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A review of the ICT policy in the Netherlands and the UK

A study for the evaluation of the Swedish national IT-policy

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Foreword

The ITPS has been tasked with an evaluation of Swedish IT policy. This report is one of several projects commissioned by the ITPS to support its evaluation. It presents a study of ICT policies, their formulation and evaluation in the UK and The Netherlands, with the objective of contributing to the identification of good policy practice that could inform the development of Swedish IT policy.

Both the UK and The Netherlands are experienced in the implementation of a broad range of ICT policies and share similar generic policy objectives. Nevertheless, the report identifies substantial differences in the approaches to ICT policy in both countries. The UK's distinctive approach to ICT policy reflects a political structure that is much more centralised than in The Netherlands. In comparison, Dutch ICT policy is strongly decentralised to foster the emergence of bottom up initiatives. The approaches of the UK and The Netherlands – centralised vs. decentralised – have their own merits and problems. The main advantage of a top down centralised style is that it permits greater and more effective co-ordination, but tends to diminish the importance of the local environment and faces implementation difficulties. The emphasis on consensus seeking can lead to delays and stagnation in policy definition, but allows for more effective identification of user needs. The adequacy of centralising or decentralising approaches will depend on local political conditions *and* the stage of policy formation. In general, policy definition is likely to benefit from central co-ordination, while bottom-up approaches will usually be better suited to the implementation stages of an ICT policy.

The study was the result of collaboration between the Complex Product Systems Innovation Centre (CoPS)[1] in the UK and a group of Dutch ICT experts. The CoPS team led in the definition of the approach and carried out the British study. Jordi Molas-Gallart co-ordinated the study, edited the report and contributed to the UK study. Puay Tang and Steve Flowers conducted most of the research, interviews and analysis of UK ICT policy. The Dutch team was formed by Wim Hulsink (co-ordinator), Willem Gooijer, and Jack Spaapen. Andy Davies led the analysis of policy implications, to which the whole team contributed. From the ITPS, Hans-Olof Hagén was the director responsible for the assignment and Kurt Lundgren acted as project manager.

Stockholm in October 2003

Sture Öberg,
Director General, ITPS

[1] *CoPS is a research centre partially funded by the UK Economic and Social Research Council (ESRC). The centre is the result of a collaboration between SPRU (University of Sussex) and CENTRIM (University of Brighton).*

Innehåll

List of Acronyms

BECTA. British Educational Communications and Technology Agency
BBC. British Broadcasting Corporation
BNSC. British National Space Centre
BSG. Broadband Stakeholder Group
BT. British Telecom
CAT. Capability Assessment Tool
CATV. Cable Television Network
CEDAR. Centrum voor Dienstverlening Auteurs- en aanverwante Rechten [Service Center for IPR and neighbouring rights]
CfT. Computers for Teachers
CMPS. Centre for Management and Policy Studies
CPB. Commissie Bescherming Persoonsgegevens [Commission for the Protection of Personal Data]
CvdM. Commissariaat voor de Media [Media Commission]
DAB. Digital Audio Broadcasting
DCMS. Department of Culture, Media and Sports
DCS-1800. Digital Communications System (operating at 1800 MHz)
DH. Department of Health
DfEE. Department for Education and Employment
DfES. Department for Education and Skills
DRM. Digital Rights Management
DSL. Digital Subscriber Line
DTI. Department of Trade and Industry
DTV. Digital Television
DVB. Digital Video Broadcasting
DVB-T. Digital Video Broadcasting - Terrestrial
E-GIF. e-Government Interoperability Framework
ECP. Electronic Commerce Platform
EIU. Economist Intelligence Unit
ELO. Kenniscentrum Elektronische Overheid [Centre of Expertise in Electronic Government]
EPSRC. Engineering and Physical Sciences Research Council
ERMES. Enhanced Radio Messaging System
ESA. European Space Agency
ESRC. Economic and Social Research Council
EU. European Union
FE. Further Education
FOI. Freedom Of Information
FSU. Prime Minister's Forward Strategy Unit
GLA. Greater London Authority
GP. General Practitioner
GSM. Global System for Mobile Communications
HE. Higher Education
HERO. Higher Education and Research Opportunities
ICRS. Integrated Care Record Service
ICTU. ICT Uitvoeringsorganisatie [Dutch organisation for ICT in the public sector]
IDC International Data Corporation
IDeA. Improvement and Development Agency

IEG. Implementing Electronic Government
IP. Internet Protocol
IP. Intellectual Property
IPPD. Intellectual Property Policy Directorate
IPR. Intellectual Property Rights
ISP. Internet Service Provider
ITC. Independent Television Commission
ITER. Nationaal Programma Informatietechnologie en Recht [National Programme for Information Technology and Law]
ITU. International Telecommunications Union
JANET. Joint Academic NETwork
JISC. Joint Information Systems Committee
KPN. Koninklijke PTT Nederland [Royal Dutch PTT Netherlands]
LGA. Local Government Association.
LGOL. Local Government Online
LLNW. Lifelong Learning Network for Wales
LSP. Local Service Provider
LSPs. Local Strategic Partnerships
MLEs. Managed Learning Environments
MVNOS. Mobile Virtual Network Operators
NDPB. Non-Departmental Public Body
NGfL. National Grid for Learning
NHS. National Health Service
NICTIZ. Nationaal ICT Instituut voor de Zorg [National Institute for the use of ICT in the healthcare sector]
NLN. National Learning Network
NMA Nederlandse Mededingingsautoriteit [National Competition Authority]
NpfIT. National Programme for IT
NWO. Nederlandse organisatie voor Wetenschappelijk Onderzoek [Netherlands Organisation for Scientific Research]
OC&W. Dutch Department for Education and Culture
ODPM. Office of the Deputy Prime Minister
OECD. Organisation for Economic Cooperation and Development
OeE. Office of the e-Envoy
OFCOM. Office of Communications
OFTEL. Office of Telecommunications
OGC. Office of Government Commerce
OPTA. Onafhankelijke Post en Telecommunicatie Autoriteit [Independent Post and Telecommunications Authority]
OSOSS. Open Standards Open Source Software
OST. Office of Science and Technology
PETs. Privacy Enhancing Technologies
PCN. Personal Communications Network
PFI. Private Finance Initiative
PIU. Performance and Innovation Unit
PKI. Public Key Infrastructure
PPP. Public-Private Partnerships
PSTN. Public Switched Telephone Network
R&D. Research and Development
RCs. Research Councils

RCUK. Research Councils UK
RDA. Regional Development Agency
SMEs. Small and Medium Enterprises
Soctim. Society of Information Technology Management
SPRITE. Successful Projects in and It Environment Programme
SRIE. Senior Responsible Industry Executive
SRO. Senior Responsible Owner
SSC. Sector Skills Councils
SSDA. Sector Skills Development Agency
SU. Strategy Unit
TK. Tweede Kamer [Second Chamber (Lower House) of the Dutch Parliament]
TNO. Nederlandse organisatie voor Toegepast Natuurwetenschappelijk Onderzoek [The Netherlands Organisation for Applied Scientific Research]
TOP. Technological Opportunities Panel
TTP. Trusted Third Parties
UKERNA. United Kingdom Education Research and Networking Association
UMTS. Universal Mobile Telephone System
UP. User Panel
V&W. Ministerie van Verkeer en Waterstaat [Dutch Ministry of Transport and Public Works]
VECAI. Vereniging Exploitanten van Centrale Antenne Inrichtingen [Dutch cable operators association]
VWS. Ministerie van Volksgezondheid, Welzijn & Sport [Dutch Ministry of Public Health and Welfare]
WiFi. Wireless Fidelity
WIPO. World Intellectual Property Organisation
WLL. Wireless Local Loop
WTO. World Trade Organisation

Executive Summary

This report is the final deliverable of a study contracted by the ITPS to a team of researchers located in the UK and The Netherlands. The project was launched in mid-February 2003 with the objective of contributing to the definition of good policy practice (from policy definition to evaluation) that could inform the development of Swedish ICT policy.

The report supports ITPS' assessment of Swedish ICT policy and its work to develop long-term approaches to promote ICT use. To contribute to this work, this report presents a study of ICT policies, and their formulation and evaluation in the UK and The Netherlands. The UK provides an example of innovative ICT policy formulation in one of Europe's larger countries, while The Netherlands is a small-size European country where problems of scale, the type of political institutions and nature of the interaction between local and central government may be closer to those of Sweden.

Both the UK and The Netherlands are experienced in the development and implementation of a broad range of ICT policies and share similar generic policy objectives that have also come to characterise the policy approach of many other European countries. Both Governments couch generic objectives in similar terms. They are: increased accessibility to advanced ICT infrastructure, increased use of ICT-based services, closure of the "digital divide", the extensive and efficient use of ICT by government agencies, and the protection of market competition and individual rights in the new technological environments. Policy objectives and strategies are also shared at more specific levels. For example

- Both the UK and The Netherlands are favouring the establishment of Public-Private Partnerships (PPP) as a mechanism to implement policy decisions.
- Both countries are establishing a Government Internet portal, giving access to all kinds of government information and public services. The single portal is a natural response to the multiplicity of public agencies, organisations, services and types of information that acquire an Internet presence under the different e-Government initiatives.
- In the UK and The Netherlands there have been attempts to co-ordinate ICT policies across departments and government agencies (including national, regional and local authorities). However, the co-ordination agencies, whether they sit within an existing ministry like in the Dutch case, or are situated outside a ministry like in Britain, do not have authority over other ministries. In the absence of specific powers, they assume advisory and monitoring roles.

Nevertheless, the report identifies substantial differences in the approaches to ICT policy in both countries. Political and cultural differences certainly play a role in explaining such differences. The UK's distinctive approach to ICT policy definition, implementation and evaluation reflects a political structure that is much more centralised than in The Netherlands. The particular challenge facing the UK has been to develop ICT policies across numerous and diverse ministries, agencies and local authorities, and to implement ICT in a large public sector employing over 3.5 million people.

In comparison, Dutch ICT policy is strongly decentralised to foster the emergence of bottom up initiatives. In contrast to the UK's 'grand design' for ICT, the Dutch approach is to develop a consensus and 'shared vision' on how to move towards an information society. Achieving this objective requires consultation among a broad range of stakeholders in the policy definition stage, the development of programmes of action to mobilise support for the ICT policy vision, and reliance on autonomous private and public initiatives to implement it.

The report analyses some of the key issues where these differences can be observed and explores them to draw conclusions about different strategies and policy options that may be considered by Swedish authorities. Sweden's ICT policy has to account for the country's national specificity. Sweden is a geographically large country with a relatively small population, and has a strong tradition of emphasising local and municipal initiatives.

The report highlights five policy areas where Swedish ICT policy faces key challenges and where lessons can be drawn from the British and Dutch experiences:

1. **Strategy and policy co-ordination.** Despite its ambitious goal to make the rapid transition towards an information society, Sweden lacks an overall strategy to co-ordinate and implement its various ICT policies. The UK and The Netherlands recognise that policies have to be co-ordinated horizontally across different ministries and departments. Yet, they are facing difficulties to put in place effective horizontal structures as ministries and departments have resisted attempts to remove their control over ICT policy. The UK approach has tended to favour top-down co-ordination, such as through the Office of the e-Envoy, which is situated in the Cabinet Office, while Dutch ICT policy has placed more emphasis on achieving consensus on a shared vision of the information society. Consulting stakeholders, however, absorbs valuable time and this has led to delays in reaching strategic policy decisions. For example, the shift from supply-push to user-led policies took much longer to achieve in The Netherlands than in the UK.

2. **ICT infrastructure development.** As in other EU countries, Sweden aims to strike a balance between using the market to simulate the investment and promoting widespread access to the broadband infrastructure. Yet, the Swedish government faces a significant challenge in promoting access to the broadband infrastructure in a large country with many remote and sparsely populated areas. The failure to attract private sector participation in many parts of Sweden has created opportunities for numerous local organisations to establish and deploy local broadband networks. Clearly, the development and presence of diverse local broadband initiatives requires some form of higher-level co-ordination to provide standardised interconnections between different local networks. A similar situation has occurred in The Netherlands where local companies owned by municipalities have also been active in broadband markets. The need for stronger co-ordination between local and central government in broadband markets is recognised by The National Broadband Expert Group, appointed by the Dutch government in 2001. It led to the Government's decision to establish of a Broadband Expertise Centre, create a legal framework to govern the development of optical fibre networks, and allocate €6.5 million to help the municipalities to build optical fibre test beds.
3. **e-Government.** The development of e-Government is an important policy in Sweden. The government's success in promoting e-Government is demonstrated by the widespread diffusion of ICT-based public services. The main emphasis is on increasing citizen participation; yet, several policy officials we interviewed were concerned that too much emphasis has been placed on a creating a 'top-down' structure to promote the uptake of e-Government services. In their view, e-Government policies should build on the success of Sweden's home computer scheme by encouraging 'bottom-up' user-led initiatives. Sweden faces a choice in how to approach the development of its e-Government agenda. It can continue along the existing path of incremental policy initiatives or follow the UK's more radical approach by developing a coherent overall strategy for e-Government. If the latter path is chosen, the Swedish government will have to mobilise considerable cross-ministry support. As the UK experience shows, the establishment of an agency to deliver e-Government is no guarantee of success. The agency must have the power and political leadership required to tackle any resistance to change presented by the ministries, departments and other established interests.

4. **e-Health.** An important policy objective in Sweden is to use ICT to increase the efficiency of the healthcare system. The UK and Dutch experiences in e-Health present a stark contrast in policy approaches. Each country has developed e-Health policies that are well adapted to the contrasting structures of their health care sectors. The Dutch approach of developing numerous bottom-up initiatives for e-Health is well suited to the fragmented nature of the country's healthcare sector, composed of numerous institutions. The UK, by contrast, is able to develop and implement a centrally planned e-Health strategy because its healthcare sector is dominated by one main state-owned provider: the NHS. Unlike the UK, the Swedish Government has not developed an overall centralised strategy for e-Health, but has created a number of e-Health initiatives, both at central and local government level.
5. **e-Education**. Several e-Education policy initiatives were implemented in Sweden during the 1990s to develop ICT usage in schools, and the level of ICT access in schools is high. However, despite the many initiatives and the efforts to develop a national strategy, there is a perception that Sweden is performing poorly and could do better in e-Education. The problem is not the lack of ICT infrastructure to support e-Education policies, but the low level of ICT use within teachers' professional practice. The diverging experiences of e-Education in the UK and The Netherlands may provide some useful policy lessons on the trade-offs facing the Swedish government. On the one hand, the UK's e-Education policies have been driven by central government, emphasising supply-push initiatives. On the other hand, the Dutch Government's approach to e-Education emphasises the need to create a supportive environment for the adoption of ICT.

The overall policy implication for Sweden is drawn from the contrasting styles of the Dutch and British Governments toward policymaking and implementation. The approaches of the UK and The Netherlands – centralised vs. decentralised – have their own merits and problems. The main advantage of a top down centralised style is that permits greater and more effective co-ordination of the government's policy agenda and its implementation. Its main disadvantages is that it tends to diminish the importance of the local environment, which is generally closer to user needs, and it faces difficulties at the implementation stage when the agencies and departments in charge may resist the perceived imposition of policy practices.

The Dutch emphasis on consensus seeking to develop a shared vision can lead to delays and stagnation in policy definition. However, the Dutch Government's preference for a "light touch" and the practice of devolving policy implementation in many areas to local authorities allows for a more effective identification of user needs and, consequently, increases the opportunities for greater use of ICTs.

The Swedish policy process is, in general, closer to the Dutch system. But as noted above, sacrificing co-ordination of policy implementation for a persistent decentralised approach has risks. The adequacy of a centralising or decentralising approach will depend on the policy area *and* the stage of policy formation. In general, policy definition is likely to benefit from central co-ordination and the clear defini-

tion of policy objectives. The pursuit of policy consensus is likely, at best, to slow down the policy making process and, at worst, result in muddled policy objectives. Yet to force a centralising top down process on policy implementation is likely to encounter resistance from those in charge of implementing the policy, and may run counter to the political traditions and practices of countries with a diffuse distribution of political power. Bottom-up approaches will usually be better suited to the implementation stages of an ICT policy. Policy implications for each of the five "Swedish challenges" are elaborated in the Report.

The report is divided into three sections. The first section discusses the approach of the study, presents a summary analysis of the UK and Dutch ICT policy environments, and discusses their relevance for Swedish ICT policy formation. The second and third sections present a detailed structured study of ICT policy issues in the UK and The Netherlands respectively.

Drawing lessons from the study of ICT policies in the UK and The Netherlands

Introduction

This report is the final deliverable of a study contracted by the ITPS to a team of researchers located in the UK and The Netherlands. The project was launched in mid-February 2003 with the objective of contributing to the definition of good policy practice (from policy definition to evaluation) that could inform the development of Swedish ICT policy.

The study will support ITPS' assessment of Swedish ICT policy and its work to develop long-term approaches to promote ICT use. The ITPS is providing an evaluation and assessment of the Swedish Government's ICT policy, as part of a wider effort to ensure that different components of economic growth policy are evaluated. A key component of ITPS' assignment is the introduction of an international comparative perspective to the evaluation of Swedish ICT policy. This comparative focus should address the formulation of policy objectives, the policy strategies selected, and the processes of implementation and policy evaluation. To contribute to this assessment, this report presents a study of ICT policies, their formulation and evaluation in the UK and The Netherlands.

The report is structured into three sections. This first section presents the objectives of the study, its approach and the analysis of policy implications derived from the national studies. It presents the conclusions of the study and analyses the relevance of the British and Dutch cases for the Swedish policy environment. The detailed analysis of the UK and Dutch cases are then presented in Sections II and III respectively. These national studies discuss government objectives across different ICT policy fields, review a selection of ICT policies including procurement, regulatory and competition policies, and analyse the policy-making processes by which such policies are defined, implemented and evaluated.

The study was the result of collaboration between the Complex Product Systems Innovation Centre (CoPS)[2] and a group of Dutch ICT experts. The CoPS team led in the definition of the approach and carried out the British study presented in Section II. Jordi Molas-Gallart co-ordinated the study, contributed to Sections I and II, and edited the report. Andy Davies led the analysis of policy implications for Sweden presented in Section I. Puay Tang and Steve Flowers conducted most of the research, interviews and analysis in Section II, and contributed to Section I. The Dutch team was co-ordinated by Wim Hulsink. Willem Gooijer, Jack Spaapen and Wim Hulsink carried out the study in Section III and contributed to the analysis of policy implications in Section I.

[2] *CoPS is a research centre partially funded by the UK Economic and Social Research Council (ESRC). The centre is the result of a collaboration between SPRU (University of Sussex) and CENTRIM (University of Brighton).*

Approach

Country selection and timing

The terms of reference for this assignment ask for an international comparative approach to be developed. We draw on the experiences of two countries: the UK and The Netherlands. The UK provides an example of innovative ICT policy formulation in one of Europe's larger countries, while The Netherlands is a small-size European country where problems of scale, the type of political institutions, and nature of the interaction between local and central government may be closer to those of Sweden. Both the UK and The Netherlands are experienced in the development and implementation of a broad range of ICT policies. In the UK, Government's commitment to e-government is shown by its comprehensive strategies and implementation plans, and a target date of 2005 for universal rollout of broadband so that the British public may fully participate in the e-economy.

As in the UK, The Netherlands also developed strong "schools" in policy evaluation and pioneered several approaches to evaluation. For example, in order to keep pace with leading ICT developments in other countries, the Dutch Government has set up an annual internal ICT and electronic commerce monitoring mechanism, and bi-annual ICT-benchmarking studies.

We focus our study on the policies developed and implemented over the last 5-10 years. This covers policies launched before and after the "dot-com boom" and provides a broad array of initiatives. In the UK, this period coincides with the time of two consecutive Labour Governments following the Labour victory in the 1997 general elections. In The Netherlands we have taken 1994 as our starting date as this is the year in which the *National Action Plan on the Information Superhighway* was published. The National Action Plan set up the framework for Dutch ICT policy for the following years.

It is to be noted however that both Dutch and British IT approaches are, to a considerable extent, shaped by European policies and initiatives. The Sections below will, for instance, present the strong relationship between IT regulation and European Directives in the field. Further, general policy objectives and goals are also set at European level. Although our focus is at the national and regional policy level, it is important to note the European policies shaping and affecting them.

Framing the research

ICT policies concern the development and generation of new Information and Communication Technologies, and their diffusion and application across all types of activity, from manufacturing, public services to leisure and education. One of the main challenges that ICT-policy formation, implementation and evaluation faces is the "horizontal" character of ICT: ICT permeates virtually all social and economic activities; consequently, almost all areas of governmental activity will, in one way or another, be concerned with ICT. From a policy point of view this raises obvious co-ordination questions: the actions of different ministries and regional and local authorities may affect the same areas and may, occasionally, pull in different directions. Although the need for strategic co-ordination seems obvious,

there are many practical difficulties in harmonising the policies of different and autonomous public agencies.

From an analytical perspective, it becomes difficult to define the scope of "ICT policy" and the "ICT sector". Our study will have to address a broad range of issues and it is therefore important to organise our approach in a systematic manner. This section discusses the way in which we are going to differentiate across relevant ICT areas. This approach then guides the national studies presented in Sections II and III.

Information Technology is the term used to refer to a cluster of innovations based on microprocessors, electronics and computing. To account for the increasing number of interrelated technologies (e.g. telecommunications and Internet Protocol (IP) technologies), the more generic term Information and Communication Technology (ICT) is now used to inform many policy debates. These ICT-related innovations are having pervasive effects throughout the economy and society. They are not only creating entirely new products, services, network infrastructures, and leading-edge industries based on ICT, but also are affecting – *directly* or *indirectly* – almost every other sector of the economy, from industrial, commercial and public service applications to health and the leisure industries.

As with other major technological changes of this type, the growth potential of ICT may be difficult to realise unless accompanied by appropriate changes in policies, strategies, skills and capabilities, education and learning, patterns of work, institutions, and management styles. A comprehensive analysis of "ICT policies" must cover a broad array of vertical and horizontal activities. Government policies, in particular, relevant to the development and application of ICT technologies involve almost all ministries as well as local and regional authorities. To approach this broad area of enquiry, our analysis of UK and Dutch ICT polices (Sections II and III) has been divided into four inter-related fields:

- *Infrastructure: towards broadband.* A broad range of public policies, implemented at different government levels (from local to international) aim to support directly the development and deployment of advanced telecommunications infrastructure. At present, the common policy trend is the support for broadband technologies, including the deployment of advanced mobile phone technologies, digital television, and, in general, the provision of broadband and IP services to the home and businesses.
- *Regulation: towards convergence.* Even when new technologies exist, new ICTs cannot be readily deployed in the absence of a clear and supportive regulatory environment. The changing nature of ICTs, and their associated markets (both for technology and services) has required regulatory changes. The promotion of competition in communications infrastructure and services has been one of the key elements of change that requires a new regulatory environment. New regulations are needed to stimulate infrastructure development, facilitate access to key services, and support the development of electronic commerce. Further, as forms of communication that had henceforth been separated (radio, television, telephone, mail, …) are converging towards the use of common media

mainly through the use of broadband technologies capable of delivering a variety of services, so are the separate regulatory regimes starting to converge towards a single regulatory environment, as evidenced by the new Office for Communication (OFCOM) in the UK. In addition, the dissemination and use of ICT has generated new problems requiring novel legal frameworks, such as IPR legislation, and data protection and privacy regulations.

- *Public use: towards e-Government.* A key element in the diffusion of ICTs is their use by Government offices and agencies. ICTs can be used to improve the delivery of public services and enhance the efficiency of public administration processes. The indirect role of Government use can be twofold. First, as a large customer Government agencies can act as "first users" and influence the emergence of formal or *de facto* standards. Second, the use of ICTs for the delivery of public information and services can provide a powerful channel for the diffusion of these technologies among users. *E-government* is the term generally used to refer to the growing application of ICT in the public sector, with particular emphasis on their application for service delivery.
- *Learning and competences.* Government agencies can also play an important role in promoting the generation of ICT-related knowledge and technologies, their diffusion and their application in new environments. These policies, aiming at generating learning and improving competences can include, among others, the financing of research and development, the promotion of high-tech innovation clusters and incubators for start-up companies, and support measures to assist in the commercialisation of novel applications and the use of new ICTs across society.

To study the policy processes in each of these fields, it is helpful to distinguish four stages of policy development:

- *Definition:* It includes the processes leading to the definition of a policy agenda, the establishment of policy objectives, and their translation into rules, regulations and initiatives.
- *Implementation:* It refers to the processes by which policy initiatives, rules and regulations are executed, including the implementation of new legislation, the workings of regulatory bodies, the development of research programmes, etc.
- *Evaluation*. The processes and methods by which the efficiency and effectiveness of policies are monitored and assessed. Evaluation can be conducted by informal means, or through structured, formal mechanisms.
- *Feedback and learning*. How the evaluation results are used for further policy definition and implementation, be it for the deployment of new approaches or the adaptation of existing ones.

Our analysis of the policy processes in Sections II and III will address, wherever possible, the actors involved at each of these policy stages for each policy area.

TABLE 1 AN ANALYTICAL MATRIX

	Infrastructure	Regulation	Public Use	Learning and Competences
Policy Definition				
Policy Implementa-tion				
Policy Evaluation				
Feedback and learning				

The study will draw on the analysis of a broad variety of documentary sources, including reports, policy documents, regulations and legislation, articles and other publications. It must be taken into account that, often, the formal processes laid out in regulations and accepted practices are only an ingredient of policy formation. Instead, informal practices, overlaps, and disputes on emerging responsibilities are an equally important element to understand the ICT policy environment. An understanding of such informal processes and how they affect policy formation is needed when attempting to draw lessons for future policy development. To develop such an understanding, our study needs to go beyond the analysis of official policy documents: the information obtained from publicly available sources has been complemented and validated with interviews with current and past Government officials, heads of relevant agencies and other experts. Given the sensitivity of the issues explored we have conducted most of our interviews on a non-attributable basis. In total we have conducted 21 interviews (13 in the UK and 8 in The Netherlands), in addition to informal interviews with Swedish officials.

Key issues

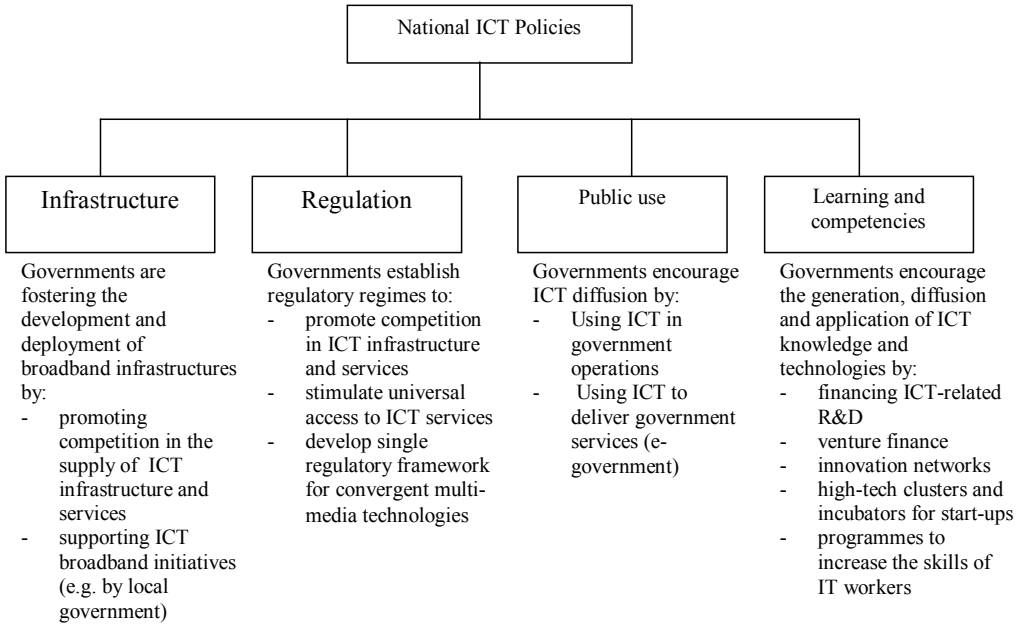
National ICT policies: the trend towards convergence

Government policy plays a crucial role in ensuring that ICT innovations are developed and diffused throughout society. The evidence suggests that there are marked differences in the development and diffusion of ICT across OECD countries, but that an increasing number of countries are adopting similar national ICT policies.[3]

[3] OECD (2003) *Seizing the benefits from ICT – an international comparison of the impacts of ICT on economic performance*, Organisation for Economic Co-operation and Development, DSTI/IND/ICCP, 2; OECD (2003) *Seizing the benefits of ICT – comparative country performance and policies for review*, Organisation for Economic Co-operation and Development, DSTI/IND/ICCP, 7.

Governments from across the political spectrum are embracing pro-competitive policies for ICT. In other words, 'the colour of the government seems to matter little.'[4] This trend towards ICT policy convergence has been given impetus by the promotion of free trade and competition in global ICT markets by international organisations such as the World Trade Organisation (WTO) and the International Telecommunications Union (ITU), and European Union (EU). Key features of this trend towards the convergence of national ICT policies can be summarised for each of the four main ICT policy fields (see Figure 1).

FIGURE 1 CONVERGENT ICT POLICIES



Infrastructure

It is now almost uniformly accepted that privatised and liberalised telecommunications markets – supported by pro-competitive regulation and the adoption of uniform ICT standards – are required to increase the deployment of national broadband infrastructures. EU governments also have accepted that these conditions underlie the effective supply, demand and diffusion of ICT.

[4] *OECD (1998)* Information Technology as an instrument of public management reform: a study of five OECD countries*, Organisation for Economic Co-operation and Development, PUMA, (98) 14, p. 13.*

Regulation

Regulatory regimes have been established to strike a balance between two key policy objectives. First, they are responsible for encouraging greater competition in ICT infrastructure and services to foster innovation and efficiency in domestic and international ICT markets. Second, regulatory policies promote 'universal access' to ICT services to individuals, households (particularly for lower income) and other public institutions (e.g. libraries and schools).

Public use

Governments are exploiting their role as a purchaser, user and provider of services using ICT to help accelerate the widespread diffusion of ICT. Government procurement (e-procurement) can help to stimulate ICT innovation by creating a large source of demand for ICT products and services. Rapid uptake of ICT has been promoted by providing public services on-line, such as health and education.

Learning and competencies

Governments are funding ICT related R&D programmes, such as high-speed computing and communications. These are increasingly organised as public private partnerships (PPP) between industry and government-supported laboratories and universities. In addition, governments have developed a range of indirect measures to support the development and use of ICT by business. These include policies to:

- offer fiscal incentives for R&D;
- enhance small firm access to venture capital;
- stimulate ICT use by small and medium sized firms (SMEs);
- strengthen the IT skills in industry.

In general the trend towards policy convergence is characterised by a shift away from direct state ownership and management of ICT policies to a near universal commitment to the use of competition aimed at promoting the development, diffusion and use of ICT. In the 1980s, many of the world's advanced economies used reform to create competitive telecommunications markets and to reduce the size and role of government. By the late 1990s, the emphasis had switched from 'less government to 'better' government policies for ICT.[5] Accordingly, government has an increasingly important indirect role to play in a more competitive and open environment:

- as a policy leader, responsible for setting the ICT agenda and making strategic investments in ICT;
- as a regulator, by encouraging competition and universal access;
- as an ICT user, purchaser, and provider of ICT-based services.

[5] *Ibid.*

Countervailing pressures: the persistence of national specificity

However, there are number of countervailing pressures working against convergence which may lead countries to follow their own distinctive national ICT policy paths. National policies are constrained or facilitated by a range of national conditions, such as social and legal norms (e.g. different approaches to data protection), the size of the ICT sector, the pool of ICT knowledge, training and education for ICT, the readiness for ICT uptake by businesses and citizens, etc.

Our study has shown that national specificity is clearly observable in five areas. They are

1. infrastructure;
2. political environment;
3. co-ordination strategies;
4. evaluation;
5. size of the public sector and its culture.

These are addressed in greater detail below. Yet, it is important to note that despite the integral role of national specificity in the policymaking process, there are also elements of policy convergence between the Dutch and British cases. We will also highlight these convergent policy areas. National specific policies and measures are by definition not easily transferable to different contexts, especially without radical and concerted effort on the part of political leaders. On the other hand, areas of policy convergence that can be attributed to specific decisions may be reproducible in other contexts.

Infrastructure

The role of government in promoting the extensive deployment of the ICT infrastructures is constrained by the capacity of the existing national ICT infrastructures based on legacy investments in telephone, data and cable TV networks. Policy choices for upgrading and deploying broadband ICT infrastructure are inhibited by the possibilities of the existing networks. The Netherlands, for example, has extensive coaxial cable TV networks based in the municipalities, which can be converted for broadband Internet transmission. In contrast, investment in cable TV networks is a recent phenomenon in the UK, where TV has been transmitted over terrestrial networks. As a result, the deployment of broadband communications in the UK has focused mainly on upgrading the large installed base of telephone lines.

Political Environment

Three different organisational models are being established by national governments to drive ICT deployment across leading industrialised countries[6]:

- Dedicated, cross-governmental organisation, within a Cabinet Office or equivalent agency.
- Dedicated organisation within the Treasury or Ministry of Finance, with some budgetary influence.
- Dividing responsibility for ICT implementation across several departments, such as the Ministry of Industry (e-commerce) and the Ministry of Interior, or equivalent (e-government).

Many factors such as a country's social norms, the size of its defence sector and its traditional political structures all influence how and for what purpose ICT policy decisions are formulated. Similarly, what levels of government are responsible for decision-making and the different ways in which policies are implemented affect the formulation and outcomes of policies. The presence or absence of a senior government official and committed political leadership prepared to drive the ICT policy agenda, as well as a supportive national regulatory regime, will vary from country to country. However, three factors play a vital role in determining how ICT policy is formulated and implemented.

1. Regulatory framework: the extent to which it favours the creation of a competitive (e.g. the UK) or a sheltered market environment (e.g. France, when state-ownership was an priority) for ICT goods and services.
2. Policy-making processes: ranging from more centralised (e.g. the UK and France) to more decentralised, consensus-driven decision-making processes (e.g. The Netherlands and Sweden).
3. The extent to which different levels of government – state, regional, and local or municipal – play a role in the promotion of ICT.

Our study has shown that these three factors underpin the UK and Dutch ICT policymaking process. Yet, key observations with respect to how the e-agenda will be implemented from our discussions with top UK Government officials point to another important consideration, which highlights the central role of national specificity. UK officials, for instance, coincided in pointing out that the main problems with policy formulation and implementation were: (a) the 5-year election cycle; (b) the usual two-year ministerial cycle; and (c) the budget cycle. Policy objectives are usually narrow in scope, tending to be individualistic; in other words led by the requirements of the minister or political official in charge. This being the case, there is often insufficient coherence or consistency between policy and implementation, which results in a disappointing level of "joined up government."

[6] *Booz Allen Hamilton (2002)* The World's Most Effective Policies for the E-Economy*, p. 15.*

Fortunately for Britain, the political stability provided by two terms of Labour Government has allowed for a somewhat longer-term perspective in policy implementation. For instance, despite various ministerial changes, e-health policy has remained stable. Still, there is widespread belief among non-political Government officials that the short-term nature of political appointments results in a lack of coherence and consistency between policy definition and implementation. These are further exacerbated by a top-down governance structure.

In contrast, the Dutch trait of consensus in policy making has its limitations as well. Our study shows how the consensual nature of Dutch politics has had a clear effect on Dutch ICT policies. A main characteristic of Dutch ICT policy is its adherence to the development of a shared vision on the information society and a broad consensus on the use of the electronic superhighways. The main implementation strategy has consequently been based on the mobilisation of all parties involved (network operators, service providers, responsible ministries, local governments, etc.).

This consensus-driven effort, highly characteristic of the Dutch policy making process, has had several consequences that have gradually developed into obstacles in the policy implementation process. It resulted in lengthy and complicated procedures that hindered the ability of the responsible authorities to provide rapid responses as needed in a constantly changing environment. In seeking as broad a consensus as possible, policy making and implementation often became hesitant. This is clearly visible in the half-hearted attempts to liberalise the market, steering between maintaining a favourable position for the incumbent while ensuring non-discriminatory access for new entrants. The result was an ambiguous policy that in the end satisfied no one. Significantly, the excessive emphasis on the allocation of responsibilities to the appropriate decision making level has resulted in the loss of policy coherence.

The final result of consensual politics has been a decentralised bottom up approach, leading to an avalanche of projects and experiments that seldom produced the coherence required. Consensual approaches may, however, have allowed for the development of initiatives that could have been developed close to the context of application. The role of municipalities in Dutch ICT policy definition and implementation extends to the development of infrastructure, as shown in the case of the fibre optic “city rings”. Furthermore, the protracted process leading to the formation of the present Dutch Government has had a direct impact on policy definition. This resulted in the delayed launch of several initiatives.

The problem of short-termism is of course common to all democratic regimes, and it is a difficulty that is hard to address. The establishment of detailed long-term evaluation procedures and methodologies, however, could address at least the impact that political short-termism has on the approaches used for policy evaluation and monitoring.

Co-ordination strategies

In both the UK and The Netherlands there have been attempts at co-ordinating ICT policies across departments and government agencies (including national, regional and local authorities). Obviously, the lack of co-ordination could lead to initiatives overlapping or pulling in different directions. Furthermore, in many cases there is scope for interagency collaboration, but such opportunities are seldom exploited.[7]

In the UK the responsibility for co-ordination lies in a specialised office, the Office of the e-Envoy (OeE) situated in the Cabinet Office and staffed by seconded personnel from different ministries and agencies. In The Netherlands, there is a split responsibility. For specific applications the related ministry will be responsible for the setting of priorities and the policy details. For overall internal ICT policy, the Ministry of Interior bears the ultimate responsibility. Dutch lack of co-ordination is further exacerbated by the lack of a clear demand orientation, despite the multiplicity of initiatives. Instead, the stimulation of new services was largely seen from a technological and supply-side perspective, and, consequently, the main policy interest has been on infrastructure issues rather than service and user involvement issues. Furthermore, policy initiatives have been relatively indifferent towards the development of new services and applications.[8]

Given the horizontal and pervasive nature of ICTs, it is necessary for governments to pursue policy coherence and avoid unnecessary duplications of efforts. However, the co-ordination agencies, whether they sit within an existing ministry like in the Dutch case, or are situated outside a regular ministry like in Britain, do not have authority over other ministries. In the absence of specific powers, their role becomes more advisory and monitoring rather than imposing co-ordination. Moreover, resistance from individual ministries and departments can hamper co-ordination, as illustrated by the UK OeE's difficulties, despite its explicit co-ordination role. Still, it is arguable that its independence from a specific ministry has placed it in a better position to effect co-ordination than in the "split" Dutch case. However, OeE staff has been cut after Government, considered that it had not sufficiently met its targets.

The diversity of initiatives in the UK and The Netherlands is in part explained by the horizontal and pervasive nature of ICTs, which affect the activities of all public authorities. The result is a complex policy environment, with overlapping responsibilities, and a large range of, sometimes overlapping programmes. Co-ordination across the myriad initiatives and institutions is notoriously difficult.

Evaluation

As argued earlier, evaluation plays a key role in the policy process. Further, for policy to become a "learning process", it is a necessary condition that past policy efforts are systematically monitored and evaluated. Yet, ICT policy evaluation is

[7] *The Grid initiative in the UK provides one of the few exceptions.*

[8] *There have been exceptions, particularly at a local level. The city of Amsterdam has followed a bottom up approach based on proven demand for new ICT services, which could trigger other applications.*

not a straightforward matter. There are substantial methodological differences between assessing programmes whose effect is likely to be long-term and indirect (like many ICT programmes and most R&D initiatives), and the evaluation of policy initiatives with well-defined short-term objectives. The evaluation of the former is particularly difficult: where policy effects are likely to be long-term and indirect there is a broad variety of evaluation instruments, the choice of which is made difficult as there is no broadly established consensus for the preferred approaches.[9]

Neither The Netherlands nor the UK has been found to follow a systematic approach to ICT policy evaluation. In both countries there was an element of centrally co-ordinated monitoring, and, in addition departments and agencies carried out their own evaluations, mostly on an *ad-hoc* basis. This common shortcoming, however, manifested itself in different ways. In The Netherlands general monitoring revolves around a structured international benchmarking exercise. The degree to which measurable benchmark indicators that could be *attributed* to specific policy initiatives is far from clear and has not been formally explored. Yet, a good benchmark performance is still taken as an indicator of robust and adequate policy outcomes.

In the UK, nationwide monitoring revolves around the establishment and pursuit of quantifiable targets for each department involved in ICT policy. The targets are set up by each department, in what can be considered a process of *self-evaluation*, and collected by the OeE. At most, such targets gather only a subset of impacts: those that are reasonably short-term and can be measured. In doing so, they run the risk of diverting ICT policy away from some of the long-term, difficult to quantify, objectives that should drive policy formation. Further, target-driven monitoring and evaluation runs the risk of promoting opportunistic behaviour by those agencies being assessed.

However, in both countries Government departments conduct their own policy studies and evaluations. Some do it as part of a reasonably structured policy process (see for example the policy process implemented by the UK Department of Trade and Industry). More often evaluation and policy assessment will be conducted on an *ad-hoc,* "as-needed" basis.[10] In The Netherlands a strong emphasis on policy analysis can be seen as part of the consensus-driven approach to policy formation. The Dutch study has shown that exhaustive policy consultation results in comprehensive documentation on policy definition. These documents will often include different forms of policy evaluation, whether implicitly or explicitly.

Furthermore, evaluation in the ICT sector faces an additional problem. Many projects are, even at the pilot stage, large, resource-intensive initiatives attracting a good deal of media attention. An evaluation whose results are not encouraging could be interpreted and presented as an example of failure and affect negatively

[9] *Evaluation must often deal with difficult problems like the* attribution *of impacts to a specific initiative, the ways to identify the* additionality *of a policy (i.e. identify the effecst that would* not *have taken place in the absence of a policy), and the* timing *of the evaluation. There are different methods and techniques to deal with these issues.*

[10] *Take for instance the evaluations of UK e-learning initiatives conducted by BECTA.*

the prospects of the programme. In the UK for instance, the press has often reported on IT project "failures," when referring to the assessment of pilot projects. Such intense media scrutiny has driven evaluation towards covert, "backstage" exercises, where assessments are often carried out on an informal basis.

Finally, the long-term nature of many ICT initiatives requires, in theory, a long-term approach to programme evaluation and impact assessment. However, such approach may not suit the political needs of the elected government officials, who will usually seek short-term indicators of some kind of success. The trend towards using quantitative indicators, as in the Dutch case, serves the political needs of key ministerial officials. The difficulties of addressing long-term policy goals within a short-term political environment, ruled by electoral cycles, have been discussed above.

In both countries policy evaluation remains a challenge. There is no broadly accepted methodology, and the focus on the collection of measurable indicators appears to be made at the expense of tackling the thornier issues of impact assessment, like the *attribution* of observed changes to specific policy actions, and the identification of the *additional* effect of such actions.

Size of the public sector and its culture

Another issue to be addressed when considering the suitability of foreign practices for domestic policy contexts is the size and diversity of the public sector. In the UK, the public directly sector employs about 3.5 million. To change the cultural practices of this large and variegated group of civil servants can become an ominous challenge. Staff training will often be needed, but beyond training programmes a change of culture is often necessary before training and continuous learning can have the desired effects.

To deal with complex administrative environments, some UK agencies have implemented the idea of "policy champions" in charge of implementing a specific policy. To carry out their task "policy champions" are given a budget and authority. They will then try to engage different groups of public sector employees to define and establish a perceived "common" benefit of the intended policy.[11]

Size can also become a problem when moving from pilot stage to national rollout. This is an issue that is now being confronted by many UK policy initiatives. Having tested in the framework of a local or regional pilot, the move to a national rollout opens new problems of a completely different magnitude. Smaller countries may not face this problem in the same way, but in the UK, the policy commitment, and the financial requirements for national rollout of an ICT pilot are very substantial and do not follow automatically from a programme's pilot stage. The transition from pilot to final implementation needs to be adequately planned when the policy is first designed.

[11] *The Chief Executive of the OGC provides a good example of "policy champion". His unrelenting efforts to introduce, refine and impose the OGC Gateway Review process for public procurement projects have been perceived as being very successful. Other departments, such as the DH, Ministry of Defence and some local governments are now considering this model.*

The Dutch civil service is considerably smaller than the UK's. But as explained above, the pervasive consensus driven culture results in both delayed and staggered programme launches and implementation. Coupled with this is the decentralised approach to implementation, which in turn has seen local initiatives implemented autonomously and discretely. This mode of implementation, while in some cases may be quicker than national rollout, nonetheless returns us to the central problem of co-ordination.

Thus, the problem of national implementation exists for the two countries. However, the magnitude and shape of the problem differs, given their varying political and cultural traditions. The specifics of the Swedish political, economic and cultural environment will be the decisive factors in mapping out the optimum implementation strategies. When proposing policy changes and searching for best practice, the role of existing cultural and political traditions both as an impediment and as an enabler of change have to be taken into account. These traditions cannot be easily recreated nor circumvented.

ICT Policy Learning for Sweden

This section draws upon the ICT policy experiences of the UK and The Netherlands in order to develop a range of policy implications relevant to the Swedish environment. It begins with a brief overview of Sweden's ICT policy and description of five important challenges that Sweden faces in achieving its policy goal of 'an information society for all'. These points are considered in more detail through a comparison IT policy developments in the UK and The Netherlands. Each section ends by considering what Sweden can learn from the contrasting policy paths followed by the UK and The Netherlands; these implications are summarised in the final chapter of this section.

The IT bill 'An information society for all', which was presented in March 2000, announced Sweden's ambitious goals to be the first country in the world to have ICT available to everyone in society. Sweden's IT policy conforms to the EU's basic concern to promote competition in networks and services. In particular, the Swedish pursues three priority ICT goals:

- increasing confidence in ICT;
- developing competency to use ICT;
- promoting widespread access to ICT.

Although Sweden's ICT policy has not altered since the 2000 IT bill, over the past two years the Government has been concerned less with ICT-related issues and more with making fundamental structural reforms to the Swedish economy. The IT bill was written at a time of strong economic growth and considerable 'IT hype', which brought Sweden's performance in IT to the attention of countries throughout the world.[12] In 1999 and 2000, for example, Ericsson – Sweden's 'high-tech flagship' – was still the world's largest mobile communications equipment supplier and parallels were being drawn between Sweden's 'mobile valley' in Kista and the US's Silicon Valley.

Sweden's specificity

Sweden's ICT policy has to account for the country's national specificity: (1) it is a geographically large country with a relatively small population; and (2) with a strong emphasis on local and municipal initiatives. The 2000 IT bill requires that Sweden's broadband infrastructure has to be accessible in remote and sparsely populated areas. Unlike the UK and The Netherlands, which are densely populated urban countries, Sweden has the additional problem of providing universal broadband access to a widely dispersed population with many remote rural communities. Sweden has a density of only 20 inhabitants per square kilometre,[13] and consequently widespread access can only be achieved through high per capita investments. In the UK and The Netherlands numerous private firms have been attracted into broadband markets by the large profits to be made in densely populated urbanised areas. Because of the dispersion of, Sweden's population, Sweden provides a much less attractive investment opportunity for the private sector. The Swedish Government recognises that it has to provide government subsidies to develop ICT infrastructure in rural and sparsely populated areas.

However, Sweden's decentralised political structure creates opportunities for its traditionally independent local agencies – the County Councils, 289 municipal authorities and housing co-operatives – to substitute for private sector investment in local broadband developments. These local organisations have become actively involved in financing, building and operating local and even regional networks and ICT projects within their boundaries. For example, Sweden's municipalities have empty pipes below the ground that can be used by other network operators, companies owned by the municipalities or housing cooperatives.

As seen above, the decentralised structure of the Dutch political system has led to a similar proliferation of localised initiatives. Yet, decentralisation can be a double-edged sword: on the one hand, the local programmes have resulted in "real output";[14] on the other hand, they entrench the elusive co-ordination required for overall ICT strategy making and implementation.

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[12] *Brown-Humes, C. (2001) Downbeat mood as telecoms sector falters* Financial Times Survey: Sweden*, 12 December.*

[13] *The Netherlands has a density of about 350 inhabitants per square kilometer.*

[14] *In The Netherlands some of the localised initiatives have been successful. Success factors are varied and include the availability of funds, the clarity of policy objectives, and the adequacy of organisational structures.*

Sweden's five main ICT policy challenges

The 2000 IT bill laid out an action plan to enable Government to achieve the goal of 'an information society for all' through investments and institutional changes in a number of areas. Here we highlight the five most important ICT challenges facing the Swedish government that were identified during interviews with senior policy officials.

1. Strategy and policy co-ordination

Despite its ambitious goal to make the rapid transition towards an information society, Sweden lacks an overall strategy to co-ordinate and implement its various ICT policies. Swedish policy officials recognise the need to develop a strategy for ICT to enable:

- ICT policy coordination horizontally across different ministries or departments;
- a balance in a number of domains to be created between centralised and decentralised policies, central and local government, competition and government intervention, and activities performed inside or outside government;
- the move from a period of technology push to user-led ICT policies.

2. ICT infrastructure development

As in other EU countries, Sweden aims to strike a balance between using the market to simulate the investment while promoting widespread access to the broadband infrastructure. On the one hand, emphasis is being placed on unbundling the local loop to promote competition in broadband infrastructure markets. The traditional Telecommunications Act has been amended in 2003 to make Telia's access network available to competitors at cost-based prices. On the other hand, the Swedish Government faces a significant challenge in promoting access to the broadband infrastructure in a large country with many remote and sparsely populated areas.

3. e-Government

The development of e-Government – in line with the EU's goals for the creation of an eEurope – is an important priority for the Swedish Government. Government's success in promoting e-Government is demonstrated by the widespread diffusion of ICT-based public services. In particular, the Government created the 24/7 agency, an electronic administration to improve the delivery of public services and to increase citizen participation by encouraging users to access and perform a number of public service operations on their own. However, policy officials are concerned that this 'top-down', supply push approach fails to engage with or understand user needs for e-Government services.

4. e-Health

As in other EU countries, an important policy objective in Sweden is to use ICT to increase the efficiency of the healthcare system, which has to cope with an increasingly large aging and widely dispersed population. Sweden has achieved considerable success in promoting the use of ICT in healthcare, but in our interviews we found that policy officials believe greater progress can be made in this sector.

5. e-Education

During the 1990s Sweden made considerable progress in promoting e-Education. By 2000, for example, 85% of Swedish pupils had access to a computer more than once a month. According to this measure, Sweden was ranked fourth among OECD countries. These successes were built on a number of policy initiatives in the 1990s that helped to develop ICT usage in schools, focusing on deepening the knowledge and expertise of teaching staff, and as a result of this, among pupils. In 2003, however, policy officials interviewed during our research felt that Sweden is under performing and could do better in e-Education. The problem is not related to a lack of ICT infrastructure, but to the low level of ICT use within teachers' professional practice. Thus, a key element of Sweden's e-Education policy challenge here is to foster professional practice.

Learning from the UK and The Netherlands' experience

This section seeks to identify the policy implications for what Sweden can learn from the ICT policy experiences of the UK and The Netherlands. It concentrates on the five main ICT policy issues that concern Swedish policy makers. The main goal of all three countries is to achieve a leading position in the world as an information society. As the Dutch and British studies have shown, generic objectives couched in terms of increased accessibility to advanced ICT infrastructure, increased use of ICT-based services, closure of the "digital divide", the extensive and efficient use of ICT by government agencies, and the protection of market competition and individual rights in the new technological environments are common to both Governments. Despite common policies that aim at market liberalisation and the establishment of a Government Internet portal to provide access to all kinds of government information and public services by the Dutch and British Governments, two diverging ICT policies models are being implemented to achieve this objective.

The UK's distinctive approach to ICT policy definition, implementation and evaluation reflects a political structure that is much more centralised than countries like Sweden and The Netherlands. The particular challenge facing the UK has been to develop ICT policies across numerous and diverse ministries, agencies and local authorities, and to implement ICT in a large public sector employing over 3.5 million people. In addition, the UK has to overcome the hurdle of developing the ICT skills and competencies of a much larger population than The Netherlands or Sweden.

Dutch ICT policy is more decentralised to foster the emergence of bottom up initiatives. In contrast to the UK's 'grand design' for ICT, the Dutch approach seeks two purposes: (1) the development of a consensus and 'shared vision' on how to move

towards an information society; and (2) the mobilisation of ICT initiatives throughout society at large, including both the profit and the not-for-profit sectors. Achieving these objectives requires consultation among a broad range of stakeholders in the policy definition stage, the development of programmes of action to mobilise support for the ICT policy vision, and reliance on autonomous private and public initiatives to implement it.

An interesting finding from the interviews conducted in the UK and The Netherlands was the different use of metaphors to describe each country's ICT policy. In the UK, interviewees invoked the metaphor of 'a machine', which allows central government to initiate ICT actions by pulling levers. In The Netherlands an organic metaphor was preferred. Interviewees often talked about central government as a facilitator of ICT actions rather than a developer of strategies. Its role is to create a space for autonomous initiatives and 'let a thousand flowers bloom'.

TABLE 2 ICT POLICY MODELS

ICT POLICY MODELS – IDEAL TYPES	
The Centralised Model	**The Decentralised Model**
The UK	**The Netherlands and Sweden**
Centralised politics (e.g. 'first past the post' political system)	Decentralised politics (e.g. proportional representation and ample room for local initiatives)
Top-down initiative	Bottom-up initiatives
Machine metaphor: 'build the machine and pull levers'	Organic Metaphor: 'let a thousand flowers bloom'
Central government's role: implementing 'grand design' for ICT	Central government's role: mobilising societal initiatives, a 'shared vision' for ICT, and consensus for implementation
Centrally controlled ICT strategy – horizontal co-ordination across ministries and departments	Distributed ICT policy actions – vertical separation of ministries and departments and local government
Relations between government and citizens: hierarchical and directed	Relations between government and citizens: horizontal & self-organising
National guidelines for local ICT initiatives	Local solutions for local ICT initiatives with central help desk and expert functions
Policy definition: based on strategic and expert advice	Policy definition: loosely defined framework based on consensus among stakeholders
Policy implementation: rapid action, reporting and feedback	Policy implementation: consultation, lengthy discussions and recommendations
Policy evaluation: targets, internally-focused, e.g. progress of ICT policies and projects	Policy evaluation: externally-oriented, e.g. international ICT benchmarking

Some important 'ideal type' features of the centralised and decentralised models are summarised in Table 1. These are stylised models that do not necessarily reflect the complex detail of the different policy approaches to what is a rapidly moving policy field. Rather, the "ideal types" are drawn to highlight key differences in the national ICT policy models that the two countries are following. While Sweden faces its own unique challenges in ICT, it shares many of the characteristics of the decentralised policy model being implemented in The Netherlands. The two models also serve to highlight the trade-offs between some of the different policy options and choices that Sweden faces as it develops into an information society.

Strategy and policy co-ordination

The UK

The development of ICT policy in the UK is a top-down, centrally-driven process run by the Strategy Unit of the Cabinet Office, which is attached to the Office of the Prime Minister. The Cabinet Office is responsible for outlining the government's ICT vision, policy objectives and guidelines. Each ICT policy is then scrutinised by Cabinet Committees, before being passed on to a ministry or department of government where policy details are developed and implemented.

An e-Minister, who reports directly to the Prime Minister, is responsible for developing the government's e-strategy. Each department, in turn, has its own e-Minister responsible for different areas of ICT policy. E-Ministers work together and with the Government's e-Minister to create a 'joined-up' approach to ICT policy implementation. Each department also has an e-Champion, responsible for driving the UK's online strategy. The government is using ICT to help achieve its wider objective of 'joined up government', from high-level policy coordination down to public service delivery.

Four new Government organisations have been established since 2000 to develop a more strategic approach to policy making. First, until recently, the Performance and Innovation Unit (PIU) was charged with developing Government strategy. In 1999 the PIU produced an influential report, which contributed to all the major policy actions for ICT.[15] The PIU was reorganised in 2002 to form the Strategy Unit. This unit, which reports directly to the Cabinet Office, provides the e-Minister and e-Envoy (see below) with strategic support on the formulation of ICT policies. Although the Strategy Unit has not yet made a significant impact on ICT strategy, its remit is to improve policy making horizontally across ministries and departments. It could, therefore, play a strong role in the joining up of ICT strategies and policies.

Second, the Secretary of State for Trade and Industry established the e-Envoy in 2000 to devise a strategy for implementing the government's e-agenda. The Office of the e-Envoy (OeE) is a cross-departmental organisation located in the Cabinet Office. It is responsible for promoting the development, uptake and use of ICT in the delivery of services by government and the private sector. The OeE is regarded

[15] *Performance and Innovation Unit (1999)* e-commerce @its.best.uk. *London, Cabinet Office, September.*

as a policy 'learning organisation' because it continuously captures the lessons learnt from the implementation of a range of ICT projects. However, although the OeE is required to meet Government targets for ICT implementation, it has no formal power over Government departments that are ultimately responsible for achieving Government's objectives. In practice, the individual departments set quantifiable targets, which are then submitted to the OeE and the National Audit Office. Therefore, despite the Government's intention to promote joined-up government by co-ordinating ICT activities across ministries and departments, the OeE has insufficient powers to undertake this process of horizontal integration. In particular, it has been unable to prevent the emergence of multiple ICT initiatives resulting from individual departments launching their own ICT projects and policies.

Third, the Office of Government Commerce (OGC) was created in April 2000 as part of a wider reform of the public sector procurement within Central Government. In addition to its wider role in modernising Government procurement, the OGC is responsible for the successful delivery of major government ICT projects. Government recognises that the ability to deliver large ICT projects underpins the whole e-Government agenda. The 2000 McCartney Report *Successful IT: Modernising Government in Action* outlined a series of measures to improve project delivery and led to the creation of *Successful Projects in an IT Environment* (SPRITE) Programme, which was managed by the OGC until 2003 when the Programme ended.

Fourth, in recognition of the need for more strategic and co-ordinated policies for ICT, in November 2003 Government will establish a single regulatory body – the Office of Communications (OFCOM) – for the entire UK communications sector. The underlying rationale for this new regulatory framework is that a more coherent structure is required for convergent telecommunications and broadcasting in a digital age.

The Netherlands

In contrast to the UK's emphasis on developing a top-down strategy for ICT, the development of Dutch ICT policy over the past decade has been an exercise in consensual policy making. Efforts have been made to forge a nationwide view of the emerging information society. Consultations with a range of stakeholders – such as suppliers, network operators, municipalities and citizens – have led to the production of a stream of ICT policy publications, White papers and expert reports, offering recommendations and guidelines for action. Here, Government has played the role of facilitator in this process, by encouraging different participants, public and private, national and local, to develop diverse ICT initiatives that help to achieve the overall goal of an information society. Like the UK, the Dutch Government recognises the importance of developing a co-ordinated approach to ICT policy making that addresses the horizontal impact of ICT across ministries and government departments. Yet, in the Dutch case the appropriate organisational structures and steering mechanisms to implement a co-ordination strategy have not been put in place.

The formulation of a Dutch policy vision for the information society has occurred in three main phases. In the first supply-push phase from 1994 to 1998, the emphasis was on encouraging the construction of the ICT infrastructure. In December 1994, the Dutch government's *Action Programme Information Superhighway: From Metaphor to Action* represented the first integrated policy approach for converging ICT infrastructure. It was a cross-departmental policy developed by Ministries of Economic Affairs (co-ordinator); Transport & Public Works; Interior; and Education & Culture. The Ministries also worked closely with important companies and stakeholders. The Action Programme was devised to achieve the strategic co-ordination of Government's agenda for ICT by re-packaging and integrating the vertical action plans of the Ministries involved. In an explicit shift away from previous regulation, the Action Plan promoted free market competition and private sector involvement in the construction of the ICT infrastructure and services. Here, it can be seen that the UK and The Netherlands support the establishment of Public-Private Partnerships (PPP) as a mechanism to implement policy decisions. Although the nature of the specific PPP approaches can vary between the two countries, and must in every case be supported by appropriate legal and social frameworks (national specificity), the two Governments regard PPPs as a practical and cost-effective response to the rapidly changing environment in the ICT-field and the increasing pressure facing national budgets.

In a second demand-led phase from 1998 to 2001, the orientation of Dutch policy switched from construction to the use of the ICT infrastructure. In 1998, Government produced a report *Beyond the National Action Plan* which placed a new emphasis on 'soft' issues such as providing access and developing the skills to use ICT. In 1999, Government's policy for promoting the information society was presented in the document *The Digital Delta: The Netherlands On-Line*. This programme was divided into five 'pillars' of projects, ranging from telecommunications infrastructure to public performance. Rather than place the programme under strict centralised control, each cluster of projects was placed under the responsibility of one or more ministries.

In the most recent phase since 2001, ICT policy in The Netherlands emphasises the longer-term policy objective to promote the broader issue of knowledge-based innovation. The first move in this direction was initiated by the creation of *Commission on ICT and Government*. It produced a policy document in 2001, which recognised that transitioning towards the information society will place new demands on the role of Government. It emphasised that traditional hierarchical relations between government and citizens have to give way to non-hierarchical, self-organising and horizontal collaborations that are better able to cope with the increasing complexity and diversity of ICT applications. In other words, there is less need for Government to provide centralised co-ordination in the development of an information society. The Government's new role should be to create a supportive environment – by facilitation, mediation and management – to encourage numerous bottom-up initiatives in ICT.

This new policy philosophy has been given impetus by a policy document produced in 2003 by the new coalition government. It outlines new strategies for

knowledge creation, sharing and using, including support for R&D and start-ups in ICT. Relevant ministries and stakeholders from industry, educational and other institutions are represented on an Innovation Platform under the leadership of the Prime Minister. The document also recognises the strategic value of ICT in improving the efficiency of public services.

Like the UK, the Dutch Government has also recognised the need to create a more coherent framework for regulating the converging telecommunications, broadcasting and IT sectors. Following EU directives, this new regulatory framework for electronic communications was supposed to be in place by July 2003. However, this process was delayed due to the political stalemate caused by the resignation of the Dutch Government.

Throughout these three phases, it is worth noting that the "Dutch trait" of consensus-seeking underpinned the implementation of the Programmes. As already noted, this led to the delayed launch of several initiatives under these Programmes.

Policy implications for Sweden

The Swedish Government recognises the importance of developing a more strategic approach to ICT policy. For example, the ICT Commission for electronic communications, which presented its findings in December 2002, proposed the development of a more co-ordinated policy goal for electronic communications. The new telecommunications policy for converging electronic infrastructures adopted in 2003 represents an important attempt to achieve policy co-ordination across different media. However, interviews with Swedish policy officials identified the lack of an overall strategy to co-ordinate ICT activities undertaken by different ministries as one Sweden's areas of weakness in ICT policy.

What are the implications for Sweden from UK and Dutch efforts to develop a more strategic and co-ordinated approach to ICT policy? Both countries recognise that policies have to be co-ordinated horizontally across different ministries and departments. The UK moved quickly by establishing the OeE as the authority responsible for co-ordinating horizontal ICT policies. However, putting in place horizontal structures for ICT has been difficult to achieve because ministries and departments have resisted attempts to remove their control over ICT policy. As a result of these difficulties, the OeE has been reduced in size and its role has been changed from a more strategic involvement in policy co-ordination to focusing on improving the efficiency of back-office processes.

Unlike the UK, Dutch ICT policy has placed more emphasis on achieving consensus on a shared vision of the information society. But consulting stakeholders absorbs valuable time and has led to delays in reaching strategic policy decisions. For example, the shift from supply-push to user-centric policies took much longer to achieve in The Netherlands compared with the UK. Moreover, the importance of the horizontal co-ordination of ICT policy is recognised in many policy documents. However, in the absence of a structure to enforce horizontal co-ordination, the Dutch ministries and departments have continued to develop ICT policies for different sectoral applications, such as e-Health, e-Education and e-Government.

To sum up, both strategies appear to have their disadvantages. The more centralised UK approach encounters difficulties in overcoming departmental resistance and to develop and implement flexible policies. The Dutch approach seeks to build broad policy commitments across all stakeholders and can consequently become entangled in bureaucratic inefficiencies. There is a need for mixed approaches, away from the ideal types described in Table 1, that can be adapted to the peculiarities of the Swedish policy environment and to the different policy arenas and stages of policy formation. We will come back to this issue in the closing chapter of this section.

ICT infrastructure development

The UK

The UK Government's policy for broadband infrastructure is to make the UK the most extensive and competitive market in the G7 by 2005. As in Sweden and The Netherlands, the UK Government is aims to strike a balance between fostering competition and achieving widespread access to broadband networks and services.

The Department of Trade and Industry (DTI) is responsible for encouraging competition in broadband markets and the Office of Telecommunications (OFTEL) is responsible for ensuring that competition is achieved. (OFTEL will be absorbed into the new OFCOM at the end of 2003). As Europe's first independent regulatory body, OFTEL has been tackling the problem of the privatised British Telecom's (BT) monopoly in the local loop for almost two decades. It has developed a regulatory regime to support the unbundling of the local loop by requiring that BT must make its ADSL broadband services available to other operators and service providers on the same terms as its in-house retail organisation.

The provision of widespread access to the broadband infrastructure is an important policy objective in the UK. The OeE's strategy – called '*UK online: the broadband future'* – aims to extend broadband connections to businesses and consumers. targets by 2005. The UK Broadband Task Force was established in 2002 to facilitate the rollout of broadband services at the local and regional levels by placing a broadband expert in each of the English regions and Devolved Administrations, such as Scotland and Wales. The Broadband Stakeholder Group (BSG) was established in 2001 as an independent body to provide Government with advice on how to implement a strategy in order to achieve Government's broadband targets.

Unlike Sweden, however, much less money is being made available in the UK to achieve widespread geographical coverage and access to broadband communications. For example, Government has only allocated £30 million to the Regional Development Agencies (RDAs) and Devolved Administrations (Scotland and Wales) to promote access in rural and remote areas. The RDAs have launched local initiatives, such as the East of England's pilot 'Broadband Brokerage Service', to create local markets for broadband delivery.

The Netherlands

The Netherlands was among the first countries in the EU to recognise the importance of promoting a widespread broadband infrastructure. The 1994 Action Pro-

gramme's objective was 'to acquire a leading position in the field of electronic super-highways in Europe', by building on the large installed base of cable TV networks in The Netherlands. With over 95% nationwide coverage at that time, the Dutch cable TV networks provided a real possibility of becoming the country's main broadband infrastructure and providing KPN – the Dutch national telecom operator – with strong local loop competition.

In practice, the cable TV operators have been unsuccessful in combining network operations into a credible alternative infrastructure. For instance, individual companies have undertaken most broadband initiatives in isolation. Some cable TV companies that were owned by the municipalities have been transformed into private owned multi-service providers of TV, cable telephony, local broadcasting and Internet access services delivered through a digital set-up box. However, the market for broadband services failed to develop on widespread basis mainly because local operators were unable to make the large investments needed to upgrade cable networks for broadband transmission.

Rather than simply upgrading existing networks, a number of municipalities have started to build new local and regional broadband networks using high-capacity optical fibres (2-10 Mbps, and now up to 1 Gbps in the "Gigaman" project). Leeuwarden and Zaanstad, for example, have been constructing optical fibre city-rings, and others have initiated a number of local and regional optical fibre test beds, such as Kenniswijk, Eindhoven/Helmond, Almere, Amsterdam and Deventer.

Since the late 1990s, the Dutch Government has intensified its efforts to promote competition in telecommunications and broadcasting markets. KPN's (the incumbent national telecoms operator) local monopoly was finally opened up to full competition in 2001 when OPTA – the Dutch Regulatory Authority for Post and Telecommunications – introduced local loop unbundling. KPN was required to make its local loop facilities available to competitors on a cost-effective basis. In future, the Dutch Government intends to comply with a EU directive by liberalising the national cable TV access and service monopoly. Competition between cable modem and modernised local telephone systems (based on DSL technologies) may provide a stimulus to local loop competition.

Policy implications for Sweden

The goal of Sweden's new 2003 telecommunications policy is that all citizens should have access to advanced telecommunications services throughout Sweden. However, the Swedish Government has encountered two main problems with its broadband policy: promoting widespread access in remote rural areas and creating competition in local broadband markets.

First, the problem of providing broadband connections in a large country with many sparsely populated regions is a unique challenge that Sweden will have to overcome. Universal access is also high on the political agenda in the UK and The Netherlands. But because these countries are densely populated and geographically much smaller than Sweden, the issue of providing access in remote and rural regions features much less in policy discussions.

Following the 2000 IT bill, the Swedish Government allocated EUR 618 million to stimulate and expand the ICT infrastructure in remote regions. But providing a fibre optic network in Sweden's rural areas will cost an estimated EUR 4.7 billion. This means that Government's subsidy will cover only 10% of the total costs of financing rural access. The problem facing the Swedish Government is that private investors have so far been unwilling to pay the additional costs of building a broadband infrastructure in these isolated areas.[16] Instead these firms have concentrated their efforts on serving more profitable urban regions of Sweden.

The failure to attract private sector investment in many parts of Sweden has created a space for numerous local organisations – such as local authorities and housing cooperatives – to develop broadband initiatives. To support and promote these activities, the Swedish government has provided €120 million to build new networks in Sweden's municipalities. The municipal authorities receive a subsidy to build, buy or rent (from other operators) local networks inside towns or in specific areas of the countryside. While the funds are primarily for new networks, in some cases funds are available for upgrading existing telephone networks for ADSL connections. Government has allocated €190 million to link urban centres in each municipality with other smaller towns and villages in the municipality.

As noted above, PPPs could be considered as a channel to attract private investment, as already practised in the UK and The Netherlands. The design or mode of these private-public partnerships need not be the same as that of the two countries as national specificity has to be considered. Still, the concept of PPPs could merit some consideration here.

Second, the development of diverse local broadband initiatives requires some form of higher-level co-ordination to provide standardised interconnections between different local networks. A similar situation has occurred in The Netherlands where local companies owned by municipalities have also been active in broadband markets. The need for stronger co-ordination between local and central Government in broadband markets is recognised by The National Broadband Expert Group. Appointed by the Dutch government in 2001, the Expert Group's 2001 report *The Netherlands: Broadband Country* provides clear guidelines for local broadband initiatives. It led to Government's decisions to establish a Broadband Expertise

[16] *An alternative way of overcoming the lack of investment in Sweden's broadband infrastructure in remote regions is by promoting competition in mobile communications. To achieve national coverage, 3G licences were awarded the licences on the basis of promised coverage rather than by auction. Licences were awarded to operators who promised 99.9% coverage, but only about 60% coverage had been achieved by summer 2003. There is concern that this objective may not be realisable because of the recent downturn in telecom markets and until recently the low take up of 3G services.*

Centre, create a legal framework to govern the development of optical fibre networks, and allocate €6.5 million to help the municipalities to build optical fibre test beds.

Third, a key problem is Telia's continuing monopoly position in the local loop and its close ties with government, which some interviewees argued, have prevented the emergence of a competitive market. As in the UK and The Netherlands, Sweden has found that the traditional operator's local monopoly can only be overcome by unbundling the local loop. Sweden's Telecommunications Act has been amended so that Telia's local access network is available to competitors at cost-based prices. Rather than promote competition between large vertically integrated network-owning providers, unbundling aims to promote a horizontal market structure, with competition at different levels in the network, such as transmission and applications. The 2003 law requires that networks are 'open and operator-neutral' to prevent any recurrence of local monopolisation. Despite Government's policy of curtailing Telia's dominance in local markets, the operator could still play a positive role in upgrading the local loop for broadband transmission.

Again there is a similarity between Sweden and The Netherlands: in both countries the Government retains a substantial share of ownership over the national telecom operators. In The Netherlands, the close ties between KPN and the Ministry of Transport and Public Works (now the Ministry of Economic Affairs) led to delays in promoting competition in the local loop and in installing a new regulatory regime. To complicate matters further, OPTA – the Dutch telecom regulator – lacked the political legitimacy and legal mandate to push through local loop unbundling and challenge KPN's monopoly. Unbundling of the local loop was only achieved in 2001, after a period of intense negotiations with KPN regarding interconnection issues, number portability and carrier pre-selection.

The Dutch Government is in the process of redesigning its regulatory regime to prevent the re-emergence of local monopolies. Following a EU directive, it is introducing competition in Dutch cable TV markets. Competition between cable modem and modernised local telephone systems (based on DSL technologies) may provide a stimulus to local loop competition. Under the new Dutch regulatory framework, OPTA should see its capabilities strengthen at it becomes part of the National Competition Authority.

Opening up the telecommunications market to competition in order to stimulate the necessary investments in infrastructure development is a policy that requires conviction and stamina. The Dutch example shows the problems that emerge wehn competition is sought in a halfhearted way. New entrants should be supported by a favourable legal environment and the offer of market opportunities. Without these, the competition with the incumbent operator will prove to be very difficult and for most of the new entrants largely impossible. For competition to flourish it is an absolute necessity to implement measures that will counterbalance the resistance of the incumbent operator.

e-Government

The UK

Since it came to power in 1997, the Labour Government has developed and executed an ambitious top-down strategy for delivering e-Government. According to a Booz Allen Hamilton benchmarking report,[17] the UK has been successful in achieving its e-Government objectives: it ranks second after the US in the uptake of e-Government and e-Commerce services.

As described above, the UK's policies for e-Government are being developed and implemented by several offices and organisations. The OeE, a dedicated cross-departmental organisation, with seconded staff from various ministries and departments has led the development of the e-Government implementation strategy. In an effort to co-ordinate the implementation of e-Government, the OeE has developed a 'channels framework' so that a large number of public sector bodies can deliver improved e-Government services. A 'channel' is a means of delivering services to citizens. The OeE claims that without this centralised and joined-up framework, e-Government services would achieve varying levels of quality and availability. The ability to achieve this policy goal, however, may be undermined by the recent scaling back of the OeE's activities.

The OGC is responsible for modernising and improving the efficiency of public procurement processes and projects. In recent years, Government has established several initiatives for e-Procurement. For example, in January 2001 the OeE launched *Government Gateway* which will handle an around £5-6 million of annual Government-related transactions. A strategy for e-Procurement was established by central government in October 2002. It aims to use web-enabled tools to improve Government's relationships with private sector suppliers.

The Government's Office of the Deputy Prime Minister (ODPM) 2001 White Paper *Strong Local Leadership – Quality Services* presents a policy for strong and innovative local government, which includes a local e-Government strategy to improve the delivery of local council services. While local authorities are responsible for implementing local e-Government services, Central Government allocates funds and offers advice on how to promote a supportive environment for local e-Government implementation: £350 million during 2001/2 for local government, and each local authority received a capital grant of £200,000 in 2002/3 to assist in its implementation of e-Government.

Government has also promoted a number of other local e-Government initiatives, funding schemes and projects, such as the Local Government On Line Pathfinder project Programme. Running between June 2001 and June 2002, this Programme involved 100 councils in 25 partnerships projects. These pilot projects aimed to promote e-Government in local authorities through various projects such as access channels, which include digital TV (DTV), smart cards and e-procurement. Building on these pilot projects, a smaller number of Local e-Government National Pro-

[17] *Booz Allen Hamilton (2002)* International e-Economy Benchmarking: The World's Most Effective Policies for the e-Economy**,** *London: Booz Allen Hamilton.*

jects has been selected to develop further specific applications, such as DTV, e-procurement and local planning services.

However, implementing e-Government across the UK's large and complex local government sector is an enormous task. There are 388 local authorities in the UK and each authority is a large organisation responsible for providing over 700 different public services. To assist the implementation of local e-Government, around 97% of local authorities have two e-champions – one councillor and one officer – whose job is to achieve the government's 2005 target for online services.

Local authorities will have to overcome considerable challenges in order to achieve Government's 2005 target for the electronic availability of services. An estimated £2.5 billion will be required to deliver their programmes. Despite these efforts to develop local e-Government, local authorities have identified the lack of comprehensive information and effective coordination between different e-Government programmes as a potential barrier to progress. They have called for a national framework to improve the coherence of local e-Government strategy and policy. A recent survey emphasised the weaknesses of local government skills and capabilities to implement e-Government.[18] It found, for example, that 72% of staff lacks the skills to support e-Government.

The Netherlands

The Dutch government's policy for e-Government was formulated in the 1998 *Action Programme Electronic Government*. The document called for annual progress reports on four main objectives:

- achieving electronic access to all public institutions;
- improving the provision of public services;
- improving internal management;
- targeting specific user groups.

A priority of the Dutch Government is to ensure that relations between Government and citizens take place electronically. In 1999 this objective was formulated as a target that 25% of all public communications should take place electronically. Progress has been made in providing electronic access to public information through the creation of a government portal to over 1,000 websites of ministries, advisory boards, semi-public institutions, provinces and local governments. Government set up the ICTU, an organisation responsible for gaining knowledge and expertise on ICT and government. Its objectives are to improve the internal processes of Government agencies and their interactions with citizens.

The KIBO – Expertise Centre on IT management in the public sector – was established to use ICT to improve the internal efficiency of Government. It co-ordinates the management of public sector administration processes within the various ministries and organisations. In the Dutch Government's own international benchmark-

[18] *ODPM (2003) Local e-Government: a survey of local authorities, May, Office of the Deputy Prime Minister, http://www.info4local.gov.uk/searchreport.asp?id=15199&heading=e-mail+alert*

ing exercise undertaken in 2000 and 2002, The Netherlands performed well in the provision of services (such as income tax returns by electronic means) to citizens, but achieved a below average performance in the provision of public sector services to businesses.

The Dutch Government has faced difficulties in using ICT to organise its public procurement processes. The Ministry of the Interior is responsible for co-ordinating public sector procurement by harmonising procurement procedures and adopting technical standards based on XML and Open Source Software, which are required to promote e-procurement horizontally across the various ministries. But its efforts to centralise procurement practices have been resisted by individual ministries that want to maintain control of their own procurement policies.

Policy implications for Sweden

E-government is a key policy objective in Sweden. The creation of 24-hour administration – providing public websites, electronic payments and invoicing, and other Internet services –represents a first step towards E-government. To encourage the adoption of e-Government, the Swedish Government has set up the Golden Link prize, which is awarded to the authority within the public administration that demonstrates the most innovative use of the Internet in its communications with citizens.

A great deal of emphasis is being placed on using e-Government to increase citizen or user participation in public services. Yet several policy officials interviewed during our study were concerned that too much emphasis has been placed on a creating a 'top-down' structure to promote the uptake of e-Government services. In their view, e-Government policies should build on the success of Sweden's home computer scheme by encouraging 'bottom-up' user-led initiatives so that the take up of services is driven by the needs and priorities of citizens.

Sweden faces a choice in how to approach the development of its e-Government agenda. It can continue along the existing path of incremental policy initiatives or follow the UK's more radical approach by developing a coherent strategy for e-Government. If the latter path is chosen, the Swedish Government will have to mobilise considerable cross-ministry support to achieve this objective. As the UK experience shows, the establishment of an agency such as the OeE to deliver e-Government is no guarantee of success. The agency must have the power and mandate to tackle any resistance to change presented by the ministries, departments and other established interests.

Another possible approach is the one taken by the municipality of Amsterdam, which implemented a purely bottom up approach based on proven existing demand for new ICT services. Six problem areas were identified (care sector, labour market, education, economic development, digital capabilities, and social cohesion). The problems in these sectors were analysed and proposals were formulated for experiments with ICT services.

e-Health

The UK

The UK Government's strategy for e-Health has to be understood as part of a far-reaching policy to address the problem of an ageing population, which is placing greater demands on the National Health System (NHS) – the UK's main provider of health care. This commitment to reform is backed by large public expenditures. During its first term of office (1997-2001), the Labour government helped to launch its e-Health agenda by providing over £1 billion to launch its *Information for Health* programme. During the 2001 election, Prime Minister Tony Blair pledged £5 billion for NHS reforms. Central funding for a National Programme for IT in the NHS (NPfIT) includes £370 million for 2003-2004, £730 million in 2004-2005, and £1.2 billion in 2005-2006. Central funding for the NPfIT is supplemented by local investment, which is currently around £850 million per year. In 2003, Government announced an additional £2.3 billion to provide Integrated Care Record Services, which will allow physicians throughout the country to access patients' medical and care records electronically.

The Department of Health (DH) is responsible for implementing the government's e-health agenda. A pioneering move for the implementation of e-Health was *NHS Direct,* launched in 1999, and which now handles over a million telephone calls each month, ranging from basic health and medical enquiries to treatment. *NHS Direct* also can be accessed electronically. A ten-year plan of NHS investment and reform also addresses e-Health issues. The plan includes the construction of a new ICT infrastructure linking up NHS doctors, hospitals and patients. Government has appointed a 'IT Tsar' – which is illustrative of the UK's centralised approach – who is responsible for co-ordinating the country's £5 billion IT health-care infrastructure projects. This infrastructure is also aimed at providing an expanded range of services, which includes e-booking of appointments, e-prescription, telecare/telemedicine and the broadband NHS network.

Government's proposed NHS network –so-called 'N3'– also contributes to the overall objective of providing broadband connections across all health- and care-related public services. A National Infrastructure Provider will be responsible for delivering broadband connections within the NHS. A private organisation will receive a contract to act as the N3 National Service Provider and will be responsible for purchasing and integrating local and national services.

The majority of these e-Health initiatives are driven by Central Government. However, the actual provision of health care services – such as the NPfIT – takes place at the local level. Local Service Providers (LSPs) are responsible for their own IT systems and e-Health services in different geographical areas. In England, for example, five contracts will be awarded in 2003 to LSPs in five different regions: London; North East, Yorkshire and Humberside; South East and South West; East of England and East Midlands; West Midlands and North West.

Government recognises the need to devolve more e-Health services to local providers. For example, from April 2004, *NHS Direct* will have to be more accountable and responsive to local priorities. During 2004 and 2005, it will be devolved to Primary Care Trusts at the local level. This will allow these local organisations to shape the priorities of *NHS Direct.*

The Netherlands

The Ministry of Public Health and Welfare (VWS) handles the Dutch e-Health agenda. It is responsible for developing Government's policy guidelines and achieving its policy objectives for e-Health, which include:

- Using ICT to reduce waiting lists for health services
- Encouraging the healthcare customer to use ICT

The VWS has established a number of ICT projects to achieve the integration and standardisation of healthcare records; to promote higher levels of access; and make more information about healthcare services available to patients.

The 'Healthcare Passport' is one of the most important e-Health initiatives. Under this scheme, each healthcare user receives a chip card with a personal identification number as well as administrative and insurance information. This initiative will lead to the creation of an open electronic network in the Dutch healthcare sector that will enable customers, healthcare providers and insurers to exchange and receive data.[19]

Unlike the UK, where one public sector organisation – the NHS – dominates the provision of public healthcare, the Dutch healthcare sector is comprised of numerous public and private sector institutions under different forms of ownership. To address the complexity of the sector, an umbrella organisation called the National Institute for the use of ICT in the healthcare sector (NICTIZ) has been created to bring together the various public departments involved in implementing health care policies. One of its main priorities is to create an integrated ICT infrastructure to connect the various organisations involved in the Dutch healthcare sector. It is also involved in the rollout of a range of services based on the creation of an 'Electronic Patient Dossier'.

Policy implications for Sweden

Like in the UK and The Netherlands, e-Health is an increasingly important topic in Sweden, mainly because of the belief that ICT can help create a more efficient system of healthcare. Since the late 1990s, Sweden has achieved considerable success in promoting e-Health.[20] Unlike the UK the Swedish Government has not developed an overall centralised strategy for e-Health, but has created a number of e-Health initiatives such as:

[19] *This initiative reflects a radical policy change by which users will be given a more central position in the health care system. User will be able to behave as customers and choose from different providers, with the help of online databases.*

[20] *The terms telemedicine or telecare are more common in Sweden.*

- The 'IT in Healthcare' R&D programme, which was established in 1997 to provide patients with greater quality of life. It is based on 112 projects in areas as diverse as infrastructure, digital image processing and Virtual Reality.
- Sjunet, a communications network for telecare services connecting all of Sweden's county councils and regions.
- Swedish developments in e-Health are not just led by the central Government. A survey of 90% of Sweden's municipalities found that 11% had initiated their own telecare or telemedicine projects.

The UK and Dutch experiences in e-Health present a stark contrast in policy approaches. Each country has developed e-Health policies that are well adapted to the contrasting structures of their healthcare sectors. The Dutch approach of developing numerous bottom-up initiatives for e-Health is well suited to the fragmented nature of the country's healthcare sector composed of numerous institutions. The UK, by contrast, is able to develop and implement a centrally planned e-Health strategy because one main state-owned provider dominates its healthcare sector: the NHS.

In the light of Sweden's advanced adoption of telecare and telemedicine, it would appear that the policy lessons from British experience insofar as these two applications are concerned are minimal. Yet, the introduction of an electronic patient record (as with the UK Integrated Care Record Service and the Dutch Electronic Patient Dossier) can offer a reference for Swedish health authorities and physicians considering the development of integrated IT systems to monitor and prescribe treatment, and expedite referrals.

e-Education

The UK

The UK Government has initiated many actions to promote e-Education across the whole education system. Government's 1998 policy *Open for Learning, Open for Business* identified several targets for the promotion of e-Education. It provided £650 million to support the introduction of ICT in schools between 1998-2002, with an additional £155 million being allocated for centrally funded projects.

The policy includes an initiative to connect all schools, universities, public libraries and community centres to the National Grid for Learning (NGfl). By 2002, the NGfl programme had successfully achieved its targets for connectivity to the Internet. For example, in 2003 over 99% of schools were connected to the Internet. The NGfl was replaced in 2002 by the *ICT in Schools* Programme to continue these efforts to promote ICT use in schools.

Government has also established *Cybrarian,* an e-Education project to promote Internet usage among excluded group's of the population, such as people with disabilities, the socially excluded, and people with Internet but lack the skills or confidence to use it. Announced in Government's 2001 White Paper *Opportunity for All*, Cybrarian involves partnership between government and the private sector: Government has allocated £22.5 million on the condition that the private sector provides £12.5 million of matching funds.

The implementation of the government's e-Education policies is overseen by two national agencies. The *Joint Information Systems Committee (JISC)* is responsible for co-ordinating the development of the ICT infrastructure and offering strategic advice on how to use ICT to support teaching, learning, research and administration. The British Educational Communications and Technology Agency (BECTA) was set up to support the UK Government and national agencies in the use of ICT in education. Its objectives are to raise standards, widen access and improve ICT skills.

The Netherlands

The Dutch Government has launched a number of e-Education initiatives, some of which are in response to the e-learning action plan presented by the European Commission in 2001. Government's main e-Education initiatives include:

- the creation of a technical infrastructure for e-Education;
- increasing ICT expertise;
- 'lifelong learning'.

The Ministry of Education, Culture and Sciences also has issued an action plan for e-Education, which includes several measurable targets, such as increasing the number of computers in schools and promoting Internet connectivity. These targets are monitored by a two-yearly ICT-monitoring exercise, which produces a list of indicators about the performance of The Netherlands against other countries (including Sweden).

The Dutch Government's policy goals for ICT in the education sector as a whole are presented in the White Paper *Education Online.* One of its main objectives is the development of a knowledge network – called *Kennisnet* – as a portal on education and ICT issues. In 2002, over 11,000 schools, libraries, museums and content providers accessed the *Kennisnet*. Established as an independent foundation in 2001 with financial support from the Ministry of Education, Culture and Sciences, the *Kennisnet* provides a good example of the Dutch style of self-governance and self-organisation.

The numerous institutions involved in the Dutch education sector as a whole are responsible for deciding on how to use ICT and developing their own programmes and curriculum. Government plays a supporting role by providing schools and colleges with the funds required to establish an ICT infrastructure for e-Education. In this way, Dutch policy subscribes to the philosophy of 'light touch' in promoting an environment conducive to the development and diffusion of ICT. For example,

the *ICT at School Foundation* was set up by the Dutch Government to support the use of ICT in primary and secondary schools. This demand-led initiative helps schools acquire and use only those ICT applications that they have identified as important.

Policy implications for Sweden

Several e-Education policy initiatives were implemented in Sweden during the 1990s to develop ICT usage in schools. They concentrated on deepening the ICT knowledge of teaching staff, and as a result of this, ICT expertise was transferred to pupils as well. Sweden has achieved a high level of access to ICT in schools.[21]

Building on these initiatives, a working group was established in 2001 by the Ministry of Education and Science to develop a national ICT strategy for Swedish schools. The strategy aims to achieve the broad goal of increasing ICT knowledge in schools and use of ICT to support the goals of the teaching syllabus.

Despite these efforts to develop a national strategy, there is a perception that Sweden is performing poorly and could do better in e-Education. The problem is not the lack of ICT infrastructure to support e-Education policies, but the low level of ICT use within teachers' professional practice. In 2002, for example, a survey of Sweden's secondary schools found that under a third used a computer on a daily basis in their teaching practice, a decrease of 12 percent compared with the previous year. By 2003, around 50% of Sweden's schools have failed to achieve a recognised level of ICT maturity.

The diverging experiences of e-Education in the UK and The Netherlands may provide some useful policy lessons on the trade-offs facing the Swedish Government. On the one hand, the UK's e-Education policies have been driven by Central Government. The emphasis is on supply-push initiatives that educational establishments in the UK can use to support teaching, research and administration. On the other hand, the Dutch Government's approach to e-Education emphasises the need to create a supportive environment for the adoption of ICT. This user-led approach recognises that the individual educational establishments are best equipped to decide on how use ICT in their daily activities.

Poor performance of professional practice in the UK shows that a supply-led and top down strategy is unlikely to be an effective way of fostering e-Education. Yet, such an approach can deliver greater opportunities for policy co-ordination across the country. The Dutch approach, on the other hand, which involves a high degree of user-led participation at the local level, suggests a more plausible way of developing and adopting professional practice, but suffers from uneven development and adoption – less co-ordination. These two experiences could suggest for Sweden a mixed approach combining elements of top-down strategic co-ordination with user-led local participation initiatives.

[21] *In 2000, for example, 85% of Swedish pupils had access to a computer more than once a month. According to this measure, Sweden was ranked fourth among OECD countries.*

The foregoing discussion has focused on the key implications of the Dutch and British experience for the five vital challenges that we have identified for Sweden's ICT policies. Yet policy formulation and its implementation may not be the "end of the story." Instead, evaluation of policies is also an integral of the policy making process so that policymakers may have an idea of the success, pitfalls and/or lack of success of the policies in question. The following section encapsulates the differing approaches that the UK and Dutch Governments use for policy evaluation. As with the above five fundamental challenges that we have pinpointed for Sweden, these approaches may have implications for Swedish practice.

Policy evaluation: a contrast in national styles

The UK

In comparison with the more fragmented approaches to ICT policy definition associated with The Netherlands and Sweden, the UK's efforts to create an overall strategy for ICT have resulted in greater coherence between various policy objectives. The success of this strategy, however, depends on how effectively it can be implemented, monitored, and evaluated.

The UK Government has concentrated on developing a sophisticated system of internally-focused policy evaluation techniques. The focus is on achieving measurable targets in the short-term rather than undertaking complex, multi-faceted long-term evaluations. The pursuit of short-term measurable targets is a product of the short policy cycles (government and ministerial) that are characteristic of the British political system.

Organisations like the OGC have developed sophisticated techniques for evaluating ICT programmes and projects. However, such evaluations need to be handled carefully. In particular, there is a danger that pilot projects may fall victim to heavy-handed evaluation procedures. In a competitive policy making environment, the identification of problems at an early stage may lead to unnecessary cancellations of ICT projects – particularly if problems are reported in the press – instead of policy improvements or refinements. In other words, there is a form of "self-censorship," which could result in the avoidance of potentially riskier ICT policies, the aims of which, paradoxically, could benefit Government's e-agenda.

To avoid such deficiencies in the evaluation process, new or pilot initiatives are now evaluated 'backstage' in an informal manner. If a pilot is successful in moving to the national rollout phase, other problems may be revealed by evaluation techniques. In a large European country like the UK, the move from local pilot to national rollout involves a step change in the mobilisation of investment and resources.

The Netherlands

Whereas ICT policy formulation in the UK largely takes place behind the closed doors of Central Government in organisations such as the Cabinet Office and Strategy Unit, the Dutch approach of reaching a consensus on the policy vision for the information society involves a broad range of institutions, from both within and outside government. In contrast with the UK's ability to move quickly from strategy to implementation, the elaborate and lengthy consensus-seeking Dutch approach has often proved unable to provide rapid and appropriate responses to shifts in the ICT domain. Numerous policy reports with recommendations and guidelines for action have been produced, but little decisive action has been taken. The Dutch Government has also encountered problems in designing market structures for ICT and creating a regulatory framework able to cope with the dynamics of the telecommunications market.

The absence of a strategy to co-ordinate the ICT activities across different ministries has also fostered bureaucratic inefficiencies and a duplication of effort. Ministries, agencies and other parties have launched their own individual projects and policies in the absence of any clear political leadership. In e-Government, for example, the process of decentralisation and delegation to lower levels of Government has undermined programme coherence and the Ministry of the Interior's power to execute leadership in this domain.

The Dutch Government's decision to facilitate autonomous initiatives rather than implement a grand design for the e-agenda has, however, been successful in stimulating diverse broadband activities at the local level in The Netherlands. As we have seen, for example, many municipalities have established fibre optic test beds to provide access to broadband services in local communities.

Whereas the UK has developed a sophisticated system of internally-focused policy evaluation through targets, the Dutch are more concerned with understanding their country's performance in ICT based on cross-national benchmarking. There is no systematic application of formal techniques for evaluating the adoption, use and potential of Dutch ICT projects or programmes. The Government does, however, produce bi-annual progress reports and data on the Electronic Superhighways and Digital Delta programmes. For example, it sets explicit targets to be achieved by each pillar of the Digital Delta programme. The Government also has established a bi-annual benchmarking programme, which compares the position of The Netherlands in ICT with other leading countries. In these benchmarking exercises, input and output indicators of several 'best-in-class' countries are compared so that lessons about best practices can be identified. This externally oriented process of policy learning provides a measure of how successful the country has been in transitioning towards an information society against leading other countries. A problem with this approach, however, is that it tends to ignore national specificity, which we have argued above is integral to policy formulation and implementation.

An assessment of policy evaluation approaches

The diverging approaches to policy evaluation adopted in the UK and The Netherlands reflect the different ways in which ICT policies are defined and implemented in these countries. In the UK, policy definition is performed by agencies of Central Government in consultation with leading experts in each domain. With less emphasis on external consultation, a policy is produced and acted upon relatively quickly. In this context, policy evaluation is concerned with monitoring progress and providing rapid feedback to justify expenditures on a stream of ICT policies and programmes.

In The Netherlands, the policy definition phase is a drawn out consensus-seeking process involving a broad range of stakeholders. While this often leads to inaction or delays in the policy implementation phase, reaching an agreement on a shared vision provides an important source of political legitimacy for an ICT policy. As a result of this, policy evaluation is less concerned with providing a justification for a particular ICT programme or project. Instead the emphasis is on higher-level evaluations of the overall policy vision: by benchmarking the performance of Netherlands against other leading information societies.

An overview of policy implications

In future the main challenge facing all countries is how to develop demand-led ICT policies. In the UK and The Netherlands, less emphasis is now placed on the physical infrastructure for broadband and more on how to engage with the end-user of broadband services. The UK Government is attempting take into account end user needs by developing frameworks and guidelines for broadband access and use across different sectors, such as e-Government, e-Health and e-Education. However, this form of user engagement remains top-down and centrally imposed. In The Netherlands, by contrast, the Government has recently stressed the importance of self-organisation and diversity in its approach to meeting end user requirements. While numerous local ventures have been launched in The Netherlands, there have been calls for central government to play a stronger role in co-ordinating these diverse activities. In particular, some interviewees believe that the Dutch Government's 'light touch' philosophy may have contributed to indecision in the market place and a failure to invest in one type of infrastructure as the basis for next generation broadband networks and services.

In this section we have defined two "ideal types" of ICT policy formation: a "centralised" and a decentralised" model. We have presented the top down central approach of the UK and the bottom up consensus building policy of the Netherlands as exemplars of these ideal types. Although it is clear from our description of policy initiatives that both countries share similar generic policy objectives, the differences in the policy definition and implementation processes are very substantial. We have pointed out on several occasions that both the centralised and decentralised models face difficulties that have certainly influenced policy outcomes in the UK and The Netherlands.

Although it is not the objective of our assignment to provide policy recommendations for the Swedish context, from the analysis of the UK and Dutch experiences we can derive policy implications that are likely to be relevant in the Swedish context. The ideal type models have been found wanting in many circumstances, and the adequacy of a centralising or decentralising approach will depend on the policy area *and* the stage of policy formation. In general, policy definition is likely to benefit from central co-ordination and the clear definition of policy objectives. The pursuit of policy consensus is likely, at best, to slow down the policy making process and, at worst, result in muddled policy objectives. Yet to force a centralising top down process on policy implementation is likely to encounter resistance from those in charge of implementing the policy, and may run counter to the political traditions and practices of countries with a diffuse distribution of political power. Bottom-up approaches will usually be better suited to the implementation stages of an ICT policy.

In order to translate these general observations into practice, it is necessary to define in detail the policy issues and context for each problem area in the ICT sector. For instance, it may not always be the case that a centralised approach is well-suited to the policy definition stage. From our analysis of the five policy challenges above, we can conclude, for example, that policy definition in the area of e-Health may be better conducted through a decentralised model, whenever the model of care provision is itself decentralised.

UK ICT policy

Introduction

Following the general approach presented in Section I, this section analyses ICT policy formation in the UK. We will first describe some general principles of UK policy and general ICT strategies that will set the context for the detailed analysis that will follow. We will then analyse ICT policies related to the development of ICT infrastructure, regulatory framework, use of ICT in the public sector, and in support of research and innovation. We will be paying special attention to the use of ICT by local government and authorities. Although formally a subset of ICT use in the public sector, the extent and peculiarities of the local application of information technologies merit a special section in our analysis. Finally, a concluding section will summarise the main issues that, from the point of view of policy learning, can be derived from the British experience.

General Strategy

Policy definition and implementation

Formally, ICT policy formation follows the same general procedures common to all policy formation in the UK. Policy definition emerges from the Cabinet Office, which outlines intended policies and their main objectives. These are then studied by Cabinet Committees that are formed to address each policy area. Here, priorities are established and then passed to the corresponding ministry or department, where the details of the policy will be developed and implemented. For instance:

- e-health will be the responsibility of the Department of Health, which will formulate the policy details;
- the DTI's mandate is to formulate policies that lead and support the overall use of ICTs for Government, business and the public at large.[22]

Each department or ministry will then identify its priorities and targets following the guidelines set out by the Cabinet Committees. Such policies will be funded by the budget allocation accorded to each ministry. Of course, depending on the ministry or department, policy definition will entail different sets of actors.

At the departmental level, each department has nominated an *e-Minister* to provide political leadership within his or her area for the e-agenda, and to support the Government's overall e-Minister, who is also the Secretary of State for Trade and Industry, DTI. E-Ministers are also expected to work with each other to facilitate joined-up approaches. The overall e-Minister has the responsibility for Government's e-agenda. She champions the e-agenda at Cabinet level, provides the Prime Minister with monthly progress reports, and assumes overall responsibility for the Government's e-strategy.

[22] *It is specifically charged with the development of legislation and measures to promote the implementation of ICT-based applications and services and boost national economic competitiveness.*

In addition, each department appoints a senior official as *e-Champion*.[23] As a group, the e-Champions support the e-Minister and e-Envoy in driving forward the *UK Online* strategy. The e-Champions are organised into two groups: e-Commerce and e-Communications.

Some ministries have established formal processes to assess new programmes and review funding. For instance the DTI required that all types of business support programmes need to be accompanied by a so-called "ROAME statement". ROAME stands for "Rationale, Objective, Appraisal, Monitoring, and Evaluation". The ROAME statement was to be submitted by any DTI office wishing to launch a new programme or the renewal of an existing one. It was a document stating the rationale and objective of the programme and establishing appraisal, monitoring and evaluation procedures. These statements were then considered by a DTI committee. This process forced policy makers to establish explicit objectives that could then be assessed. The practice aimed to inject a planning-evaluation logic in business support initiatives, including those in the ICT area.[24]

The ROAME statement procedure has recently been changed for a less rigidly structured but still formal procedure adhering to the basic principles pursued by the ROAME process. Now, all activities that had required a ROAME statement need to submit, instead, a business plan to an "Investment Committee" formed by DTI and Treasury officials, as well as representatives from the public sector. This practice will affect all ICT-related business support programmes funded by the DTI.

Policy co-ordination (1): the Strategy Unit

As far as the overall policy for the e-agenda is concerned, the overriding target is to deliver "joined up government" through the use of ICT-based applications to deliver e-services to the public. In the definition of ICT policy by the Cabinet Office, the Strategy Unit (SU) could play, on paper, a key role in "joining up" the ICT policies and strategies in different fields. Among other functions, the SU provides strategic support to the e-Minister (see below for e-Ministers) and the e-Envoy (see our First Report and below) in the formulation of e-commerce policies. Its aim is to improve Government's capacity to address strategic, cross-cutting issues and promote innovation in the development of policy and the delivery of the Government's objectives.

[23] *Representatives of the Devolved Administrations (Wales and Scotland) and local government have also nominated e-champions.*
[24] *Examples of areas where ROAME statements were required are presented below.*

Created in 2002, the Strategy Unit was the result of the bringing together of three existing units, the Performance and Innovation Unit (PIU), the Prime Minister's Forward Strategy Unit (FSU), and parts of the Centre for Management and Policy Studies (CMPS). The Strategy Unit has four main roles:

1. undertaking long-term strategic reviews of major areas of policy;
2. undertaking studies of cross-cutting policy issues;
3. strategic audit (occasional assessments of how well the UK, and UK government are doing); and
4. working with departments to promote strategic thinking and improve policy making across Whitehall.

The e-Strategy group of the SU mainly undertakes all these functions and works with partners across the public, private and voluntary sectors as well as internationally. The e-Strategy group, in particular, looks at the following areas: Internet access, modern markets and market analysis.[25] The Strategy Unit also compiles the monthly and annual reports to the Prime Minister, updates the Action Plan for *UK online* Initiative[26] and manages the e-champions network (see below).

Since its creation the Strategy Unit has undertaken a series of important studies that have all contributed to the wider policy agenda. However, in the context of e-government, it is interesting to note that many of the major policy initiatives in this area pre-dated the Unit's creation by some years.

Despite the key strategic role that the SU could acquire because of its remit and its location within government, observers and ex-senior officials interviewed for this report point out that the SU does not generate new strategies, as one could in principle expect. Instead, its role in practice is to "knit together bright ideas, provided by policy makers or others, as one does in a patchwork quilt" so as to add some coherence, ex-post, among the ideas emerging from different government departments. A senior official at a government office compared the SU role to that of a "PowerPoint operator who moves the PowerPoint slides around so as to provide real time (and sometimes post hoc) continuity to Government policies." The SU also has the freedom to present new ideas, which it then adds to the "quilt."

Policy co-ordination (2): the Office of the e-Envoy

The e-Envoy, appointed by the Secretary of State for Trade and Industry, is a position created in 2000 to devise a strategy for implementing Government's e-agenda, stimulate the development, uptake of e-commerce and the use of ICT-based applications and services by Government and business. His office, Office of the e-Envoy (OeE), is a cross-departmental organisation staffed by seconded personnel from the various departments and agencies. It is, however, important to note that while the OeE is charged with strategy formulation and co-ordination, implementa-

[25] *For instance, the Market Framework team within the e-Strategy group takes a lead in this by developing the Market Framework Policy, which focuses on creating the right regulatory environment and promoting consumer confidence.*

[26] *More details on* UK online *can be found in our First Report*

tion is devolved to departments, agencies and local authorities. While the OeE has no mandate for actual implementation, it is situated in the Cabinet Office. While, on the one hand, this specific location speaks to the importance of the e-Envoy's position and Government's commitment to the realisation of its e-agenda, on the other, the lack of a mandate for implementation signals potential inefficacy.

The OeE is designed to adopt a systematic approach to the means of delivery of e-services, security and the management of information. It does this primarily through consensus building to achieve the building blocks for the e-agenda. According to a senior Government official, it focuses on "back office consensus" through a series of work groups for each of its objectives. Unlike its early ambition of developing a co-ordinated strategy for implementation of Government' e-agenda, it is now deeply involved, in improving "back end office processes" in order to establish improved processes for ministries, departments and agencies to effectively support e-commerce. In other words, the OeE is now focusing its efforts largely on "business process reengineering" and less on setting strategy for implementation of e-delivery of all Government services. Most significantly, since the last few months, the OeE has shifted its emphasis on making *all* government services electronically available to focusing on key priority services, identified by ministries and departments, such as e-commerce.

The OeE has also a policy monitoring role. Each department has to submit quarterly returns to the OeE on the progress of the implementation of its e-policies. These are mainly reporting data on the extent to which each department's own targets are being met.[27] Such data is then compiled by the OeE and reported in the *UK online* Annual Reports (see our First Report on these Annual Reports). The OeE has no responsibility or authority to "penalise" departments that fall below their own target; instead, each department undertakes its own self-evaluation. The OeE only issues policy guidelines, such as good practice, etc.

The problem with self-evaluation is the tendency for departments to sometimes "inflate" their achievements. Since their budget is largely dictated by their reporting of "measurable and identifiable policy returns,"[28] on which Government insists, their reporting on targets met can sometimes belie the actual situation.

According to a senior Government official, the OeE has become a learning organisation as it continually learns from lessons captured from each project. For instance, by bringing together nominated (seconded) employees from the different departments and ministries, the OeE has to invest much effort to reach agreement on common programmes requiring "buy-in" from each of the representatives. This form of "backroom consensus building" is critical to the success of any implementation.

[27] *For instance, has the DH achieved its own established target of 25 per cent delivery of e-services in the period that it has set for itself?*
[28] *Interview with senior official.*

Yet, the OeE has been downsized from a total of 200 members to about 100. Its budget has also been reduced in the April 2003 UK budget. A contention for it is that the Office has not met its targets for ensuring the implementation of Government's e-agenda and that it has not bee able to develop a co-ordinated strategy for the implementation of Government's e-agenda.

What the OeE may have achieved is not easily quantifiable, despite the increased take-up of the Internet, which arguably cannot be attributed solely to the efforts of the OeE. One can argue that the important change of mindset to one of an "e-mentality" on the part of the key members of the OeE (who are senior and middle level Government administrators) cannot be measured. Yet, such a change is perceptibly important to develop and establish new ways of working. In the same way, the ability developed to build consensus among such a disparate group of members cannot be quantified.

So in its defence, the OeE can argue that first, it never had the mandate to effect implementation; instead, it is only charged with strategizing and co-ordinating the e-agenda programme, and second, some important capabilities developed cannot be reduced to a figure. The fact that ministers adopt a short-term view of a certain policy (see below) may not be attributed to failure on the part of the OeE. It remains to be seen how its recent budget cutback will affect the workings of this Office and its implications for further realisation of Government's e-agenda.

Generic policy challenges

The UK policy formulation process faces several generic problems with a bearing on the development and implementation of ICT policies. The problems arise out of (a) the 5-year election cycle; (b) the usual two-year ministerial cycle; and (c) the budget cycle.

a) Many ICT policies, such as e-health initiatives, require a complex IT-based infrastructure, which usually needs testing and modification over a long period before it is able to operate smoothly. Unlike a complex corporate IT infrastructure, an e-health IT infrastructure is deployed over several health-related agencies, which are delivering health-related services to a population of nearly 60 million. Therefore, e-health initiatives span over the live of one or more governments, and the 5-year election cycle opens the possibility that the government developing and implementing a policy is voted out well before its objectives are achieved. Policy priorities are likely to change, parts of the policy agenda may be changed or terminated altogether, and long-term policies thwarted. Under this conditions, how can long-term policies be developed, and targets effectively set up and reached?

b) The two-year ministerial cycle is not a formal political constraint but rather an observed practice in the UK policy environment. Yet, as the 5-year election cycle it challenges the stability of long-term policy initiatives. New ministers can change policy priorities and targets, and, given the short-term nature of many ministerial appointments it is then more probable that targets be made on ad hoc basis, responding to the specific contextual environment in which the minister finds him or herself. In our interviews, senior government officials have commented on the problems posed by short-term ministerial tenures resulting in "simplistic" policy approaches that can be translated into short-term objectives.

c) What may seem a policy target at the beginning of a typical three-year budget cycle may be revised downward in priority, again preventing long-term implementation of a policy aim. For instance, the budget for e-procurement for business-to-government projects, an important policy objective given the scale of Government procurement, has suffered from the growing focus on business-to-consumer initiatives.

The following sections will analyse in some detail the specific policy processes and objectives in the different fields of ICT policy. Some of the issues emerge from the general policy context presented here, but others are specific to the different policy fields under analysis.

Infrastructure: towards broadband

Broadband services

While UK achievements in mobile telephony take-up are impressive,[29] available figures for its broadband penetration were remarkably low in 2000, particularly when compared to Sweden and The Netherlands. Table 3 below illustrates the broadband usage by EU Member States, based on an assumption of 3 users per connection.[30]. In 2000, broadband penetration in the UK was 0.3% (amounting to approximately 180,000 users), compared, for instance, with 5% in The Netherlands.

[29] *The UK levels of mobile telephone penetration are ahead of all large EU countries. Besides the UK The UK has been at the forefront in rolling out mobile phone networks during the 1980s and 1990s. The UK was early to establish First Generation analogue systems, and took a lead in rolling out GSM networks, being the first country in the world to licence a Personal Communications Network (PCN) based on DCS-1800 technology. See our first report for more details on mobile telephony in the UK.*

[30] *Kirkman, G.S., P.K Cornelius, J.D. Sachs and K.Schwab (2002)* The Global Information Technology Report 2001-2002: Readiness for the Networked World, *Oxford: Oxford University Press, p. 151.*

TABLE 3 BROADBAND PENETRATION 2000*

Country	Users per hundred inhabitants
The Netherlands	5
Belgium	5
Austria	5
Sweden	4
Denmark	4
Finland	2
Germany	2
Portugal	1
France	1
UK	0.3
Spain	0.3
Italy	0.3

** Comprises DSL and cable modem connections. Assumption: 3 users per connection*

Source: Adapted Geoffrey S Kirkman, et. al, The Global Information Technology Report 2001-2002: Readiness for the Networked World, Oxford University Press, 2002.

In the last two years the UK has made remarkable progress. According to the DTI, the UK is now the most competitive market for broadband in Europe's leading countries. By March 2003, 42% of households in the UK had a choice of infrastructure providers. On 27 January 2003, there was an estimated 1.4m high-speed broadband users in the UK; a figure that was growing by 30,000 subscribers a week. Around 71% of the UK population are covered by a mass-market terrestrial broadband solution through DSL (63%), cable (44%) or fixed wireless access (13%). Satellite service is also available throughout the country.[31]

Policy definition

Broadband is defined as 'a wide range of technologies that enable high-speed, always on access to the Internet. The additional bandwidth provided by a broadband connection allows new value-added services to be delivered to consumers and businesses.'[32] There are several different types of broadband delivery technologies being deployed in the UK by a number of competitors:

- DSL (Digital Subscriber Line) technologies. DSL enable broadband to be delivered over existing copper loops, (speeds range from 256 Kbps to 10-20 Mbps).
- Cable modems. Cable networks provide speeds of around 500 Kbps to both consumer and business markets.
- Fibre. This provides higher speeds than DSL, but is expensive to install.
- Satellite. It provides one-way higher bandwidth (e.g. for television broadcasts), but two-way bandwidth is not common. It can be used to reach remote areas.

[31] *Department of Trade and Industry (2003)* Broadband*, revision date 31 March 2003, http://www.dti.gov.uk/cii/regulatory/broadband/*
[32] *Ibid.*

- Leased lines. These are permanent transmission links supplied by network operators, which are dedicated to a user's exclusive use. Large businesses and some Small and Medium sized Enterprises (SMEs) use these lines to carry high volumes of voice and data traffic. Internet Service Providers use leased lines to connect to the Internet and to offer high-speed access to businesses and consumers.
- Fixed wireless access. This enables users to have low-cost Internet and multimedia access via radio links. Fixed wireless access could provide a means of promoting broadband access in areas where broadband supply might not be commercially attractive. Government held an auction in November 2000 of the spectrum 28 GHz to support two-way higher bandwidth and broadband services. In January 2003, it presented its plans for licences to be made available at 3.4GHz for Public Wireless Access and launched a consultation for new proposals for licences at 3.6GHz.

However, most people in the UK still connect to the Internet over a telephone line, using a modem with a speed of 56 kbps. This 'narrowband' connection requires that users wait while a dial-up connection is established before they can access the Internet.

Government's broadband policy is aimed at making the UK the most "extensive" and "competitive" broadband market in the G7 by 2005. To achieve this ambitious objective it aims to promote supply and demand together to foster a virtuous circle of growth in broadband markets.

On the supply side, the DTI is charged with promoting competitive broadband markets to provide consumers with value for money and a wide variety of product choice. While not directly engaged in the definition of broadband policy, the Office of Telecommunications (OFTEL) has been actively developing a regulatory framework to promote broadband access. It has stipulated that broadband interconnection products must be made available to permit competitors to make use of their own networks and required that British Telecom (BT) must make its wholesale ADSL product available to other operators and service providers on the same terms as its own retail arm.

On the demand side, the UK Government aims to increase broadband connectivity for public services, increasing broadband connections to schools, libraries, further education colleges, universities, the health service, etc. and offers a set of incentives for private users to adopt broadband (see below). Government is investing over £1bn to provide:

- all primary and secondary schools with 2 Mbps to 8 Mbps connections by 2006
- all General Practitioner (GP) practices with 256 kbps connections
- all hospitals, Primary Care Trusts and Health Authorities with a minimum of 2 Mbps connections
- upgraded broadband connectivity across the criminal justice system.

While industry is responsible for much of the impetus behind the development of a broadband marketplace, there is also a key role that Government will play in this process. There are four main elements of the Government's strategy:

- promoting competition in broadband infrastructure and service markets
- stimulating demand for broadband through tax breaks for teleworking, a collaborative cross-industry marketing campaign, and the *UK online for business* programme (http://www.ukonlineforbusiness.gov.uk).
- promoting the production of broadband content and applications, through R&D Tax credit, business support schemes and embedding broadband in the delivery of key public services
- encouraging broadband roll-out in rural and remote areas, by facilitating satellite broadband deployment and creating effective procurement of the public sector's broadband needs.

In relation to this later objective, on March 2002 the Government provided £30m to the Regional Development Agencies (RDAs) and Devolved Administrations (Scotland and Wales) to improve, among other objectives, the rollout and availability of broadband in remote and rural areas. The South East RDAs have used this funding stream to provide Small and Medium sized Enterprises (SMEs) with low cost broadband connections and introduce broadband links among local schools, health centres, the town hall and local libraries.

Policy Implementation

Government has developed a strategy for promoting the rollout of broadband communications for businesses and consumers. This strategy is set out in a report published by the Office of the e-Envoy (OeE) in February 2001 called *UK online: the broadband future*, which was launched by e-Minister Patricia Hewitt and the e-Envoy Andrew Pinder on 13 February 2001.

Responsibility for stimulating the development of broadband services was initially shared between the OeE and the DTI. In July 2002 the DTI assumed responsibility from the OeE as the lead Department responsible for, *inter alia*, extending broadband networks to households throughout the UK, including rural and remote areas. However, as broadband is included as a channel to implement Government's e-agenda, a Channels Working Group, under the auspices of the OeE, is helping with the broadband strategy for the DTI.

In addition to these agencies, the Broadband Stakeholder Group (BSG) was established in April 2001 as an independent advisory body, which reports annually to Government. Its remit is to provide Government with advice on how to develop and implement a strategy to meet the Government's 2005 target for broadband. The BSG includes representatives from all sectors of the broadband value chain, including infrastructure, service and content companies, as well as users from the public and private sectors.[33]

[33] *A description on the BSG activities is available from its website http://www.broadbanduk.org/*

Further, the UK Broadband Task Force was set up on 22 November 2002 to play a central role in the strategy to stimulate the roll-out and take-up of broadband-delivered public services at the regional and local levels. The Task Force introduced a broadband expert into each of the English regions and Devolved Administrations, and Procurement Advisors in the Office of Government Commerce (OGC), the agency in charge of public procurement, to promote smarter public sector procurement of broadband services.

The OGC conducted a study in late 2001 for the procurement of broadband across the public sector aiming to:

- identify the public sector's actual requirement for broadband services in terms of volume, quality, location and associated services;
- determine the scope of services to be procured
- determine the preferred procurement route;
- recommend arrangements for ongoing management.

In May 2003, the OGC selected six companies to provide broadband Internet services, following a competitive tendering process. Government will be spending £1 billion for this service roll out over the next five years. Under this agreement, Government departments and local authorities will be encouraged to use one of the six suppliers thus simplifying the public procurement of broadband services.

Supported by Government, the RDAs are also launching their own initiatives. For instance, the East of England Development Agency is piloting the "Broadband Brokerage Service", a local market model for broadband delivery, enabling companies, public sector organisations, communities and individuals to register their interest and then broker aggregated solutions once demand in a particular area has reached a critical mass.

Policy Evaluation

The main avenue for general policy assessment lies in the work of the BSG (see above). The BSG as an advisory body and through its annual reports to Government provides a general policy monitoring and assessment tool. It measures on a continuous basis the progress of broadband projects and events, provides information to stakeholders on the progress of Government's strategy, identifies bottlenecks that hinder that development, and reviews the feasibility of Government's strategy as a whole.

In addition different departments and agencies involved conduct their own assessments, often on an ad-hoc basis. For instance, a report published in November 2002, commissioned by the DTI and produced by the Society of Information Technology Management (Soctim), provides evidence of the role played by local authorities in increasing the availability of broadband. It found that 67% of urban local authorities have a strategic commitment to deliver broadband services, which will increase to 85% in by 2004, and that 46% of rural communities have a made a strategic commitment, and are seeking to catch-up with the urban authorities.

Digital Television

Policy definition

The DTI and the Department of Culture, Media and Sports (DCMS) are the two key departments involved in formulating the policy for Digital Television (DTV). Within the wider strategy to position the UK to take best advantage of the digital revolution Government established as a key objective the closing down of the existing analogue television broadcast network and the move to a wholly digital service. Government has the stated aim for "the UK to have the most dynamic and competitive market for Digital Television (DTV) in the G7, as measured by take-up, choice and cost."[34]

Government is committed to ensuring that terrestrial analogue broadcasting signals are maintained until:

- everyone who can currently get the main public service broadcasting channels in analogue form (BBC 1 and 2, ITV, Channel 4/S4C and Channel 5) can receive them on digital systems;
- switching to digital is an affordable option for the vast majority of people;35

When these criteria were first announced in September 1999 it was envisaged that digital switchover could start to happen as early as 2006 and be completed by 2010. However, it has always been clear that the achievement of this objective is primarily market-driven and depends on the behavior of broadcasters, manufacturers and consumers. The role of Government within this policy is to promote and support the take-up of DTV, but the market will ultimately decide whether and when digital switchover will occur.

A major advantage of DTV is its potential for facilitating a greater participation in the information society due to its level of uptake with lower income groups.[36] Despite the somewhat constrained role of Government in effecting digital switchover, DTV has become a key element in the wider e-government strategy as a means of delivering services to the home. Importantly, local and central government departments are required to evaluate its potential for service delivery. In order to promote the use of DTV as a vehicle for e-government services within Government and the

[34] *Department of Trade and Industry (2001)* Opportunity for all in a world of change. http://www.dti.gov.uk/opportunityforall/
[35] *As a target indicator of affordability, 95% of consumers have to have access to digital equipment.*
[36] *Office of the e-Envoy (2002) http://www.e-envoy.gov.uk/oee/oee.nsf/se…/index-content.html.*

public at large, the e-Envoy has initiated a process of consultation[37] and launched an UK online interactive website that is available via DTV and the Internet (www.ukonline.gov.uk).

Policy implementation

The change management issues related to switchover are of central importance in informing Government and industry policies. The *Damodaran Report*[38] examined a range of human-centred issues related to switchover and distinguishes 6 different types of issues that needed to be addressed:

1. stakeholder issues
2. the promotion of uptake
3. designing for inclusion
4. human issues of e-business
5. managing the transition
6. identification of the existing knowledge resources.

The recommendations and action plan contained within this Report were used to inform the Digital TV Action Plan Project and particularly for the Market Penetration Group (see below).

The key initiatives and targets for activity are contained within the *Digital Television Action Plan,*[39] which is continually updated to reflect market changes and is now in its sixth version (April 2003; the fifth was in February 2003). Each version indicates the achievements to date. To undertake a systematic approach toward full implementation, DTI and DCMS set up the *Digital TV Action Plan Project* to ensure that that the criteria set for switchover are met and deliver the pre-conditions for a future government decision. The intention of the Project is to create a clear structure within which industry and Government can effectively identify, research and eliminate potential obstacles that are likely to prevent the planned switchover. All accomplishments are then reported in each version of the *Action Plan*. An Implementation Project will then follow this Action Plan Project.

[37] *Ibid.*
[38] *Damodaran (2002) Analogue to Digital Switchover: Human Aspects of Adoption, Lougborough University, CRSP465. www.digitaltelevision.gov.uk/pdfs/scoping_study.pdf*
[39] *DCMS (2003)* Digital Television Action Plan, *a joint DTI/DCMS document, February http://www.digitaltv.culture.gov.uk/pdfs/DigitalTV_ActionPlan.pdf.*

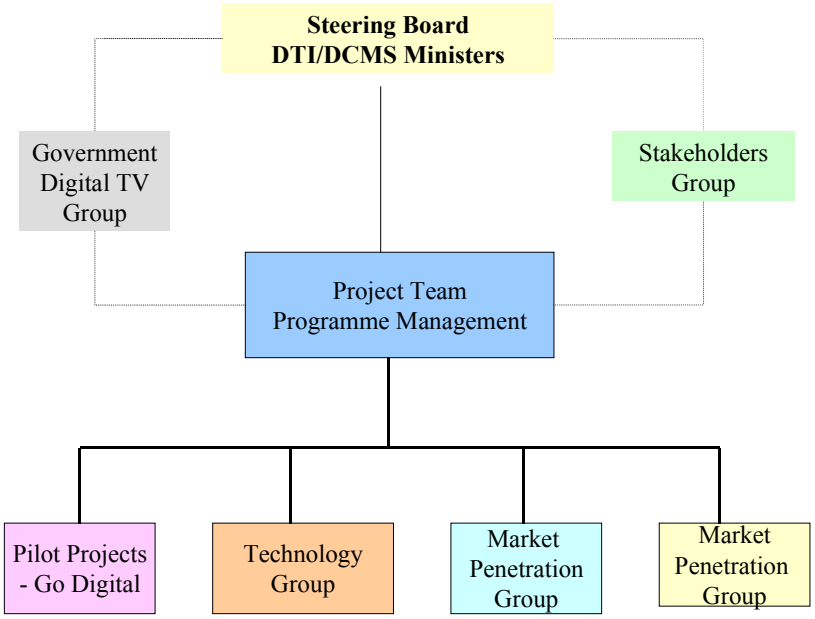
The four main strands of the *Action Plan Project* are:

1. deciding on the post-switchover spectrum plan and how to achieve it
2. preparing the market, through marketing and communications activity
3. developing and stabilising the technology, for satisfactory reception
4. conducting pilots for demonstration and testing purposes.[40]

Figure 2 illustrates the structure of the Action Plan Project and shows the number of groups that will work together to achieve the objectives of the Project. It is worth noting that other Government-led activities feed into the Project, including the work of the Broadband Stakeholders Group, the OeE and the Cabinet Office Spectrum Strategy Committee.

The Stakeholders Group consists of a wide range of organisations to contribute to the implementation of the Action Plan by providing high-level advice and a cross-sector perspective.

FIGURE 2 DIGITAL TELEVISION ACTION PLAN PROJECT STRUCTURE



Source: DTI Digital Television Action Plan, 2003

[40] *Ibid.*

The Market Penetration Group develops and co-ordinates a strategy to raise the awareness and knowledge of DTV among the public and industry. There is a great deal of interest within Government and industry concerning the level of take-up within the market and a number of surveys have been undertaken[41] in order to better understand market preferences and dynamics. This Group draws its membership from organisations representing broadcasters, manufacturers and consumer groups.

The Spectrum Planning Group is developing a range of planning options and assignment of spectrum plans. The potential future uses of the UHF radio spectrum that will be released when digital switchover is complete was the subject of a joint DTI/Treasury review that culminated with the publication of the *Cave Report.*[42] The recommendations contained within this Report are designed to provide a framework that will allow innovation and encourage competition and within which future spectrum management policies will be based. The main recommendation of this Report included:

- the continuance of the policy to use commercial auctions to assign spectrum, where possible;
- liberalising restrictions on the use of individual frequency bands;
- the introduction of spectrum trading;
- the use of incentive pricing for television in order to promote the switchover from analogue to digital.

This Group is supported by a new Spectrum Stakeholders Group, which has been established within the framework of the Action Plan. Representatives to this Group include those from broadcasting, potential users of spectrum and consumers.

An important development, though not part of the the *Digital Television Action Plan* is *Freeview*, a free digital service that provides up to 30 digital television and radio channels. Freeview is a broadcast service (termed digital terrestrial, as distinct from cable or satellite) that is received through an existing aerial, but which requires a set-top box (digital-analogue converter) to be viewed on analogue equipment. Freeview is a joint venture between the BBC, Crown Castle International and BskyB. The service was launched in October 2002.[43]

[41] *See for instance DCMS (2002)* The role of integrated digital television sets in achieving digital switchover, *http://www.digitaltv.culture.gov.uk/pdfs/role_of_integrated_digitaltv.pdf; Consumers' Association (2001)* Turn on, Tune in, Switched Off: consumer attitudes to digital TV*, March.*

[42] *Cave (2002)* Review of Radio Spectrum Management. An independent review for Department of Trade and Industry and HM Treasury*, Department of Trade and Industry, March, http://www.spectrumreview.radio.gov.uk/*

[43] *Independent Television Commission (2003)* More than 40% of households now have Digital TV, *http://www.itc.org.uk/latest_news/press_releases/release.asp?release_id=689.*

DTV pilot projects

Various departments have undertaken a large variety of pilot projects. *UK online interactive* was launched in April 2002 and is the common entry point for central and local governments' DTV services. Although the service was launched on the BSkyB platform (a private digital satellite broadcaster) it is planned to make it available across all digital television services. Other pilot projects include the Department of Health's *Living Health* (health information, advice and surgery bookings), *Channel Health* (broadcast maternity programmes linked with interactive services), and *Communicopia* (providing a version of *NHS Direct Online* in Yorkshire and London).[44] The Department of Education and Skills has also conducted pilots. The *ChildcareLink* service (interactive local information concerning childcare) and Kirklees Council's *Intouch Kirklees* project (information on local council and health services) are also examples of DTV trail projects.[45] There is also one DTV project – *Go Digital* – led by the Independent Television Commission (ITC). This pilot entails a simulation of 250-300 homes to full digital conversion in the Tamworth-Lichfield area and seeks to research the implications of full conversion of households to digital.

Policy evaluation

While many other IT policy objectives can be achieved through changes in regulatory framework, government expenditure, market-making activity, or a combination of these, the move to DTV is essentially a market driven transition. In order to inform this decision and set some parameters around the timing of digital switchover, Government has laid out two key tests relating to the affordability and availability of DTV.[46] Switching to digital equipment (including videos and televisions) must be affordable for the vast majority of people, including those on low or fixed incomes and older people, and that 95% of consumers should have access to digital equipment before switchover is completed. The target date for total switchover was set (in 1999) at 2010, and this date continues to be a focus for Government and industry activity.

There is, however, widespread scepticism within the industry that this date is achievable, with the latest figures on the adoption of DTV indicating that, by the end of 2002, 41.4% of UK households now have digital television.[47] A major challenge facing Government is achieving switchover given the huge installed base of domestic analogue television and video equipment. It is estimated that there are around 50m analogue televisions sets in use in the UK, with sales of analogue televisions (6.29 million in 2001) vastly outweighing digital sets (112,000 in 2001),

[44] *For more details on these health related projects see below.*
[45] *Office of e-Envoy (2002)* Digital television: a policy framework for delivering e-government services to the home. A draft for public consultation, *October.*
[46] *Department of Trade and Industry (1999)* Chris Smith sets out timetable for digital revolution*, press release, http://www.digitaltv.culture.gov.uk/textonly/press_notices/text_pn_index.html*
[47] *Independent Television Commission (2003)* More than 40% of households now have Digital TV, *http://www.itc.org.uk/latest_news/press_releases/release.asp?release_id=689.*

and equipment only being replaced every 8-10 years.[48] The reluctance of many consumers to move to subscription-based satellite and cable providers, has led to the launch of the Freeview service (free access) by the BBC which, in combination with the use of inexpensive set-top boxes (digital-analogue conversion systems), has become an important vehicle for achieving the 95% access targets. Yet, Freeview's programme offering is very limited and its geographical coverage irregular.

The total cost of switchover, in terms of infrastructure, marketing and equipment, has been estimated at between £15bn-£20bn.[49] However, a major advantage of DTV is its potential for facilitating a greater participation in the information society due to its level of take-up with lower income groups who already appear to have a large installed base of satellite dishes[50] and by implication, could also be more receptive to DTV. Despite the rollout of Freeview, switchover costs are not trivial and Government remains concerned with the potential take-up of DTV-based public services, an issue that remains a central focus of the OeE.

The move to DTV and its corollary, the closure of the analogue network, is the keystone of a series of interlocking policy objectives that lie at the heart of the UK's e-government and e-commerce agendas. It is also one of the most problematic in terms of Government's ability to directly influence whether, when and how switchover will occur. An important factor in seeking to close down the analogue network is the release of the UHF bandwidth it currently occupies so as to make it available for further mobile telephony and other services.

Feedback and Learning

Government and industry are still grappling with the challenges of achieving the 2010 target for digital switchover, and a great deal of research is underway to develop a better understanding of the issues affecting early and late adopters of this technology. One recent study[51] found that people who do not plan to convert to DTV change their minds when they understand what digital has to offer.[52]

An alternative perspective may be obtained if one considers the rate of the adoption of digital television against the adoption of other similar technologies.

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[48] *DCMS (2002)* The role of integrated digital television sets in achieving digital switchover, *http://www.digitaltv.culture.gov.uk/pdfs/role_of_integrated_digitaltv.pdf.*

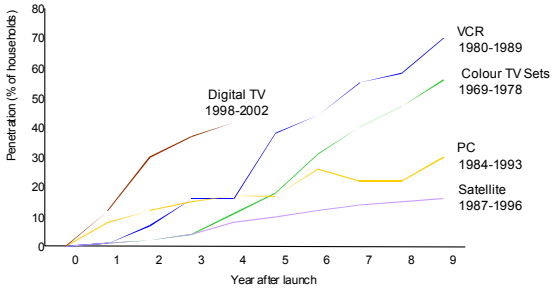
[49] *"Q&A: the analogue switch-off"* The Guardian *25 November 2002.*

[50] *Office of e-Envoy (2002)* Digital television: a policy framework for delivering e-government services to the home. A draft for public consultation, *October.*

[51] *Independent Television Commission (2003)* More than 40% of households now have Digital TV, *http://www.itc.org.uk/latest_news/press_releases/release.asp?release_id=689.*

[52] *Before the* Go Digital *trial (see above) around a fifth of all participants said that they were not interested in getting digital. However, after the trial, the majority of this group (68 per cent) indicated that they would convert, with many others showing an increased interest. Only a small number of these participants (6 per cent) still had no interest at all in switching to digital.*

FIGURE 3 TAKE-UP OF DIGITAL TELEVISION COMPARED WITH OTHER HOME TECHNOLOGIES



Source: ITC

The data appear to indicate that the rate of adoption for DTV is faster than for earlier home-based electronic technologies, such as the videocassette recorder and the personal computer. However, it should be noted that, unlike DTV, which is a replacement technology, each of the comparator technologies had no earlier parallels, and thus represent a different form of innovation.

Furthermore, it could be argued that the launch of the Freeview service in October 2003 not only demonstrates Government's determination to achieve the 2010 target, it is also an implicit recognition that a market for DTV may not currently exist and must be driven by content rather than technology. Freeview can thus be seen as a clear example of Government reacting quickly to the failure of the market to provide a Digital television offering that is compelling enough for consumers to leave the existing analogue service. Freeview was set up soon after the private digital terrestrial broadcaster, OnDigital, went bankrupt and cease to broadcast. Government policy has thus shifted from initial facilitative approach to one of market-making given the policy imperatives and the centrality of DTV to the wider e-government agenda.

Satellite communications

Policy definition

Although UK space policy has historically targeted the pursuit of user-driven research, in July 2002, the Minister for Space announced his intent in the *UK Space Strategy 2003-2006 and beyond*, to focus UK space activities on expanding the application of space-based services throughout the economy so that "UK citizens will provide and exploit the advanced space-based systems and services which will stimulate innovation in the knowledge-driven society".[53] The emphasis, not surprisingly, was on communications.

Satellite communications are an integral part of UK's space policy. Government invests about £200 million per year in civil space technology and services. Satellite navigation and telecommunications especially those that have an impact on the

[53] *BNSC http://www.bnsc.gov.uk/index.cfm?pid=854.*

information-led economy figure among the main Government's space policy priorities. The policy focuses on the technological developments with the greatest commercial opportunities.

The Space Minister is located in the Department of Trade and Industry (DTI), and has an approximate annual budget of £145 million.[54] Although it leads in the formulation of space policy, this is done in conjunction with other departments who have an interest in civil space, such as the Ministry of Defence, Office of Science and Technology, the Ministry of Transport and the Foreign and Commonwealth Office. Input into the policy process is also provided by Government agencies such as the Meteorological Office, and research funding agencies such as the Particle Physics and Astronomy Research Council and the Natural Environment Research Council.

Policy implementation

Approximately 60 percent of UK civil space expenditure is channelled through the European Space Agency, ESA, of which the UK was a founder member. ESA provides co-operation in space science, technology and applications among European Member States. In the UK, ESA funds are channelled through the British National Space Centre (BNSC), which represents the UK at ESA.

A great majority of the funds that the BNSC directs to space telecommunications are in the form of contributions to particular programmes run by ESA. To help drive the policy implementation process, a UK Space Strategy Council, chaired by the Director General of the DTI Innovation Group, was established to provide strategic guidance to the Government bodies that make up the BNSC Partnership. Funding Partners keep the Council informed on their individual space strategies, implementation plans and programmes. The Council normally meets twice a year.

Besides the BNSC's primary role of funding programmes, it conducts constant dialogue with other areas of Government where space services maybe relevant to the achievement of public policy.[55] The process by which BNSC decides to fund programmes involves the following steps:

- A review of ESA programmes open to application, including discussions with UK industry both on an individual company basis and through the Telecoms Forum, which BNSC has established with representatives from a range of firms. A set of recommendations emerge from this review.
- The BNSC Resources Board considers the recommendations. The Board is made up of members from each of the funding departments and the Research Councils

[54] *BNSC http://www.bnsc.gov.uk/*

[55] *For instance, the Engineering and Physical Science Research Council, the Home Office, the Department of International Development and the Department for Education and Skills, as well as industry and the scientific community.*

- The Minister for Space and other interested Ministers review the recommendations. In the event of a disagreement between the Ministers, the matter is then passed to a Cabinet Committee
- The Minister for Space makes the final budgetary allocations.

The BNSC also funds national programmes independent of ESA. Here again, there is a process for deciding which programmes should be funded. For each programme, BNSC officials prepare a business case as described on page 56 above, before being submitted to the Minister for Space for final approval.

Policy evaluation

The UK Space Strategy Council plays a central role in the evaluation of space policies in general, and those related to space-based communications in particular. It BNSC's performance against the objectives, outcomes and performance indicators expressed in the UK Strategic Plan. For this task it needs to identify outcomes and indicators linked to all strategic objectives, including "to foster the development of innovative technology, its commercial exploitation (such as telecommunications and navigation) and its application in research." The development of methods and indicators to carry out such assessments is still under consideration. Outcomes that are being considered for monitoring include the number of satellite operators or service providers who select to locate and remain in the UK and the growth in UK GDP that can be attributed to satellite operation and value adding service providers.

Evaluation of BNSC activities is also conducted through DTI-commissioned assessments of the programmes it funds. The results are fed back to the DTI who then considers their implications for future BNSC's activities and budget.

Regulation: towards convergence

Competition and access

Policy definition

In December 2000, the UK Government published the White Paper *A New Future for Communications,* which established a new regulatory framework for a converging communications sector.[56] Convergence will allow consumers to have access to many different broadcast channels, Internet-based services and other specialist information services, using a range of different networks. Because of the convergence of different communications networks, Government recons that it is no longer appropriate to carry on with the present regulatory structure composed of five independent regulators:

- Office of Telecommunications (OFTEL)
- Independent Television Commission
- Broadcasting Standards Commission

[56] *Department of Trade and Industry (2000)* A New Future for Communications, *London.*

- Radio Authority
- Radio Communications Agency (regulating radio spectrum)

The central proposal of the White Paper is that a single regulator for the communications sector, the Office of Communications (OFCOM), should replace these different regulators. The underlying rationale is to establish a new and more coherent structure for communications and broadcasting in the digital age. The Secretary of State for Culture, Media and Sport and the Secretary of State for Trade and Industry collectively developed this policy, resulting in the publication of the Office of Communications Bill on 7 May 2002.

The existing regulatory bodies have also signed a memorandum of understanding and have been working together to create an appropriate organisational structure for OFCOM. After months of consultation in November 2002, Government revealed a groundplan for OFCOM.

OFCOM will have an unprecedented range of powers. It will regulate broadcasting and telecommunications, and among its duties OFCOM will have the task of regulating three great powers: the British Broadcasting Corporation (BBC - a non-commercial public broadcasting station supported by television licenses and Government funding), British Telecom, and BskyB (Rupert Murdoch's satellite television company).

OFCOM's objectives are to:

- make the UK the most competitive communications and media market in the world
- ensure universal access to a choice of high-quality services, including universal access to the Internet by 2005
- ensure that citizens and consumers are safeguarded from overcharging by dominant players and protected by basics standards of decency and privacy[57]
- to determine whether mergers between communications companies would be detrimental to competition.

After the publication of the Bill in May 2003, it was scrutinised by a parliamentary committee, which made 148 recommendations, of which Government has accepted 120. The UK legislative process requires the House of Commons and the House of Lords to go through several readings of each bill before being passed. This process took place in July 2003, after which Government has sought royal assent (sent to the Queen for approval, which is just a formal process). The Bill was passed in July 2003 the Bill will pass into law by November 2003. OFCOM will be operational by the end of 2003. Table 4 summarises the key events involved in the policy formulation for OFCOM.

[57] *Access at competitive prices, content regulation and rates that BskyB charges other television companies for their channels to appear on this satellite platform are included here.*

TABLE 4 KEY MILESTONES FOR OFCOM POLICY FORMULATION AND IMPLEMENTATION

December 2000	**White Paper 'A New Future for Communications' is published**
May 2001	The Government's Business Manifesto states "Our aim is to bring OFCOM into operation by 2003."
June 2001	Office of Communications (OFCOM) Bill is introduced in to Parliament. Towers Perrin Scoping Report is published
January 2002	Media ownership consultation closes
March 2002	OFCOM Bill receives Royal Assent. Second consultancy phase for setting up OFCOM begins
May 2002	Draft Communications Bill is published for consultation
May 2002	Joint committee on the draft Communications Bill convenes
July 2002	Chairman of OFCOM is appointed
August 2002	Consultation on draft Communications Bill closes
Autumn 2002	Queen's Speech to introduce the Bill
Autumn 2002	Board members appointed
January 2003	OFCOM location announced
January 2003	Chief Executive appointed
January 2003	Transitional website launch
February – March 2003	Transitional intranet launch
February – April/May 2003	Senior staff appointed
Early Summer 2003	Consultation on main principles
July 2003	Royal Assent of Bill

Source: http://www.ofcom.org

Policy implementation

As Table 4 above shows, implementation of the OFCOM began in the autumn of 2002 with the appointment of the board. The OFCOM Board is experienced across all sectors and has a responsibility for agreeing OFCOM strategy and policy. It will meet formally on a monthly basis and the Board agendas and notes will be published regularly. An initial key task for the board will be to build a vibrant and effective organisation that will utilise the experience and skills of the five existing regulators in an integrated way. The board will also oversee the new regulatory regime set out in the Communications Bill.

The OFCOM Board is made up of 9 members. Six (including the Chairman and Deputy Chairman) are appointed by the Secretaries of State for Trade and Industry and for Culture, Media and Sport. These are known as “the Members.” The three further “Staff Members” comprise the Chief Executive and two additional persons appointed by the Members. Together, the Members and Staff Members are known as “the Board Members.” The Chairman and Chief Executive, and senior staff were appointed in January and April/May 2003, respectively.

The establishment of OFCOM will have several implications for the media and communications sectors.[58] The Communications Bill allows cross-media ownership, but includes provisions to ensure competition. These measures will continue to prevent the UK's biggest media company (Rupert Murdoch's conglomerate News Corp.) from buying into ITV. This is because Rupert Murdoch not only holds the controlling share in BskyB (the UK's only digital satellite TV broadcaster), it also owns several British newspapers, which collectively amount to more than 20% of the national newspaper market. To further competition, the Bill will also remove the block on non-EU companies who will now be allowed to buy prime UK media.

Government has also proposed in the Bill that consolidation should be allowed to a point where there are at least two commercial radio owners plus the BBC radio service. Also, religious organisations and foreign companies will be allowed to own radio stations for the first time.

Policy evaluation

The establishment of a policy evaluation process will have to wait until OFCOM becomes operational. Until such time no formal policy evaluation process is in place.

Intellectual Property Rights (IPR)

Policy definition

The Patent Office is responsible for formulating and developing UK law and policy on intellectual property so as to improve the international competitiveness of British industry. There are two directorates within the Patent Office that develop and carry out UK policy on all aspects of Intellectual Property (IP):

1. The Intellectual Property Policy Directorate (IPPD) deals with patents, Trade Marks, designs and geographical indications of origin and co-ordinates on issues affecting both copyright and industrial property matters.
2. The Copyright Directorate deals with policy on copyright and related rights and provides the Secretariat for the Copyright Tribunal, which settles disputes over copyright licences.[59]

[58] *For instance, for the first time an independent regulator will have the power to impose financial penalties of up to £250,000 for breaches of taste and decency committed by the BBC. Currently, consumers upset with any content that the BBC broadcasts can only demand an apology from the broadcaster, whereas commercial stations, such as ITV, are already subject to financial sanctions.*
[59] *http://www.ukpo.gov.uk*

The IPPD is also responsible for:

- negotiations before the Council of Ministers of the EU concerning proposed directives/regulations
- representation at the World Trade Organisation dealing with the Agreement on Trade-Related Aspects of Intellectual Property Rights, which sets out to ensure that the IP laws of more than 140 countries throughout the world afford appropriate rights that are properly enforced
- working with the DTI's directorates dealing with trade policy and responsible for liaison with all interested parties within the UK, including other DTI divisions and Government departments
- monitoring other countries' IP laws
- acting on complaints against those laws from UK industry; such as issues concerning passing off and unfair competition
- conducting European and international negotiations on IP issues.[60]

In certain policy issues on which the Patent Office seeks to obtain public input, it conducts public consultation exercises. An important area in which this procedure has been used is in the discussions on software-based business method patents.

Two public consultations have been carried out to discuss the patentability of software. It is, however, not always clear if the submissions gathered from such consultations are used to justify an existing policy orientation that the Patent Office already holds, or are used to help shape policy. Most of the comments received by the Patent Office were not in favour of software-based business method patents, and the Patent Office's general policy toward patents applications in this field is not to grant this kind of patents.

Policy implementation

The IPPD implements new domestic IP legislation, including any changes to existing legislation necessary to fulfil the UK's obligation arising from, for instance, European directives and international treaties.

Data protection and privacy regulations

Policy definition

The Home Office was responsible for defining the policies for data protection and privacy and Freedom of Information (see our First Report). Since June 2001, responsibility for these two policies was transferred from the Home Office to the Lord Chancellor's Department. The Freedom of Information and Data Protection Division at the Lord Chancellor's Department is part of the Department's Policy Group. The main policy objective of this Division is to improve the citizen's knowledge and understanding of their rights and responsibilities with respect to data protection, privacy and the right to information.

[60] *Ibid.*

Policy implementation

Two distinct measures were introduced to effect the policy. The first is the formation of the Lord Chancellor's Advisory Group on implementation of the Freedom Of Information (FOI) Act. This is a diverse group consisting of representatives from public associations.[61] The second is the appointment of the Information Commissioner.

In order to implement the FOI Act and enable a fundamental shift toward greater openness and transparency in public administration, the Advisory Group has had to define a substantial programme of work. In addition to the training of public authorities, the development of guidelines and acting as a catalyst for the drafting and approval of model publication schemes for public sector information, the Advisory Group is also charged with:

- preparing maeasures on implementation of the FOI Act
- seeking to encourage an increase in openness in the public sector;
- monitoring the Code of Practice on Access to Government information (see our First Report on this) as well as monitoring implementation of the FOI Act;
- developing a data protection policy which properly balances personal information privacy with the need for public and private organisations to process personal information;
- identifying best practice in information management and recommending approaches to its dissemination in and between different public authorities;
- advising on the needs of users of the FOI Act and how authorities might best meet those needs;
- proposing ways of raising the public's awareness of their rights.

In addition to the above specific tasks, the Group also provides advice and assistance to the Lord Chancellor in the preparation of his annual report to Parliament (see below). It also advises the preparations being made by the Information Commissioner to ensure procedures are established and guidance is produced in a timely manner. The Group will meet at least three times a year until the FOI Act is fully implemented.

[61] *Including the British Medical Association, and the Association of Chief Police Inspectors, hospitals, academics, National Association of Local Councils, Local Government Association, the Newspaper Society and the Campaign for Freedom of Information.*

The Information Commissioner enforces and oversees the Data Protection Act 1998 and the Freedom of Information Act 2000. The Commissioner is an independent supervisory authority reporting directly to the UK Parliament and has both international and national roles. The Commissioner has a range of duties including the promotion of good information handling and the encouragement of codes of practice for data controllers.[62]

Since the FOI Act and the Data Protection Act relate to information and data handling, the Information Commissioner has a dual role, which will allow him to provide an integrated and coherent approach.

Policy evaluation

However, the Lord Chancellor's Department and the Information Commissioner are required to publish annual reports informing Parliament on the progress and effects of the policies. These annual reports present the evolution and progress of the policies rather than attempting a formal impact assessment or detailed evaluation of policy effects.

Public use (1): towards e-Government

The foregoing sections already point to the Labour Party Government's commitment to use ICT to revolutionise its dealings with the public to effect e-government. Through the electronic delivery of information and public services, and electronic communication with Government, it hopes that these measures will lead to increased participation in the policy decision making process –e-democracy. Importantly, successful e-government depends, in large degree, on the participation of the public. The public must be aware of the services available and how to access them. To this end, as noted above, Government has introduced and continues to undertake several policies and regulatory steps –e-agenda– to facilitate this transition.

An important cornerstone policy in the overall e-agenda strategy is *e-Government Interoperability Framework* (e-GIF). To ensure that there is a seamless flow of information across Government so that better electronic public services tailored to the needs of the citizens and business may be delivered, adherence to E-GIF is mandatory. E-GIF sets out Government's technical policies and specifications for achieving interoperability and ICT systems coherence across the public sector. The aim is to enable "joined-up and web-enabled government."[63]

[62] *A data controller is anyone who decides how and why personal data, (information about identifiable, living individuals) are processed. There is a Register of Data Controllers who are subject to the jurisdiction of the Information Commissioner.*
[63] *Office of the e-Envoy (2003)* e-Government Interoperability Framework*, London, p. 3.*

E-government policy aims are often overlapping, as will be elaborated below in the sectoral sections. For instance, the objective to foster e-commerce is supported by the measures to increase the take-up of broadband, the regulations to protect electronic content and privacy, the initiatives to generate trust among e-commerce users, and the policies to increase the digital provision of public sector information and services. This may not be surprising since the e-agenda seeks to provide joined-up Government and it seems logical that there would be overlaps.

According to a report by Booz Allen and Hamilton, the UK ranks second after the U.S. in the advancement of e-government and e-commerce.[64] A major reason for the apparent overall UK success in e-government and e-commerce could arguably lie in the explicit policy support that Government promises to give to developing its e-government and e-commerce agendas. To lead its implementation, Government has established a dedicated cross-departmental organisation situated in the Cabinet Office to drive the e-agenda: the OeE, already noted above.

As part of its drive to co-ordinate the implementation of Government's e-agenda, the OeE developed a channels framework, which contains 10 guidelines for a channels strategy. The framework's primary aim is to promote a co-ordinated approach in the development of channel strategies across public sector bodies so that they can better deliver joined-up services.[65] A channel is defined as a means for delivering services to citizens. It could be electronic, postal or face-to-face. The main electronic channels are Internet, mobile phones, DTV, smart cards, kiosks and call centres. Although the channels framework does not explicitly recommend the adoption of any channel, the Government's e-agenda implies that it is in Government's interest to promote the implementation of Internet-enabled or electronic delivery of services through for instance, DTV.

Recognising that different Government departments have overlapping priorities, the framework suggests that for a co-ordinated approach to a channels strategy to be successful, departments need to reconcile such priorities. This requires careful assessment, otherwise a channel strategy could run the risk of being developed in isolation.[66]

The OeE argues that without a centralised and joined-up framework co-ordinating the delivery channels of public sector organisations, there is a danger of a multitude of services being delivered to varying levels of quality. Instead, a joined up approach to delivery channels can bestow several advantages, not least of all resource-saving and improved service delivery, especially since several departments

[64] *See Booz Allen Hamilton (2002)* International e-Economy Benchmarking. The World's Most Effective Policies For The e-Economy, *London: Booz Allen Hamilton. The UK's relative strengths are its market and political environments – business and government readiness for e-commerce. Its relative weaknesses lie in citizen and Government departments' uptake of advanced ICT applications compared to that of the U.S., Canada and Sweden, and to a lesser extent, infrastructure, although the latter is improving with wider access to broadband and cable.*

[65] *Office of the e-Envoy (2002)* Channels framework: delivering government services in the new economy*, Cabinet Office, London. Interview with a senior officer at the OeE.*

[66] *Office of the e-Envoy (2002)* Channels framework: delivering government services in the new economy*, Cabinet Office, London, p. 9.*

deliver related services to similar citizen groups, such as students and pensioners.[67] The OeE also reinforces the importance of a thorough understanding of citizen needs in the development of a channels strategy in order to provide "best value" and joined-up services.[68]

The following sections will review the policy steps that Government has taken since its election in 1997 to support the use of advanced ICT within the public sector and buttress ICT-related research and innovation throughout the economy. These sections also will survey the Government's measures to provide public sector information through electronic means, and facilitate and increase the delivery of electronic public services.

The public procurement of ICT systems and services

Policy Definition

To undertake its ambitious public policy agenda Government has had to tackle significant weaknesses in the procurement and delivery of major projects, while at the same time responding to the high rate of innovation found in the ICT sector. This has been achieved partly by the centralisation and reform of public procurement processes, and partly by the greater involvement of the private sector in the management, delivery and operation of major projects and systems.

Within the wider agenda of public services reform, in which e-government plays a major role, efficient and effective ICT systems play a key facilitative part. As a result the main policy objectives in this area have been focused on a series of cross-cutting operational issues concerning the procurement, delivery and management of complex ICT projects and systems. However, it is important to recognise that policy in this area was created as a result of the crisis within the public sector in respect to the very poor track record concerning the delivery of large IT systems. Indeed, during the 1990s there was a succession of high-profile public sector IT project failures that undermined public confidence in Government and threatened any future public sector reform agenda. As a result the conditions were created both to initiate and carry through a series of fundamental reforms to government procurement as whole and, within that, ICT system procurement and delivery processes.

[67] *Office of the e-Envoy (2002)* Channels framework: delivering government services in the new economy*, Cabinet Office, London, p. 10. Interview with a senior officer at the OeE.*

[68] *This, of course, could mean that services are delivered electronically and traditionally (face-to-face or through the mail) as there will "always be a large segment of the population that will not be able to use electronic means but who interact with Government frequently." Also see Office of the e-Envoy (2002)* Channels framework: delivering government services in the new economy*, Cabinet Office, London, p. 5. Interview with a senior officer at the OeE.*

The Office of Government Commerce (OGC) was created in April 2000 as part of the wider reform of public sector procurement following a review of civil procurement within central Government. This review was in turn built on a series of previous reviews of public sector procurement,[69] none of which had been wholly successful. The OGC was set up to support Government's objectives on efficiency, modernisation and competitiveness in the short and medium term. The programme of reform was based on two key foundations:

- public procurement decisions should be based on value for money (defined as the optimum combination of whole life costs and quality to meet the user's requirements);
- procurement is defined as the whole-life process of acquisition of goods, services and works from third parties, from the initial project conception to the conclusion of the service contract or the final disposal of an asset.
- The OGC has identified the 5 high-level objectives:
- providing guidance and expertise to support the successful delivery of procurement-based projects and other forms of commercial activity;
- developing the government market so it is more efficient and attractive for both suppliers and customers;
- developing a clear and supportive framework for best-in-class procurement activity to help achieve better value for money;
- delivering efficient and effective services to external and internal customers;
- gaining widespread recognition for excellence and as a leading contributor to government modernisation.[70]

A separate and parallel review of the handling of major Government IT projects resulted in the publication of the McCartney Report, *Successful IT: Modernising Government in Action*. This report[71] outlined a series of measures to improve project delivery (including Gateway Reviews, see below) and led to the establishment of the Successful Projects in an IT Environment (SPRITE) Programme. The OGC now manages this programme as part of its broader procurement remit within the public sector.

[69] *"Efficiency in Civil Government Procurement," 1998; "Setting new Standards: A Strategy for Government Procurement," 1995; "Organisation of Procurement in Government Departments and their Agencies," 1993.*

[70] *Gershon P. (2003) Transcript of a speech given to the Chartered Institute of Purchasing and Supply on 3rd March 2003, http://www.ogc.gov.uk/application.asp?app=latest_news.asp &process=full_record&id=1000008*

[71] *Cabinet Office (2000)* Successful IT: Modernising Government in Action*, Central IT Unit. http://www.e-envoy.gov.uk/oee/oee.nsf/sections/reports-itprojects/ $file/successful_it.pdf*

The importance of these reforms cannot be underestimated since the proposed spend on IT systems and services for 2003 is £12bn. This figure includes military spending (£4bn-£5bn investment in a complete communications and IT overhaul for the armed forces), a £4bn-plus, 10-year contract to run IT systems for the Inland Revenue, and a £2.3bn investment in NHS IT.

These reforms are, in turn, linked to the main mechanism that forms a central part of the public services reform agenda: Public Private Partnerships (PPPs). PPPs are central to Government's strategy for delivering modern public services by drawing on new sources of investment and management from the private sector. PPPs include a range of business partnership arrangements including the Private Finance Initiative (PFI) and the sale of equity in state-owned enterprises. Within the context of PPP, PFI is a case in which both private sector funding and private sector management control are maximised.[72] The total of the PFI contracts let (to 31 October 2002) across all categories was almost £23b[73] with many of these contracts being related to the provision of e-government services.

Policy Implementation

This section will provide an overview of some of the most notable initiatives that have been created as a result of the changes in Government policy concerning IT procurement. We do not pretend to provide a comprehensive list of all initiatives but are focusing on examples of successful innovation.

Gateway Reviews

All new procurement projects in Central Government are subject to the Gateway Review process. The Gateway Process examines a project at critical stages in its lifecycle to provide assurance that it can progress successfully to the next stage. It is applied to projects that procure services, construction/property, IT-enabled business change projects and procurements utilising framework contracts. The process considers the project at critical points (Gateways) in its development. There are now six Gateways (Gate O – Gate 5) during the lifecycle of a project, four before contract award and two looking at service implementation and confirmation of the operational benefits. The Process emphasises early review for maximum added value.[74]

- *Gate 0.* The first review focuses on strategic assessment and aims to understand all of the issues before money is put into a project.
- *Gate 1.* The second review examines the project's business case. Officials have to persuade scrutineers that they understand the business case for the project and that the proposed solution is affordable and can be delivered.

[72] *HM Treasury (2003)* Corporate information. *http://www.hm-treasury.gov.uk/documents/ enterprise_and_productivity/public_enterprise_partnerships/ent_pep_aboutpep.cfm*

[73] *Compiled from spreadsheet summary of all PFI contracts let up to date 31.10.2002; Office of Government Commerce (2003) http://pfi.ogc.gov.uk/stats.asp*

[74] *Office of Government Commerce (2003)* OGC Gateway Process information and summary *http://www.ogc.gov.uk/index.asp?id=377&*

- *Gate 2*. The third review considers the proposed procurement approach and establishes whether the project is ready to invite tenders. Crucially, it takes place before an advertisement appears in the official journal of the European Communities.
- *Gate 3*. The fourth review considers the contract decision, and whether it will deliver in time and represent value for money. It provides a last chance to modify a project before large sums of money are spent.
- *Gate 4*. The fifth review occurs before the asset is commissioned or the contracted service goes live. The review focuses on whether the service is ready for operation and whether the agency running it is ready for the necessary organisational and business process changes. A review at this stage might have reduced the scale of the 1999 Passport Agency fiasco, in which a new IT system was implemented before full testing had occurred.
- *Gate 5*. The final review occurs towards the end of the project to ensure that the planned benefits and value for money identified in the business case are being delivered. The idea is to ensure that the lessons learned are passed on to other agencies.

e-Procurement

The strategy for the adoption of electronic procurement by central Government was established in October 2002. The strategy focuses on how web-enabled tools and techniques can deliver significant value for money improvements to Government's commercial relationships. There are three main strands to the strategy:

1. the establishment of framework agreements to procure off the shelf tools where available;
2. the influencing of policy direction and best practice and the establishment of a common approach to e-procurement across government departments;
3. undertaking a feasibility study for a single point of entry and commercial information exchange between government and supplier systems (an eHub).[75]

The e-procurement strategy was based on extensive research, including trials such as ePilots, eAuctions and eTendering projects into how e-Procurement can bring added value to departments' procurement activity. In January 2001, the OeE in collaboration with Microsoft, Dell, SchlumbergerSEMA and Cable and Wireless launched *Government Gateway*, the official Internet-based website, or eHub, for e-procurement. Over time, Government anticipates that *Government Gateway* would handle a substantial part of the estimated £5-6 billion of annual Government-related transactions.[76]

[75] *Office of Government Commerce (2003)* eProcurement Programme, http://www.ogc.gov.uk/ index.asp?id=2361

[76] *Office of the e-Envoy (2002) http://www.e-envoy.gov.uk/oee/oee.nsf/ sect…/govgateway.html.*

Government Gateway provides:

- authentication and authorisation services, which ensure that users are who they claim to be and that they have the right to access a specific service or set of services;
- a single sign-on facility and single credentials that are supported across Government services, national, regional and local so that users can have one user ID and password, or a digital certificate, for use with all online public services;
- a common transaction and routing facility, which guarantees the reliable delivery of documents and messages between business, citizens and Government;
- a secure messaging facility enabling secure communication between business, citizens and government organisations and also the secure delivery of items such as tax statements that can be picked up and processed by accounting software;
- an integrated tier offering reliable delivery of standards-based information into the connecting organisation, including the option for customised local integration into existing systems and applications.[77]

The idea of a common infrastructure is to allow it to be shared across national, regional and local public services. Furthermore, it avoids duplication of the common facilities and services necessary to connect individual Government organisations to customers over the Internet. The provision of a common authentication service permits the user to interact with Government through the use of a single identity. Importantly, *Government Gateway* seeks to enable the private and public sector to provide customer-driven applications that can interface with Government in a consistent manner as well as help to concentrate expertise in the areas of security, reliability and capacity management across a narrow range of systems.

The first major upgrade of *Government Gateway* took place in July 2002. The improvements included:

- simpler registration and enrolment;
- provision of services where citizens or businesses are dealing with Government for the first time, e.g., VAT registration;
- redesigned screens and help pages.[78]

[77] *Office of the e-Envoy (2002)* Open Source Software: Use within Government. A policy document, http://www.ogc.gov.uk/oss/OSS-policy.htm
[78] *Ibid.*

Services currently available online through *Government Gateway* are

1. IACS Area Aid Application – Department for Environment, Food and Rural Affairs
2. Child Benefit Online – Department for Work and Pensions
3. DARD Secure Online Service Scheme – Department of Agricultural and Rural Development for Northern Ireland
4. Department of Trade and Industry Export License Application
5. Electronic VAT Return – HM Customs and Excise
6. Internet Service for Self Assessment – Inland Revenue
7. Landweb direct – Land Registers of Northern Ireland.

Successful Projects in an IT Environment (SPRITE) Programme
Formally established January 2001, the SPRITE Programme aims to improve the management, success and benefits of Government IT-enabled business change. The programme was created as a result of the *Successful IT: Modernising Government in Action* Report and works with stakeholder groups to embed the Report's recommendations into organisations' working cultures. The SPRITE vision was, in broad terms, to raise the standards of Government organisational capability to deliver successful projects to the level of the best and to provide mechanisms to underpin the process of improvement. The programme had a broad range of objectives based on a wide understanding and use of the measures set out in the *Successful IT* Report. It aims to enable long-term learning and evaluation, articulate government expectations, promote communication with suppliers, and establish mechanisms designed to demonstrate the SPRITE programme's impact on the delivery of government IT-enabled programmes and projects.

The SPRITE Programme's stakeholders included Central Civil Government Departments, Ministry of Defence and their Executive Agencies, Executive Non-Departmental Public Bodies (NDPBs) and Tribunal NDPBs. Devolved Administrations, Local Government, the National Health Service (NHS), Nationalised Industries, Public Corporations or Advisory NDPBs were excluded from the guidelines.[79] The SPRITE programme concluded in March 2003.

IT Projects Database
The IT Projects Database is a compilation of government projects, enabling project teams to reach knowledge held across Government. One of the findings of the *Successful IT* report mentioned above was that no central system existed in Government for managing information on IT projects, despite the risk and adverse outcomes sometimes associated with such projects. The report recommended the creation of the IT Projects Database, with input from all departments, agencies and NDPBs.

[79] *Office of Government Commerce (2003)* SPRITE Programme information and summary, http://www.ogc.gov.uk/index.asp?docid=428

The database is designed to support the sharing of expertise, experience and knowledge, and is intended to prevent the "reinvention of the wheel" in new projects.[80] It is also designed to capture a range of high-level information as well the contact details of senior staff who were either responsible for the project, the feasibility study, procurement information, implementation and post implementation review.[81]

Policy Evaluation

The cluster of related and interlocking policies that are concerned with the procurement of IT are subject to a range of formal and informal evaluations that are used to inform the development of existing policy and the direction of future policy. However, due to the relative immaturity of many of these initiatives and the continuous improvement ethos of the process as a whole, few formal evaluations have yet to take place. Despite this lack of formal processes there is a wealth of informal and ongoing policy evaluation that provides useful insights into their effectiveness and efficiency.

Gateway Review Process

Launched in February 2001, Gateway reviews build on the holistic approach to procurement and are designed to ensure that all major government projects and programmes with a procurement dimension are subject to rigorous tests as they pass through a series of gates, with identification and rectification of problems at the earliest opportunity. The process is standardised and all review team members go through common training with the result that Gateway reviews provide evidence of systemic weaknesses across government procurement. As a result, lessons can be identified which may form the basis for improvement in the process. By March 2003 some 230 procurement projects involving expenditure of £36bn have gone through one or more stages of the Gateway review process, although, due to its recent introduction and the typical duration of large IT projects, no project has been subject to the entire review process. The first projects to progress through the all stages of the Gateway review process are not likely to have completed stage 5 until 2004-2005.

The Gateway process is subject to a continuous review process with feedback being collected and collated from the review reports produced Senior Responsible Owners (SROs) and Gateway review leaders. The SROs and the leaders of Gateway reviews are also encouraged to make recommendations that would improve the Gateway review process. As a result the Gateway review process has been developed and improved on an ongoing basis during the first two years of its operation, and now it can be stated that a 'total feedback control loop'[82] exists. The Gateway review process has been judged a success, generated a number of policy developments and been adopted by other parts of government (see below).

[80] *Office of Government Commerce (2003)* OGC IT Database information and summary, http://www.ogc.gov.uk/index.asp?id=143

[81] *Office of Government Commerce (2002)* The SPRITE Programme: IT Projects Database. A briefing document, http://www.ogc.gov.uk/ embedded_object.asp?docid=1925

[82] *Comment from a senior OGC official*

The Gateway review process is of particular value to programmes and projects where complexity, integration and business change are high on the agenda and, at its launch, it was anticipated that it would generate at least savings of at least £500m per annum within 3-4 years. The Chief Executive of the OGC, Peter Gershon, has stated publicly that the Gateway review process is on track to deliver on this target.[83]

SPRITE

The SPRITE programme was intended to provide a support infrastructure in terms of tools, techniques and organisational involvement to support organisations in the implementation of the 'Successful IT' report recommendations. It was intended to act as a catalyst for continuous improvement in the delivery of public sector projects and programmes and it has been largely successful in achieving this primary objective.

The key achievements of the programme are as follows:

1 *Implementers Network*

The Implementers Network is a community of people from central Government Departments, Agencies and NDPBs, including the Ministry of Defence, who have responsibility for improving their organisations' capability to deliver projects and programmes. The intention was to ensure that Government organisations would take responsibility for the recommendations, improve the information flows between organisations and the Centre, and enable everyone to connect with colleagues in similar roles and situations across Government.

2 *Measuring Government Progress – the Capability Assessment Tool*

The success of the Capability Assessment Tool (CAT) can be defined by how the organisations in scope for the SPRITE Programme have welcomed and used it. Whereas the previous SPRITE Questionnaire was regarded as just another reporting tool that offered very little to the organisation completing it, the CAT has enabled them to recognise the need to assess the maturity of their capability to deliver IT projects and programmes. As a result of the assessment, they are able to baseline their current maturity, establish where they need to be and then create improvement plans to enable them to achieve the level of maturity that will guarantee them successful delivery of the IT-enabled business change.

This success can be further illustrated by the amount of external interest that has been generated since the launch of the CAT. NHS Trusts and departments in Local Government, as well as departments within the Australian, Irish and South African Governments have all shown interest in the CAT.

[83] *Text of a speech by Peter Gershon to Chartered Institute of Purchasing and Supply, 3 March 2003.*

3 *Senior IT Forum*

The IT supplier community is a key component in the drive to improve project and programme success. The Senior IT Forum has created an environment where government and industry representatives can openly discuss the obstacles to success and offer constructive solutions. Most of the Forum's activities have been based around developing a partnering approach to customer/supplier relationships and promoting good governance within both organisations. The Forum's first programme of work has been managed through the SPRITE Programme. The Forum has created a new project role, the Senior Responsible Industry Executive (SRIE), an industry equivalent to the SRO role to ensure that the supplier's project team are aligned with the customer's aims and objectives and to give the SRO a senior contact with whom to resolve difficulties as soon as they arise. The Forum has commissioned guidance on Effective Partnering which promotes the benefits of this approach to contracts and encourages the attitudes and behaviours required to make it a success. The Forum was involved in the production of two other OGC products: the *Government Procurement Code of Good Practice*, and the best practice guide *Value for Money Evaluations in Complex Procurements.*

4 *Role of Senior Responsible Owner*

The role of the SRO has now become established across government departments.

5 *Communications*.

The SPRITE Programme was very active in the area of communications and produced a monthly electronic newsletter, which supports the delivery of IT-enabled business change. At the time of programme closure, the newsletter had a circulation of over 800 including the Implementers Network, SROs, project and programme managers and the private sector.

An electronic Events Diary to enable sharing of all customer facing programme activities across OGC was also developed. Available on the OGC intranet, this diary has helped to ensure OGC people share knowledge and take a joined-up approach to contacting customers. The newsletter and the Events Diary were expanded in July 2002 to include contributions from the Research and Delivery Division areas within the IT Directorate.

e-Procurement

Initially measurable e-procurement targets were set up and considered central to the Government's reform drive. However, it is clear that these targets were not evidence-based but rather a means to focus the minds of the staff responsible for achieving them. Indeed, the target of achieving 90% of low-value transactions via e-procurement methods by 2001 has been recognised as unrealistic, with a figure of only 40% being achieved.

As the challenges involved in moving towards e-procurement became more clearly understood the nature of the targets themselves were reappraised, and the earlier targets repositioned as being purely 'aspirational.'[84] This has given rise to the creation of second-generation targets focused on delivering value rather than achieving a specific volume of transactions. This, in turn, implies that resources are being targeted to those areas that will provide the best return in terms of business value as a whole. This is a significant change that is still being played out across Government but which indicates a degree of maturity emerging in the e-government agenda.

Accompanying the change in targets was a different policy strategy. One of the early decisions made by OGC in 2000 was to abandon the existing approach to e-Procurement based on a 'one size fits all approach' and initiating a series of pilots across government. These pilots were concluded in 2002 and the results published in a series of reports.[85] As a result of these pilots the OGC has moved away from numerical targets related to the volume of transactions and tenders to a target which reflects the need for e-Procurement to deliver real business benefits. The primary target for e-Procurement initiatives is now to contribute £250m of value for money improvements over the period 2003-2006.

IT projects database

The creation of the IT projects database has meant that, for the first time, there has been an overview of government IT projects in a single location. It has enabled the scheduling of major and critical projects and has provided a means for project teams to identify each other and discuss matters of mutual concern. By August 2001 the database held data on over 300 projects, this number having risen to over 600 by July 2002, when the IT project database was relaunched. No formal evaluation of the operation of the IT project database has taken place although it is anticipated that, as a greater number of projects have progressed through to completion, the impact of the database on practice and policy will increase.

Feedback and Learning

Despite the lack of any formal policy review at this stage of its implementation significant feedback and learning has taken place. This section will provide some detailed insights into the feedback and learning that has arisen from government procurement policies.

[84] *Jane Gibbs, Director of e-Commerce at the OGC speaking at a CSSA conference. Reported in Simons, Mike (2001) 'Blair's unrealistic e-procurement deadlines dropped'* Computer Weekly, *15 February.*

[85] *A series of three reports were published under the title 'e-Procurement: Cutting through the hype', available at the OGC website www.ogc.goc.uk*

Gateway Review Process

The Gateway review process has been consciously set up to provide for continuous learning and is an example of a continuous improvement process that has resulted in a number of incremental developments in the implementation of policy concerning IT procurement. These fall into six main categories:

1 *Identification of Major and Critical projects*

The Gateway review process has provided a means for providing a centralised view on all major projects within the public sector and, within these projects, the identification of those projects that are deemed critical to the government's reform programme.

2 *Roles and responsibilities within the Gateway review process*

The original Gateway review process specified that a SRO be identified on the client side of any major procurement, and that SROs should remain in post for the duration of the project. This role has now been supplemented by two further roles within any major project. Critical projects will have a named government minister associated with their successful delivery, thus ensuring the appropriate political focus is applied to such projects. On the supplier side of all projects a new role has been created that equates to the SRO on the client side, the Senior Responsible Industry Executive (SRIE).

However, it is interesting to note that although SROs were to have remained in post for the duration of a programme, this has not been achieved and senior civil servants continue to move between posts during the life of a project. The implication of this is significant since it implies that achieving long-term ownership and focused responsibility amongst the executive for major IT projects within government may be much harder to achieve than was originally anticipated. It is unclear at this stage, given the large number of related initiatives, what impact this may have on the successful delivery of major IT projects.

3 *Staff development impact of the Gateway review process*

The operation of the Gateway review process, involving practitioners within the public sector and others in a review and mentoring process, has resulted in the creation of an effective experience-sharing network. The benefit of the peer review design has meant that a large number of public sector staff will be both involved in major IT projects, but also reviewing other projects throughout the Gateway review process, resulting in the creation of an effective experience sharing network.

4 *Cultural impact of the Gateway review process*

The Gateway review process has fundamentally changed the basis of the relationships between the stakeholders involved in a major IT procurement process. Suppliers now have a platform to feed information into the process, whereas they might previously have been ignored. The OGC staff who produce best practice guidelines are having to ensure that published guidelines reflect current practice emerging from the review process. Project teams obtain more meaningful, independent, peer review feedback on the status of their project. Those responsible for parliamentary oversight of major IT projects find that the Gateway process provides a powerful means of identifying problem projects at an early stage.

5 *Creation of additional stages within the Gateway review process*
The Gateway review process was initially designed with five stages, with Gate 0 (the strategic assessment of a proposed project before resources are allocated) being added after a year of operation. However, a further stage, Gate –1, has been mooted. This stage would focus on the policy formation area of a project and critically examine the foundations of policy initiatives that would give rise to major projects to create the IT systems required to support them. It is unclear at this stage if this proposal will be adopted within the official Gateway review structure.

6 *Adoption of the Gateway review process by other parts of the public sector*
As the Gateway review process has proved to be of value it has begun to be adopted by parts of the public sector that were excluded from its initial implementation. It is now to be adopted in some form by the National Health Service and Local Government within England. Although this may appear to be a positive spread of good practice, it is unclear at this stage how the Gateway review process will work in the very different organisational cultures that exist within those two groups.

e-Procurement
The policy development in the area of e-Procurement has been one of gradual retreat from the largely unrealistic early targets made in 1999, well before any systematic study of e-Procurement had taken place. As discussed above, the OGC initiated a series of e-Procurement pilots across Government as a means of gaining experience and developing a policy approach that was informed by evidence and experience. The results of this change in approach have been a shift away from simple volume-based targets and a refocusing of efforts around business benefits.

The SPRITE programme
SPRITE was a collection of initiatives that was designed to provide an umbrella programme that would address many of the practice-related recommendations that were made in the *Successful IT* report. The SPRITE programme ran between July 2000 and March 2003 and, in the spirit of the continuous improvement ethos that was at the heart of many of these initiatives, developed in response to ongoing feedback as it progressed. A good example of this was the evolution in the operation of the Senior IT Forum.

The Senior IT Forum has proved a useful means of engaging with the supplier community and has been looking increasingly at the business context of IT projects to identify and remedy systemic problems that exist at the interface between the public sector and the IT industry. The Senior IT Forum began to create a new approach to procuring and delivering successful IT projects which includes a new framework for the leadership of projects; high-level guidance on value for money; a partnering approach recommended for all complex IT projects; and a joint education programme. The Senior IT Forum also recommended that behavioural patterns are addressed on both the government and industry side and suggested the addition of the SRIE (see above). SRIE is a role that has been created directly as a result of government-industry collaboration. It is also significant that the Senior IT Forum has been largely welcomed by the media, who see its creation as a positive improvement in government-supplier relations.

The lower-key attempt to create an experience-sharing network for practitioners, the Implementers Network, has grown to 250 people across 75 organisations.[86]

IT project database

Whilst the IT projects database is still at an early stage of its operation, it was relaunched in mid 2002 after changes had been made to the process by which data on projects is captured. In its original deployment all government departments were obliged (under the 'Successful IT' recommendations) to enter data relating to their projects onto the database. This process placed data capture outside the OGC and the policy was thus dependent, to some degree, on a level of exhortation from the centre that data concerning projects should be provided in a timely manner. This process was redesigned in 2002, with project data being captured as part of the Gateway Review process, thereby streamlining and centralising the data capture process at the same time.

Sectoral Applications

E-health

Policy definition

The improvement of health services continues to be a nettlesome problem for the present Government. As the population ages and demands more and better health services, Government is turning to ICT to reduce the operational costs and increase operational efficiency. The main provider of health care in the UK is the National Health Service (NHS). It is organised as a commissioner-provider delivery system in which purchasers of health care services arrange contracts with providers to serve particular areas. The Department of Health (DH) is charged with policy-making and implementing Government's e-health agenda. [87]

[86] *Members of the group gather quarterly at different venues around London, with 140 people from 55 organisations attending the Implementers Networking Event in January 2003.*

[87] *For more details on the NHS and the e-health agenda, see our First Report.*

To implement Government's ten-year programme of investment and reform, DH published *Delivering the NHS Plan*, in cooperation with NHS and patients. The principles laid out in this Plan were endorsed by leading professionals and patient organisations. Essentially, the Plan aimed at:

- establishing high national standards and accountability;
- introducing devolution of power and resources at the front line to give health professionals delivering care the freedom to innovate;
- providing flexibility between services and between staff to cut across outdated organisational and professional barriers;
- a greater diversity of providers, and choice for consumers.[88]

Although *Delivering the NHS Plan* covers the entire reform of the health services in the UK, our interest here is in those sections that address e-health issues. The overhaul of the current antiquated IT infrastructure to deliver a portfolio of e-health services is now a major component of Government's e-health agenda. This involves the construction of an integrated IT health infrastructure, which will join up the patchwork of systems used by doctors, hospitals and patients so as to provide a seamless communication and delivery structure. This objective is clearly laid out in the DH's document *Delivering 21st Century IT for the NHS*[89] and the *Information for Health* Programme. Accordingly, Government has appointed an "IT tsar" who is in charge of co-ordinating the country's £5 billion IT health-care infrastructure project.[90] The three main policy objectives are:

1. To enable doctors 24-hour access to electronic patient care records (referred to as Integrated Care Record Services, ICRS) and to allow GPs and hospitals to exchange patient files electronically. The system will also generate the data needed to monitor the quality of treatment and to make it easier for doctors to obtain the latest treatments for a given condition. Significantly, the ICRS is an integration of social services records with health records so that social and health services may be delivered seamlessly. The logic underlying this integration lies in Government's belief that there a large segment of the British population who require social services often tends to need more health services or require more help in health-related issues, for instance, the disabled, illiterate, economically disadvantaged older people, the unemployed and the poor.[91]

[88] *http://www.doh.gov.uk/deliveringthenhsplan/deliveringthenhsplan.pdf.*
[89] *See http://www.doh.gov.uik/ipu/whatnew/nprassocv1.2.pdf. The* Information for Health *Programme (see our First Report), which formed the central plank of Government's strategy for its e-agenda for health care delivery has now been superseded by* Delivering 21st Century IT for the NHS.
[90] *To be spent over three years, following a pledge made by Prime Minister Tony Blair during the 2001 general elections.*
[91] *Interview with senior DH officer. Also see Puay Tang, Richard Curry and David Gann (2000),* Telecare: New ideas for care and support @ home*, Bristol, Policy Press.*

2. To provide electronic booking of appointments with GPs and e-prescribing by GPs. The UK is reputedly the only country with a national agenda for this service. It will be implemented to a national standard specification and will consist of two elements. (i) the publication of comparative data about services available, waiting times, etc to enable patients and their GPs to decide where to go for further treatment, and (ii) a booking management service.
3. To provide electronic prescription to replace paper-based prescription (Electronic Transfer of Prescriptions). According to the Audit Commission, 1,000 people in Britain die from prescription errors and adverse reaction to medicines. This costs taxpayers about £500 million annually.[92]
4. To further develop the national IT infrastructure and encourage the development of platforms for advanced remote diagnosis as part of the bundle of telecare and telemedicine services (for more details, see our First Report.)

In 2003 Government announced an additional £2.3 billion to deliver Integrated Care Record Services (ICRS), electronic bookings with physicians and hospitals and telecare/telemedicine.

Policy implementation

In addition to the £5 billion pledged by Prime Minister Tony Blair during the 2001 election, it is worth noting that during Labour's first term of office, Government had invested more than £1 billion to launch the *Information for Health* Programme in an effort to "kickstart" its e-health agenda. As already discussed in our First Report, as a first measure to reorganise the delivery of health care, Government introduced *NHS Direct* introduced in 1999.

It is also worth remarking that in five years *NHS Direct* has grown from a small pilot scheme to a unique national service. It now handles over half a million telephone calls and its accompanying service, *NHS Direct Online*, conducts half a million on-line transactions every month, making it probably the largest single e-health service in the world. Building on this success, *NHS Direct* aims at expanding its call taking capacity threefold in the next three years, while at the same time, developing the various channels through which patients can access the service. The *NHS Direct* telephone number will provide a single point of access for out-of-hours care by the end of 2006, enabling fast and easy access to multi-disciplinary emergency care networks.

[92] *Hayward, Douglas (2003) "Keep taking the tablets, a case study,"* Financial Times (Review Healthcare)*, May 21, p. iii.*

NHS Direct is only one element of Government's e-health policy. As a further measure to harness digital technologies for the delivery of health services, in 2001, the DH launched four pilot projects of about 4-6 months each. These were to explore the feasibility and effectiveness of health information and advice services to the public through digital interactive television (DTV). In particular DH sought to find out if DTV provided easy access and if the expected outcome was positive from the point of view of the consumer.

With respect to the integrated IT health infrastructure, the "IT tsar" will be publishing a list of requirements and standards by the end of 2003. In the meantime, it has drawn a list of 33 companies, including small suppliers and multinational system integrators, which will be invited to bid for contracts.[93] The first contracts will be awarded late 2003. Observers are impressed with the rapid pace toward the construction of the integrated IT health infrastructure.

Central funding for this National Programme for IT in the NHS (NPfIT) has been announced - £370m for 2003/04, £730m in 2004/05 and £1.2bn in 2005/06. This funding will be supplemented by local investment, currently running at £850m a year.[94]

The outcomes from this investment in the four key elements of NPfIT will be:

- improved patient-centred care through high quality integrated clinical systems for healthcare professionals available at the point of care.
- improved choice and convenience for patients through electronic appointment booking and the electronic transfer of prescriptions.
- an infrastructure with key national applications to support automated, technology-assisted care.
- a modern high capacity broadband network that will support all of the NHS' messaging and electronic transfer requirements.[95]

When complete, the new NHS network, known as "N3" will provide the communications infrastructure underpinning the NPfIT and contribute towards Government's broadband drive to provide broadband network connections across all public services. A National Infrastructure Service Provider will be appointed to deliver the broadband connections across the NHS. A single commercial organisation will be awarded the contract to act as the N3 National Service Provider and will be responsible for purchasing and integrating local and national services.

[93] *Wendlandt, Astrid (2003) "It's all about information,"* Financial Times (Review Healthcare)*, May 21, p. ii.*
[94] *(2003)* Telemedicine Briefing for Health and Welfare Minister*, July (private communication from a senior DH officer). Also interview with a senior DH officer.*
[95] *(2003)* Telemedicine Briefing for Health and Welfare Minister*, July (private communication from a senior DH officer).*

Regarding ICRS, DH has to provide quarterly returns to the OeE on its progress on delivering this objective. There are three phases for its implementation.

- Phase One (end of 2004, beginning of 2005): will allow doctors to book outpatient appointments online, send emails and browse the internet and view information relating to their patients. The latter will include laboratory and radiology results and some clinical correspondence, for example, GP referral letters. Phase One will offer simple functionality and make best use of existing and interim systems.
- Phase Two (end of 2006): will give doctors and health professionals access to a more detailed patient record, which will include specialist results, the GP prescribing record, and hospital discharge summaries. Telemedicine and digital imaging will support these services. Phase Two will also computerise referrals, requests and orders.
- Phase Three (2008): will incorporate the advanced features necessary fully to integrate care across both health and social services. This will include decision support software, screening, community wide prescribing and clinical documentation, to include assessment and care planning. Importantly, this Phase sees the full integration of electronic records across social care and health so that a seamless service may be delivered.[96]

In parallel with the above implementation plan, DH will be awarding a contract to supply a National Spine Record Repository by the end of 2003. This will provide access to summary patient information including clinical, administrative and demographic details. This incorporates the concept of the Health Records Infrastructure, for which pilots are already in place. The Health Records Infrastructure is a web-based service that combines information from many existing computer systems of hospitals and clinics to create an online record of the care and treatment each patient has received from the NHS.[97] In a sense, the National Spine Record Repository is a "test run" for Phase One of ICRS.

Although, the development of ICRS has been centrally driven by the NPfIT its implementation is focused at the local level as health services are mainly delivered at the local level. For the provision of IT systems and services by LSPs (Local Service Providers), England, for instance, will be grouped into five geographic clusters based upon the pairing of geographically adjoining Local Government Office regions plus London.

[96] *(2003)* Telemedicine Briefing for Health and Welfare Minister*, July (private communication from a senior DH officer)*.
[97] *(2003)* Telemedicine Briefing for Health and Welfare Minister*, July (private communication from a senior DH officer)*.

There will be a total of five contracts awarded and a maximum of five LSPs covering:

- London
- North East, Yorkshire and Humberside
- South East and South West
- East of England and East Midlands
- West Midlands and North West.

Local Strategic Health Authorities in consultation with the DH will award the first two contracts by the end of 2003 to London and North East, Yorkshire and Humberside. The three remaining contracts will be signed before the end of the year. In London contracts are currently being examined in order to provide the future LSP with details of existing systems. LSPs will have responsibility for management of legacy systems as part of their overall remit.[98]

According to critics, ICRS is indeed ambitious given the Herculean task of pulling all dispersed medical *and* social care records into a single unique electronic system. More importantly, the large-scale use of electronic patient records entails high costs, which, for a large hospital can exceed tens of millions of pounds. For a national system costs will run into billions of pounds. Despite Government's financial investment, it is still questionable whether in the present stretched budgetary situation in the UK healthcare sector hospital administrators will prefer electronic patient records to high profile clinical projects. Similarly, the social services sector will likely want to use scarce resources for more social services than have to divert them to the production of electronic records.

The target of 2005 for the ICRS rollout remains very ambitious. There is historical experience in the slow pace of adoption of computers by GPs, and there is little doubt that substantial cultural change will be needed. Moreover, it remains to be seen whether there is a sustained will and interest for integration of services of two separate departments, given that Government departments in the UK tend to work in "silos."[99]

As noted above, e-prescription is also an objective Government's e-health agenda. In 2001, Government commissioned three pilot trials of computerised prescribing by GPs. The first one, Flexiscript printed bar-coded prescriptions on paper, which were then sent electronically to an offsite server. Pharmacists scanned the paper prescriptions into computers, which then downloaded the electronic versions. Doctors' notes on guidance about patients' needs could be sent along with the prescription. After the prescription was dispensed, an electronic transaction record was sent to the Prescription Prescribing Authority, the agency that reimburses pharmacists.

[98] *(2003)* Telemedicine Briefing for Health and Welfare Minister*, July (private communication from a senior DH officer)*.
[99] *Interview with senior officer in the OeE.*

The second trial was the Transcript pilot. This sends electronic repeat prescriptions directly from GPs to pharmacies. Patients nominated the pharmacy where they wanted the GP to send their prescription and then picked up the medicines. The third pilot, Pharmacy2U, involves electronic prescriptions sent to an online pharmacy. This dispatches the medicines by registered mail to patients' homes or workplaces.

By the end of 2003, the "IT tsar" is expected to commission a national electronic prescription system for GPs, with the aim of combining the best parts of the three pilots, aiming for a complete rollout in a couple of years. Some have suggested that the pilots are a stalling tactic by DH to buy time and "harvest good ideas for free."[100]

Policy Evaluation

The National Audit Office, a Government agency that monitors Government programmes and activities, has judged that in just five years, NHS Direct has established an impressive track record for customer satisfaction and patient safety, empowering patients to make better informed choices about their own healthcare. It has also clearly identified its potential to contribute to wider developments in the NHS.

With the challenges ahead for NHS Direct and the new emphasis on devolving services to the local providers, it became clear that longer-term organisational arrangements had to be considered. Mike Ramsden, former Chief Executive of Leeds Health Authority undertook a review that identified the need to introduce major organisational changes.

From April 2004, a dedicated *NHS Direct* provider will be established. Governance arrangements will be put in place to ensure that the national provider is accountable for delivery and responsive to local priorities. This will include the establishment of a National Commissioning Board and of a national tariff for services. From 2004/5 funding for *NHS Direct* will be devolved to Primary Care Trusts at the local level, enabling them, over time, to shape the priorities of *NHS Direct* in line with wider healthcare objectives.[101]

Government officials from outside the DH interviewed for this project, see *NHS Direct* as a major success. Not only is the telephone aspect of the service useful, but also the e-mail help system in its website is as efficient as the telephone service. More importantly, *NHS Direct* illustrates that effective e-services can be delivered via parallel means of delivery (phone and the computer). This could be complemented by an additional channel: DTV.

The evaluation of four DTV pilot projects in this field found that most of the participants found the delivery mechanism useful and a significant number used the services being offered, such as information for self-care, appointments booking and a "television nurse." Significantly, the pilots showed that DTV-delivered health

[100] *Hayward, Douglas (2003) "Keep taking the tablets, a case study"*
[101] *http://www.nhs.gov.uk*

services attracted new users, particularly those from the lower-income groups. Although the evaluation exercise could not conclude if these services took the pressure off primary services, it did suggest that there were "hopeful" signs that DTV could deliver health advice services and increase self-care.[102]

In the e-booking arena the trials were also successful. Yet many experts are sceptical about the chances for rolling out the services in a speedy way. Changes in culture and traditional practice will be required. For instance, specialist consultants will be required to open their appointment books to GPs, meaning that GPs will have control over the former's schedule. Given the "status" that consultants have over the GPs, such transparency may not bode well with the consultants.

Regarding e-prescriptions, the first two trials have shown the inefficiencies of the paper-based systems and that it is possible to replicate existing processes using electronic means. The two consortia responsible for conducting the two pilots wanted to trial "repeat dispensing," a process that allows a GP to authorise a batch of repeat prescriptions, which the pharmacies dispense over a certain period. This, the consortia argued, would save time for patients and doctors alike. Despite the requests from the consortia, the DH argued that repeat dispensing would be too radical and that to introduce this new trial halfway through the pilot projects would confuse the results. Other observers note that the pilots did not cover prescribing in hospitals, where many fatal errors occur.[103] These critics contend that Government missed an opportunity to remedy this serious situation.

With respect to Government websites, all departments are required to adhere to the *Guidelines for UK Government Websites*,[104] which emphasises accuracy, timeliness, accessibility, accountability and the publication of public documents that are not restricted by the Freedom of Information Act. Such information helps the public assess how each department/agency is fulfilling its policy commitments/targets.

Health-related websites in particular have to adhere to a European Commission Communication, *eEurope 2002: Quality Criteria for Health related Websites*.[105] As with the UK website Guidelines, the criteria aimed an ensuring that health-related information reflects accuracy, transparency, accountability, accessibility, compliance with EU directives (such as privacy and confidentiality) and timeliness. Ac-

[102] *Nicholas, David, Paul Huntington, Peter Williams and Barrie Gunter (2002)* First Steps toward providing the nation with health care information and advice via their television sets: An evaluation of pilot projects exploring the health applications of digital interactive television, *http://www.soi.city.ac.uk/organisation/is/research/dhrg/reports.*

[103] *Hayward, Douglas (2003) "Keep taking the tablets, a case study"*

[104] *Office of the e-Envoy (2002)* Guidelines for UK Government Websites*, London, Cabinet Office.*

[105] *Commission of the European Communities (2002)* eEurope 2002: Quality Criteria for Health related Websites*, COM (2002) 667, final, November. This Communication resulted from a series of meetings held in 2001, which drew together key players from Government departments, International Organisations, non-governmental organisations and industry, to explore current practices and experiments in this field. Some 60 invited participants from all the Member States, Norway, Switzerland, and the U.S. took part in the kick-off meeting of June 7-8, 2001. Delegates included representatives from industrial, medical, and patient interest groups, Member States' governments, and key invited speakers from the field of health information ethics. These and many others, also took part in the web-based consultation which was open from August to November 2001*

cording to a senior officer at DH, this Communication does not mandate implementation. However, it would be "watched" by the European Commission and if it found that EU health-related websites did not reflect the criteria, "then the Communication could become a directive."

E-Learning: ICT in the education sector

Policy Definition

We define e-learning as a range of ICT-enabled activities, resources and technologies that may be applied to facilitate learning within a traditional or non-traditional educational setting. The UK e-learning policies have been outlined in a series of reports that reflect the developing understanding of the ways in which e-learning may be applied to different educational contexts across a range of educational contexts.

From its emergence in the mid-1990s e-learning policy included infrastructure initiatives (Janet – see below) that were largely confined to higher education, but the main thrust of e-learning has developed to include schools, with the aim of enabling them to 'routinely exploiting ICT.'[106] The policy in this area includes a wide range of initiatives aiming at a broad range of objectives, including social exclusion, life long learning, shortages of IT and electronics professionals, and the participation of women in IT. These objectives are being pursued through a combination of policy approaches, market activity, and a series of initiatives that evolve as experience is gained and results analysed.

Within this framework the notion of e-learning was soon supplemented with the idea of 'e-confidence'. The concept of e-confidence was introduced in a recent report from the Department for Education and Skills,[107] which defined it as a complex set of skills, processes and attitudes, and expressed the wish that every school leader, governor, teacher, member of the support staff and pupil, should become 'e-confident'. 'E-confidence' should result in re-engineered teaching, learning and assessment, and the effective ICT application in management processes.[108]

[106] *Department for Education and Skills (2003)* Fulfilling the Potential: Transforming teaching and learning through ICT in schools, *May.*
[107] *Ibid.*
[108] *Ibid., p. 15.*

Policy Implementation

The implementation of e-learning policy is a large and complex area, and this section will examine some of the major initiatives across the educational system as a whole.

Schools, Colleges and Universities

The National Grid for Learning (NGfL) was proposed in the 1997 consultation document *Connecting the Learning Society* and formally adopted in the following year.[109] NGfL was intended to provide a national focus for harnessing new technologies in order to raise educational standards, improve quality of life and improve the UK's international competitiveness. A total of £657m was made available to support new technology in schools between 1998-2002, with a further £155m being allocated for centrally funded projects.[110]

The 1998 policy document *Open for Learning, Open for Business*[111] identified five ICT targets to be achieved by 2002:

1. Connecting all schools, colleges, universities, public libraries and as many community centres as possible to the Grid.
2. Ensuring that serving teachers feel confident and are competent to teach ICT within the curriculum; and that librarians are similarly trained.
3. Enabling school leavers to have a good understanding of ICT, with measures in place for assessing their competence in it.
4. Ensuring that general administrative communications between education bodies and the Government and its agencies cease to be largely paper based.
5. Making Britain a centre for excellence in the development of networked software content, and a world leader in the export of learning services.

Two years later it was also announced that each school should achieve a minimum level of ICT provision to ensure that all pupils can take advantage of ICT in the classroom. This provision was as follows:

- a computer:pupil ratio of at least 1:11 in primary schools, and 1:7 in secondary schools;
- a connection to the Internet in each school, with at least 20% of schools connected at broadband level; and at least one networked computer with Internet access in each school for management and administrative purposes.

[109] *Department for Education and Employment (1998)* Open for Learning, Open for Business, http://www.dfee.gov.uk/grid/challenge/index.htm
[110] *Department for Education and Skills (2003)* e-Learning Strategy Initiatives, *http://www.dfes.gov.uk/elearningstrategy/initiatives.cfm*
[111] *Department for Education and Employment (1998)* Open for Learning, Open for Business.

In 2002 the NGfL programme was replaced by the *ICT in Schools* Programme. The funding for this next stage will be £920m over the period 2003-2006, including matched funding from local government and including all education sectors.[112] This phase aims to make of the use and application of ICT an integral part of the learning process. Broadly, this initiative aims to:

- make a significant use of ICT in teaching and learning across all subjects and ages, inside and outside the curriculum;
- use ICT to improve access to learning for pupils with a diverse range of individual needs, including those with disabilities;
- use ICT as a means of enabling learning to take place more easily beyond the bounds of the school and outside the school day.

The following are some of the main policy initiatives concerning Schools, Colleges and Universities:

- *Curriculum Online*. An initiative to provide teachers and learners with curriculum relevant to digital learning resources via a range of channels and media.[113]
- *e-Learning Foundation.* This organisation is a not-for-profit registered charity established in 2001. It aims to ensure that all children, irrespective of their background, can have access to a portable computer for use in school and at home. Department for Education and Skills (DfES) and charitable donations fund the Foundation.[114]
- *National Learning Network*. An initiative to modernise ICT infrastructure, content and training in all Further Education (FE) colleges, Specialist Colleges and Adult and Community Learning Institutions.[115]
- *All-Girl Computer Clubs*. To create a virtual learning environment in which girls can develop both hard and soft skills.[116]
- *Fast Track trainee teachers Online Community*. A community facilitator with links to online curriculum material and other resources.[117]
- *Teachernet.* Provides teachers with a single access point to information and resources. Brings together materials from a range of government sources.[118]
- *Virtual Heads and Talking Heads.* Candidates for the national professional qualification for school headteachers participate in 'Virtual Heads', a confidential online learning and networking environment. They can access learning ma-

[112] *Department for Education and Skills (2003)* e-Learning Strategy Initiatives
[113] *Department for Education and Skills (2003)* Currilculum online*. http://www.dfes.gov.uk/ curriculumonline/*
[114] *e-Learning Foundation (2003)* About the e-Learning Foundation*, http://www.e-learningfoundation.com/default.cfm?fuseaction=aboutus.overview*
[115] *NLN (2003)* National Learning Network. *http://www.nln.ac.uk/*
[116] *Department for Education and Skills (2003)* e-Learning Strategy Initiatives.
[117] *Ibid.*
[118] *Ibid.*

terials and tutor support as well as network with other candidates. Provided by the National College for School Leadership, the 'Talking Heads' facility is a confidential online networking system for head teachers to share good practice and reduce the sense of isolation.[119]

- *HERO*. Higher Education and Research Opportunities (HERO) is the official national gateway website for higher education in the UK. It provides a single access point for individuals and organisations requiring information about higher education and research in the UK and provides links to all HE-related bodies and activities.
- *GridClub*. Provides an online learning area for children to participate in interactive games, clubs and electronic communication.[120]
- *Laptops for FE staff loan scheme.* To allow FE and sixth form colleges to set up a laptop scheme for staff.[121]
- *Parents Online (POL).* A web based initiative designed to make online educational content available to parents showing the importance of the medium in their children's education.
- *Superhighway Safety.* To provide free guidance to teachers, parents and learners on using the Internet safely.[122]
- *BBC e-learning initiatives.* The BBC's educational role sits at the heart of its public-service remit and it has been engaged in a number of e-learning education projects, including a major broadband project and Open Centres, which offer both formal and informal learning opportunities through new technology.[123] It has also been given permission to launch the Digital Curriculum service within the wider *Curriculum Online* initiative launched by Government.[124] Digital Curriculum is a digital learning resource aimed at teachers, students and individual learners.
- *Managed Learning Environments (MLEs).* MLEs provide an integrated approach to the range of information systems and processes within an institution designed to support learning. Considerable support is being given to FE and HE institutions through the Joint Information Systems Committee (JISC) to help them improve their systems.[125]

[119] *Ibid.*
[120] *Ibid.*
[121] *Ibid.*
[122] *Ibid.*
[123] *BBC (2002)* Annual Report and Accounts. 2001/2002.
[124] *"DCMS Statement on BBC Education,"* The Guardian, *9 January 2003.*
[125] *Joint Information Systems Committee (2003)* Managed Learning Environments, *http://www.jisc.ac.uk/index.cfm?name=mle_home*

e-Learning infrastructure

A key part of the e-learning infrastructure in the UK is the network that connects schools, colleges and universities to the Internet: the Joint Academic NETwork, JANET. The United Kingdom Education Research and Networking Association (UKERNA) was established by the then-Conservative Government in 1993 to manage the computer network programme on behalf of higher education. UKERNA continues to operate and develop JANET (the private-government-funded network for education and research) on behalf of JISC.[126] UKERNA also administers the .ac and .gov.uk domain names and provides security through JANET-CERT.[127]

The following are some of the main initiatives in this area:

- *SuperJANET backbone upgrade.* The SuperJANET Backbone is being up-graded in anticipation of higher bandwidth requirements over the next few years.
- *Spark Initiative*. Aims to provide each local authority in Scotland with a common set of IT services for use by publicly funded schools. It is proposed to use the SuperJANET backbone to interconnect local authority schools' networks.[128]
- *The Lifelong Learning Network for Wales (LLNW)*. The LLNW will provide all of the 22 Local Authorities in Wales with high speed Internet connectivity.[129]
- *Welsh Videoconferencing network.* This project provided 90 videoconferencing studios across both the FE and HE sectors in Wales.[130]

Social exclusion and Life Long Learning

One of the flagship projects in e-learning is *Cybrarian*: an initiative targeted at a substantial proportion of the British population that do not use the Internet because of lack of skills or confidence or because of physical or cognitive disabilities. It was announced in the DTI/DfEE (Department for Education and Employment, now referred to as Department for Education and Skills, DfES) *Opportunity for all* White Paper in 2001. The Treasury recognised the importance of this project and allocated £22.5m over three years from the Capital Modernisation Fund.[131]

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[126] *JISC is a strategic advisory committee working on behalf of the funding bodies for further and higher education in England, Scotland, Wales and Northern Ireland. It also works in partnership with the Research Councils and plays a central role in the network backbone for UK higher education.*

[127] *UKERNA (2003)* Corporate information*, http://www.ukerna.ac.uk/aboutukerna.html*

[128] *UKERNA (2003)* The Spark Initiative, *http://www.ja.net/development/spark/*

[129] *Welsh Assembly (2002) "Signing up for Lifelong Learning Network," Welsh Assembly Government Press Release, http://www.wales.gov.uk/servlet/*

[130] *UKERNA (2003)* Video Development, *http://www.ja.net/development/video/*

[131] *The £22.5 million was granted on the condition that £12.5m funds were matched by the private sector in the final year.*

The Cybrarian concept resulted from recognition of the fact that a substantial proportion of adults in the UK still do not or cannot use the Internet, and are in danger of becoming excluded from a growing number of citizen-oriented public services as these increasingly migrate to the Internet. The target date for its full rollout is April 2004.

In order to gain a better understanding of the complexities and risks associated with Cybrarian, DfES commissioned a Scoping Study, carried out in late 2001. The results confirmed the needs of the target audience and identified a suitable proposition that will allow Government and its partners to address these needs. The focus of Cybrarian will be what is largely referred to as "excluded groups." They are:

- people with disabilities (sensory, mobility, cognitive) that restrict their usage of the Internet;
- the socially excluded, whose restriction in using the Internet may be financial, educational or motivational;
- the 'untapped mainstream' who may have access to the Internet but do not use it, find it excessively difficult or frustrating, or of no perceived benefit.

Through innovation and working with new technology the Cybrarian project aims to develop and market a search facility to help and guide people to overcome barriers such as lack of confidence, lack of skills or lack of motivation in using online services and encourage them to go online. The overall purpose is to provide an ability to personalise how information is presented and assistance in the use of online services and to provide easy access to information and learning.

Cybrarian is built on partnerships with the private sector and other Government departments and agencies. A Project Board and an advisory Stakeholders Group, numbering 60 plus organisations, providing input to the Project Board via their Chair have been set-up. The Stakeholders Group is intended to represent the interests of those who will use Cybrarian so that their requirements may be taken into account as the project develops.

The project is being managed in six stages, with potential breakpoints in the early and later stages of the project. The breakpoints will be reviewed by the Office of Government Commerce Gateway Review process, and the project can be stopped if the evaluation is negative. During the first stage, DfES appointed Management consultants to develop this strategy as well as establish and agree on the scope of the required services from the Cybrarian partner. During this stage and prior to the full procurement, a Cybrarian Proof of Concept will be developed. As well, during this stage, the future support and on-going development of Cybrarian beyond the full launch will be considered. One of the conditions of funding is that Cybrarian is sustained beyond launch by the private sector.

Agencies and other bodies

The implementation of e-learning policy is realised through specialist agencies and other bodies, the most prominent of which are:

- *Joint Information Systems Committee (JISC)*. JISC works with further and higher education by providing strategic guidance, advice and opportunities to use ICT to support teaching, learning, research and administration. JISC operates through a committee system whose membership consists of senior managers, academics and technology experts working in UK further and higher education. With funding from the UK further and higher education funding councils, JISC provides a centralised and co-ordinated direction for the development of the infrastructure and activities, in line with a 5-year strategy. JISC provides the JANET network, guidance on institutional change, electronic resources, and advisory and consultancy services.
- *British Educational Communications and Technology Agency (Becta)*. Becta was set up to support the UK Government and national organisations in the use and development of ICT in education to raise standards, widen access, improve skills and encourage effective management. BECTA aims to provide leadership and expert advice to the UK Education Departments, their agencies, and to set up initiatives in support of their ICT policy development. It also tasked with developing technical and educational standards for ICT use in education and provide information to users and policy makers on progress towards them. Becta has emerged as a key player in e-learning in the UK as it acts as a vehicle both for informing government policy and for providing guidance for educational practitioners.

Policy Evaluation

By the end of the National Grid for Learning (NGfL) programme (1998-2002) it was clear that the rather straightforward targets concerning connectivity to the Internet, access to broadband, and the availability of computers within schools had largely been met or in some cases exceeded. For example, by early 2003 over 99% of schools had been connected to the Internet, with more than a quarter being connected to broadband.[132] In addition, 100% of UK universities and 100% of colleges in England were connected to the Internet with a high-speed connection via JANET.[133] Computer to pupil ratios had also improved to 1:9.7 in primary and 1:6 in secondary schools (compared to the targets of 1:11 in primary and 1:7 in secondary schools). By the end of March 2002, over 390,000 (96%) of eligible teachers in England (over 470,000 in the UK) had signed up for ICT teacher training and over 240,000 teachers in England (over 290,000 in the UK) had completed it. In terms of these rather straightforward targets, the policy of rolling out Internet access and improving the availability of computers in schools, the government has been largely successful.

[132] *Department for Education and Skills (2003)* Spending Review Allocation for ICT 2003-06, http://www.dfes.gov.uk/ictinschools/funding.shtml

[133] *Department for Education and Skills (2003)* Background on ICT targets and achievements, www.dfes.gov.uk/ictinschools/background.shtm

The parallel learning-by-doing approach to developing a better understanding of how, when and why ICT has an impact on school and pupil performance was embodied in the 'let a thousand flowers bloom' approach to initiatives. As can be seen from the very large number of e-learning initiatives covering a very broad range of areas that are currently underway,[134] it is clear that there is still much to learn concerning many aspects of e-learning provision and implementation. However, one stream of activity within the NGfL programme was the commissioning of research into many of the initiatives. It was the results of this research, much of it undertaken by Becta, that were used to inform the direction of the next phase of policy in this area.

As noted above, given the scale of the Cybrarian project it is subject to the Office of Government Gateway Review process. All large procurement projects in civil Central Government are subject to the six-stage Gateway Reviews.[135] The Gateway process examines a project at critical stages in its lifecycle to provide assurance that it can progress successfully to the next stage.

The review of Cybrarian is a means of evaluating whether the aim of enabling access by the large diverse groups that encounter particular problems with accessing e-services and the Internet is being achieved. Cybrarian has now moved into the Proof of Concept phase of Stage One and this has involved the establishment of the project management structure and the refinement of the Cybrarian proposition. The Proof of Concept includes the development of the Sourcing and Procurement Strategy, which will be reviewed in the autumn of 2003 before commencing Stage Two.

However, during our interviews we found that Cybrarian's sustainability is giving cause for concern.[136] Has DfES considered how it is going to maintain this service? Would it not have been more commercially viable if the service is provided totally by the private sector since Cybrarian is targeted over a large and growing segment of the population? Given the policy definition process, will its importance change with a new minister or new Government? These issues, again, reflect the importance of continuity and coherence between policy and implementation.

In the area of infrastructure, the operation of the Joint Information Systems Committee (JISC) and UKERNA is overwhelmingly viewed as a success and an example of good practice.[137] Indeed, access to the JANET network is being expanded to include schools and colleges, in addition to Universities. It is also likely that, in due course, access to the network will be expanded to include the National Health Service.

[134] *Those listed above represent only a sample of the most relevant initiatives.*
[135] *The process applies equally for those organisations that already have strategic partnering arrangements in place.*
[136] *Consultant, ex senior civil servant, who was involved in the early stages of the project.*
[137] *Follet, B. (2000)* A Review of the Joint Information Systems Committee (JISC), *http://www.jisc.ac.uk/indec.cfm?name=report_jisc_review*

Becta has undertaken a series of evaluations on behalf of the DfES into many of the initiatives within the e-learning policy agenda. One example of these evaluations is the ImpaCT2 study: one of the most comprehensive investigations into the impact of ICT on attainment so far conducted in the UK. The study extends over three years (1999-2002), and its purpose is to make an independent evaluation of ICT on children's achievement in a representative sample of schools in England. ImpaCT2 was designed to identify the impact of networked technologies on the school and out of school environment, and the degree to which networked technologies affect the educational attainments of pupils at different stages of their school career. The study involved three related strands:

- *Strand 1*. To develop and apply appropriate methods for evaluating the use of ICT in school and out of school, and to analyse the statistical relationship between the effective implementation of ICT and standards of performance in National Tests and GCSEs
- *Strand 2.* To develop and apply a variety of methods to establish how pupils use ICT, in particular out of school, and what is gained from such use.
- *Strand 3.* To explore the nature of teaching and learning involving ICT in various settings, with a focus on the views of pupils, teachers, and parents.

Whilst this is a complex and detailed study, some key findings from this area include:

- strong evidence of a positive relationship between ICT use and achievement;
- most pupils spend more time using ICT at home than at school;
- many pupils have sustained access to powerful ICT resources as home;
- it is clear that learning is taking place through the use of ICT for leisure pursuits, including factual knowledge and conceptual understanding;
- networked technologies are fast becoming a feature of pupils' education, but strategies for their effective use are still developing;
- sustainability and improvement of ICT within schools are key issues. [138]

Becta has evaluated other projects and programmes, including *Computers for Teachers* (CfT), a Government initiative aimed at helping teachers in England raise standards by enabling them to have access to a personal computer. The first phase of the scheme was launched in January 2000. A total of 28,000 teachers purchased computers under the first phase between January and July 2000. The evaluation aims to assess the impact that teachers' personal access to ICT has on teaching and learning. The first phase of the evaluation involved sending questionnaires to a random sample of 6,000 teachers who benefited from the scheme, and found that CfT has had positive effects on the use of ICT by teachers, their ICT skills, and the

[138] *Harrison, et al. (2003)* The Impact of Information and Communication Technologies on Pupil Learning and Attainment, *http://www.becta.org.uk/ research/reports/impact2/report01.pdf*

use of ICT by their pupils. The majority of teachers believed that their personal ownership of a computer had positively affected pupils' attainment.[139]

This first evaluation was followed by a second one targeted at mathematics teachers. The evaluation is based on a comparison of a baseline survey of recipients conducted in July 2001 with a follow-up survey a year later. The report focuses on teachers' use of computers and their views of the potential and application of ICT one year after receiving their computers.

Feedback and Learning

The general direction of the changes in government policy in this area reflects the move to policies that are far more informed by evidence from practice than they have been in the past. During 1998-2002 a large amount of evidence was collected providing the basis for e-learning policy move away from 'a leap of faith to real evidence of successful practice.'[140] The evidence obtained from the evaluation studies carried out mainly by Becta has resulted in policy beginning to focus on the 'how' rather than the 'why' of e-learning. However, although the main focus of evaluation work relates to schools, there is also a large amount of activity in other areas like higher education, social exclusion and life long learning. Although the thrust of policy remains largely unchanged in these areas, the evidence base underpinning policy is not as strong.

It can be argued that the provision of effective and efficient infrastructure to support e-learning presents a relatively straightforward set of challenges to Government. Historically the UK has been very strong in this area, as demonstrated by the success of JANET. However, it is in the adoption of e-learning technologies that the greatest challenges are likely to occur. As the focus of policy moves from the provision of infrastructure towards effective use, the scale of the challenges that are going to face policymakers is likely to increase. This has been recognised in recent policy documents: 'the vast majority of schools are only beginning to tap the potential of ICT to enhance teaching and learning and to modernise the way in which schools are run and organised.'[141] In order to achieve this there has been a shift towards an evidence-based approach towards policy development and recognition that far more research will have to be undertaken into the use of ICT in teaching. However, this represents a fundamental shift in education and raises a series of questions about the restructuring of the financial model of education as a whole in order to make the shift towards e-learning sustainable over the longer term. The following sections will examine the implications for future e-learning policy in some key areas.

[139] *Becta. (2003)* Computers for Teachers: an evaluation of phase 1, *Department for Education and Skills, http://www.becta.org.uk/research/reports/cft/ngflseries_cft.pdf*

[140] Becta (2003) *Fulfilling the Potential: Transforming teaching and learning through ICT in schools,* May, Department for Education and Skills, http://www.teachernet.gov.uk/docbank/index.cfm?id=4382, p. 5.

[141] *Ibid., p. 3.*

Practice

There is beginning to be a clearer understanding at the policy level of the scale of the challenges that have to be overcome in order to embed ICT within the learning and teaching practices. It is also recognised that the solutions to these challenges need to be developed in partnership with the stakeholders involved, central and local government, government agencies and the schools.

The effective use of ICT in back-office activities is also seen as a key part of the next policy phase. Re-engineering the manual back-office administrative systems still prevalent in the majority schools is seen as the key to unlock staff capabilities.

Research and Innovation

With the shift to evidence-based policy approaches, the e-learning research agenda has moved to being an important first step in policy development. The first stage of the e-learning policy, 1998-2002, has generated a large and growing body of research showing that e-learning is of undoubted value within education; and that new knowledge and skills need to be developed before e-learning approaches can be widely and successfully adopted.

As a result, the research effort in this area is likely to increase in scale and importance as we move from pilot studies to widespread adoption and to optimisation. The nature of research will also have to change to reflect the specific challenges faced by the introduction of ICT in the classroom, and the way in which 'learning by doing' takes place in practice. One example of changing methodological approaches is the announcement by Becta of a new teacher-centred research project based on "action research" methods. This DfES/Becta study intends to gather case study evidence from practising teachers, based on their own detailed reports of what works with ICT and under what conditions. It is intended that a steady flow of examples of effective practice will be produced, demonstrating robust, classroom-tested models of ICT pedagogy. This study will start in the 2003/04 academic year.[142]

Public use (2): towards local e-government

The Local Government White Paper *Strong Local Leadership - Quality Services*[143] produced by the Office of the Deputy Prime Minister (ODPM) sets a policy that aims at encouraging strong and innovative local government. As a component of this policy, the ODPM proposed a local e-government strategy[144] to enable councils to lead and undertake improvements in services. Other public sector bodies would also be encouraged to work effectively with councils to make sure that strong local leadership can deliver services that are joined up and focused on meeting real public needs.

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[142] *Becta ICT Research statement. http://www.becta.org.uk/research/reports/ action_research.cfm*

[143] *ODPM (2001)* Strong Local Leadership - Quality Services, *www.local-regions. odpm.gov.uk/sll/index.htm, December.*

[144] *ODPM (2002)* e-gov@local: Towards a national strategy for local government, *http://www.local-regions.odpm.gov.uk/consult/egov/02.htm, April.*

The proposals contained in the White Paper, and the local e-government strategy provide a framework to allow councils to seek new and more effective ways to deliver customer-focused services and lead their communities through the application of the Government's four principles of public service reform:

1. national standards, clear accountability, and performance against targets so that people can see how their services compare
2. devolution - giving local leaders responsibility and accountability for design, development and delivery
3. flexibility - to allow new means of action to improve services
4. choice for all consumers of public services.

The aim of local e-government is to make local services more accessible, convenient, responsive, and cost-effective. Expectedly, to achieve local e-government, local public services will have to operate very differently from the ways in which they operate at present. In particular, local services will be delivered or supported electronically and, where appropriate, *jointly* by local and regional partnerships, and connected to a national infrastructure. An important reason for joined up or seamless delivery of services is to avoid repeatedly asking users for the same information and enabling providers to better identify, reach and meet their needs.[145]

Electronic delivery of services, according to the White Paper also facilitates easier and quicker access to local authorities and participation in local decision-making, for instance, through online discussion, live polls, webcasts, referenda and consultations. Importantly, electronic delivery via the Internet also gives the users the opportunity to learn how to use the Internet.

As with the national target of universal Internet availability by 2005, local e-government is expected to have this in place by the same year. The next section reviews how local authorities are implementing the strategy for local e-government.

[145] *Especially where services are e-enabled, but accessed through physical channels such as contact centres and one-stop shops located in post offices, Government encourages local authorities to deliver these services jointly. Yet, Government recognises that there will be limits to such integration of services primarily because of capacity of staff to provide effective customer service across the vast potential range of local e-services.*

Implementation of local e-government strategy

There are 388 local authorities in England alone and each provides more than 700 services. This does not take into account the hundreds of other local authorities in Scotland, Wales and Northern Ireland. Nonetheless, each of these is a complex organisation, undertaking a wide range of activities. Each is autonomous, with its own local priorities, service standards and Council Tax levels set by their elected councillors. There is, therefore, a compelling reason for local authorities to exploit the opportunities offered by ICT to transform the quality and efficiency of their services, and where possible, to align and integrate them with those of other public and community bodies, as well as work with Local Strategic Partnerships (LSPs).[146]

In order to spearhead the implementation of local e-government, about 97 per cent of local authorities have two e-champions, comprising one councillor and one officer.[147] Their job is to forge ahead e-government within the authority and to make sure the authority is on-track to meet the 2005 target for online services. There are about 800 e-champions in total. In order to share information, they have formed a national e-champion organisation/network known as IDeA (The Improvement and Development Agency). IDeA conducts regular briefings on major issues and each e-champion has access to reports and information as well as networking opportunities through events and online communities. There is also access to a dedicated advice centre and help line.

Furthermore, IDeA has given local authorities in England and Wales the means to enhance traditional methods of procurement, through the IDeA Marketplace. This is local government's own electronic procurement solution, developed specifically for local authorities and is assisted by the OGC. IDeA Marketplace is already available to every council. IDeA has also worked with some local authorities, training staff in the social services and IT and setting up implementation programmes. IDeA has become a key organisation in helping develop local e-government.

[146] *A LSP is a body of stakeholders who will develop ways to involve local people in shaping the future of their neighbourhood and in how local services are provided. They do so by bringing together under one coherent and understandable set of arrangements local residents, communities, businesses, and voluntary groups in order to develop co-operation and collaboration from all stakeholders. Most are being established on the basis of local authority district boundaries guided by local authorities of an area. LSPs have a key role to play, although not only in the area of e-government as local services do not only involve those that can be delivered electronically. Developed initially in the 88 most deprived areas of the country; the Government is now committed to supporting and facilitating their development across the country.*

[147] *This mirrors the e-Ministers at Central Government.*

Role of Central Government in local e-government

Although the responsibility for implementation of local e-government lies with local authorities, Central Government also has a key role in promoting a supportive environment. In particular, Government will work in partnership with local service providers by helping to establish priorities for local service delivery, establishing technical standards,[148] providing a national infrastructure for electronic service delivery, and allocating resources toward the implementation of local e-government.

As an early measure to bring local authorities into e-government, in 1999 Central Government's Central-Local Partnership unit signed the Central Local Information Age Concordat.[149] This outlined the common objectives, expectations and responsibilities of the various stakeholders in local e-government, and established a forum to oversee its development. Since then, central and local government have worked together to adopt the 2005 target for all local authorities.

Our First Report described how Central Government allocates funds to help local authorities implement local e-government. Through their Implementing Electronic Government (IEG) statements, local authorities explain their strategies and business plans to enable e-service delivery. Yearly IEGs are required to inform Central Government of the progress and continuing efforts toward e-government. Government required councils to set out their plans for implementing e-government in Round 1 of IEG statements (2001). Round 2 (2002) emphasised the need for councils to provide evidence of progress in taking the e-government agenda forward and to demonstrate realistic plans of action and expenditure to meet 2005 targets, particularly for the 100 per cent of electronic delivery of local services.

According to most local councils, the IEG process has been successful in engaging councils and in promoting a corporate approach to tackling e-government. At the national level, the IEG process also provides a valuable source of information from which Central Government can identify progress in implementing local e-government.

Government has earmarked about £350 million for 2001/2002 for local e-government. Every council (except one) has received a capital grant of £200,000 in 2002/03 to assist in implementing their plans. In April 2003 ODPM confirmed that all Councils have submitted satisfactory IEG2 statements and will receive a further capital grant of £200,000 in 2003/04.

Government also has sponsored local innovation, through a variety of initiatives and funding streams, including the Invest to Save Budget and the Capital Modernisation Fund. The National Grid for Learning and New Opportunities Fund has also sponsored investment in Internet access and communications capacity in schools and libraries (see above). An important innovation programme is the Local Government on Line Pathfinder projects involving more than 100 councils in 25 part-

[148] *Take, for instance, the £2.5 million invested by ODPM to establish a Local e-Government Standards Body, e-GIF.*
[149] *www.e-envoy.gov.uk/publications/guidelines/cl_iag/concordat.htm*

nership projects.[150] These projects aim to develop and make available to local government as a whole, products ranging from Central e-government approaches to community planning, through access strategies and back-office integration, to specific technology applications such as smart cards and DTV.

The Pathfinder projects that ran between June 2001 and June 2002 were spread across local governments in England. These pilots focused on a wide range of e-government issues designed to improve access to services and information, including exploration of new access channels such as digital TV, new ways of interacting with customers, such as smart cards and remote access centres, e-procurement, and the automation of back-office systems. Following on these local projects a smaller group of "national projects" have been selected focusing around a number of specific applications, including DTV, e-procurement, and local planning services among others. It is intended that the majority of Local e-Government National Projects will have completed their development work by March 2004. This will allow at least 21 months for delivery and roll out to other council (supported by Local e-Government resources) before the end of 2005.

Of the Pathfinder projects currently underway the DTV project provides a useful insight into the aims and objectives of the national projects as a whole. The overall aim of the DTV national project is to demonstrate how DTV can be used as a channel to deliver local government services and to develop technologies that will enable Local Authorities and Regional Development Agencies to have DTV presence on any of the major platforms. The Digital TV project has three main deliverables:

- *How to Guide* - everything local government needs to know about adopting Digital TV, from information on platforms, hardware and costs through to going live with a site.
- *Starter Kit* - an entry level product that will enable a local government body to create a presence on any major technical platform
- *Online Forum* - Currently an interim website containing overview information about Digital TV, this will be developed to become the online forum for the project.

The Digital TV project also intends to commission research concerning issues related to the technical, social and organisational aspects of adopting Digital TV within local government. The project is intending to work with a combination of Local Authorities and Regional Development Agencies in order to pilot the project.

[150] *www.lgolpathfinder.gov.uk*

Performance evaluation

All councils submitted an IEG statement during 2001. Of these, two-thirds were assessed as satisfactory, a further 29 per cent while satisfactory had significant weaknesses that were drawn to the attention of local authorities, and a small number were asked to revise and resubmit their statements. Most of them have achieved a 25 per cent of electronic delivery target for 2001, although the average estimated availability of electronic services was 29% (but with a large range from 5% to 65%).[151] Councils were also found to be generally working toward a common and effective implementation model and many are working in partnership with others, and with public sector agencies, and the private sector.[152]

Local authorities anticipate the need to invest around £2.5bn to deliver their programmes. Most authorities anticipate savings in the longer term, but expect that these will often be needed to fund continual improvements to service quality and extra capacity to meet demand triggered by improved access.

Recent research by the independent Audit Commission found that "over 80 per cent of chief executives [of local councils] see e-government as essential or very important in helping them to deliver the modernising agenda and over 75 per cent of e-champions see improved or more accessible services as key objectives of their e-government strategies."[153]

Problems with implementing local e-government

Despite the apparent smooth process toward implementation of local e-government, problems persist. For instance, local authorities and others have identified the lack of comprehensive information and the lack of co-ordination between programmes as major potential barriers to progress. They insist on a national framework so that there can be coherence between strategy and policy. In response, Central Government is examining the feasibility of ensuring that a database of government-sponsored e-initiatives is available on the web.[154]

The Audit Commission research also indicates that only recently have many councils accepted the role and importance of e-government in delivering better and more services. More significantly, a noteworthy threat to further progress in implementation lies in the cost, lack of ICT skills and the scale of cultural and organisational change required. Lack of leadership capacity and skills in change management, project planning and business analysis are also identified as major barriers to successful delivery.

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[151] *See http://www.local-regions.odpm.gov.uk/consult/egov/02.htm. For instance, Manchester City Council tenants can order repairs online at any time of day or night by logging an entry in the right tradesperson's diary with personalised instructions, such as "knock loudly" or "use the back door."*

[152] *For example, Middlesbrough's Public Private Partnership with Hyder Business Services will be delivering joined up electronic services, saving the Council about £2 million a year.*

[153] *Audit Commission (2002)* Councils and e-government. *www.audit-commission.gov.uk/itc/ egovernment.shtm/*

[154] *Information on different initiatives is currently spread over the websites of each department or agency*

A recent survey[155] provides some insights into the weaknesses in capability and capacity within local government. The survey reports that an overwhelming number of staff or members (72%) lack sufficient skills and understanding in relation to e-government and, more fundamentally, 84% of local authorities believe that their staff lack skills in change management/process re-engineering. Further, 69% of local authorities report that their members lack an appreciation of how e-government can contribute to their strategic objectives. Whilst the same survey reports a high degree of current activity in seeking to engage the public with e-government, the scale of the challenge as local government moves to the adoption of the wider and more pervasive e-government agenda is clear.

Of more concern, in June 2003 the local government IT managers' association, Socitm, was notably unhappy with the ODPM for dropping a commitment to allow councils to focus resources on key local e-government services, rather than diluting them across all service areas. Socitm pointed out that the latest draft guidance from the ODPM on how councils should create their third annual round of IEG policy statements does not mention the concept of "priority outcomes and services."[156] According to Socitm, this omission contradicts a public service agreement between the ODPM and the Treasury made in 2000, by which ODPM undertook a commitment to assist "local government achieve 100 per cent capability in electronic delivery of priority services by 2005, in ways that consumers will use." Instead, Socitm argues, "the continued emphasis on achieving 100 per cent of *everything*," regardless of whether services will be used or not, "is in direct contradiction to principles of value for money."[157] This indiscriminate approach is likely to result in the dilution of resources away from priority services, and increases the probability of local authorities failing to implement e-government.[158]

Feedback and Learning

The adoption of e-government presents local government with a series of significant challenges. In seeking to achieve the 2005 target for the electronic availability of services, central and local government will need to overcome many technical, social and organisational challenges, some of which have not been revealed in the early projects or else are unknowable at this stage of the adoption process. An indication of the scale and complexity of the challenges may be obtained by an examination of the breadth of the initial *Pathfinder* projects. These projects, which were primarily designed to be technical proof of concept projects, provided detailed information on the technical as well as user adoption challenges. To move from these specially funded projects to the widespread adoption of a broad range of e-government services within local authorities is likely to require intense transformational effort at the local level. As the change-management challenges are becoming

155 ODPM (2003) Local e-Government: a survey of local authorities, May. Office of the Deputy Prime Minister, http://www.info4local.gov.uk/searchreport.asp?id=15199&heading=e- mail+alert

156 *http://fastlink.headstar.com/soc2*

157 E-Government Bulletin*, 30 June 2003*

158 *Further, ODPM's policy change seems to be out of tune with other Government policies. For instance, the OeE has shifted away from insisting on digitisation of* all *public services and, instead, is focusing more strongly on key services, such as health and education.*

clearer, it is likely that there will have to be far more research undertaken within local government in order to optimise approaches.

One example of this relates to the DTV national project. As discussed above, this was a project that was originally structured around a series of primarily technical questions concerning the ability of DTV to deliver information and other services to citizens. The ambition of the project and the turbulence of the technology provided real challenges to the project team. The need to make the system up-to-date and reflect current technological capabilities meant that there was an unavoidable technical focus within the original project.[159] As a result, the national DTV project, whilst based on the technical success of an earlier project, has not, until now, been fully informed by user acceptance issues.[160] The national project will be underpinned by more research into usability, user interface design, user expectations, and user testing. It will also be far more informed in terms of the business value of employing DTV as a channel for e-government services.

Finally, it is worth noting that despite the apparent success of recent e-voting pilots, the Electoral Commissioner has cautioned central Government against promising online voting after 2006 for the whole population. This is because its research has shown that technology will not necessarily promote electoral participation; instead, research has shown that postal voting, also piloted in a number of recent local elections, doubled voter turnout.[161] Perhaps this could provide a signal to enthusiastic "e-advocates" - that modernisation by technology might not solve major political problems, such as poor voter turnout.

[159] *Summary of interview with senior project manager of National Digital TV project.*

[160] In contrast, there has been good involvement and response from potential suppliers, with reductions in fees and increases in user support being negotiated by the project team. One provider of satellite D has even offered to make a channel available to local e-government on its digital network at no cost, thereby seeking to use local e-government as a means to encourage adoption of their commercial service.

[161] *Henke, D. (2002) "Blair told not to rush voting online,"* Guardian online. *http://www.guardian.co.uk/Internetnews/story/0.7369,767956,00.html. Visited August 8, 2000.*

BOX 1 LONDON AS A SPECIAL CASE OF LOCAL AUTHORITY

London's e-strategy

London is special because as the capital city and with a population of nearly 8 million, it is less a local than a regional authority. It has a mayor and its administration is known as the Greater London Authority (GLA). The GLA has a core staff of about 500, most of whom are involved in the development of policy and strategy. The GLA controls 33 boroughs, which in turn, are responsible for local services. Therefore, London does not supply services directly to Londoners; it has little power over the boroughs in the delivery of local services, although it exerts considerable influence in some key issues, such as the environment and land use. Importantly, it helps to develop a "collective vision" for e-government with the boroughs. However, as a London-wide e-service, the city has pioneered a travel smart card for the London public transport system. It is the first of its kind in the UK.

The Mayor of London is committed to the national e-government agenda insofar as it is coherent with his objectives and strategy for the development of the city. London's priorities include the management of population growth and land use, planning for economic growth, ensuring that London is the third best financial centre after New York and Tokyo, and social equality and inclusion. Areas of overlap are found mainly in:

- the extensive utilisation of fixed and wireless broadband as it as an important underlying infrastructure for the continuing growth of the city, for the operation and delivery of high quality public services such as education and health, and for the promotion of social inclusion;
- the "e-enablement" of all new houses built in London by 2006 for electronic delivery of public services (GLA has been undertaking extensive consultation with broadband suppliers for the most effective solutions to wiring up new houses);
- the need to provide joined up services through a one stop shop. [162]

Implementing local e-government

An important measure the GLA undertook to help its 33 boroughs provide integrated (joined up) services is *LondonConnects*, London's e-agency set up in 2001.[163] Since the boroughs are of varying financial situation and "e-strength," GLA formed this partnership among the local public sector organisations to help spread good practice, share knowledge and assist the lagging boroughs catch up with the best local authorities.

LondonConnects has established three key projects:

- the development of a city-wide portal to deliver joined up services for which Central Government has contributed £160,000.
- the identification and development of common standards for protocol, security and authentication for a coherent joined up service infrastructure
- the bringing together of the Social Services and NHS in the boroughs to deliver these services jointly, which is particularly difficult as Social Services lacks financial resources.

In addition, GLA is also studying the feasibility of a citywide smart card for *all* services, such as library use, travel and payment of council taxes, but is finding it difficult. To encourage a high

[162] *Greater London Authority (2001)* An e-Government Strategy for London, *December, http://www.london.gov.uk; and interview with GLA senior policy advisor*
[163] *http://www.londonconnects. org.uk*

volume of users a common standard should exist, but, conversely, such a card requires a critical mass of users to make the development of a common standard viable. Central Government has turned down GLA's request for funding for its development. According to the GLA policy adviser interviewed, this is probably because the envisaged payback from a citywide smart card is about 5-6 years and since the mayoral electoral cycle is 4 years, there is no certainty that the incoming mayor would support it.

As with other local authorities, London also submits IEGs for the purpose of receiving £200,000 of assistance from Central Government. It will continue to do so, despite some misgivings about the process, for instance, redundancy as exemplified by the need to fill in "boxes for technology use" when most of the processes involved in implementing local e-government require technology.

Summary

Local e-government is a GLA priority in the areas pointed above. However, the GLA recognises that its success lies in focusing on the users – the demand pull effect. It also realises that there is no "magic bullet" that will encourage a large volume of users. Therefore, GLA must provide a wide "bouquet"[164] of content and applications that will meet individual needs. Finally to develop an e-culture that will promote the take-up of electronic services, the consumer must be actively educated, not so much to the technology but to the potential social, economic and public value benefits of electronic services.[165]

Learning and competences

Broadly speaking, many of the policies analysed in other sections of this report could be considered as being oriented, primarily, to the development of competences and the promotion of learning; some of them, like the e-learning initiatives in a very direct and explicit way. However, in this section we refer to those policies *directly* supporting the generation and adoption of *new* ICT-related knowledge, focusing mainly on R&D funding and innovation support measures. We will distinguish two main sets of policies pursuing the development of *Learning and Competences*:

- R&D support. Programmes providing R&D funding either to universities and laboratories or firms.
- Policies to support the application of existing ICTs technologies, whether through the provision of help for the purchase of advanced ICT equipment or through broader policies supporting the deployment of ICT-based applications and services.

[164] *Mayor of London (2002)* Broadband: Connecting to London's future, *November, London: Greater London Authority, p.18.*
[165] *Greater London Authority (2001)* An e-Government Strategy for London.

R&D support for the development of new ICT applications and products

There are several ways in which government agencies may provide R&D support:

- funding academic research (basic and applied) in universities and government laboratories;
- supporting the R&D investments made by the private sector;
- directly funding the development of ICTs and systems to be used by the public sector.[166]

These tasks are carried out by different ministries and agencies:

- Government funding of targeted167 academic research is channelled through the Research Councils (RCs): executive public bodies that are not part of any ministerial department. There are a total of seven research councils under statutory control of the DTI and its Office of Science and Technology (OST). OST is responsible for the allocation of the Science Budget (currently just under £2.4 billion per annum) through the Research Councils. The Council with the largest investment in the development of ICTs is the Engineering and Physical Sciences Research Council (EPSRC).
- Through other departments and agencies the DTI supports research and innovation in industry, through schemes like LINK, which attempt to bring academia and industry together in the development of new products, applications and services.
- Many ministries and government agencies directly fund the development of ICT products and applications of direct relevance to their missions. The Ministry of Defence, for instance, plays an important role in funding R&D in a variety of electronics and communication technologies.

There is limited co-ordination across these different policies and stakeholders. Attempts are made at the margins to establish joint initiatives and inject some cross-departmental co-ordination. For instance, the Research Councils and the DTI co-fund specific innovation support initiatives, some of them in the ICT area. The "e-Science" effort to develop and deploy an advanced data processing and communications infrastructure to support scientific research (see below) constitutes an example of a substantial cross-departmental initiative. Also, whenever a specific project submitted to any of the Research Councils under any scheme may have potential defence applications it may be co-funded with the Ministry of Defence (MoD) under the so-called "Joint Grants Scheme" (JGS).[168]

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[166] *This would include, for instance, government R&D funding to develop new communications systems for the military.*

[167] *Government-funded academic research is channelled through two main systems: universities receive non-targeted core research funds based on their past research performance, and researchers can apply to the research councils to receive funding for specific research projects.*

[168] *There are several ICT-related areas where the MoD has pooled resources with the EPSRC to fund research projects, including virtual reality, systems integration, electronic and photonic materials, encryption and secure digital systems, and human-computer interaction. The JGS tends to*

Yet, joint initiatives account for a very small share of the total research effort and further co-ordination is less than systematic. The science-support function of the different RCs is co-ordinated through Research Councils UK (RCUK), a strategic partnership bringing them together to establish a common framework for research, training and knowledge transfer.

We will focus here on the funding activities of the EPSRC. This is the council that contributes the highest investment to research in the ICT field, and its ICT programme is the largest of its activities. Besides it has a well-established process to identify research priorities and evaluate results.

Research funding for academic research: the approach of the EPSRC

Definition

Both the EPSRC and the Economic and Social Research Council (ESRC) have research programmes targeted to the development of IC technologies, the development of applications, and the analysis of their economic and social effects. Yet, the EPSRC is by far the main funder of academic research in the UK,[169] and its Information and Communications Technology Programme enjoyed the largest financial support of any EPSRC programme: a total of £54 million committed, accounting for 13% of all EPSRC programmes (2000/2001 financial year data).

The Information Technology & Computer Science is one among the nine main programmes run by the EPSRC. To distribute funding across them, it has set up an annual decision-making process called the "Balance of Programme". It is through this process that the amounts to be assigned to R&D in ICT area are decided year after year (as well as the allocations made to all other programmes). The allocations are made by the Chief Executive and the Council of the EPSRC, based on the recommendations of two expert panels:

- the Technological Opportunities Panel (TOP) formed by academics, industrialists and others;
- the User Panel (UP) made up largely of experts from industrial firms.

The work of the two panels is purely consultative and revolves around three main tasks:

- to review the content of each programme of funding,
- to assess the performance of the programmes following a set of criteria,
- to give consideration to shifts in funding between programmes.

Therefore the panels have an evaluative role providing a structured mechanism to inject programme evaluation results into the funding process. Each member of the panel is provided with extensive source material, including EPSRC programme

fund fundamental and applied research in the hard sciences and technological development, and is less active in socio-economic research.

[169] *In 2000, it distributed £280 million in research grants to mainly UK universities.*

expenditure by funding category,[170] discipline-based bibliometrics,[171] demography of academic community by discipline, number and type of EPSRC researchers by programme, first destination employment of the EPSRC postgraduate and postdoctoral studentships, EPSRC research expenditures relevant to industrial groups, relationship between user sector R&D investment and relevant EPSRC expenditure, success rate trends by programme, etc. In addition the managers of each programme have to provide a business plan describing the programme objectives and a strategy for meeting them, the issues impacting on the programme, a description on how the programme ranks against the EPSRC criteria, and a set of targets for the upcoming year. Finally TOP and UP members are provided with peer review evaluation reports of each of the programmes. This information is used by panel members in a complex assessment process including both individual evaluation and consensus meetings in which funding shifts across programmes are discussed and agreed.

The EPSRC is also seeking to concentrate its research funding in a few leading research departments. Leading groups are being encouraged to submit larger and longer-term research projects and to use "Platform Grants", a mechanism to provide continuity for key research staff.[172] Platform Grants are only given to centres with "internationally leading reputation".

Implementation

The above process determines the funds available to all EPSRC programmes including the Information Technology and Computer Science programme. At present, this programme aims to develop a long-term research and training agenda in five main areas:

- Computer Science
- Communications
- Electronics
- People and Interactivity
- Photonics

[170] *Computing services, international facilities, other UK facilities, fellowships, doctoral studentships, masters studentships, special schemes, managed programmes, conditional mode, responsive mode.*

[171] *Percentage of total national publications, national patterns of number of citations per publication, etc.*

[172] *A feature of the UK academic system is the short-term nature of most university-based research contracts. Unlike teaching positions, usually funded on a rolling-contract or tenure basis, research contracts are dependent on specific project and are usually short-term.*

The Information and Communications Technology Programme main objectives are:

- to focus research on leading groups to maintain world class excellence;
- maintain account of user needs;
- develop more visible links between the science base and industry to facilitate better take up or research and training;
- develop a clear, long-term research agenda;
- increase connectivity with other EPRSC research programmes and the activities of other UK research councils.

We note the emphasis placed by these objectives on research use and the uptake of research results, reflecting the EPSRC strategy to build better connectivity between the academic research base and the ICT industries. Further user involvement is sought through workshops, the "Software Technology Outreach Programmes" run by the DTI and the funding of LINK programmes also in collaboration with the DTI.

Evaluation, feedback and learning
Evaluation and feedback take place at least at two levels:

1. The yearly "Balance of Programme" review, through which the amounts being allocated to the Information and Communications Technology Programme and the other EPSRC programmes are established. This amounts to a high-level yearly evaluation process of the EPSRC investments in the ICT field.
2. At the project level, research proposals are assessed following a standard peer review process (an EPSRC board makes the funding decisions informed by the peer review reports). After the conclusion of a project a final report is submitted, which is also subjected to peer review.

Within this structure, the Programme managers have a very important responsibility. They have to develop a strategy for their line of research and closely monitor progress, so that they are able to present a case to the TOP and UP panels in the yearly reviews. These reviews also operate as the mechanism through which the assessment of programme results is fed back into the decision making process. In other words, there is a formalised system by which lessons learnt during programme implementation are translated into management measures. First, budgetary allocations are informed by the yearly "business plans" of each programme; second, such business plans have to be seen to respond to the issues and problems raised by the programme implementation.

The e-Science initiative

Definition

The UK Government 2000 "Spending Review" announced that an initial allocation of almost £120 million would be made to a new "e-Science" initiative aiming to develop IT infrastructure in support of international research collaboration. The objective is to provide for the shared use of large computing and network resources, enabling the management of large datasets and the remote access to specialised research facilities. The initiative seeks the development of a "Grid" of systems able to support commercial applications as well as international scientific collaboration.

The majority of funds (£74 million) were allocated to large scale e-science pilot projects in several areas of science and engineering. An additional £10 million have been invested in the purchase of a super-computer, while the remaining £35 were invested in the "e-Science Core Programme", an initiative to develop generic middleware and support infrastructure for the pilot applications.[173]

Implementation

e-Science is a multi-departmental initiative. The UK Research Councils have allocated the initial £74 million for the development of pilot projects, and the DTI has allocated £20 million over 3 years to the "e-Science Core Programme" to stimulate the participation of British firms in the development of the "Grid". The OST has contributed a further £15 million to the Core Programme and industry is expected to contribute a further £15 million. The "Core Programme" is managed by the EPSRC.

The Core Programme has a Director who is advised by a Grid Technical Advisory Group. The different e-Science programmes carried out by the Research Councils are co-ordinated through an E-Science Steering Committee where the Core Programme Director also sits.

As part of the "Core Programme" a Grid Network Team (GNT) and a Grid Technical Advisory Group (TAG) have been set up to develop the infrastructure. A National e-Science Centre has been established at Edinburgh along with 8 Regional Grid Centres, to develop expertise in Grid-related technologies and deliver collaborative projects with industry. The National Centre will also act as a focus for UK e-Science activities, holding seminars, training programmes and workshops and involving UK scientists in the development of international open standards for the Grid.

[173] Hey, T. and A.E. Trefethen (2002) "The UK e-Science Core Programme and the Grid" *Future Generation Computing Systems* vol. 18, http://www.ecs.soton.ac.uk/~ajgh/FGCSPaper.pdf

Supporting the use of ICT

Policy Definition

In seeking to support organisational use of ICT, Government has concentrated on the four main strategies of raising awareness, skills development, advice and assistance and, to a far lesser degree, taxation. The initiatives outlined below are generally highly targeted at either businesses or individuals, with tremendous efforts going into the issue of skills development. Government is broadly attempting to raise awareness of the key issues, develop recognition of the strategic challenges that face businesses and improve the availability of the necessary management and technical skills.

One of the major problems facing Government is the relatively high proportion of the UK population of working age who lack basic and intermediate ICT skills. A particular problem in the UK is the large number of low-skilled adults in the workforce, and though levels of attainment of young, new entrants to the labour market have been rising, they are not keeping pace with those of other industrialised countries.[174]

In terms of fiscal approaches to these issues, the use of alterations to the company and personal taxation system to provide incentives has been largely resisted. For instance, a proposal to provide tax breaks for companies adopting broadband was considered but was ultimately resisted.[175] Tax breaks have, thus far, been confined to minor and short-term benefits associated with the purchase of IT equipment and R&D expenditures.

Policy Implementation

UK online programme

UK online.gov.uk is intended to become the main portal through which companies and individuals access government services on the Internet. It provides access to more than 900 government websites and is a key part of the UK online initiative which aims to give everyone access to the Internet by 2005, with all government departments fully online. The website is run by the OeE.

In line with the aim to raise awareness and provide advice for companies, there is a specialist section of this portal called *UK online for business* (see above). This initiative is aimed at providing impartial, expert assistance on ICT to SMEs. *UK online for business* is linked to a network of specialist ICT advisors throughout the UK.[176] Help and advice is delivered in a number of different ways through a network of UK online business advisors in over 100 local centres: the Small Business Service in England and similar business support organisations in Scotland, Wales and Northern Ireland.

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[174] *Cabinet Office (2001)* Workforce Development: In Demand: Adult Skills for the 21st Century, *Performance and Innovation Unit, Cabinet Office. London.*

[175] *Richardson, T (2001) "UK Govt rejects tax breaks for broadband,"* The Register.

[176] *UK online for business (2003)* UK online for business, *http://www.ukonlineforbusiness.gov.uk/cms/template/general-content.jsp?id=61363*

Another initiative within the UK online programme is the provision of UK online centres, which are designed to bridge the gap between those in the UK who have access, and are able to use ICT competently, and those who do not. The government's target, typically located in areas of social need, was to open 6,000 centres by the end of 2002.

Reports outlining the progress of the wider 'e'-related projects across business, individuals and government are published by the OeE each month, with annual reports titled *UK Online* published for the three years 2000-2002.[177]

e-skills

e-skills UK is the industry body responsible for addressing the ICT skills needs of employers in the UK. Within the e-skills agenda, *e-skills UK* provides the main channel through which e-skills are identified and policy recommendations made. *e-skills UK* is formally recognised by Government as the national training organisation for the information age, with responsibility for IT, Telecommunications and Call Centres.

'E-skills' are defined as the blend of technical, personal and business skills that enable organisations to take advantage of the Internet and other ICTs. *E-skills UK* aims to improve the performance of UK businesses by 'understanding, articulating and acting on the e-skills needs of employers of IT and Telecoms professionals.'[178] A key element of the current activity within *e-skills UK* is the development of an IT User Skills Framework, which will provide a comprehensive structure for the definition and explanation of the IT user skills required by employers in the UK. It is intended that this framework may be used to identify IT skill gaps, the identification of training and development needs within national standards and qualifications, the creation of career development models and to support recruitment and selection processes. It is anticipated that the final version of the framework will be available by mid-2003.

Another initiative in this area, e-skills4industry[179], is a more focused, business-led, employability initiative that aims to match trainees from disadvantaged areas who have an above-average aptitude for IT, with companies who need committed and motivated entry-level IT staff. e-skills4industry is London-based pilot and is led by Deloitte & Touche, with support from HSBC, Morgan Stanley, News International, Vodafone, SHL Group, Lewisham College and The Learning and Skills Council.

Sector Skills Councils

A network of Sector Skills Councils (SSCs) has been charged to lead the skills and productivity drive in business. The SSCs bring together employers, trade unions and professional bodies working with government to develop the skills that UK business needs. SSCs are independent, UK wide organisations developed by groups of influential employers in industry or business sectors of economic or strategic

[177] *Office of the e-Envoy (2003)* UK online Annual Report 2002, http://www.e-envoy.gov.uk/oee/oee.nsf/sections/esummit-ukoannrep/$file/indexpage.htm

[178] *Department of Trade and Industry (2003)* E-skills UK, http://www.set4women.gov.uk/set4women/careers_training/e_skills.htm

[179] *For more information see* http://www.e-skills4industry.org

significance. SSCs are employer-led and actively involve trade unions, professional bodies and other stakeholders in the sector. They are licensed by the Secretary of State for Education and Skills, in consultation with Ministers in Scotland, Wales and Northern Ireland, to tackle the skills and productivity needs of their sector throughout the UK.[180]

The Sector Skills Development Agency (SSDA) has been established to underpin the SSC network and promote effective working between sectors. The SSC network is funded and supported by the Sector Skills Development Agency, which awards licences to SSCs.[181] The licences of the SSCs will be reviewed in 2006 following an evaluation of the impact of the SSC initiative.

Fiscal measures

Current fiscal measures have largely been developed through the manipulation of the tax credit system for companies and individuals. These initiatives include incentives for R&D, e-commerce, and homeworking, and have typically been targeted at SMEs. For example, from April 2000, spending on R&D by SMEs qualified for R&D tax credits and enhanced tax relief.[182] Further tax incentives introduced in the 2000 budget were targeted at promoting IT investment, including 100% first year capital allowances for small businesses investing in IT and e-commerce, and tax incentives for provision of IT equipment to employees for use at home.[183]

Partnership Programme

Established as part of the *UK online* initiative, this DTI-led programme is aimed at helping businesses exploit ICT effectively. The main aim of the programme is to improve the competitiveness and productivity of UK businesses, particularly SMEs. The *Partnership Programme* aims to recruit business partners to work with the DTI to open new channels of communication with the business community and assist in the development and dissemination of guidance.[184]

Businesslink.org

Businesslink.org is the web presence of Business Link, a national business advice service aimed at SMEs in the UK. The Small Business Service, a centrally funded agency that assists the SME community in a wide number of areas concerning innovation, operations, funding and regulation, funds Business Link. Business Link operates a network of 47 advice centres across the UK.[185]

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[180] *Sector Skills Development Agency (2003)* Sector Skills Councils, Corporate information, http://www.ssda.org.uk.

[181] *Lifelonglearning (2003)* Sector Skills Development Agency, corporate information, http://www.lifelonglearning.co.uk/iln/n4-01.htm

[182] *Department of Trade and Industry (2002)* Research and Development Tax Credits for SMEs, http://www.dti.gov.uk/support/taxcredit.htm

[183] *Department for Education and Skills (2002)* UK online: Key facts. *http://www.dfes.gov.uk/ uk-onlinecentres/keyfacts/default.cfm?OPEN4=OPEN4*

[184] *UK Online (2003)* Partnership programme: UK online for business, http://www.ukonlineforbusiness.gov.uk/cms/template/general-content.jsp?id=61818

[185] *Business Link (2003)* Business Link, About us. *http://www.businesslink.org/cgi-bin/bv1 /about.jsp?community=3210588127&graphic=_hg&filter=Off*

Policy Evaluation

The challenge facing any policy evaluation in this area is the relative newness of the range of policy-related initiatives. Whilst some data is now becoming available and surveys are being undertaken, it is important to recognise that it is too early in the policy cycle to develop an informed evaluation of their effectiveness. The results of small-scale pilots have been used to develop larger programmes like *e-skills4business*. More complex initiatives like the UK online programme are, however, far more difficult to evaluate, and the data available probably raise more questions than they answer. The following are indicative of the current level of evaluation in this area:

UK online programme

Two aspects of this large programme will be examined, UK online centres, and the usage of the UK online website. The achievement of the initial target of opening 6000 UK online centres by the end of 2002, was announced six weeks early in November 2002. However, whilst the roll-out of these centres may be viewed as a success, their early impact on the intended disdvantaged target group was less clear-cut. A study of the impact on the UK online centres[186] found that although the majority of users were in the socio-economic target groups, the majority already have a home computer and 37% home access to the Internet (close to the national average). Skill level of users is generally low, and the centres are having a positive impact both on skills and assisting users to move into the mainstream educational system. However, the evidence also suggests that the most excluded groups (i.e. the poorest) had not been using the centres to any great extent. The initial users of the centres appeared to be those who already have access to a computer or the Internet, but do not have the skills to use it. This result is viewed as being consistent with the typical user profile of early adopters of a new service – those who are in a position to most easily identify their learning needs. Overall, the survey indicated that users found their contact with centres to be positive and constructive, and reported high levels of satisfaction.

For the first year of its operation the traffic data for the UK online web site was not made available. However, in March 2003 statistics on website traffic were published showing data on unique users, total visits, and page views for both www.ukonline.gov.uk and www.e-envoy.gov.uk. A rough analysis of this data indicates that the after the first six months around 300,000 unique users were accessing around 3m page views. In contrast, the e-envoy site was getting around 15,000 unique users accessing about 150,000 pages, a far lower figure. This gross data is, however, not very useful since it does not provide the level of detail required to make a fine-grained analysis of who is accessing what or, more fundamentally, why they are doing it. It is very unclear at this stage what value, if any, is being created from this level of activity. The lack of any meaningful benchmark also makes these values less meaningful as to the success, or otherwise, of the UK online website. An alternative view is that there are far too many government web-

186 Hall Aitken Associates (2002) *Evaluation of CMF-funded UK online centres: initial report*, July, HMSO, www.dfes.gov.uk/research/data/uploadfiles/ACF66F.doc

sites and UK online is far too complicated to use, with the result that 'like most other people, I'd rather use Google'[187].

e-skills initiatives

The success of a small-scale collaborative pilot scheme in London (e-skills4industry) has led to the scheme being more widely available across the UK. The independent evaluation of the pilot, undertaken by the National Foundation for Educational Research, found that the programme has been successful in developing the employability of young people with relatively low levels of educational achievement. The key factors of success were seen to be that it was set up in response to local needs and that it was employer-led.

Feedback and Learning

It is still very early days in the life of the policies designed to support the use of IT. It is still unclear if the early success of pilot e-skills projects like *e-skills4industry*, can be scaled up successfully, whether the UK-online centres can reach their target audience, or the UK online portal can demonstrate that it can add value to the e-government project as a whole. The policy initiatives have generally been successful in terms of their initial feasibility, but wider scale adoption is still some way off. What is clear is that government has been engaged in covert prototyping across a whole range initiatives, as demonstrated by the redesign, re-launch and repositioning of a number of initiatives including the UK online website.

The evidence thus far does raise a number of issues concerning the role of market-based approaches (e.g. Google) in the moves to create successful and valuable e-government portals. It also raises the question as to whether a radically different approach to e-government information provision, say based on life-events or specific citizen needs, should be explored, rather than the government department-centric approaches (based around separate departmental websites) that are currently the dominant paradigm.

At the leading edge of the implementation of e-government policy in this area, the level of learning-by-doing is clearly very high at this time. Dominant models and approaches have yet to emerge and the evidence is still far too thin to discern a clear forward path, although a forward trajectory does clearly exist.

Concluding remarks: the UK experience

Through a variety of initiatives the UK has pursued generic ICT policy objectives common to many European countries. Efforts have been made to increase the availability and accessibility of advanced ICT infrastructure, promote the use of ICT-based services, and protect competition and individual rights in a rapidly changing market and regulatory contexts. Yet, unsurprusingly, policy implementation has proved difficult. The UK is a large country, with complex and changing public institutions and a large public sector employing over 3.5 million. In this context the introduction of new technologies and associated practices calls for substan-

[187] *Quote from an interview with a senior government official.*

tial changes requiring a variety of initiatives extending to wide-ranging training programmes.

The size and complexity of the public sector is also reflected in the extent of co-ordination problems despite a political tradition that is more centralist than in countries like Sweden and The Netherlands. Responsibility for co-ordination lies in the OeE, which is currently under pressure.

The OeE is expected to meet targets although it is devoid of formal power over the departments that are ultimately responsible for achieving most of the Government objectives. Further, quantifiable targets are still set up by each department, with the OeE playing a data collection and monitoring role. //failure of joined up government //disjointness between definition, implementation and evaluation, and lack of coordination means failure to develop "joined up government" (quote on joined up government)///made worse by the multiplicity of initiatives///

The focus on measurable targets is a general characteristic of UK policy across all areas, and in the ICT field, they appear to be playing a more important role than more complex, multi-faceted evaluations. The pursuit of measurable targets, which are by their own nature short-term, is linked to short policy cycles (electoral, ministerial...), a problem explicitly recognised as such by interviewees in the UK. Further, many agencies feel they need to handle policy evaluation with care. Pilot projects, for instance, can easily fall victim of an evaluation revealing problems. In a competitive policy environment, the identification of problems may lead to straightforward programme cancellation instead of changes and improvements, particluarly, if the difficulties have received public attention through press reports. Consequently, evaluation of new and pilot initiatives is usually carried out in an informal, "backstage" manner.

If the pilot is seen as successful, difficulties may emerge in the national rollout phase. Moving from a local or regional pilot to a national programme represents, often, a step change in terms, for instance, of the required investment. This issue is likely to be more apparent in large countries where the cost difference between local pilots and national initiatives will usually be bigger.

Dutch ICT policy

Introduction

This section presents an analysis of Dutch ICT policy since 1994. In December 1994 the Dutch Government announced the *Actieprogramma Elektronische Snelwegen Van metafoor naar actie.*[188] This was the first integrated ICT policy approach in The Netherlands and provides a point of reference to assess the recent evolution of Dutch ICT policy. The section is structured following the policy areas presented in Section 1, and concludes with a summary assessment of Dutch ICT policy since the 1994 "Action Programme".

General Strategy

The Dutch economy is very open with high levels of both imports and exports and is therefore very sensitive to international economic trends. The Netherlands is already attractive to foreign companies, but to strengthen its international position government policy aims at improving market conditions and developing a favourable regulatory framework for business and growth. Especially regarding ICT, strong incentives are provided to invest in infrastructure and service development, for joint demonstration and pilot projects, the establishment of expert centres, and to facilitate the purchase of electronic services. The incentives are mainly provided through subsidies, public–private partnerships, and fiscal measures among others.

Building upon initiatives developed in the fields of telecommunications, broadcasting, and IT policy in the late 1980s and early 1990s, and generic policies in support to competition and innovation, the *Actieprogramma Elektronische Snelwegen Van metafoor naar actie*,[189] announced by the Dutch Government in December 1994 was the first integrated policy approach towards the converging ICT industries. This action plan, aimed at promoting the upgrading of the infrastructure and the development of new services, was developed by the ministries of Economic Affairs (co-ordinator), Transport & Public Works, Interior, and Education & Culture, in close consultation with key companies and other stakeholders.

The action programme's objective was ambitious: 'to acquire a leading position in the field of electronic super-highways in Europe.' It included a re-packaging and integration of the plans of the various ministries involved,[190] and was guided by the principle of free market competition (e.g. deregulation), including incentive measures aimed at encouraging private financing to accelerate the development of the electronic superhighway and on-line services.

[188] *Action Programme Information Superhighway,* From Metaphor to Action, *December 1994, The Hague.*
[189] *Action Programme Information Superhighway,* From Metaphor to Action, *December 1994, The Hague.*
[190] *For instance, legislation to liberalise the telecommunications and media markets, and the promotion of trials and pilots of IT applications.*

In May 1995 the Ministry of Economic Affairs announced a subsidy of €30 million over four years to promote large-scale experiments with multimedia services at the local level. A month later the Ministry invited representatives of the business community to join a high-level Steering Group to prepare a decision for the further development of the information superhighway and facilitate a large-scale environment for the provision of electronic services. At the end of 1995, the Steering Group announced its working plan for the Information Superhighway and the Information Society, called Visie op Versnellen.[191] The plan was based on three strategic principles:

- The *promotion of market forces,* enabling Dutch companies to build up a strong market position in The Netherlands and elsewhere;
- *Simultaneous development of services and marketing channels,* geared to satisfy consumer demand;
- *Convergence.* The plan foresaw a situation in which different networks and equipment would be utilised, and different market channels would develop. As the dominant technologies cannot be predicted in advance, this generated the risk of both a moving horizon and a 'restrictive lead'.

Several action lines were defined to accelerate the establishment of the information superhighway and the information society in The Netherlands:

- the promotion of electronic services in the fields of entertainment, commerce, and education;
- agreements on standardised access and selection of information;
- the development of electronic shopping centres;
- building-up know-how in electronic marketing;
- setting up test and demonstration centres;
- creating expertise centres;
- launching information awareness campaigns;
- R&D credits for electronic service innovation and diffusion;
- the stimulation of local experiments;
- uniform low rate of VAT for electronic services;
- public sector information (government on-line).

[191] *Steering Group Electronic Highway (1995)* View on Acceleration, Working Plan*, The Hague.*

Implementation

The implementation of this initial ICT policy was rather complicated, mainly because it focused on three different implementation levels with their own specifics and responsibilities:

- The generic policy level, where the general conditions for the introduction of new and innovative services were set.
- The sectoral level, where specific applications were introduced.
- The centralised and decentralised government levels where public services were generated.

On the generic level much attention focused on the infrastructural upgrading and the realisation of open market conditions under the initial responsibility of the Ministry of Transportation and Public Works (in 2001 this responsibility moved to the Ministry of Economic affairs). As an important result the Dutch Regulatory Authority for Post and Telecommunications (OPTA) was set up in August 1997. OPTA has been very active in its efforts to liberalise the Dutch telecommunications market. As a result there are now several fixed and mobile communications providers, although it can be concluded that the position of the incumbent provider KPN is still very strong (see below).

Also considerable progress was reported in the definition of the public domain of the information superhighway and in drawing up a legal framework addressing issues as customer protection, cryptography, privacy protection, intellectual property rights and criminal liability.

On the sectoral level the responsibility is passed to the corresponding ministry, where the priorities are set and the details of policy will be formulated and implemented. As a result strong co-ordination was lacking. The only instrument to measure any progress were so called progress reports, which tend to be drawn up in rather general terms and to be a bit conceited.

Regarding the public services the Dutch government has continuously aimed for an approach based on the maximum decentralisation of responsibilities. Such a decentralised approach presupposes the accumulation of expertise and experiences in such a way that especially the lower government strata can make use of it. For this purpose the ICTU (*ICT uitvoeringsorganisatie*) was established to advise on the internal working processes of public institutions and agencies and their interaction with the citizens.

Despite all these efforts it has been difficult to realise a level of co-ordination that enabled the responsible authorities to monitor the implementation process as a whole.

Policy co-ordination

In the progress reports published in 1995 and October 1996,[192] the Government communicated the steps that had already been taken towards the establishment of the information superhighway and the information society and announced further activities and topics that needed to be addressed. The reports gave an overview of the liberalisation proposals for the telecommunications infrastructure and the broadcasting sector that had been prepared and were being implemented (e.g. establishing a mobile communications duopoly, introducing commercial television, deregulating voice telephony and fixed infrastructures, and creating an independent telecommunications regulator). Also progress was reported in the definition of the public domain of the information superhighway[193] and in drawing up a regulatory framework addressing consumer protection, cryptography, privacy, intellectual property rights, and criminal liability. Furthermore, a large research programme on ICT and Law was announced. A small number of demonstration projects in the public sector[194], and private sector[195] initiatives were shortlisted for financial support.

The Final Progress Report, published in 1997[196], presented three new issues (ICT start-up firms, electronic commerce, and Trusted Third Parties -TTPs), and announced the establishment of a new multimedia applications demonstration centre (Mediaplaza). The centre was set up as a public-private partnership between the Ministry of Economic Affairs and industry.

In a follow-up policy document published in 1998, Herijking van het 'Nationaal Actieprogramma Elektronische Snelwegen,197 the Government announced a policy adjustment, shifting the emphasis from the construction to the actual usage of the electronic highway. In addition to the infrastructure upgrading and the development of an appropriate legal-institutional framework, a new focus was placed on 'softer' issues, such as access to new technologies and the promotion of their use by enhancing skills. The report also evaluated the activities related to the National Action Plan. It hailed the improvements in the overall ICT knowledge infrastructure and the liberalisation efforts in the telecommunications markets; yet the status of the development of electronic services both in the public and private sector

[192] *Voortgangsrapportage Actieprogramma Elektronische Snelwegen*, December 1995, The Hague; *Tweede Voortgangsrapportage Elektronische Snelwegen*, October 1996, The Hague.

[193] For instance, preparing new rules and regulations for public broadcasting, must-carry-rules, access rights of citizens to public information, and promoting the use of ICT in education.

[194] Among them the Digital Tax Authority SURF-net's proposal to upgrade the Internet, OL2000 (government-on line), ON21 (joint purchasing of ICT services), and ON2000 (government data transport service).

[195] Among them the development of conditional access systems, the digital decoder/set-top box, the modernisation of cable television networks, credit and fiscal measures and subsidies to support the development of online services.

[196] *Rapportage Voortgang Actieprogramma Elektronische Snelwegen*, October 1997, The Hague.

[197] *Beyond the National Action Plan: A recalibration of the existing programme,* April, 1998, The Hague.

caused serious concern. The document also asked for targeted efforts towards the promotion of electronic commerce and innovative entrepreneurship in ICT.

Also in 1998, the *Wetenschappelijke Raad voor het Regeringsbeleid* (the Scientific Council for Governmental Policy) produced an agenda setting report[198] that led the Government, among others, to establish Infodrome, an organisation to research the social implications of the information society and provide strategic advice to Government. In one of its first reports, Infodrome characterised the information society as a society where the importance of national borders was decreasing, increasingly organised in non-hierarchical ways as a network society, and where socio-economic boundaries were blurring.[199]

In June 2003 the new Dutch government presented its coalition agreement (policy paper) for the next four years. This is again an ambitious document, setting up an Innovation Platform under the leadership of the Prime Minister. Relevant ministries and stakeholder representatives from industry, education and science are represented in the Platform, which is tasked with developing new strategies for knowledge creation, sharing and diffusion. SMEs will receive financial support to invest in R&D, with an emphasis on start-ups in areas like biotechnology and ICT. A second main focus is on the efficiency and improvement of public services. The government recognises the strategic value of ICT in this process.

Long term policy

Although there were few attempts to formulate a long-term policy, two initiatives are worth mentioning. In its 1999 cornerstone policy document for the promotion of the information society, called *De Digitale Delta: Nederland on-line* the Government re-stated its ambition that The Netherlands would remain among the international forerunners when it came to the digital economy.[200] The programme of the Digital Delta is divided into five "pillars", clusters of projects that are more or less coherent:

- *Pillar A Telecommunications Infrastructure.* Mostly the responsibility of the Ministry of Transport & Public Works (V&W), for matters concerning cable television networks the department for Education and Culture (OC&W) is also involved.
- *Pillar B Knowledge and Innovation*. Almost completely under the Ministry of Economic affairs, with a small participation of OC&W and V&W.
- *Pillar C Access and Capabilities*. Various ministries involved, mostly OC&W.

[198] WRR (1998) *Staat zonder land: een verkenning van bestuurlijke gevolgen van de informatie- en communicatietechnologie* [a state without land: foresight into the policy consequences of the information and communication technology], The Hague.

[199] The report can be found at www.infodrome.nl.

[200] The Digital Delta: The Netherlands on-line, The Hague. The Internet site De Digitale Delta is the key site for all ICT-related information of the Dutch government and is meant both for the general public and for professionals (www.dedigitaledelta.nl).

- *Pillar D Legislation*. Mostly Ministry of Justice.
- *Pillar E Improvement of public performance*. Various ministries, mostly Ministry of the Interior.

The government was explicit about the targets to be achieved in each pillar, including:

- a first-class, accessible and reliable telecommunications infrastructure;
- availability of high-quality knowledge infrastructure;
- a workforce and citizenry with the right set of ICT skills;
- regulation and legislation effectively facilitating the usage and diffusion of ICT; and
- an optimal use of ICT by and in the public sector.

One of the tangible results of the Action Plan for the Electronic superhighway and its follow-up, The Digital Delta, is the bi-annual benchmark initiative to draw a comprehensive picture of the relative position of The Netherlands in the global information society. The five pillars mentioned above are the object of the Dutch government's regular benchmarking exercise and The Netherlands compares itself with 10 peers, namely Australia, Canada, Germany, Finland, France, Japan, Singapore, UK, US, and Sweden.[201]

As a second step towards a longer term policy, the *Commissie ICT en Overheid* was established. It was asked to produce a report with policy recommendations.[202] In its policy document, published in 2001, the Committee recognised that new relations are growing between Government and its citizens and that they have a strong impact on the role and functioning of the public sector. Government has to anticipate new developments in a flexible way and has to take into consideration citizen views. The Committee argued that in order to strengthen the role of Government in the information society, Government had to find new ways of working and establish new relations with citizens. Hierarchical relations between governments, citizens and industry and non-governmental organisations will have to be replaced by horizontal collaborations. Non-hierarchical approaches should be promoted especially in the field of ICT with its high level of complexity, its socio-economic pervasiveness, and the impossibility to 'lead' the information revolution. Government should recognise that there is a growing tendency in society towards self-regulation and self-organisation. The changing role of Government should therefore be based on the principles of mediation, facilitation, and process management.

[201] The Digital Delta (2002) *International ICT benchmark 2002. The Netherlands*. The Hague: Ministry of Economic Affairs, Ministry of the Interior, Ministry of Finance, Ministry of Justice, and the Ministry of Education, Culture and Science. Internationale ICT-toets 2000, October, The Hague; Internationale ICT-toets 2002, November, The Hague.

[202] Commissie ICT en Overheid (2001) *Burger en overheid in de informatiesamenleving. De noodzaak van institutionele innovatie*, [Advisory Committee on Citizen and government in the information society. The need for institutional innovation], The Hague.

Future governments should at least:

- guarantee open access to all public institutions and their electronic services;
- prevent problems hindering innovation and the maximum use of ICT-based services (e.g. privacy, security, intellectual property);
- address the digital divide by supporting relative backward user groups;
- monitor the democratic level of all decisions in the area.

The role of government will have to be redefined in the perspective of a society that becomes more and more self-regulating. Government in the electronic age will have to:

1. guarantee access to e-government services;
2. prevent the negative effects of ICT developments;
3. improve the position of underprivileged groups; and
4. protect democratic decision-making.

Infrastructure: towards broadband

In international comparisons, The Netherlands does well in access to and usage of the Internet, costs for fixed line and mobile telephony services (because of workable competition) and the penetration of ISDN connections, cable modems and mobile services.203

Some observations regarding the data on the Dutch communications market need to be made. While the traditional infrastructures have remained stable (cable) or have lost momentum (PSTN), mobile communications, DSL and, to a lower extent, ISDN are catching up rapidly and becoming widely used throughout society:

ADSL was launched officially by KPN in 2000, to be followed by its rivals a year later. After its introduction DSL has grown rapidly and within a short time span has rivalled the popularity of ISDN. KPN officially launched DSL in 2000. In 2002, there were already some 370,000 users of DSL of which almost 320,000 are KPN customers.204 If defined as a separate market (i.e. different from Internet access via cable), KPNs own Internet Service Providers controls 70% of the DSL market, leaving hardly any space for the "independent" ISPs (e.g. Tiscali, Zonnet, and Wanadoo). Also KPN is looking ahead with its recent offer to connect 10.000 schools in The Netherlands to broadband internet for free for the next three years (the competition, not surprisingly immediately filed a complaint against PKN by the OPTA). However, regulators and policy makers are concerned with the provision of competitive leased lines, the rates for off-peak Internet access, the price-capacity ratio for ADSL, and the charges from fixed line to mobile. All these issues

[203] *OPTA (2003)* Visie op de Markt. Jaarverlag 2002*, The Hague; OPTA (2001)* Visie op de Markt*, The Hague; Internationale ICT-toets 2000; Internationale ICT-toets 2002.*
[204] *OPTA Annual report 2002.*

emerge from KPN's structural dominance in the mobile and the ISP markets, and ongoing tariff rebalancing.

The Netherlands is one of the major "hubbing" countries for a number of Internet backbones, accommodating many Internet hosts and, therefore, scoring well in international comparisons of Internet connections. The penetration of the Internet in The Netherlands is arguably one the highest in the world.205 Consumer expenditure using the Internet has grown 77% in 2002. In total, Internet sales went up from €554m in 2001 to €980m in 2002. According to the Economist Intelligence Unit (EIU), The Netherlands ranks second in "e-readiness", right after the United States, but before the UK, Sweden and Australia.206

In terms of liberalising their national telecommunications sector, The Netherlands had a head-start to other European countries. The Dutch Government introduced full competition six months before the EU's official full competition deadline of 1/1/1998. Terminal equipment had been liberalised in 1989, followed by data communications in 1993, network capacity in 1996, and finally voice telephony in 1997. The Netherlands was known as a quick follower of the EU's liberalisation pioneers, namely the UK and the Nordic countries. Also the updating of the EU's Open Network Provision regime was rapidly transposed into national legislation: a new Telecommunications Act governing the newly deregulated sector, entered into force in December 1998.

In addition to KPN, Enertel207 and Telfort208 initially dominated the long-distance, international voice, and data communications markets relying upon the networks of the electricity companies and the national railways, respectively. Later new indigenous entrants started to built their own network (e.g. Versatel) and various foreign operators and service providers establishing a presence in The Netherlands (e.g. WorldCom, COLT, Global One) also joined the market and eventually made the Dutch long distance and international services markets a competitive place.

Despite OPTA's efforts to unbundle the local loop, KPN still holds a dominant position in the local access market. After serious legal haggling with KPN on interconnection issues, number portability, and carrier pre-selection between 1997 and 2000, OPTA finally managed to make local loop available to competitors on a cost-

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[205] *The latest ICT benchmark (2002) shows that The Netherlands is the country with the highest Internet penetration in the world. Also, the quality of the infrastructure is relatively good compared to most other countries. Furthermore, the report estimates that 40% of productivity growth is ICT-related.*

[206] *The Economist Intelligence Unit (2002)* Comparison of e-readiness*, July. The EIU score is based on six multiple indicators: the presence of ICT-infrastructure; the overall industrial climate; the regulatory policy; the adoption of e-commerce; socio-cultural conditions and the existence of supporting e-services.*

[207] *At first Enertel was owned by some of the largest energy companies in the country, then it was sold to Worldport, and then to Energis to become an independent company in 2001.*

[208] *Telfort started as a joint venture between the Dutch national railways and BT, and eventually fully owned by BT, and renamed as Ignite.*

oriented and cheap basis in 2001. This was another boost for competition in Dutch telecommunications.

Mobile telephony

The take-off of mobile phones between 1999-2001 is striking, and can be attributed to emerging competition between the two incumbent operators (KPN and Libertel/Vodafone) and three new entrants. While The Netherlands was one of the earliest EU countries to liberalise the telecommunications market, it was slow in implementing an oligopoly in the mobile market. In addition to the incumbent operator KPN Mobile (providing 1st generation mobile and GSM services), Libertel/Vodafone made up the other half of the GSM-duopoly in 1995-96. Also in 1996, two nationwide licenses for ERMES (Enhanced Radio Messaging System) were issued to KPN and Callmax after a competition.

Two years later, the Dutch cellular market became potentially one of the most competitive in Europe when Dutchtone/Orange, O2/Telfort and Ben/T-Mobile acquired DCS-1800 licenses and set up shop in The Netherlands. The allocation of the new mobile licenses had taken place through an auction, raising €0,7bn.

In 2000, the Dutch government organised another auction to sell five UMTS frequencies. Due to poor auction design (only six groups took part in bidding for five licenses) and lack of genuine commitment to new entry and competition, the five incumbent GSM providers all managed to get an UMTS license. New entrant Versatel was excluded from the bidding process, rumours about collusion among the status quo operators abounded, and several court cases were launched.[209] The Dutch UMTS auction raised a disappointing €2.4bn Euro (approximately €10bn Euro was expected) and put other frequency auctions on hold.

In 2002, new mobile services (GPRS-based) were introduced by KPN, Vodafone and O2. Also two new MVNOS (mobile virtual network operators) have entered the market for cellular services: Tele2, a Swedish telecom retailer, and Ahold, a Dutch supermarket chain, made interconnection and access deals with Telfort/O2 and KPN, respectively, to provide services without having a network of their own.

As charges from fixed to mobile services remained high, despite fierce competition in the market, and when a recent initiative promoted by business users and consumer organisations to introduce voluntary quality of service reporting failed, it became clear that market transparency was lacking. As a consequence of this failure of self-regulation, the regulator OPTA will now step in and enforce reporting and transparency in the mobile market.

[209] *For a critical discussion of the design and the outcome of the Dutch UMTS auction see Klemperer, P. (2000) "The flaws of a Dutch auction,"* Financial Times*, July 26.*

Cable

Together with Belgium, The Netherlands is known for its high level of cable density (more than 95% penetration). It was no surprise that the Dutch policy makers involved in defining the Action Plan in the mid-1990s had high expectations about the potential of cable television networks (CATV):

- Firstly, knit together, the cable operators provided an alternative fixed infrastructure which could compete head-on with the incumbent KPN in the residential and the business market;
- Secondly, given the potentially high capacity of coax cable, CATV could become, after modernisation, the electronic superhighway of the future.

Although The Netherlands has one of the highest levels of penetration of CATV infrastructure in the world, creating an ideal opportunity to develop local loop competition, the cable operators suffered from network fragmentation, diseconomies of scale and the necessity of huge upgrading investments.

In addition to their core TV programme distribution role, cable operators run cable telephony, pay-TV, video-on-demand, local broadcasting and Internet access services. Cable has become a newly emerging market where, often, municipality owned operators have turned into privately owned multi-service providers. They shifted from basic cable provision to offering a more costly package of voice, video and data services via a set top television computer and an upgraded (two-way) cable infrastructure.[210] Yet, as the market for cable telephony failed to take off due to the huge upgrading investments needed and the weak demand, most cable operators left this market to KPN.

Since 2002, the largest cable operator in The Netherlands, UPC, has sought to offer new interactive services through its digital set-top box on top of its regular minimum package that it has to distribute among its customers (under the so-called "must-carry rules"). The new services include additional pay-tv channels and an advanced programming guide. Although there were high expectations of a massive take-up, its actual rollout was slowed down due to technical problems and poor demand. The new offerings were criticised by consumers and programme providers alike. Consumers complained about additional charges and technical problems with the set-top box. Some programme providers, like CNN and MTV, felt they were confronted with de-facto price and access discrimination. However, the content providers found themselves unable to find legal support for their case, simply because of lack of clear jurisdiction among the four institutions with authority in the area, namely OPTA (i.e. access to cable networks), the Ministry of Education & Culture (media policy and pricing), the National Competition Authority (competition policy) and local programming committees.[211] In fact, the larger cable opera-

[210] *For instance, one of the largest cable companies in Europe, US-owned UPC controls 35% of the Dutch market. UPC follows a 'triple play' strategy: Internet access (via its subsidiary Chello), cable telephony (via Priority), and broadcasting & interactive television (via UPC Media).*

[211] Kabel en Consument: Marktwerking en Digitalisering *[Second Cable Policy Document], The Hague, 20 April 2000.*

tors (UPC, Casema and Essent) have established local/regional monopolies that are almost impossible to regulate in case of abuse of economic power. Today, broadcasting organisations and local programme committees are seeking to settle controversial access and pricing issues through self-regulation, i.e. drawing up a voluntary agreement or a covenant with the cable operators.

The market for Internet access via cable has proved to be booming. For instance, in 2001 there were 450,000 cable Internet subscribers in The Netherlands (cf. 203,000 in the UK and 100,000 in Sweden), while there were a total of 6,600,000 cable subscribers (cable density 97,2%) (cf. 3,600,000 in the UK -cable density 14,3%- and 2,300,000 in Sweden -59,5%).[212] About 60-70% of all cable connections can be used for Internet access and about 30% of all households in The Netherlands (about 800,000) have now a cable modem.[213]

Like programme providers, ISPs also complained about the allegedly discriminatory treatment received from the cable operators. ISPs complain about the preferential treatment some ISPs received from their 'parent' cable operators. While Essent and Casema opened their networks to independent ISPs in 2001, UPC has not given in to the complaints of rivalling ISPs, basically protecting its Chello ISP subsidiary. As shown above, access regulation in the Dutch cable market proved to be extremely complex and difficult.[214]

Until very recently the cable market was considered to be an emerging market needing special treatment. In the near future, the Dutch government, backed by the new EU regulatory framework of July 2003 based on the implementation of Directive 2002/21/EC, will open up the national cable access market and their service provisioning monopoly. Further, increasing competition from DSL as an alternative to Internet access, together with the poor financial situation of many cable operators, may force some of them to reconsider their discriminatory policies.

Wireless in the Local Loop (WLL), Digital TV, Satellite

WLL

While The Netherlands has introduced competition in fixed services and mobile markets, no similar progress has taken place over the last five years regarding the auctioning of Wireless Local Loop (WLL) frequencies, and Digital Video- and Audio broadcasting (DVB & DAB) licenses. The fiasco of the 3G auction in 2000 threw several other frequency auctions into doubt. Plans to auction frequencies for FM radio and digital audio broadcasting were put on hold. Also the regrouping of AM and FM frequencies and the rationalisation of frequency planning (the so-

[212] *ECCA (2002)* Facts, opinions and trends in the broadband cable industry, *Brussels.*

[213] *The percentage of households with cable modems is substantially lower in other countries (Belgium 16%, France 14%, Germany 4%).*

[214] The European Commission Recommendation on a regulation on unbundled access to the local loop did not apply to television distribution networks' co-axial cables. Commission of the European Communities (2000) *Commission Recommendation on Unbundled Access to the Local Loop: Enabling the competitive provision of a full range of electronic communications services including broadband multimedia and high-speed Internet,* Brussels.

called "zero-base project") stretched the human resources available in the Ministry of Transport and Public Works, and as a consequence delayed the process of selling off WLL and DVB licenses even further.

In 1998 the Dutch government was among the first to deregulate air space and to prepare for the allocation of frequencies for WLL, but due to legal battles between the Ministry of Transport and Public Works and several alternative carriers it has lost the lead. WLL was considered to be interesting for alternative operators or local exchange carriers without extensive networks and/or no access to the households and small business customers. In order to create a level playing field in the telecommunications market, the WLL market was designed and engineered to curtail the incumbent operator KPN: KPN was only entitled to bid for a limited number of frequencies to facilitate the entry of new alternative carriers.

After the successful sale of three DCS-1800 mobile telephony licenses, the plan was to set up an auction for allocating the WLL licenses in 1999. The auction as a means to allocate WLL was contested by Telfort arguing that as part of the 1996 liberalisation package for fixed infrastructures, the two new alternative network operators, Telfort (now BT Ignite) and Enertel (Worldport/Energis), should be given preferential treatment to obtain a WLL license. Telfort's claim that it should get the WLL automatically was contested by the Ministry of Transport and Public Works and a lengthy legal battle started. Also KPN was not convinced about the market definition and auction design of the Ministry: it complained about the instrument of asymmetrical regulation as a means to new entry and eventually full competition.

After the National Competition Authority had made an investigation, it was decided that KPN could participate in the auction but with a handicap: it could only bid for the less significant and smaller sets of frequencies. Finally, other carriers, such as Versatel, Worldcom and UPC complained about unclear procedures and how the legal framework, developed by the 1st generation and one of the 2nd generation incumbent operators, were slowing down market liberalisation. After the stock market collapse of the telecoms sector and with the availability of other radio and fixed local access facilities (GSM & UMTS, WLAN, cable, etc.) it is uncertain whether the window of opportunity for auctioning or selling WLL licenses is still open. Till today, no official WLL licenses have been issued.

Digital Video Broadcast

In the field of DVB, mention must be made of the Digitenne venture. Digitenne is able to offer a maximum of 25 channels and has delay-tv, electronic programming guide, and near–video-on-demand facilities. Digitenne is a joint venture of KPN Telecom, Nozema (the national broadcasting transmitter company), NOB (National Audiovisual Production company), and Cahanoves (bringing together the interest of the public and the commercial broadcasting organisations). In January 2002 the Ministry of Transport & Public Works granted an exclusive DVB-T license to Digitenne for 15 years for terrestrial broadcasting. Digitenne was also the only applicant for the license. In April 2003, Digitenne started its operations in the western

part of the country, in the densely populated Randstad region (the Amsterdam-Utrecht-The Hague triangle).

Digital Satellite TV

About 5 % of all households in The Netherlands (less than 500,000) have TV satellite receivers. Luxembourg-based ASTRA/SES consortium dominates the satellite TV market. Following complaints about the poor service and high prices of cable operators such UPC and Casema, together with the limited offerings in standard cable programming (i.e. access to a limited set of channels), customers are increasingly buying satellite dishes and subscribing to ASTRA services.

WiFi

There are promising local experiments with WiFi (Wireless Fidelity), a freezone frequency by which public buildings and locations (referred to as *Hotspots*) throughout the country are connected and may, when tied together, eventually provide an alternative communications infrastructure. Some WiFi/Hotspot initiatives, such as Wireless Leiden and the Wireless Campus (University of Twente, Enschede) have public origin and non-profit objectives. Others such as the start-up firms Huphop.com/Meganova (acquired by KPN in May 2003) and Aervik (recently acquired by SwissCom) are in the process of linking Hotspots throughout the country (e.g. Huphop has 35 Hotspot locations at the moment of writing).

Optical fibre and Local Access Infrastructures

The process of continuous upgrading of existing infrastructures and the ongoing competition between cable modem and DSL plays an important part in the further development of the broadband market. Furthermore, there are already a number of local and regional optical fibre testbeds (e.g. Kenniswijk, Eindhoven/Helmond, Almere, Amsterdam, Deventer, etc.). Further, some municipalities have started building their own city rings (e.g. Leeuwarden, Zaanstad).

Further, there is increasing support among broadband experts, Internet activists, and local and national policy makers that a transition to fibre optics into domestic premises is inevitable.[215] It is expected that, given the bottlenecks of cable modems and DSL in terms of limited capacity and asymmetry, these technologies will not be able to keep up with demand in the foreseeable future. The wide diffusion of optical fibres will enable the creation of high-capacity and robust networks that can meet the growth in demand and can process large symmetrical dataflows.[216] This is called "infrastructure glassification": to be prepared for future market demand, fibre optic initiatives must be promoted and high capacity networks (between 2 and 10 Mbps) need to be rolled out throughout the country. Besides being increasingly

[215] Nederland Breedbandland [Broadband Expert Group] (2002) *Recommendations to the Cabinet from the national Broadband Expert Group for achieving a national lead in the field of broadband infrastructure and applications* The Hague; Internet Society Nederland (2001) *Slim Graafwerk. Samenwerken aan glasvezel in de wijk. Een advies van de Commissie Andriessen* Den Haag.

[216] *Internet Society Nederland (2001).*

incorporated into the higher backbone and city-ring networks, fibre optics should also be built into the local loop, fibre to the curb and fibre to the home.

A high-level expert group was appointed by the Cabinet at the end of 2001 to give recommendations for achieving a national lead in the field of broadband infrastructure and applications. In its final report *The Netherlands: Broadband Country*, the National Broadband Expert group recommended, among other general goals, that a Broadband Knowledge Centre be established and clear guidelines for local initiatives be defined.[217]

In their policy statement, VECAI, the association of the Dutch cable industry argued that Internet via cable would soon be available at no additional cost to the Government for 85% of all cable subscribers.[218] VECAI argues that equipping all new houses and premises with fibre (instead of conventional cable), and "glassify" all the local access networks in both urban areas and country areas would cost €75m per annum, €7,5bn and €6,5bn, respectively.

A year before the publication of The Netherlands *Broadband Country*, the Dutch branch of the Internet Society in its *Smart Digging* report criticised the dominant political view that the wiring up of all households to a broadband network was a matter for the market, and argued for moderate intervention by both central and local Government. Fibreoptic connections to the home and workplace were needed if The Netherlands wanted to be among the forerunners in a computerised Europe.[219] Local authorities could take care of the actual co-ordination of fibreoptic connections and a subsidy by central Government would be needed to ensure the separation of infrastructure and services and to accelerate the connection process. Local authorities could make better use of the opportunities to construct broadband infrastructures by considering possibilities such as setting up municipal underground zoning plans, adapting the building regulations for new buildings, combining the laying of broadband with laying UMTS base stations, and combining the demand for connection from consumers and medium-sized users.

The *Smart Digging* report calculated that a government subsidy of approximately €1.4bn would stimulate an investment of around €8bn from the business sector. It was argued that over a period of 10 years a fibreoptic infrastructure covering 90 percent of the country could be built. In its official response,[220] the outgoing Government stipulated that only a few of the recommendations of the Expert Group would be followed through: the establishment of a Broadband Expertise Centre, the development of a legal and institutional framework to govern the development of optical infrastructures, and the granting of subsidies (€6,5m) to municipalities to build high-capacity testbeds.

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[217] *Broadband Expert Group (2002).*

[218] *VECAI (2002)* Kabelbedrijven leveren bijdrage aan discussie over glasvezel. Het Kabel Glasplan – Versnelling van evolutionaire groei van breedbandaansluitingen *(Notitie 15 April), Den Haag.*

[219] *Internet Society Nederland (2001).*

[220] *Kabinetstandpunt Breedband, December 2, 2002. The Hague.*

Regulation: towards convergence

The Dutch Government sees independent, statutory regulation, self-regulation and anti-trust policy as the main guiding principles when structuring and supervising the ICT markets and the ICT sector in general. There is a clear preference for self-regulation and 'co-regulation' (a combination of government regulation and self-regulation).[221] At the same time, the Dutch Government understands that, apart from the more technical aspects of regulatory policy, it has to provide a legal basis to the general public, providing for fair competition and choice, consumer protection, privacy and security. Complying with the international legal and fiscal framework is another important principle.[222] The Dutch Government must comply with the regulatory frameworks and guidelines set by international and supra-national actors, such as the European Union, the WTO and –to a lesser extent– the OECD. Further policy constraints are posed by increasing trade globalisation and openness of national markets to new entry and competition.

In developing laws and regulations, the Dutch Ministry of Justice has a double focus: (1) the improvement of government performance, and (2) the need for new legislation emerging from the introduction of ICT in many areas of society. Examples of projects that are underway are the adaptation of civil rights, and legislative initiatives on liabilities, computer crime, data protection and privacy. In order to create a sufficient level of co-ordination in these areas het Virtueel Keniscentrum ICT en Recht (the Virtual Centre of Knowledge for ICT and Legislation) was created. Further, to support legal and regulatory development, the government has invested in a large programme, ICT and Law (ITER), under the auspices of The Netherlands Organisation of Scientific Research (NWO) and the main ministries involved in ICT policy (Law, Education, Economic Affairs, Internal Affairs, Transport). The programme started in 1995 and studies six main themes: privacy, reliability (in particular for e commerce), access to information and IPR, infrastructure and telecommunications law, ICT and jurisdiction, and legal power of the state.

Competition and access

The regulatory responsibilities concerning the provision of infrastructure and communications services are divided between several ministries and agencies, including:

- the independent telecom regulator OPTA (Dutch Regulatory Authority for Post and Telecommunications) for supervising the telecommunications industry;
- the Ministry for Education & Culture and the Media Commission for regulating cable television networks and broadcasting content respectively,

[221] Digitale Delta: Nederland on-line*, The Hague, 1999.*

[222] *Notitie Internationalisering en Recht in de Informatiesamenleving TK 1999-2000, 25880, no.10, [Note on Internationalisation and Law in the Information Society, Lower House, Hansard] The Hague.*

- the National Competition Authority (NMA) is in charge of executing and enforcing competition policy;
- local programming councils, responsible for stipulating TV distribution and service package (i.e. applying the must-carry-rules to the various channels to be distributed on the local cable system).

OPTA was set up in August 1997 as an independent body spun-off from a former unit of the Transport and Public Works Ministry. Regulatory decisions are taken by and are the responsibility of a Commission of three experts appointed by the Ministry for a period of four years. OPTA is financed in several ways: part of its operational costs are paid by the operators in the form of fees for its services and a fixed yearly payment. The relevant Ministry covers the remaining costs, as well as the costs of complaints and appeals against OPTA's decisions.

OPTA has been very active in liberalising the Dutch telecommunications market and has issued a substantial number of directives and recommendations. OPTA's main tasks are:

- to monitor and guard the process of liberalisation of the telecommunications and the postal markets;
- to deal with complaints of market stakeholders (operators, service providers, customers, public institutions) on all relevant matters concerning the telecommunications and postal markets;
- to present recommendations to protect vulnerable market stakeholders;
- to formulate policy recommendations to the responsible ministry.

Almost from its conception till today OPTA did not receive full political support from all political groups and was by the organisations in the telecommunications industry representing the *status quo*. It is not surprising then that OPTA does not have strong legal powers. This means that when it issues a directive, for instance a pricing directive towards the incumbent operator, the market party involved can contest the decision. In such a case the responsible Minister can try to mediate the conflict. In the ultimate situation a court procedure can be followed. OPTA's decisions do not always get the support of the law.[223]

One of the key issues in OPTA's operational mode is the relationship with the Ministry. Since OPTA is closer to the market and arguably better informed, but the Ministry bears final responsibility for policy-making, conflicts of competence can easily arise. Controversial issues OPTA had to settle included interconnection and access, tariff rebalancing, pricing regulation (rate-of-return or price-cap regime), number portability, carrier pre-select, wholesale and retail price setting, cross-subsidies. and collusion.

[223] *For instance, in 2000 OPTA fined KPN €200,000 Euro a day because the incumbent operator was not giving cut-price telephone companies access to its local phone networks. A week later a Rotterdam court ruled that the fines were illegal.*

After an official evaluation of OPTA in 2001, it was decided that OPTA would remain independent for another 4 years to create a level playing field, before it would become a branch of the NMA, the National Competition Authority. The preparations for such a merger have already started. The proposal to establish a joint independent communications authority in which the responsibilities of the Media Commission, OPTA and some tasks of the Media & Culture Ministry would be integrated, was never seriously considered.

In 1988, the Media Commission was established with far-reaching tasks and legal powers in the domain of broadcasting. It is tasked with:

- guaranteeing equal and honest access to the media for everybody;
- safeguarding quality, diversity and independence of information; and
- reassuring optimal conditions for effectively enforcing the law.[224]

This independent regulator stands between the Government and the media organisations. Formally, it is accountable to the Minister of Education, Culture and Science. The Media Commission has the power to fine violators up to a maximum of €90.000 per month and the media are obliged to give all necessary information about their business to the regulator.

In December 2002 the Directorate General of Telecommunications and Post, in charge of policy formation and implementation, was transferred from the Transport & Public Works Ministry to the Economic Affairs Ministry. The National Radiocommunications Agency, now part of the Ministry of Economic Affairs but previously within the Ministry of Transport and Public Works, is responsible for optimising the use of radio frequencies, and since 2001 it is also responsible for frequency management in the telecommunications sector.

The new governance of the converging telecommunications, broadcasting and IT sectors is based on the principles of competition, interoperability, technology neutrality and universal service, following EU regulations. It is unlikely that by 25 July 2003, when all Member States of the EU should have adapted national legislation implementing the new Directives, The Netherlands will have the new regulatory framework for electronic communication networks and services fully in place. Due to a political stalemate between May 2002 and May 2003, caused by the resignation of the Government (Cabinet Balkenende I) followed by elections and a lengthy cabinet formation process, The Netherlands has been slow in implementing the new regulatory framework in electronic communications.

[224] *These tasks entail the following more specific responsibilities: allocate broadcast time to public media (national, regional and local); issue permits to commercial media meeting certain criteria; control cable media (following legal obligations); mediate conflicts between cable companies, broadcasters and other parties; control advertisement; control the general content of programs, in particular the balance between information, culture and education in the public sector; control certain programme quotas (affirmative percentages of European, independent, recent, Dutch or Frisian programs); financial control of relevant public organisations; monitor the concentration of media; advise on the present and future media policy.*

IPR

The Dutch Government is currently establishing new rules and regulations for IPR, following as reference point the European Guidelines for harmonisation of property and neighbouring rights in the information society (Pb EU 22 June 2001, L 167/10). A particular focus will be on the educational sector and the archival world. In the higher education sector especially, the digitisation of journals has led to a sharp confrontation between producers of knowledge and publishers, revolving around economic aspects of publishing, accessibility and property rights. A host of new public and private initiatives is emerging to challenge the power of the traditional publishers.[225] The regulatory process that takes place within the EU framework and the UN's dedicated organisation WIPO, will have to pull together different interests from diverse of social groups.[226]

The Ministry of Justice and several market stakeholders are involved in the process of adapting the Dutch legal structure on IPR. The Ministry of Justice recently started a long-term project to develop a strategy regarding IPR, in particular copyright. A first report contained an inventory of issues and possible policy strategies.[227] A main focus of this report is on Digital Rights Management (DRM). TNO is also conducting several studies on IPR policy and technical issues.[228]

Furthermore, the national collective organisation representing and administering the interests of copyright owners and creators, BUMA-STEMRA, is also involved in modernising today's IPR regulation and using new digital techniques to improve internal efficiency and services to their members and customers. Various market parties associated under the umbrella of CEDAR,[229] Buma-Stemra's service organisation, collaborate in this work.

[225] *The Open Archives Initiative (OAI) is a prime example of these initiatives.*

[226] *The WIPO treaties, which were adopted by the European Communities and the Member States, and many other countries affiliated with the World Intellectual Property Organization, constitute an important update of the international protection of copyright and related rights. They state explicitly that copyright and the rights of performing artists and phonogram producers are applicable in a digital environment.*

[227] Auteursrecht en informatiemaatschappij. Bouwstenen voor een justitiestrategie*, The Hague, 2002*.

[228] *See www.tno.nl*

[229] *CEDAR (Centrum voor Dienstverlening Auteurs- en aanverwante Rechten): www.cedar.nl (Service Center for IPR and neighbouring rights)*

Data protection and privacy regulations

The Dutch Government position on data protection and privacy regulations can be summarised in the following policy principles:

- the main reference point for Dutch policy and legislation are the EU regulations and directives;
- whenever possible allow for self-regulation and limit Governmental rules;
- laws are in general technology independent ("what goes for 'off line' also goes for online").[230]

Nevertheless, the government acknowledges that the present ICT developments require adaptation of existing rules and regulations. To this end, the Government has established a Commission for the Protection of Personal Data (Commissie Bescherming Persoonsgegevens, CPB) which is to follow and study developments in the area of privacy, and advise the Government on legal regulations. The CPB has asked the Commission on Basic Rights in the Digital Era to study the following issues:

- protection of confidential information;
- freedom of speech;
- accessibility of government information;
- technology supply and freedom of choice;

As part of this agenda, the CPB is analysing a number of privacy related issues such as cameras in public spaces; data exchanges in privacy-sensitive government sectors such as health care and social security; privacy enhancing technologies (PET's), including online authentication; consequences of Internet surfing on personal data; and Privacy Incorporated Software Agent (PISA), a European Union sponsored project aiming at developing an intelligent agent representing and protecting the interests of the user.

Though the self-proclaimed role of the Government in these developments is limited, it does support certain initiatives actively. For example, in 2002 it set aside €25m to become a 'launching customer' for PETs.[231] Furthermore, Government is working on privacy regulations in relation to the development of its own digital information infrastructure. This regards both the technical infrastructure (in order to exchange data on citizens in a safe way and prevent unauthorised access) and the rules and regulations of the various government bodies (ministries, local government)

For practical matters, Government established GOVCERT, a Computer Emergency Response Team. This organisation is to support Government in matters of com-

[230] *Notitie Internationalisering en Recht in de Informatiesamenleving TK 1999-2000, 25880, no.10 [Note on Internationalisation and Law in the Information Society, Lower House, Hansard], The Hague.*
[231] *TK 26643 and TK26387 [Official publication of the Lower Chamber].*

puter related safety incidents, such as viruses, hacker activities, etc. It serves as a governmental Alarm Service, and has as one of its focal points the development of a safe ICT environment for government organisations based on public key encryption.

Content regulation

In the 1998 Dutch law on the electronic superhighway (De wet op de elektronische snelweg) distinguishes among three levels of regulation: infrastructure, transport, and content. With respect to content the law focuses on two aspects: a) protection against violation of technical provisions, for example encryption, and b) illegal information, for example child pornography. The law addresses these two issues rather differently. While in the first case commercial interests are involved, it roughly follows what is customary in the 'off line' regulations. The second case raises moral issues. Here the Dutch approach is based on the principle of self-regulation. It sets up the Internet Meldpunt Kinderporno (alarm service child pornography), and puts moral pressure on the Internet providers to deny access to suppliers of illegal or amoral content.

E-commerce

The Dutch Government, and in particular the Ministry of Economic Affairs, has treated e-commerce as a priority area. The Dutch Government undertook several studies and produced a number of reports on different aspects of e-commerce, leading to the following set of policy objectives:[232]

- to monitor the internationalisation of the market and the sectors where electronic commerce is rapidly developing in order to ensure competition in the market;
- to guarantee freedom of access and transparency of the market;
- to facilitate newcomers on the market, and offer customer protection;
- to offer risk management to avoid unnecessary failures.

The Ministry of Economic Affairs new Action Plan formulated after the 1996-97 revision of the previous Plan, set as its main goal is to develop The Netherlands as one of the leading countries in e-commerce. To achieve this goal, it laid out actions in three areas:

- creating a favourable environment for industry;
- creating a transparent legal framework;
- stimulating international collaboration through large projects.

[232] *Actieplan Electronic Commerce, (March 1998), The Hague.*

The chosen approaches revolved around self-regulation and public-private platforms. The Netherlands is one of the leaders in applying self-regulation to tackle sensitive and complex issues, such as trusted third parties (TTPs), codes of conduct, illegal content, and on-line dispute resolution. Applying self-regulation, however, could not solve the problem of introducing secure electronic signatures. Here, legislation has recently been adopted in Parliament.

As further step towards the formulation of a forward-looking policy on electronic commerce, Government established the Electronic Commerce Platform (ECP) in 1997. This independent centre of expertise and co-ordination operates as a public-private platform for the diffusion of information about electronic commerce and to serve as a help-desk. ECP devised a model for a code of conduct for parties involved in e-commerce. Since this model was at the time (1999) quite unique, it was the subject of many international studies, for instance by the EU and the OECD. Together with the Foundation for Conflict Resolution (*Stichting Geschillenbeslechting*), ECP has successfully pioneered on-line dispute resolution, and hence strengthened consumer's confidence in electronic commerce.

Public use: towards e-Government

The basis for the Dutch policy in this area was the 1998 Actie Programma Elektronische Overheid.[233] This document announced yearly reports on the progress of four main sets of objectives:

1. achieving a high standard in electronic access to all public institutions;
2. improvement of the provision of public services;
3. improvement of internal management;
4. targeting of specific user groups.

In the first area (access to public institutions), progress was made through the introduction of www.overheid.nl, a general portal to more then 1000 public websites (ministries, advisory boards, semi-public authorities, provinces, local governments, water boards etc.). The portal also offers access to all official documents since 1995 and to relevant papers and documents discussed or to be discussed in Parliament. The site is intensively used.

In addition, there are several specific areas of public information that have recently been made available in digital format. A good example is the Elektronisch Loket Rechtelijke Organisatie [Electronic Counter Legal Organisation], which offers relevant information about legal procedures, relevant addresses and tariffs. Further, the Dutch Government has established ICTU, an organisation that accumulates knowledge and expertise on ICT and government. ICTU aims to improve both the internal working processes of Government agencies and departments and their interaction with citizens.

[233] *Actie Programma Elektronische Overheid [Action Programme Electronic Government], 18 December 1998, The Hague.*

Apart from providing open access to relevant public information, the Dutch Government considers it essential that the relations between Government and private organisations and individuals should take place through electronic means. An important project in this area is Overheidsloket [Public Counter] (OL 2000). In 1999 the objective was formulated that at least 25% of all public communications should take place digitally. In order to achieve this goal the existing OL 2000 project received additional funding. The main objective of this programme is to develop a coherent and transparent network of physical (counters, information pillars) and virtual (websites) public-private interfaces in several selected areas including housing, healthcare and trade and industry. Other initiatives that deserve mentioning include:

- The Virtual Counter for Work and Income Centres, the main intermediate public institution on the labour market. The final product of this project can be described as a logical and functional design for the digitalisation of an intermediary laboru market function. In 2003 a testing environment is being established. After this experimental phase implementation will take place on a national level.
- The identification number for healthcare customers. Customers will receive a chipcard with personal, administrative and insurance information. This so-called "Healthcare Passport" (Zorgpas) aims at the realisation of an open electronic network in the Dutch healthcare sector that will enable customers, healthcare providers and insurers to exchange and retrieve data.
- The *Kenniscentrum Informatievoorziening Bedrijfsvoering Overheid* [Expertise Centre on IT management in the public sector] (KIBO) was established with the aim of improving the Government's internal efficiency. This Centre deals with the management of public administration processes and co-ordinates the different ICT-related activities within the various ministries and other government organisations. One of its programmes focuses on the streamlining and co-ordination of the data that Government collects about its citizens, and about society in general. These activities obviously raise a number of important issues such as privacy, and the citizens' confidence in Government. Recently, ICTU started a new initiative to promote the use of open standards and open source software in Government in an attempt to become less dependent of the big software suppliers.

The Government has also implemented targeted initiatives in a wide number of areas, such as digitisation of electoral processes, a security service for software and hardware problems, various programmes to study and develop the electronic relation of Government with its citizens, and a programme aimed at safeguarding knowledge within governmental organisations. The latter, called 'digital sustainability', covers the whole Government postal and archival systems.

In the international benchmarks carried out in 2000 and 2002, The Netherlands has shown a good result in service provision by government organisations to citizens (e.g. income tax returns via electronic means) and a below average performance in offering public electronic services to businesses and across public departments and organisations.[234]

Public service architecture

Procurement of IT services/ E-procurement

Attempts have been made to organise the public procurement in such a way that its procedures could be monitored from a central direction unit. Until now, these efforts have been blocked by the individual claims from several Ministries about independent policy making in this area. Among the various ministries involved in ICT matters, there is no central co-ordinator of standardisation policies and practices in the public sector. In theory, the Ministry of the Interior is responsible, but in practice it has been so far unable to execute leadership in the adoption of XML and Open Source Software.

In one area, however, there was a relative success: the OT2000 (Government Telecommunications 2000) project on the public procurement of telecommunication services. OT2000 was an initiative of the Ministry of Interior pursuing five main objectives:

- to realise substantial savings on telecommunication costs;
- to raise the quality of the telecommunications services;
- to realise a long term planning scheme for new telecommunications services;
- to reach a level of inter-ministerial standardisation and harmonisation;
- to establish a harmonised procurement procedure.

The project serves as an example of how to organise different parts of Government –both national and local– on ICT matters. During the preparation process, which took place between 1995 and 1999, it appeared to be very difficult to organise different ministries on the same technical platform. Differences of opinion and demand and the lacking of long-term communication policies were the main reason behind the small number of collaborating ministries. Also, there was criticism that the final package of telecommunication services that was presented was too limited and lacked innovative and future-oriented aspects. Nevertheless a total of 250 central and local public institutions joined in the final procurement procedure. The total package was divided in three main lots (fixed national, mobile national and international), and two providers were selected per lot. The average savings on the existing tariffs were estimated to be 18%. The project has just entered a new term and will continue until 2006.

[234] *Internationale ICT toets 2000 & Internationale ICT toets 2002*.

As a follow-up to this rather successful initiative, ICTU organised ON21, aiming specifically at the joint procurement of ICTs for government organisations and agencies. A recent outcome of this initiative is a joint contract with Citrix, an organisation providing telecommuting services.

Finally, a platform called OSOSS was launched in May 2003. It aims at developing an open standards and an open source software community at all levels of Government. Typically, Government does not plan to force this development top-down, but through interactive mechanisms provided by OSOSS. The OSOSS website[235] serves as a gathering point for all government organisations interested in open standards and open source software. OSOSS aims at providing a catalogue, being a service provider and also a developer, all to promote the use of open standards and open source software in The Netherlands. One big city, the Hague, has already adopted the 'open' policy.

Sectoral Applications

E-health

The ministry of Public Health and Welfare (VWS) is responsible for projects in the healthcare sector. These are mainly driven by broad policy guidelines debated at the national policy level: waiting lists reduction, improvement of efficiency, greater involvement of users of health services, and evolving patterns of customer/patient relationship.

The Dutch healthcare sector is characterised by the involvement of a large number of institutions and organisations. Faced with this organisational complexity, the creation of the National Institute for the use of ICT in the healthcare sector (NICTIZ) represents real progress. NICTIZ is an umbrella organisation bringing together public sector departments involved in implementing health care policies.

There are two main political objectives that define the implementation of strategic ICT projects in the health sector:

- Reduction of the waiting lists for a number of health services through the realisation of ICT driven efficiencies;
- The emphasis on the role of the user in organising his personal care process by the use of ICT and other means. Dedicated personal health care budgets will enable the customer to choose between the different services providers using online tools.

The implications for a sector that is characterised by traditional and regional relations will be enormous. The existing chain of health care relations based on rigid organisational structures will have to be broken down. In this process, the availability of sufficient information about the variety of health services available to patients will be crucial.

[235] *www.ososs.nl.*

Many current ICT projects are therefore aimed at matching the relevant databases and reaching agreements on standardisation and the use of protocols. The main focus has usually been technical, addressing issues like database integration, standardisation, and the development of technologies to support higher levels of access. Yet, the present situation raises more social and cultural issues than technical ones. The very strict Dutch privacy legislation, and the tradition of managerial autonomy are emerging as obstacles to the achievement of these goals.

Also, until now there has not been much research on whether and how future customers will cope with the new technologies. Yet the ability of patients, many of whom may not be familiar with the use of IT, to deal with IT based healthcare organisation may pose substantial problems. A related problem is presented by the handicapped, both because of their specific demand for services and their possibly different capabilities for the use of ICT means. Several separate projects are addressing this issue.

Against this background, NICTIZ has set the following main priorities, following two main programme lines.

Line 1: AORTA
The main feature of AORTA is the development of a basic integrated ICT infrastructure among the different organisations in the health sector. To reach its goals the programme has to develop:

1. Unique identification numbers for customers, service providers and insurance companies.
2. A System to exploit the basic infrastructure on a cost-effective manner.

In a second phase, AORTA will rollout a range of services, revolving around an "Electronic Patient Dossier." The objective is to realise phase 2 of AORTA in at least one region. Nationwide coverage is planned for 2006.

Line 2: Specific healthcare applications
Most of the projects under this second line are telemedicine initiatives. Some of the most important are:

- *Chain management in healthcare*. This is specifically aimed at patients that are dependant on different institutions and require multidisciplinary information exchange. The project will first address the needs of cerebral vascular accident patients and will then be transferred to other areas like diabetics.
- *Farmacotherapeutic Compass*. A medical encyclopaedia for different drugs that will be integrated with the Electronic Prescription System and the Electronic Medical Dossier.
- *Information system regarding pregnancies and maternity nursing*. This will include the development of an online system for long distance maternity nursing that will be developed as a private initiative of KPN (Dutch Telecom) and Nederland Kennisland [Knowledgeland].

Apart from these project supported by the Dutch government there are also several private initiatives, involving for instance insurance companies.

E-learning

Following the e-learning action plan presented by the European Commission in 2001, the Dutch Government has developed a number of activities. The plan is primarily oriented towards building a technical infrastructure, including software development, but it also includes development of new expertise for teachers and virtual mobility ('lifelong learning').

The Dutch Government set up *The ICT at School Foundation*, with the aim of supporting effective and efficient use of ICT in primary and secondary education. The foundation is demand oriented, in the sense that it intends to help schools acquire and use the ICT applications they feel they need.

Further, the Ministry of Education, Culture and Sciences issued an action plan including a number of measurable targets.[236] To execute this plan the Ministry of Education collaborates with other ministries, in particular the ministry of Social Affairs.

For the education sector as a whole, the policy goals on ICT and learning are found in the White Paper Education Online (*Onderwijs On Line*). Its four main themes are:

- development of expertise;
- methods and educational software;
- management;
- the Knowledge Network (*Kennisnet*).

Kennisnet functions as a portal on education and ICT issues, focusing on infrastructure, services and content. In 2002 more that 11.000 schools, libraries, museums and content suppliers, and a total of 2,5 million users accessed Kennisnet. Kennisnet became an independent foundation in 2001 supported by funding from the Ministry of Education, Culture and Sciences. Being an independent organisation, but yet dependent on Government funding, Kennisnet presents an example of the Dutch style of self governance. While, the education sector gets to decide for itself how to use ICT and to develop their programmes and curriculum, the underlying role for Government is to provide financial support to establish a good communications infrastructure. Dutch policy subscribes to the principle of a "light touch" when supporting the development and diffusion of ICT.

[236] *The targets include, among others, the number of computers in schools, and levels of Internet connectivity. They are monitored through the two-yearly ICT-monitor exercise, in which a long list of indicators is benchmarked against other countries (including Sweden).*

Public sector information

Since 1994, the provision of public information by electronic means has become an important policy issue. A 2001 study analysed the progress made in three categories of public information

- laws, regulations, and other legal documents;
- information about government services;
- any other information in the public domain which can be of use to the public.

The study concluded that the results felt well short of the 1994 policy goals.[237]
A central role in developing and implementing public sector information policy is played by:

- ICTU (ICT Uitvoeringsorganisatie). The Dutch organisation for ICT in the public sector, is a project organisation in charge of implementing ICT programmes and projects in the public sector;
- ELO (Centre of Expertise in Electronic Government), an initiative of the Ministry of Interior to create a platform to bring together experts and exchang information on different e-Government initiatives.

According to Matt Poelmans,[238] ELO director, developments in ICT have to coincide with a more general Government programme to improve its own relations with society, the so-called B4 operation (Beter bestuur voor Burger en Bedrijf, Better government for citizens and industry). Other main initiatives in the area include the attempts to organise one public desk for all Government-related affairs.

To manage public information within Government organisations and agencies, Government established a Public Key Infrastructure (PKI) Taskforce for secure electronic communications. This future infrastructure should meet high level criteria on safety and transparency and offer the possibility for the use of electronic signatures. PKI services should support electronic mail, the use of the Internet and electronic communication between Government, industry and private citizens. The Taskforce follows a two-step approach:

1. pilot experiments involving the use of a limited PKI infrastructure;
2. the rollout of a fully fledged PKI

Due to legal and technical problems with the introduction of digital signatures and the absence of a central Government-approved Certification Authority, which would have the mandate to assign to other organizations the right to issue certificates for electronic signatures, PKI actual implementation has temporarily halted.

To increase the effectiveness and efficiency of electronic communication, data exchanges between all public organisations and institutions should be standardised.

[237] *Project overheidsinformatie, Rathenau Instituut, 2001 [project governmental information], various publications.*
[238] *Conference Overheid en ICT, March 2003, Utrecht.*

To achieve this objective, in 1999 the programme *Stroomlijning Basisgegevens* [Streamlining Basic Data] was introduced. The programme recently ended and, according to the responsible minister,[239] was estimated a success, having received a high level of acceptance in all parts of Government. Yet, the actual development of a reliable common public infrastructure based on authentic registration is yet to come. Since many ministries are involved (Economic Affairs, Interior Affairs, Environmental Planning and Housing, Justice, Social Affairs, Ethnic Integration, Finances), this is not expected to be easy. The consensus model followed by the Dutch government in these matters, has been criticised in a report pleading for a more top-down and sector wide approach.[240]

Learning and competences

R&D support for the development of new ICT applications and products

In international benchmarks conducted in 2000 and 2002, while academic knowledge production and fundamental research stand out, exploitation of research results appears as weak.[241] One the one hand, the Dutch scientific and R&D communities public-private partnerships seems to be doing reasonably well, including TNO, CWI, National Telematics Instititue, NWO, Philips, and the leading technical universities. On the other hand, the R&D intensity of the Dutch ICT hardware industry emerges as disappointing and collaboration between innovative ICT-companies with public research establishments and universities is almost absent.[242] Also software developers display disappointing results in R&D performance, new product development and exports. There are also shortages at the ICT labour market: there is a huge demand for engineers and technical scientists and women are strongly underrepresented in higher education.

Yet, given its relative strength in the fields of semiconductors, consumer electronics, and software services,[243] and its potential in next generation infrastructures and ambient intelligence, The Netherlands provides an interesting test site to promote broadband developments and embedded software.[244] Initiatives like the Amsterdam Science Park (WTCW) and its GigaPort/Internet II project and the High-Performance Computing network (HPCN), have been partly funded by Government subsidies under the ICES-KIS programme. This programme allocates the windfall profits of Dutch natural gas revenues to promising techno-economic initiatives. Other large projects supported include advanced software-engineering (Jac-

[239] *Letter of the minister of Interior to the Parliament, 19 March 2003*

[240] *Commissie Docters van Leeuwen, Burger en Overheid in de informatiesamenleving. De noodzaak van institutionele innovatie, The Hague, ministry of Interior, 2001 (Citizen and government in the information society. The need for institutional innovation).*

[241] *Internationale ICT-toets 2002; Internationale ICT-toets 2000.*

[242] *As a case in point, Philips has just recently decided to redirect part of its collaboration in the area of ICT to the Belgian university in Louvain.*

[243] *The Netherlands is home to leading international firms in the field, like Philips, ASML, and ATOS Origin.*

[244] Concurreren met ICT-competenties*, April 2000, The Hague.*

quard) and 4th generation mobile telecommunications technology (Vrijband/Freeband).

Research funding for academic research

For the higher education sector, the universities in particular, The Netherlands Organisation for Scientific Research (NWO) initiated a number of large programmes to stimulate the use of ICT in these institutions. One of these programmes, which is jointly financed by NWO and the ministries involved in the Action Program Electronic Highways, is aimed at studying the relationship between ICT and the information society.[245] As mentioned above, the Digital University programme, focuses on issues related to distance and e-learning.

Another example is the recently started DARE Programme for increasing the use of ICT in higher education. It focuses on two main themes:

- to stimulate the development of digital academic repositories and related services for scientific information;
- to foster new forms of digital collaboration, through e-science, among researchers in different physical environments.

Three other major funding channels in the higher education/research sector are ICES/KIS, TNO and SURF.

- ICES/KIS is a large government fund aiming at the development of the knowledge society. In many innovative areas of science and technology, including ICT, substantial research funds are distributed to consortia of public and private knowledge producers.
- TNO is the largest applied science organisation in the country. Once government sponsored, it now primarily acquires its funding on the market, although still a substantial part of that market is government. In 2003 TNO took over KPN's research laboratory and merge it into its own telecommunications and electronics R&D facilities.
- Many activities in the higher education sector are channelled through the SURF foundation.[246] SURF is a public-private partnership between Government and the national telecom operator (KPN), and is responsible for the exploitation and innovation of advanced ICT infrastructure in the higher education sector and public R&D institutions.[247] It also addresses a wide variety of issues like copyright, authentication, e-libraries, e-learning, licenses, etc.

[245] Maatschappij en elektronische snelweg *[Society and the electronic highway]*.
[246] *www.surf.nl*
[247] *SURF is now actively working on Internet II and gigabit connections.*

The Grid

Insofar as a Government Grid policy can be said to exist, it focuses on participation in, mainly European, international initiatives and the indirect funding of conferences and other fora.[248] Three Dutch organisations participate in the European DataGrid project at CERN: NIKHEF, the department of Higher Energy Physics of the University of Amsterdam, SARA, the biggest computer facility of The Netherlands, and KNMI, the Dutch meteorological institute.[249]

Target user groups

The project Digital Playing Grounds (*Trapveldjes*) originated in 1999 attempts to avoid a split in society between those that are ICT-literate and those that are not (so called "surfers" and "drowners"). In order to avoid such "digital divide" and to support relatively backward groups, a national programme for the establishment of "Digital Playing Grounds" was presented. The term "Playing Ground" refers to locations where people come together to practice, learn and experiment. The three main objectives of the programme were:

- to fight the "digital divide";
- to improve the labour market prospects of residents in problem areas;
- to strengthen social cohesion.

The three-year project was financed by the Large Cities department of the Ministry of Interior, and was organised together with a number of specialised institutions and foundations, such as the *Nederland Kennisland* (The Netherlands Knowledge Country), IPP (Institute for Public and Policy), Seniorweb, and Technika 10.

The specific organisation of the Grounds was left to the local authorities and therefore varies with the character of the target groups and the specific characteristics of each location. The centres were concentrated in "problem areas" in the 30 biggest Dutch cities. Almost half of them were established in community centres, about 25% in libraries ands the others mainly within educational organisations and youth centres.

[248] *For example a large conference under the auspices of the Global Grid Forum was held in 2001 in the University of Amsterdam.*

[249] *The DataGrid Project, funded by the European Union at CERN aims to enable next generation scientific exploration requiring intensive computation and analysis of shared large-scale databases (millions of Gigabytes), across widely distributed scientific communities. Total funding is €10m for the period 2001-2003.*

The funds available were Nfl1m for each of the 4 biggest cities (Amsterdam, Rotterdam, Den Haag and Utrecht) and Nfl500,000 for the others. Taking into account that the original objective of the programme was the establishment of 43 locations, the fact that in the end 243 Playing Grounds were established makes it an enormous success. Seen from a quality perspective it should be noted that one third of these initiatives operates above expectations, while another one third 1/3 is working on a level far below initial target. There are several reasons why the majority of these centres could however fail in the near future:

- The new Government has not set any priorities regarding the continuation of the programme. Since no new funds were allocated it should be noted that "only" 123 of the Playing Grounds can be at present self-sufficient.
- In many cases the funds were allocated through the existing decentralised welfare channels. The reluctance in these circles to create necessary collaborations with the educational and business world is an important reason for the lack of a broad commitment. The weakness of the programme is therefore that it depends on the enthusiasm and talents of specific individuals.

Breeding grounds (*Broedplaatsen*) is a project supporting the development of a wide range of innovative ICT services. It was launched in 2002 and it is still running. It is an "umbrella project" of the ministry of the Interior, especially from its Large Cities department, co-ordinating a number of projects presented by four cities (Amsterdam, Den Haag, Eindhoven, Deventer). The project builds on the Playing Grounds project and can be regarded as a further and more structured step in the development and use of ICT services. Whereas the Digital Playing Grounds were considered centres where people could acquire basic digital capabilities, it was recognised that it was at least as important to develop more sophisticated uses of the available, more innovative ICT capabilities. A second important feature of this project is that it should enable people to break out of their isolation and establish social contacts. Projects falling under the Breeding Grounds umbrella project address areas such as:

- neighbourhood safety matters;
- integration policies;
- citizen participation;
- youth and education.

In order to support the cities that are involved in the project a separate organisation was established: the Institute for Social Quality Matters. In total a budget of €7.3 million was allocated for this initiative. The financial scheme is however based on 50% co-financing by the local authorities or the private sector.

There are several reasons why, in the present economic conditions, "Breeding Grounds" could fall apart. The are no clear criteria for the degree of innovation or social coherence (two very different objectives) that is being sought, and there it appears as if many "hobby-projects" are being brought under the programme. Very different projects with very different objectives and user groups are being carried out, and the lack of professional programme management is emerging as a serious problem. Improvisation seems to set the agenda.

Support to e-Entrepreneurship

During the implementation of the Action Plan and its follow-up, the Dutch Government started to acknowledge that special attention had to be paid to SMEs, ICT start-ups, and innovative firms wishing to invest in electronic commerce applications. Several projects were launched with these objectives in mind. The "Urgency" project (*SPOED*) distributed information about doing business on-line and promoting electronic commerce to 2500 SMEs. The "Twinning" initiative was set up to encourage ICT start-ups by providing office space, venture capital, mentoring and networking facilities to innovative entrepreneurs in the ICT field.

Originally Twinning was set up by the Ministry of Economic in 1997 to stimulate entrepreneurship in the Dutch ICT industry, triggering nascent starters, venture capitalists and service providers to collaborate with its initiative. Although Twinning facilitated the emergence and early growth of just under 100 new technology-based firms in its three Incubation Centres throughout the country, after an external evaluation in 2000, it was decided to privatise the public incubator. When it became clear in 2003 that Twinning could not be sold, Government decided to terminate this incubation network.

Further the Dutch Government has set up a mechanism to provide targeted R&D credits for service and application development in an on-line setting (the KREDO-mechanism). Its objective is to encourage additional investments in this newly emerging industry. About 50 young and more established ICT firms have benefited from KREDO.

Support for the use of ICT

Following the original Action Plan and Progress reports, the Dutch Government set up a number of demonstration projects to broaden ICT use. One of them is Mediaplaza, a test bed for Internet and multimedia technology. Mediaplaza is a public-private partnership, founded in 1997 by ING, Jaarbeurs Exposition Centres, the Ministry of Economic Affairs and KPN/PTT. Another demonstration project, initiated and subsidised (€45m) by the national Government in the late 1990s, is the creation of a Knowledge Neighbourhood (*Kenniswijk*) in Eindhoven. Its ambition is to develop the first 'electronic consumer market of the future' combining and integrating services on a broadband infrastructure. Other cities have followed the Eindhoven example developing local initiatives. Through the City Link Foundation (*Stichting Stedenlink*) experiences and expertise are shared among the participating 'intelligent' cities.

Although no formal evaluation has taken place, the results of these efforts so far get mixed reviews, with problems emerging not so much with the technologies, but rather with the level of organisation and involvement of citizens.

Concluding remarks: the Dutch experience

Since 1994 many impressive research reports and white papers have been produced, funded or carried out by all kinds of government organisations and agencies. A lot of energy and means have been invested to consult the various public agencies, non-governmental organisations and business representatives, investigating market and technologies, and forging a national consensus. The result has been a growing stream of policy papers, white papers and expert reports, but making it very difficult for policy formation to catch up with a rapidly changing environment. Besides the studies have resulted in projections and mega-plans whose feasibility is sometimes questionable.

No doubt the lack of co-ordination and strict direction has been a complicating factor in the implementation process of all these plans. This is of course partly due to the fact that the ICT-sector has very distinguishing characteristics. Developments in ICT are varied and manifold, there are many players in the field and there is a strong dependence on international developments. Creating strong and transparent structures to manage the implementation process is therefore next to impossible.

Another specific feature of the Dutch ICT policy is the emphasis on consensus building. On the one hand this orientation has sometimes been quite inefficient, on the other hand it can be concluded that consensual approaches have initiated projects that have been close to the context of application.

Nevertheless, the efforts of successive governments have been extensive. The ICT policy has been a major spearhead in the policy programmes from the beginning of the nineties and considerable investments have been done in stimulating projects and research areas. The overall picture is therefore somewhat mixed, with successes in some areas and considerable failures in others. In order to paint a clear picture and to get an insight in the particularities of the Dutch approach we roughly follow the same structure as we presented in the introduction.

On a generic level the ICT policy of the Dutch government could be characterised as a mobilising effort to develop a shared vision on the emerging information society. The Dutch government has sought a broad involvement of all public and private stakeholder, including all network operators, service providers, new entrants, local communities and counsils, etc. The underlying goal is to develop a consensus on the use of the electronic superhighways to revitalise society and to create a shared vision of the information society.

The elaborate policy formation process and lengthy consensus-seeking practices have often proved unable to provide appropriate responses to shifts in the ICT domain. Problems have emerged with the mistakes in auction and market design, the rigid legal framework that was clearly at odds with the dynamics in the telecommunications market, and the failure to set up an effective regulatory system. It could be argued that the excellent Dutch record in broadband Internet access and

the emerging competition between cable modems and DSL (and to a lesser extent ISDN) have taken place despite an ineffectual policy environment.

In this consensus-driven approach, there was no place for taking controversial and adversarial decisions, as the newly appointed national telecommunications regulator OPTA found out when fighting off the privileges of the incumbent operator KPN. Starting from a post-monopoly situation, OPTA has sought to liberalise the telecommunications market (while safeguarding consumer protection and quality of service issues) by supporting new entrants and restricting the incumbent operator. Due to the initial close ties between the Ministry of Transport and Public Works and KPN (in which the Ministry was still the largest shareholder with 34-45% share), a lack of political legitimacy, and a limited legal mandate (contributing to lengthy conflicts and slowing down momentum), only a very uneven kind of competition has been established.[250] The hesitant position of the responsible authorities has lead to a situation where independent ISP's such as Tiscali and Zonnet have been unable to push for non-discriminatory access.

The organisation of regulatory functions is however changing. OPTA's position and functioning is to be evaluated after four years. This will give politicians and policy makers the opportunity to develop alternatives, such as merging it with the broadcasting and cable regulator (CvdM, *Commissariaat voor de Media* -the Media Commission) or the National Competition Authority. Due to OPTA's already narrow mission and the upgrading of national telecommunications framework (as part of the new EU framework), a process has been started to transfer OPTA to the National Competition Authority and to merge their powers.

On a sectoral level it can be concluded that the rigid division of responsibilities between the relevant ministries has been a major obstacle to introduce more co-ordinated implementation strategies. Since one ministry does not have authority over others the process becomes more of a mutual advising and monitoring effort then a strictly co-ordinated implementation strategy.

Policy coherence has been lost as separate ministries, agencies and other authorities, launched their own projects and policies, in the absence of clear political leadership. For instance, in the field of e-government, programme coherence suffered with the process of decentralisation and delegation that led to the involvement of lower levels of government and resulted in the Ministry of the Interior finding it impossible to execute leadership.

For an effective policy implementation the right mix of management and co-ordination is required together with political commitment. It must be stated though that during the last two years the political environment in The Netherlands lacked continuity because of the protracted process leading to the formation of the present government. During this lengthy process the launch of many initiatives was delayed considerably.

[250] *The only exception being international data and voice services where effective competition has been established.*

Furthermore, policy implementation needs to be followed through and eventually has to be properly evaluated. Although regularly updates on the Electronic Superhighway and the Digital Delta programme were produced and data on several policy fields were provided to the public via bi-annual benchmarks, no formal evaluation of the whole programme and most of the sub-programmes has taken place (with the exception of OPTA and Twinning).

Instead of full-blown formal evaluation exercises, a dominant practice of cross-national benchmarking has evolved over the years. In these exercises, input, process and output indicators of several (so-called 'best in class') countries are compared, lessons and 'best practices' learnt and conclusions drawn. No proper evaluation of acceptance, use and potential of ICT and existing ICT policies is, however, carried out and used in the design of follow-up projects. Instead, in The Netherlands cross-national benchmarking is used as an instrument for policy learning, while cross-sectoral learning among the various policy communities and action programmes is limited

The Dutch Government has deliberately opted not to implement central or top-down co-ordination. Decentralisation of responsibilities and bottom up consensus building are characteristic building blocks of the Dutch policy making process. Although they can assure a strong and broad commitment on the long run, such level of decentralisation makes it difficult to formulate alert and flexible strategies and it tends to lead to bureaucratic inefficiencies. As stated before such an approach has its advantages (bottom up practical projects, broad commitment) and disadvantages (inefficiencies, delays, no clear-cut decision making). A mix with more strict management procedures would therefore be recommendable. Constituting elements of such procedures could for instance be: a more centralised overall steering committee, strict time schedules, contractual agreements with local governments, monitoring procedures, etc.

Yet, some of the programmes and projects launched lacked a clear demand orientation. The stimulation of new and innovative public services was for instance largely seen from a technological and/or supply-side perspective. Until today most policy interest seems to lie in infrastructure issues, rather than service and user involvement issues. Priority was given to an incremental migration from the old copper and coax networks to broadband (i.e. cable modems and DSL) and optical fibres (a gradual introduction and diffusion of this radical but expensive technology), and a 'let a thousand flowers bloom' attitude towards the development of new services and applications. The result is a parsimonious approach in which no massive investments in a single set of next generation infrastructures or advanced services was made.

Another approach can be found in the way Amsterdam structured its ICT programme. The local authorities started with defining some recognisable problem areas and answering the question what ICT services and products could contribute to their solution. The ICT projects that were subsequently launched were therefore close to existing demands and could possibly serve as trigger projects for other new services and applications.

Like we stated before, the Dutch ICT policy is something like a mixed bag and can be judged in different ways, depending on one's own perspective. A lot of investment has been done on the research level and, seen from an international perspective, the results have been quite satisfactory. In the chapters above we presented several examples of this. Also, the approach taken lead to a strong and broad social commitment, based on a common view of the so called information society. This was obviously stimulated by an active policy that emphasised the diffusion of public information and broad access to internet.

Weak points are obviously the lack of management and co-ordination that prevented the government to adjust itself to new developments and policies. More then necessary the Dutch policy got therefore stuck in substantial paperwork production without any decisive action taken.

Of course there have been policy initiatives, frameworks and guidelines developed and EU regulations transposed, but in the present environment, with a new government and deteriorated economic conditions, ICT policies seem to have lost some of their political prominence. Priority is now given to the emerging knowledge society, to developing science and engineering skills, and to society-wide and sector specific innovation policies. ICT policies have shifted first from electronic infrastructure development (supply-led), to demand-led and generic information society projects, and then to the active promotion of supply-led innovation/knowledge goals. At the same time, Government is now generating yet another debate on ICT policy goals through its *ICTna2002.nl* [ICT after 2002] initiative.

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