APPENDIX ONE

Study Scope and Methodology

1　We used a range of methods to examine in detail the progress made in the provision of government websites and services since the previous *Government on the Web II* report was published in 2002. These included four methods focusing on government provision, and six methods focusing on how the public use government websites and how they perceive online services. Further details on all of the study methodologies are included in Research Report available online on the NAO website.

Methods looking at government provision

2　**Web Census.** Between September and December 2006 a census of all central government websites was conducted to establish firm data on the online services and facilities made available by government organisations to citizens over the internet. The sites covered included those for all ministerial and non-ministerial departments, executive agencies and non-departmental public bodies, covering 300 organisations in all. The census replicated a core of facilities searched for in the 2001 census, plus many new variables to reflect more recent advances in technology and internet practices. Sites were coded by post-graduate students based at the London School of Economics, who were trained in implementing the survey, and used consistent equipment in an LSE computer classroom and Internet Explorer version 6.0 to access the sites. Pilot forms were replicated and results from coders were cross-checked to ensure consistency. We would like to thank Claire-Marie Healy, Natalia Leshchenko, Paola Lopez-Rosero, Dorlin Muresan, Dorthe Weimann and Maha Younes for their research assistance on the web census.

3　**Survey of central government organisations.** Between October and December 2006, we asked 153 of the largest central government organisations to complete an online survey for this study. We received 131 survey returns, a response rate of 85 per cent. The survey asked relevant web managers or IT managers within organisations about their websites' usage levels, the costs and staffing involved in these websites and how they saw provision of central services fostering website use within government. In reporting this data, in some Figures we have separated out departments from agencies and non-departmental public bodies, so that figures from these smaller organisations do not obscure the findings for the large core departments with which citizens are more likely to interact.

4　**Web Crawling** is a technique for objectively mapping a set of websites. A computer programme on a dedicated server worked its way through 26 websites, covering all central government departments and selected agencies, counting the number of links, pages and documents that it could find. We systematically crawled in total about 750,000 web pages and their related link structure (using the Open Source crawler Nutch). The data was analysed for key properties likely to enhance the findability and usability of websites, such as the number of links pointing into the site and the average number of clicks required to navigate between pages on the site (using Pajek). We also assessed the extent to which the sites were 'outward looking' by measuring the external links pointing to other sources. In addition, we used the application Yahoo Site Explorer API to analyse the origins (in terms of country and sector) of links pointing into these government sites. Web-crawling creates a composite snapshot of a website, each part taken at one point in time. If an organisation redesigned or updated their site and the crawl was repeated, the results would change.

5　**Interviews with UK government officials and private sector IT experts.** We conducted a range of 17 interviews and brief visits with senior officials across the civil service in major departments and agencies, mainly speaking to web or IT managers and with Chief Information Officers. We also met with senior staff in the Cabinet Office and interviewed senior staff in the e-Government Unit (now called the Delivery and Transformation Group), the E-Delivery Team and managers responsible for Directgov. Finally we visited and interviewed personnel from major IT firms and corporations with experience of running large websites and some voluntary sector organisations, including Friends Reunited and Patient Opinion.

6   Comparator Studies. We looked at three comparator countries – the United States, Canada and Sweden - with different approaches to government web provision from the UK. We surveyed website development in the three countries, accessed policy documents, visited the USA and Sweden and conducted a programme of phone interviews with Canadian officials and some US and Swedish officials not seen on our visits. Appendix Two gives more details of these governments' policies. We also undertook a series of interviews with private sector firms and voluntary sector organisations in the UK, looking at areas where government websites might have lessons to learn. We thank all those named in the List of Study Contacts below for their generous help and co-operation. We would also like to thank Mads Mathiesen and Jonna Meyer-Spasche for their assistance with some comparator countries.

Methods looking at public use of government websites

7   Focus Groups. In January 2007 we undertook four focus groups with internet users, two in Watford and two in Birmingham, with one group for people aged under 45 and one group for those aged over 45 in both locations. Each group included between 9 and 11 people and all participants were paid for attending. The sessions lasted for 90 minutes. For the first 30 minutes of each session we asked participants to use PCs or laptops with internet access to look online for 15 specific items of government-related information and complete brief details of what they found. We gave them no prompts as to how to go about this but asked them to record where they had found the information and how useful they found it. The discussion part of each session first picked up on their experiences in completing tasks and then worked through a set of broader issues about how participants use government websites, what they wanted from them, how they compared to other websites they used and how they thought government websites could be updated or improved. We are grateful to the 39 people who attended the focus groups in Birmingham and Watford.

8   National Survey. In February 2007 we designed a set of questions, formulated from the experience of the focus groups. The questions were included in a national omnibus survey undertaken by ICM Research, with 1,006 adult respondents across the UK interviewed by phone.

9   User Experiments. We conducted two internet use experiments, one in London (in December 2006) at the University College, London ELSE lab and one in Oxford (January 2007) in the Oxford Internet Institute experimental computer lab (OXlab). In all, 70 subjects took part in the experiments of which around half were general internet users from a range of occupational backgrounds, ethnic groups and age and half were students. Only results from the sample of general internet users are reported here (for full results see the Research Report). In each experiment, subjects were provided with a questionnaire asking them to find government-related information, and small payments were given as incentives for participants to answer as many questions correctly as possible. We used two experimental 'treatments' to explore differences in subjects' behaviour when using search engines and when using the Directgov website. First, in an open access treatment, subjects were allowed to use search engines or any other means to find the information, to replicate the conditions under which individuals would normally use the internet. Second, subjects were provided with the direct.gov.uk website and could use internal search and navigate links to other sites but were not allowed to use external search engines. We recorded the answers of our participants to the questions and logged all the web addresses they visited during each search made. We thank the 70 people who took part in the experiments.

10   Web based Public Survey. We designed a short survey that was hosted on the NAO website (www. nao.org.uk) so that anyone interested in the area of e-government could participate in the study. We advertised the survey on the NAO home page, and on those of the LSE and the Oxford Internet Institute. We also had post-graduate students email the link to the survey to a large variety of individuals and organisations who we thought might be interested in contributing to the study. The survey was live from November 2006 to February 2007. During that period, we received 205 completed survey returns. As the returns to this survey were self selecting, the results have been used in the report only to provide illustration or extra illumination of particular points or findings, and not as a primary source of evidence.

11   Research on digital inclusion and exclusion. We reviewed the literature on digital inclusion/ exclusion, interviewed senior staff from UK online centres and met with third sector organisations whose clients are at risk of digital exclusion. We visited three UK online centres in different locations and met with their users.

List of Study Contacts

12   We are also grateful to two internal NAO referees and to our Expert Panel members who gave comments and suggestions to the study team at two stages in the study:

- Professor Peter John, University of Manchester

- Professor Angela Sasse, University College, London

- Professor Roger Burrow, York University

13   We would like to thank all the people who gave us interviews from Sweden, Canada and the USA, and our interviewees from outside government in the UK, who are listed overleaf.

Sweden interviewees

Name	Position	Organisation
Bengt Andersson	Audit Director	Swedish National Audit Office
Eric Gandy	Head of Department	Swedish Agency for Public Management
Gustaf Johnssén	Special Adviser	Ministry of Finance, Sweden
Pär Karlsson		Swedish Bankers' Association
Anna Kelly		Swedish Administrative Agency (VERVA)
Kay Kojer	e-Delivery	Swedish Tax Agency
Karin Lindstroem		Computer Sweden
Agneta Nord	Business Developer	Swedish Tax Agency
Olle Östeberg		Swedish Administrative Agency (VERVA)
Madeleine Siösteen-Thiel		Swedish Governmental Agency for Innovation Systems
Björn Undall	Audit Director for Performance audit/IT	Swedish National Audit Office
Christina von Greyerz		Swedish Administrative Agency (VERVA)

United States interviewees

Name	Position	Organisation
Richard Burk	Director, Federal Enterprise Architecture Program	Office of Management and Budget
Karen Evans	Director, Office of e-Government and IT	Office of Management and Budget
Gwynne Kostin	Director, Web Communications	Department of Homeland Security
Christine Liu	Chief Information Officer	Small Business Administration
Mary Mitchell	Associate Administrator, Technology Strategies	General Services Administration
Glenn Schlarman	Chief, IT and Policy Branch	Office of Management and Budget
John G Sindelar	Acting Associate Administrator	General Services Administration

Canada interviewees

Name	Position	Organisation
George Arsenijevic	Deputy Assistant Commissioner, Benefit Services Branch	Canada Revenue Agency
Nancy Desormeau	Chief Operating Officer, Information Technology Services Branch	Public Works and Government Services Canada
Marcie Girouard	Executive Director	Industry Canada
Michele Goshulak	Director General, Web Channel Office, Business Integration Branch	Service Canada
Robert L Hawkins	Senior Director, Web Information Services, Services to Business Branch	Industry Canada
Nabil Kraya	CIO, Information Management/Information Technologies Directorate	Infrastructure Canada
Barbara Slater	Assistant Commissioner, Benefit Services Branch	Canada Revenue Agency

Interviewees in the UK private and voluntary sectors and other areas

Name	Position	Organisation
Stephen Beesley	Software Development Manager	Disability Rights Commission
David Butcher	Director of Transformation	British Telecom
Jon Clarke	Head	Friends Reunited
Ian Clifford	Business Development Manager	UK online centres
Graham Colclough	Vice President, Global e-Government	Capgemini
Jason DaPonte	New Media and Technology	BBC
Stephen Darvill	Government Relations Director	LogicaCMG
Melissa Echalier	Public Policy Manager	Royal National Institute for the Deaf
John Fisher	Chief Executive	Citizens Online
William Heath	Chairman	Kable
Paul Hodgkin	Chief Executive	Patient Opinion
Hugh Huddy	Director Digital Policy Development	Royal National Institute for the Blind
Frances Irving	Director	Mysociety
Tom Jackson	Professional Section	Guardian
Phil McCarvill	Head of Public Policy	Commission for Racial Equality
Helen Milner	Managing Director	UK online centres
Ernst Nilsson	Administrator, e-Gov Taskforce	OECD
David Paget	Head of Business Consulting	Detica
Tom Steinberg	Director	Mysociety
Malcolm Taylor	Director of Information Systems	Citizens Advice Bureaux
Leonnie Vlachos	Digital Inclusion Manager	Age Concern
Jo Wickremasinghe	Product Manager, Windows Live	Microsoft

APPENDIX TWO

Comparator Studies

1   For this study we looked at the experiences of e-government services and online information development in three other advanced industrialized countries with generally well-performing e-government systems that have attracted positive international evaluations – namely, the USA, Canada and Sweden. We give a short synopsis of some key aspects of these countries' experience and practices here.

The USA

2   The United States has long been a dominant country in the development of the internet, with high levels of household internet access, and the federal government has been a key adopter of internet technologies as a useful way of integrating services across distant locations. Online information and transaction services were historically developed separately by many different departments and agencies and many thousands of federal websites have been established.

3   A leading central department in setting American e-government policy has been the Office of Management and Budget (OMB). Under President Bush, OMB's management agenda has assigned importance to 'expanded electronic government' and the development of 24 government-wide e-service initiatives plus 9 Lines of Business. The federal government spends $65 billion a year on e-government and IT systems as a whole, and OMB has been keen to oversee the attainment of value for money, for example by collecting full IT cost data and ensuring that departments and agencies do not duplicate innovations or efforts already made elsewhere within federal government.[25] OMB sets some technical standards for websites and indexes information and services available online. It is advised by a Council of Chief Information Officers, the role of CIOs being longer-established in the US federal government than in the UK.

4   A second influential central department in the US system is the General Services Administration (GSA) which has around 40 staff working cross-agency on initiatives and government-wide e-services projects, especially in procurement areas. GSA has developed a 'touchpoint' approach to count in a comprehensive way how citizens interact with the Administration (for instance, publications, phone calls, web visits, and emails). The Administration then tries to estimate the costs of handling different kinds of touchpoints.

5   A key central initiative has been the development of the portal site www.usa.gov (previously named www.first.gov but newly rebranded) and its Spanish language counterpart GobiernoUSA.gov which aim to help users connect easily with government information and services. USA.gov and GobiernoUSA.gov are small sites (of around 1,000 pages in total) that point citizens and businesses to federal, state, local, tribal and territorial government information online. Costing around $21 million per year to run (a very small proportion of overall federal spending), USA.gov has seen rapid growth in its user numbers, from 14 million visitors in 2001 to 84 million in 2006. A particular strength of the site has been the development of a strong internet search engine, which looks across all federal, state, local, tribal and territorial government sites for information to respond to users entering search terms. The smaller site www.business.gov is developed by the Small Business Administration, and other federal departments, to provide small and medium-sized businesses with a single access to easily find government information, including forms and compliance assistance resources and tools.

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6   Overall United States policy still assigns most weight to decentralized web and internet services development by separate departments, offices and agencies. But there is enough central co-ordination to maintain a good statistical, budgetary and regulatory overview of federal websites and online developments as a whole.[26] And the USA.gov site provides American citizens and businesses with a useful government shop window and strong search capabilities for finding information they are looking for. Congress has recently voiced some scepticism about the further development of cross-government services.

Canada

7   Like the USA, Canada is a federal state covering a massive land area, much of it thinly populated. The internet took off rapidly as a means of proving information and services online to Canadians, at the time and place of their choosing to counteract the long internal distances and provide better and faster services to citizens. The country has long been a pioneer of excellent federal government online services and for many years was ranked top or close to the top in e-government rankings from a range of sources. With a 'Westminster model' political system and a much more integrated civil service system than in the USA, the long standing hallmark of Canadian e-government policy has been a collegial style of developing e-services and managing channel strategies so as to connect across departments and agencies by providing the government's entire suite of services through a single point of access. Major departments generally host sub-sites for their agencies within the departmental domain names or in purpose-built and well-marketed sites, like the main site for Industry Canada which is called Strategis and has high public recognition.

8   A major portal site called Service Canada was set up in autumn 2005. Service Canada has grown as an organisation to 22,000 staff whose goal is to provide Canadians with one-stop, personalized service they can access however they choose – by telephone, internet, or in person. By mid 2006 Service Canada had around eight million visitors to its website, but this number has begun to rapidly grow following the coming on-stream of new and direct services on the site, including facilities for people to claim benefits. The Canada Site is the complementary primary portal of the Government of Canada and provides a wide range of information services and is well used, both within and outside Canada.

9   The Canada Revenue Agency runs a large site that attracts high levels of interest by businesses and individuals for both its information services and its account-specific portals. For the latter, customers gain access by using the Canadian government's e-pass system of identification. Both individuals and businesses can carry out a wide range of transactions and can look at their own specific tax account, giving extensive details of their transactions with the Agency.

10   As the management board of government, the Treasury Board provides overall policy guidance to departments but with specific or tagged Government On-line funding now at an end, it relies more on collegial collaboration between departments for new developments. Current central policy-making on e-government focuses on the further development of an integrated channel service delivery capability and on the development of common and shared services, with the Department of Public Works and Government Services Canada providing the operational aspects for departments.

Sweden

11   Although Sweden has a large land area, again much of it sparsely populated in the north, it is a smaller country in population terms. Its system of government is a parliamentary one and there is a strong separation between the government and ministers and the large administrative agencies which carry out service delivery on behalf of the ministries. Ministries allocate budgets and set some limited strategic goals for agencies, but in terms of e-government there has never been any strong or mandatory e-government strategy. The current government has indicated a concern to ensure more effective use of e-resources, but the development of online services and information remains highly decentralized to the agencies and local authorities.

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26   More details on OMB's general guidelines for federal websites can be found here http://www.whitehouse.gov/omb/memoranda/fy2005/m05-04.pdf.

12 Sweden has a strong reputation in e-government, with much higher levels of citizens and small businesses reporting using government online services than in the UK. Partly this reflects the existence of well-developed identification numbers for individuals, businesses and third sector organisations which facilitate the easy use of electronic identification for online services. The Swedish government agencies rely chiefly on identification systems operated by the Swedish banks, with agencies paying the banks' central body a fee for using their system for their transactions. Along with easy electronic identification Swedish citizens are required to register their address with the Swedish Tax Authority, which runs a separate population register as well as its tax functions. Privacy issues are much less contentious in Sweden than they have been in recent debates in the UK, partly because Sweden has very strong data protection laws.

13 The Swedish government also benefits from the existence of strong national databases, which predated the internet era but have developed in recent times. The Swedish Tax Authority (STA) is able to issue citizens with completely populated (that is filled in) tax forms very shortly after the end of the tax year, showing income received from all sources and taxes due or overpaid. Citizens with simpler tax affairs are able to sign off their acceptance of the calculations via text message or online.

14 Other well developed e-services in Sweden include a strong labour-market site, providing links to the CVs of would-be employees, CVs that can make full use of multi-media facilities. In some social policy areas there have been developments of innovative services allowing (for instance) the families of person A who needs social services care to track how care workers have found A to be when they visited him or her, and to ensure that family members and care workers can effectively co-ordinate their efforts to look after A, even where the family members perhaps live some distance away. In areas like transport there are also facilities for road users to access motorway cameras online so as to check on traffic conditions for their journey.

15 Sweden has a small and not particularly strongly developed government portal site, for which some further limited investment is planned. However, there is a different climate of government information in Sweden – with for instance a system of 'open book' government and an ability for citizens to email officials means that problems of finding government information have been less acute than in some larger countries.

APPENDIX THREE

Recommendations from the Public Accounts Committee's sixty-sixth report in the 2001-02 session on *Progress in Achieving Government on the Web* and the Government's response

PAC Main conclusions	Cabinet Office Response	Action since the PAC report
The Office of the e-Envoy (OeE) should be more active in monitoring and reporting departments' progress in putting services online, their take-up by the public, and the quality and use made of departments' websites.	The Government agreed with this point, though argued that the OeE regularly monitored departments' progress in meeting the 2005 target for all services to be available online. They recognised the need for more to be done in three main areas:	The OeE was wound up and its successor body is the Transformational Delivery Unit in the Cabinet Office.
	i) The OeE has developed a Government Web Traffic Monitor which allows all central government websites to register details and provide traffic performance data.	i) The Government Web Traffic Monitor was not mentioned to the study team by any senior interviewee. Departments run their own web data collection.
	ii) The 2005 target had a substantial impact in focusing departments efforts on online services.	ii) The 2005 target for making services available online was reached in 92 per cent of cases according to the Cabinet Office (2006).
	iii) The OeE does not audit government websites but instead concentrates on developing and implementing services that meet users' needs. They concentrate on practical measures to set standards and encourage consistent good practice.	iii) From web census evidence reviewed here, the standard of government websites still varies, it would seem consistent good practice is not yet reaching throughout government.
More websites need to be designed around specific services that cut across organisational boundaries so that people can access all the information they need on services such as transport, housing and education from a single source.	The Government agreed with this point.	The UK Online portal design and portal never prospered. It was wound up in March 2004 and its users transferred to a differently designed website, direct.gov.uk. Directgov has shown appreciable usage growth from 2006 on. Some transaction services have moved on to the Directgov site and it aims to solve more of users' information needs without them needing to click through to other government sites. Current strategy is that it should become the main government 'supersite'.
	i) A number of key services were cited which it was felt held the most potential for significant benefits should online take-up be maximised. These formed part of a core e-Government Delivery Programme (e-GDP) which would focus resources towards those services where high take-up would have the greatest impact.	
	ii) The relaunch of the UK Online portal in January 2002 led to a steady increase in visitors.	
	iii) The OeE is focusing on building a central infrastructure designed to host multiple government sites.	In other ways, a central infrastructure for government sites has not progressed. However, Directgov is now run on a shared infrastructure through a cross-Departmental programme called 'the Club' that uses robust, industry-standard technology.

PAC Main Conclusions *continued*	Cabinet Office Response *continued*	Action since the PAC report *continued*
People are only likely to use online services if they are easier and most cost-effective to use, more accessible and more convenient.	The Government response highlights the allocation of just under £6 billion over three years in the 2002 Spending Review to confirm its commitment to e-government as a powerful catalyst to transforming service delivery. The e-GDP focuses on enhancing the delivery of key services to meet the public's needs.	Take-up of online services from government in the UK now lags behind many European countries, including in Scandinavia and Germany. For instance, Eurostat 2005 found that within the EU as a whole, 14 per cent of people had used the internet to download official forms, whereas in the UK this proportion was only 7 per cent.
Simply converting conventional processes to internet-based applications will not realise the significant improvements in efficiency which IT can make possible.	The Government agrees that it is important to measure the success of e-government. The OeE has been working with the Treasury to improve government techniques for measuring the efficiency improvements of e-government.	Following the winding up of OeE, the development of e-government services is now mainly bound up with the *Transformational Government* initiative launched in 2005 and the working out of the Varney report on achieving more customer-centred services.

PAC Detailed Conclusions	Government Response	Action since the PAC report
The OeE has a strategic responsibility for promoting electronic service delivery and should identify good practice examples as beacons for other organisations.	The UK Online Annual Report served to address this. The OeE works with a range of bodies to develop guidance on a range of issues.	Under *Transformational Government* the Cabinet Office now works through the Council of Chief Information Officers (set up in 2005) and related bodies to further encourage the sharing of expertise and information throughout government.
Departments can only enhance their online services if they have reliable and regular information on how they are used. As a minimum, take-up of services should be monitored and their impact on quality of service which users receive.	The OeE's Government Web Traffic Monitor will be used here. This will enable all central government websites to register details and provide traffic performance data. The OeE is working with departments to segment audiences in order to provide tailored messages and services for these different users.	As above, the Web Traffic Monitor does not now exist under this name. A substantial number of departments and agencies do not have a formal channel strategy.
The public must trust that personal information they provide online is confidential and adequately safeguarded. Departments must meet the appropriate security standards.	The OeE published a comprehensive set of framework documents for security policies in online services. A draft e-Trust charter was incorporated into the Public Service Trust Charter in 2001.	Security standards across government have been generally successful but each department uses slightly different ways to authenticate users. In our 2007 national survey 39 per cent of respondents said they could trust government sites.
Digital certificates are used by some organisations for authentication but they can be costly and time-consuming for citizens and business to obtain. The OeE should work with IT industry to ease this process.	The OeE will work to remove as many barriers as possible to the development of these products. It will also look for alternative ways of providing strong authentication to avoid these difficulties with digital certificates.	Digital certificates have made little further progress. But simpler password-protected identities have grown in use, for instance for self-assessment income tax. Government-industry collaboration on facilitating online identification is much less than in some comparator countries, such as Sweden.
Significant sums are being invested by departments in developing online services. But there is little reliable data as to the extent of value for money being achieved by these services. Government organisations need to set out the intended benefits in business cases justifying their expenditure and monitor and report on achievements.	Departments should consider the potential for savings before investment decisions are made. Potential savings should be looked for in front-end e-delivery as well as back-end and end-to-end enablement. Departments should also consider the possibility of closing existing channels.	Results from our online survey showed that many departments and agencies do not have a good view of the costs of their web activities. Hardly any can estimate the value to them of their websites or associated electronic assets. Nevertheless, Interviews suggest that financial cost cases for website developments remain important.