11</sup> with respect to the global knowledge economy, a big sector of which is services to the public.

*39. A new Shared Services approach is needed ... Particular attention should be paid to the following areas:*

*(3) Common Infrastructure, where as government services converge around the citizen and organisations adopt commercial off-the-shelf technology solutions, the ability to share items of common infrastructure increases. ...*

*(4) Data Sharing: data sharing is integral to transforming services and reducing*

<sup>11</sup> Since the launch of the Lisbon Agenda in 2000, the EU has had in place an ICT strategy which provides an overarching framework for the Commission's and Member States' ICT policy. It recognises the key role that ICT can and should play in promoting economic growth, labour productivity and social inclusion.

*administrative burdens on citizens and businesses. But privacy rights and public trust must be retained. ...*

Services need to be shared with the private and voluntary sectors and generally provided by business to a global market. The following perspective is too narrow, as the reference to a Comprehensive Review of Spending indicates. The need is to raise gross national revenues, not merely to reduce costs. Services need to be shared with other sectors and the world, not just to reduce waste and inefficiency in government here.

39..

*(5) Information Management: to facilitate the move towards more collaborative working on issues that involve a range of government organisations, common standards and practices for information management will be developed, with an effective range of tools to allow the most efficient use and sharing of information to all those across government that have a legitimate need to see and use it.*

Information in the public sector needs to be shared with outsiders too. The government needs to implement the Re-use of Public Sector Information directive which it introduced by statutory instrument on 1st July 2005. No funds were provided to train staff in most of the thousands of public authorities affected by the regulations so many do not know where their re-usable information is concealed. The information assets are unregistered so no outsider can work collaboratively with officials to unearth commercially valuable data. Records management systems cost time and money to implement but are not a priority for most holders of the sort of electronic information which re-users seek.

*56. It is likely therefore that the planning for this era will be based upon a vision that sees citizens and businesses increasingly serving themselves - at home, in work and public places and on the move; public servants truly dependent on technology to discharge their professional roles; policy makers regarding technology as crucial to designing policy and achieving policy outcomes; and backed by a government delivery network in which the boundaries between departments, between central and local government, and between public, private and voluntary sectors continue to be less important and less visible to the citizens and businesses. This may seem very radical by today's standards. But with strong foundations laid in the next few years it should be entirely achievable.*

OPSI has promoted click-use licences in central government, enabling self-service. These foundations were laid a few years ago, showing what is enabled when attitudes are transformed by technology. PSI re-users need to serve themselves across the whole of the public sector, which depends, as in a supermarket, on good labelling and reliable stock control.

The terms of reference of the Service Transformation Board should require it to consider the national interest, not just that of government. Regulatory Impact Assessments are now familiar features of policy making through legislation. The STB should be required to publish its assessment of the wider impact of transformation. The suggested CIO Scorecard<sup>12</sup> makes no mention of these "externalities".

### 3.3 Outside government, strong foundations were laid years ago

The "government delivery network" should have merged with the national and global network by the end of the last century but the attitude that "the public sector is different" prevailed. Twenty years ago, government thought that it needed bespoke office automation systems; now it uses the same as everyone else. It has adopted the internet protocol at the "e" level.<sup>13</sup> It is still uncomfortable with the "i" in FOI and PSI, legislation that was conceived in the sixties and eighties respectively. In the

<sup>12</sup> Report of the Strategy Project Team, Annex D

<sup>13</sup> "e" for electronic underpins "i" for information which in turn supports "k" for knowledge; "e" data processing (edp) superseded mechanical data processing in the sixties and seventies; "i" underpinned the systems of the eighties and nineties (remember iT82?); "k" got an honourable mention in the Lisbon Agenda in 2000.

knowledge economy, information has to be shared in a manner analogous to the sharing of electronic systems through information technology a generation ago.

The current collaboration between government and commerce on e-crime, although belated, is a welcome portent. Government needs the knowledge and skills of those protecting global financial systems; financial services providers lack the authority vested in, and the understanding of crime developed by, those in the criminal justice and regulatory systems. Technology has enabled the villains but it could also enable those who are fighting them if they can develop protocols analogous to TCP/IP for sharing intelligence. In this area as in others, government needs to exploit the knowledge of uses and users, who will expect in return to share government's knowledge.

*7. The specific opportunities lie in improving transactional services (eg. tax and benefits), in helping front line public servants to be more effective (eg. doctors, nurses, police and teachers), in supporting effective policy outcomes (eg. in joined-up, multi-agency approaches to offender management and domestic violence), in reforming the corporate services and infrastructure which government uses behind the scenes, and in taking swifter advantage of the latest technologies developed for the wider market.*

Seizing these specific opportunities to improve the operation of government is a good start. However, the real opportunity lies in joining up with other sectors to make them more effective, not least in global markets and in serving users and uses.

As the report says:

*39. A new Shared Services approach is needed to release efficiencies across the system and support delivery more focussed on customer needs.*

*An overall strategy for geographical information will be developed under the leadership of the Geographical Information Panel recently created by Ministers.*

### Geographic Information

In the eighteenth century, the Ordnance branch of the army mapped Britain and the hydrographers of the Royal Navy charted the oceans of the world. The data they and their successors processed into information was sold to users in other sectors and other countries. Their knowledge and capital assets sustained their dominance of the market for GI, despite the establishment of other national mapping agencies (NMAs), until late in the last century.

Changes in technology have changed the market for, and the economics of, GI. Surveying now relies on satellites, lasers and digital images, not theodolites, sextants and chains. Navigation has been transformed and de-skilled by electronic bridges and in-car displays. The basis of competition has changed for GI as it has for music, films, news services, sport, gambling, software and other publishing industries based on intellectual property.

The argument that the public interest is best served by a public monopoly was sustainable when resources were scarce. The BBC argued this case when independent television was mooted; so did the GPO before mobile telephones. Quality of service could be ensured only by concentration and regulation, because spectrum and networks respectively were too valuable to misuse.

Technology has enabled transformation in the basis of competition. Quality is assured by user choice, not by control of the means of production and distribution. The Office of Fair Trading is now considering the position of our NMA, the Ordnance Survey. Technology enables its transformation from a trading fund with a privileged position in the UK market into a global competitor for the users' custom. The arguments adduced in the last century are as obsolete as the technology.

Europe has begun to deploy Galileo to provide competition for the US-owned GPS, which the American government could decide to switch off. The failure to agree on a National Spatial Address Infrastructure\* indicates the need for alternative sources of address information which are not the

intellectual property of the OS and Royal Mail. Local authorities, businesses, charities and individuals know the locations of homes and business premises. Satellites and aerial photography can geo-code them and motoring organisations can provide directions to get there. Google and Microsoft are on the substitutes bench for this game.

\*see the response of the Association for Geographical Information to the invitation to comment.

### 3.4 Competition drives the exploitation of innovation

*51. There must be effective processes to ensure continuing innovation. To encourage the development and design of better, more joined-up services as technology itself develops, the CIO Council should sponsor the accumulation and sharing of research, knowledge and innovation.*

Government, as regulator, needs to ensure continuing innovation by preventing monopolies, whether public or private, from abusing their power. Dominant players in any industry can afford to lobby government for continued protection. The privileged position of GPO telecommunications survived an extra decade into the 1980s because it had “the monopoly of the ear of government”. Almost every person to whom government could turn for advice on telecommunications worked for or depended on the GPO. Similar campaigns were waged by the BBC, the ITV companies, some utilities and even ICL when it was our national champion. Monopoly ensured that there were no British competitors to express a different view. Foreigners waited to move in.

Government, as customer, needs to procure systems which use innovation. This requires a different approach to managing risk and a better understanding of risk management by critics in Parliament and the Press. Innovation requires a toleration of small failures in the expectation of great successes. Two or more approaches may have to be carried through to operational trials or even to full implementation.

Government, as service provider, needs to recognise that developments at e, i and k (electronic, information and knowledge) levels have changed the world in which government operates, as successful businesses have recognised. For business, the key to growth is collaboration. For government, collaboration is the key to delivering more for less. The information technology developments in electronics and photonics (silicon chips and glass fibres) reduced almost to zero the costs of copies, and of transfers, of information (maps, music, data bases..); much of the cost of originating material, like this paper, has dropped dramatically. The cost of distilling knowledge from information and of sharing it has fallen with the internet and worldwide web (both at i- level). When the k-level delivers over the next decade or two the semantic web and knowledge services which can recognise, for example, errors and deception, criminal behaviour, impending failure and inconsistent arguments, the cost of knowledge will fall. The demand then will be for wise use of knowledge: transformation in policy-making, strategy development and risk management.

## **4. The strategy reflects the needs of government rather than the opportunities for the UK**

### **4.1 Increasing opportunities is even more important than reducing costs**

8. Overall this technology-enabled transformation will help ensure that:

- Citizens and businesses have choice and personalisation in their interactions with government...
- Taxpayers benefit from efficiency gains.
- Citizens, businesses and the voluntary and community sector benefit from the better regulation, reduced paperwork and lower costs ..
- Public servants have better tools to undertake their jobs, and the opportunity to provide better service as a result.
- Policy makers will be better able to achieve intended outcomes in practice.
- Managers are able to free resources from back office to the front-line.
- Citizens feel more engaged with the processes of democratic government.

Increasing opportunities for new export businesses is more important even than reducing burdens on business. The businesses we have not yet got will not squeal about poor regulation or burdensome taxes. Most citizens, businesses and taxpayers will welcome marginal improvements in a tiresome but, for most, a low priority activity: dealing with government.

Technology has transformed our position in the world and every other nation's. We can see our competitors succeeding in foreign markets including our own, using their advantages in the knowledge economy: more graduate engineers; lower cost, better educated, multilingual office staff; demand for innovation. Abroad, the British brand symbolises integrity; it is trusted. We could be selling a lot more services than we do.

#### **GIS: charting the waters of the world.**

The UK Hydrographic Office has supplied the world with knowledge of the oceans for two centuries. Much of the knowledge comes from the Royal Navy. Its charts are available both as paper to spread on chart tables and as electronic files for display on screens. It was established in its global market at the apogee of the British Empire and it has held its place by using new technologies, first in surveying, chart making and printing, later in electronic distribution and satellite positioning. It is a model for commercial success in the global knowledge economy.

Should it follow QinetiQ into the private sector?

The House of Commons Trade and Industry Committee noted in its report on "Progress towards the Knowledge Driven Economy" that, according to Professor Michael Porter, the UK was relatively poor at commercialising the output of its research base. Their witnesses generally agreed with this analysis. QinetiQ told them that knowledge transfer was a part of innovative success where the UK had had a poor performance record in the past and that in the future the UK must: "urgently transform its ability to translate research and knowledge into innovative products and services that can provide profits." The Royal Academy of Engineering told them that they had found that all too often: "UK educational sector R&D is often not turned into commercial success". They believed that outputs from the research base needed to be combined with marketing and other commercial skills so that ideas could be effectively developed into successful products which would create wealth.

The same analysis applies equally to technology-enabled innovation in the public sector. The benefits to government are usually achieved but they are not developed into successful products which create wealth from exports. Much of the knowledge is transferred to foreign multi-national corporations who are good at finding markets for it.

*53. 2005 & 2006 The current volume of change is stretching the capacity and capability of the government teams and their suppliers to deliver. Major new programmes are already in the pipeline, such as the Olympics, the Census and identity cards. So the next eighteen months must focus on:*

*....*

*(6) Working with government and public services at all levels - central government, devolved administrations, local government and other public services - to identify areas of common purpose and opportunities for specific shared actions.*

The 2012 Olympics will require a shorter campaign than the development of the British Empire. However the Games are typical of the opportunities opening up in the knowledge economy which others will spot if we do not. The dominant aspects of the programme are human and physical: athletes and buildings which will be long gone before London again hosts the Olympics. The legacy could be a transformed Thames Gateway and an invigorated host community. It could also be a set of thriving businesses serving a global market for knowledge services if government chooses to enable them. This paper has already touched on identification, sports medicine and user-to-user video. Gambling on sport, local knowledge for foreign visitors, intelligent clothing and equipment for athletes and many other services enabled by technology are possible and easily imported into London if we do not seize the opportunity to develop them here and export them. Here is an opportunity for specific shared action, not just with government and public services, but with UK-based businesses, both new and established. There is indeed an opportunity for shared action but it pales into insignificance compared with the opportunity for new services to the world.

## **4.2 The government needs to work with the private sector**

It is not sufficient to work with “public services at all levels” to achieve a real transformation. Specifically, it needs to transform the thinking of public servants, many of whom see the private sector as a threat or enemy, not as a potential partner or collaborator. Most of their dealings with the private and voluntary sector are with suppliers, agents or clients.

Constitutionally, an official cannot place the interests of a partnership on whose board he serves above the interests of government, unlike a director or trustee who can act in his personal capacity as company law requires. Intermediaries outside government can do so. This independence is a key characteristic of professionalism which is difficult to reconcile with the mutual loyalties underpinning traditional lifetime employment.

## **4.3 Professionalism is necessary but not sufficient for successful transformation**

In most of the long-established professions, the client’s interests are paramount. (Exceptionally, in the Church, the institution takes precedence over the individual). When the client is an institution, such as government, the professional may have to consider the greater good. The profession as a whole may have to support an individual member against his employer.

It is not professionalism but competence to a professional level that is needed for Transformational Government. Continuous professional development is essential: for some roles this requires experience in other countries and industries, for others experience in earlier or later links in the supply chain. Those with such broad experience can draw on the deep knowledge of specialists provided that both have learnt to work in a team.

*41. Government’s ambition for technology enabled change is challenging but achievable provided it is accompanied by a step-change in the professionalism with which it is delivered. This requires: coherent, joined up leadership and governance; portfolio management of the technology programmes; development of IT*

*professionalism and skills; strengthening of the controls and support to ensure reliable project delivery; improvements in supplier management; and a systematic focus on innovation.*

The step change in professionalism is needed particularly in system architecture and design. In other engineering disciplines, the names of architects are associated with their works. The design is commissioned first and the builders are contracted to put it in place, usually under the watchful eye of the architect acting on behalf of the client. The design competition sparks innovation whereas the design and build contract rewards tradition. For an example from civil engineering, see the highest bridge in the world, the recently-opened Millau viaduct designed by Lord Norman Foster and implemented with innovative construction techniques by French engineers. In ICTs, new technologies are generally better and cheaper than old but require greater skill for pioneers to apply for the first time.

#### **4.4 The management of risk in government systems needs transformation**

In central government, most major new systems are unique. In local government, “Pathfinders” can meet new requirements in new ways in conjunction with their suppliers who can then go on to sell copies to hundreds of other LAs and thereby recoup the cost of pioneering. In central government, many new systems are unique so the requirement is for professionals versed in doing things for the first time. They have to lead expeditions into the unknown, not administer yet another similar project using PRINCE2. Contrast Sir John Hunt’s expedition to the top of Mount Everest in 1953 with the latest team queuing for access at the bottom and led by guides who have been to the top before. Colonel Hunt was a military man who recognised the mountain as an enemy seeking to defeat him with a surprise attack. His professional training fitted him to expect the unexpected and respond appropriately. Contrast that training with that of a civil servant which teaches risk avoidance.

Technology enables government to transform its attitude to risk. On the showing of this report, it will not risk doing so.

## ***Annex: about the author***

### **Adrian R D Norman**

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Adrian Norman has been involved in public policy issues relating to IT for forty years. His understanding of the technical, business and economic aspects of computing, telecommunications, broadcasting and electronic publishing has fitted him to advise governments and international agencies on policy implications. Conversely, his work for public policy makers on the regulatory, macro-economic, social, ethical and political aspects has been crucial to his studies for businesses and agencies who are planning new products and services for markets influenced by public policy.

He has worked in continental Europe, North and South America, Africa and Asia, as well as in international organisations, so his perspective on UK policy making is broad enough to encompass businesses and technologies with global impacts. He was educated at Cambridge (Maths and Physics) and Columbia Business School, New York. He is a Fellow of both the British Computer Society and Institute of Directors.

He has always been active in political and professional groups that study and formulate policy. He has also been an implementer of policy in government as well as an advisor. He knows and is known to many of those who influence public policy and has collaborated with some of them on boards, panels and committees. He has spoken, broadcast, lectured and written articles and books on these issues.

In 1979, he was the author of the Conservative Party's paper on IT which contributed to the manifesto. When the new government took office, he was drawn into the Central Policy Review Staff and then moved to the small IT unit of the Cabinet Office. Over the next two years, the unit ensured that all impacts of IT on the UK were understood by the responsible departments and incorporated into their policies. This also involved representing the UK in international negotiations on IT matters, participation in Bill teams and contributing to White Papers.

After returning to management consulting in 1983, he retained his interest in public policy, particularly through his membership of PITCOM on whose council he served for 20 years. In early 1987, he published papers predicting the imminent crash of stock markets which occurred in October. In 1989 he launched a broadband service business, using spare capacity on BSB's new broadcasting satellites which were superseded by Sky's earlier generation of technology. He understands risk.

After the demise of BSB, he returned to consulting, including a spell in the CCTA's strategic assignments consulting service. He was chairman of the Electronic Shopping Forum which discussed then novel concepts in the mid-nineties. Since then, he has been involved as a director and consultant with new enterprises seeking to offer new services enabled by technology. He now serves on the enterprise committee of the Worshipful Company of Information Technologists.