United Nations
E-Government Survey 2010
Leveraging e-government at a time of financial and economic crisis
United Nations Department of Economic and Social Affairs

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Leveraging e-government at a time of financial and economic crisis
Foreword

E-government – once a bold experiment and now an important tool for public sector transformation – has progressed to the point where it is now a force for effective governance and citizen participation, both at national and local levels. This is important. Until governments have the capacity to lead development efforts and deliver services that fully respond to the needs of citizens, the achievement of the internationally agreed development goals will continue to elude us. With the Millennium Development Goal time horizon of 2015 quickly approaching, it is no longer a question of whether we can afford information and communications technology in health, education, environmental protection and a multitude of other areas, but where to deploy them first and how rapidly gains can be realized.

The high demand for e-government knowledge and skills on the part of Member States has increased considerably in recent years. This upward trend in e-government development has accelerated despite, or maybe in part also due to, the current financial crisis and the pressing need for governments to be competent, transparent, accessible and efficient. The crisis makes a compelling case for e-government. The demand for social support has increased dramatically while revenues have declined precipitously. Public sector commitments to stimulus packages and financial sector support have yielded debt levels that may take a very long time to reduce.

Member States have had to coordinate, make hard choices and weigh spending options very carefully. But we must also consider in this moment that there is a reason why e-government matters beyond the need to maximize efficiency, or even beyond engaging citizens in urgent questions of public policy. The compelling factor and the bitter lesson learned from the crisis is that trust matters and lack of confidence in government, as in markets, can lead to calamity. The capacity to respond under difficult conditions and deliver expected results are cornerstones of effective government and a foundation of public trust.

The 2010 edition of the United Nations E-Government Survey, the fifth in a series begun in 2003, makes the case that e-government should play an ever-greater role in development. Many countries have made tremendous strides in the last two years, due in part to recent, exciting advances in the diffusion of technology. With its responsive, citizen-centric qualities, I firmly believe that e-government can make a decisive contribution to the achievement of the MDGs, particularly in developing regions.

This publication can become a useful reference to guide development efforts at international, regional and local levels.

Sha Zukang
Under-Secretary-General for Economic and Social Affairs
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Part One on leveraging e-government at a time of financial and economic crisis was prepared by S. Ran Kim and Patrick Spearing with lead authors Tiago Peixoto (Chapter 1), Nick von Tunzelmann (Chapter 2) and S. Ran Kim (Chapter 3). Jeffrey Roy contributed an additional background paper for the study. Interns Aynur Sagin, Shuyi Wang, Jin Xin Liyuan Zhang and Huang Zhao provided research assistance.

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</tr>
<tr>
<td>C2C</td>
<td>Citizen-to-citizen</td>
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<td>C2G</td>
<td>Citizen-to-government</td>
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<tr>
<td>CEO</td>
<td>Chief executive officer</td>
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<td>CEPA</td>
<td>Committee of Experts on Public Administration</td>
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<td>CPSS</td>
<td>Committee on Payments and Settlements Systems</td>
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<td>CSC</td>
<td>Common services centre</td>
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<td>ESRI</td>
<td>Environmental Systems Research Institute</td>
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<td>EU</td>
<td>European Union</td>
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<tr>
<td>FAQ</td>
<td>Frequently asked question</td>
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<td>FATF</td>
<td>Financial Action Task Force</td>
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<td>FSA</td>
<td>Financial Services Authority</td>
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<td>FSAP</td>
<td>Financial Sector Assessment Program</td>
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<td>G2B</td>
<td>Government-to-business</td>
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<tr>
<td>GCC</td>
<td>Gulf Cooperation Council</td>
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<td>GDP</td>
<td>Gross domestic product</td>
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<td>GIS</td>
<td>Geographic information system</td>
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<td>HIV/AIDS</td>
<td>Human immunodeficiency virus/acquired immune deficiency syndrome</td>
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<td>ICT</td>
<td>Information and communications technology</td>
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<td>ILO</td>
<td>International Labour Organization</td>
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<td>IMF</td>
<td>International Monetary Fund</td>
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<td>IOSCO</td>
<td>International Organization of Securities Commissions</td>
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<td>ITU</td>
<td>International Telecommunication Union</td>
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<td>MDG</td>
<td>Millennium Development Goal</td>
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<td>NEPAD</td>
<td>New Partnership for Africa’s Development</td>
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<tr>
<td>NGO</td>
<td>Non-governmental organization</td>
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<td>OECD</td>
<td>Organization for Economic Cooperation and Development</td>
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<tr>
<td>OTC</td>
<td>Over-the-counter</td>
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<tr>
<td>REDD</td>
<td>Reducing emissions from deforestation and forest degradation</td>
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<tr>
<td>ROSC</td>
<td>Report on the observance of standards and codes</td>
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<tr>
<td>SMART</td>
<td>Skills matching and referral technology</td>
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<tr>
<td>SME</td>
<td>Small- and medium-sized enterprise</td>
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<tr>
<td>SMS</td>
<td>Short message service</td>
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<td>UNDESA</td>
<td>United Nations Department of Economic and Social Affairs</td>
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<td>UNDP</td>
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<td>Telecommunication infrastructure index and its components</td>
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<tr>
<td></td>
<td>Human capital index and its components</td>
</tr>
<tr>
<td></td>
<td>E-participation index</td>
</tr>
</tbody>
</table>
Introduction

E-government is a powerful tool for human development and essential to the achievement of the internationally agreed development goals including the Millennium Development Goals. Many countries are experiencing its transformative power in revitalizing public administration, overhauling public management, fostering inclusive leadership and moving civil service towards higher efficiency, transparency and accountability. They recognize e-government as a way of realizing the vision of a global information society. In contrast, countries slow to embrace e-government tend to remain mired in the typical institutional pathologies of supply-driven services and procedures, remoteness between government and citizen, and opaque decision-making processes.

Taking as its theme the most pressing challenge of recent times, the United Nations E-Government Survey 2010 focuses on the global financial and economic crisis. Part One of this report is dedicated to a discussion of the ways in which e-government can be leveraged to mitigate the effects of the financial and economic crisis on development. Its three chapters examine e-government in light of three stated priorities of United Nations Member States. Part Two is a report on the results of a global survey.
E-government at a time of financial and economic crisis

E-government is a means of enhancing the capacity of the public sector, together with citizens, to address particular development issues. It is never an end in itself. Can e-government help policy makers to respond to the global financial and economic crisis? Certainly, the effect of the crisis on the public sector has been profound. Although financial markets stabilized in 2009 due to massive and internationally coordinated government intervention, the real economy is still in a state of shock with high rates of unemployment and a tremendous squeeze on government revenues in many countries.

“Make the stimulus work for all”

In June 2009, government leaders and senior ministers converged at the United Nations to discuss the crisis and its impact on development. Member States called for action and encouraged governments to “make the stimulus work for all”. By October 2009, more than 50 countries had committed $2.6 trillion to fiscal stimulus and pledged another $18 trillion in public funds to underwriting the financial sector and other industries. Next came the challenge of assessing whether or not the stimulus was indeed working for all, as Member States had hoped, and of assuaging public unease about the distribution of these huge sums.

In response to the crisis, governments have been exploiting online tools to enhance transparency and track stimulus spending – and they stand to gain much more if they tap the potential of open data. Chapter One describes the ways in which e-government tools are being used to monitor the crisis response funds, based on a study of 115 websites built on official government information. While there is a relatively high degree of transparency in stimulus initiatives, the real potential of e-government lies in the free sharing of government information based on common standards, otherwise known as open data services. Most governments are not yet taking advantage of the simple practice of sharing information in this way, yet it would enable independent actors to deepen their own analyses of government policy and action at very low cost to the public.

“Improved regulation and monitoring”

Deficiencies in financial supervision revealed by the crisis spurred Member States to express an interest in “improved regulation and monitoring”. The experiences of the Great Depression and the Asian financial crisis show how alike the current crisis is in terms of financial causes as well as the behaviours that unfold as financial markets unravel. In each case, the systemic risks resulting from the neglect of analysts and regulators might have been mitigated if governments had promoted information and communication technology designed to reduce the opacity of the financial sector.

What is the role of e-government in financial regulation and monitoring? Chapter Two looks at these important historical analogies from the 1930s and 1990s, and then defines the potential of e-government to address structural problems in the financial system. Regulatory reform aims to promote transparency, integrity and efficiency in the financial sector. This is exactly what e-government is highly capable of doing. It can also add agility and provide real-time responsiveness to regulatory needs. While the capacity of e-government to handle speed and complexity is in the end no substitute for good policy, it may at least give citizens the power to question regulators and bring systemic issues forward.

“Contain the effects of the crisis and improve future global resilience”

Finally, Member States have signaled the need to “contain the effects of the crisis and improve future global resilience” by ensuring that governments take internationally-agreed development goals into account when they respond to it. Stronger social safety nets and measures to protect social expenditures are required if goals for poverty eradication, employment, environmental protection, gender equality, food security, health and education objectives are to be met alongside sustained economic growth. Stimulus funds can only go so far. To avert deep cuts in public spending (or even to avoid devaluing currencies and defaulting on public debt), governments may have no choice but to enhance efficiency and effectiveness if provision of public services is to be assured.
Just as ICT can introduce speed, agility and insight into regulatory functions, so too can e-services help governments to respond to an expanded set of demands even as revenues fall short. In Chapter Three, to help governments build on the practical experiences of others, recent e-government actions are described with possible solutions suggested for addressing employment, education, gender equality, health and environmental protection goals – five priorities of the Millennium Development Goals.

Global trends in e-government development

The United Nations E-Government Survey is recognized for providing a comprehensive assessment of national online services, telecommunication infrastructure and human capital. In Chapter Four, the results of the biennial global survey are presented together with insights into the "whats" and "whys" of e-government development in particular situations.

The watchword of e-government is ‘citizen-centric practice’. For a country to be assessed favourably in relation to other countries, there needs to be solid evidence of an approach to e-government development that places citizens at the centre. The survey will show, for example, the availability of electronic and mobile services designed with citizens in mind. The explosive growth of broadband access in developed regions and mobile cellular subscriptions in developing countries are trends that governments are reflecting in their use of ICT, to varying degrees. Chapter Five provides an assessment of the use of e-government tools to promote citizen empowerment and inclusion, including women’s equality. The focus is on the availability of e-services and the use of e-government techniques to enhance participation in decision-making.

Another word to watch is ‘development’, which in this edition replaces ‘readiness’. The term ‘e-government development’ describes how far governments have actually advanced in this field instead of how ready or able they might be to do so, which was how ‘e-government readiness’ described national capacity. More countries than ever before are adopting national e-government strategies and multi-year action plans. From the most to the least developed, countries can be seen responding to expectations that governments both participate in and enable the information society by communicating and interacting more effectively with increasingly technology-savvy citizens. They are ready, and it is their level of development in this regard that must be assessed.

Key findings from the 2010 Survey

On-demand access to information, services and social networks on the Internet through a personal computer is no longer considered cutting-edge in developed regions but a norm that many people take for granted. The same may soon be true of the more advanced middle income countries. Cellular telephones and personal digital assistants have the potential to play the same role for developing countries if governments are able to come to terms with the changing face of technology and innovate with a citizen-centric mindset.

For example, alerts sent through short message services (‘text messages’) are being used to notify citizens that a request for assistance has been processed, that a permit needs to be renewed or that an emergency advisory notice has been issued. Cellular telephones are also being used in a more dynamic fashion to browse public services, authorize payments and engage in micro-volunteerism. Cell phones are used, for example, to provide government agencies with images or descriptions of local environmental conditions and to respond to social surveys.

The mobile revolution and growth of high-speed broadband and wireless access is beginning to have a measurable economic impact, reinforced by expansion of e-government capacity in the public sector, even in least developed countries with limited economies of scale. Mobile cellular subscriptions have grown exponentially in developing regions in the last 10 years but most governments are not exploiting this technology fully in public service delivery.

Returning to the question of online services, middle-income countries in particular have made significant advances, to the point where a number of them have usurped positions held in the past by high-income countries in the e-government development index. This has occurred despite the relative advantage enjoyed by developed regions
in telecommunications infrastructure, which accounts for a third of a country’s index value. This may be explained by a combination of government leaders who understand the potential of ICT, a willingness to invest and comprehensive e-government policies designed with all segments of society in mind. Many of these countries have revamped their national and ministry websites as tightly integrated portals providing citizens with a single point of entry to all e-government services.

By contrast, e-government development remains a distant hope for many of the least developed countries due to the cost of technology, lack of infrastructure, limited human capital and a weak private sector. A paucity of public sector resources clearly imposes a drag on government innovation. Small ad-hoc and stand-alone projects are the norm in least developed countries, which often lack a well-thought e-strategy within their national development plans. Once initial funding for these projects ends, they are usually at high risk of simply shutting down. However, there are a few notable exceptions, such as e-education in Bangladesh and Ethiopia, and m-health in Rwanda. The experiences of these three countries demonstrate that significant gains can be realized in the least developed countries where there are enabling legal and regulatory frameworks in place, including specifically an e-government strategy with clearly identified sectoral priorities aligned with national development goals.

Consider Ethiopia – a landlocked country with limited access to international telecommunications lines, low adult literacy levels and a resource-poor public sector. On the surface it seems ill-equipped to profit from the information revolution, yet in 2005 the Government of Ethiopia adopted a national information and communications technology (ICT) policy and in 2006 launched a five-year ICT action plan to help diversify the country’s economy, promote public sector reform and improve opportunities in education, health, small business development and agricultural modernization. The country has now connected nearly 600 local administrations to regional and federal offices, linked 450 secondary schools to a national education network, and provided some 16,000 villages with access to broadband services.

Problems of resources are in no way limited to developing countries. The 2010 assessment of government websites has revealed that many national governments continue to focus on online and mobile dissemination of information rather than expansion of interactive services often because of the expense and complexity of rethinking systems, procedures and staffing behind the scenes. An antidote might be found in incremental expansion of e-services guided by sound institutional principles with a core objective of integration. Even simple solutions to discrete problems can result in substantial local efficiency gains and increased public satisfaction.

The survey found that some progress has been made in addressing the disconnection between e-government supply and demand although there is still a lot of room for improvement globally. In places where citizens may not be aware of the existence of e-government services, or prefer not to use them, governments would do well to ask them why. One reason may be ineffective marketing. Another may be that the majority of ICT initiatives are designed as efficiency measures (e.g. to automate complex functions such as income tax collection, school registration and processing of social benefits) with little input from the intended beneficiaries. Most surveys have shown that users prefer localized and personalized services, attributes that usually call for interdepartmental cooperation, back-office reorganization and reallocation of both human and financial resources. These requirements are not often taken into account.

E-participation remains in a nascent state in many countries, a finding that is related to the disconnection between government and citizens described above. Many governments include polls and feedback forms on their websites, but few sponsor discussion forums or blogs or post information to social networking sites. This is especially true for developing countries. Governments may need to be more creative about the ways in which they interact with the public, perhaps by creating integrated ‘one-stop shop’ portals or actively soliciting views that can be used to design public services or to shape public policy. Here, the Governments of Australia, Bahrain, Canada, Kazakhstan, the Republic of Korea, Singapore, the United Kingdom and the United States have been leading the charge.
Despite technological progress, the lack of ICT professionals (i.e. human capital) remains a major shortcoming in both middle- and low-income countries. Few civil services are able to compete with private sector salaries, with the inevitable result that top information technology personnel in developing countries tend to gravitate towards commercial firms. Even in cases where governments are able to recruit highly skilled information technology workers, these young men and women tend to stay only long enough in their government jobs to acquire enough experience to make them marketable in the more lucrative private sector. Similar capacity gaps exist at the management level. Developing country governments often find themselves in the position of having to hire expatriate management consultants and other information technology professionals to develop domestic e-government services.

**Future prospects**

The value of e-government will increasingly be defined by its contribution to development for all. Citizen-centricity, inclusiveness, connected government, universal access and use of new technologies such as mobile devices are the benchmarks against which electronic and other innovative forms of public service delivery will be assessed. A conceptual framework is presented in Chapter Six that grounds the future survey and sets the stage for further study by answering the question: What is e-government and how is it measured?

In the constantly evolving world of the Internet, research methods need to be updated regularly if the findings they underpin are to remain valid and relevant. More importantly, an international standard is needed in order to model, analyse and monitor the state of e-government across economic sectors and jurisdictions. Intergovernmental and expert bodies of the United Nations system could usefully examine the relationship between indicators of e-government and internationally agreed development goals. Such an exercise could deepen understanding of the impact of ICT in the public sector on development.

Indicators of e-government are the focus of efforts at the working level led by an international partnership of organizations. The group includes the United Nations Department of Economic and Social Affairs, the International Telecommunication Union, World Bank, Organisation for Economic Co-operation and Development, United Nations Conference on Trade and Development United Nations Educational, Scientific and Cultural Organization and others. While some progress has been made, a common set of e-government indicators would greatly facilitate international comparability and avoid unnecessary duplication in assessment of e-government development.

It is important to bear in mind the resistance that reformers might face when confronted with an entrenched public sector. Beyond changes of a technological nature, deeper transformations may be necessary behind the scenes. This is particularly so in contexts where esprit de corps is deeply rooted, where information-sharing is the exception rather than the rule, and where government ICT capacity is limited. In order for a country to excel at e-government, policy makers will usually need to join forces with public administrators to change mindsets and behaviours while offering civil servants the opportunity to acquire the skills needed in the modern organization.

Looking ahead, international cooperation in e-government may be driven by economic integration policies, as experienced recently in the Caribbean, Europe and Western Asia. The Caribbean Centre for Development Administration, an agency of the Caribbean Community, prepared a draft regional e-government strategy for 2010 to 2014 to outline a common e-government vision, set of goals, strategic initiatives, immediate outcomes and implementation plan for English-speaking countries of the Caribbean. In the European Union, ministers responsible for e-government policy issued the "Ministerial Declaration on eGovernment" to articulate a common vision, objectives and priorities for 2011 to 2015. The Gulf Cooperation Council developed e-government standards and structures that are common among Arab States of the Persian Gulf, and holds a regional e-government conference with national awards.
Elsewhere, the African Union convened a high-level summit in February 2010 on challenges and prospects for information and communication technologies in Africa, while the International Telecommunication Union has plans to organize a series of summits over the course of 2010 to promote regional ICT strategies and products as part of its “Connect the World by 2015” initiative.

Such efforts at harmonizing e-government at the regional level would be strengthened by global cooperation, in the spirit of the World Summit on the Information Society. Fundamentally, e-government is not about “e”, but about promotion of citizen-centric and participatory governance – helping people to improve their lives and have a voice in decisions affecting their future. Global collaboration is needed to succeed. With the leadership of United Nations Member States, e-government can become a global priority, creating opportunities for all.
Part 1

Leveraging e-government at a time of financial and economic crisis
Part 1
Leveraging e-government at a time of financial and economic crisis

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Chapter One
Stimulus funds, transparency and public trust

In the face of the rapidly unfolding global economic crisis, governments have acted swiftly to stabilize markets, restore economic growth and promote job creation. By October 2009, more than $20 trillion in public funds had been committed to addressing the crisis by some 50 countries – equivalent to more than one-third of world gross product. About 90 percent of this support went to underwriting the financial sector, with the remaining 10 percent allocated to the sort of government spending and tax breaks that constitute fiscal stimulus packages.¹

Many observers agree that central banks, acting with the concurrence of national governments, can claim partial credit for the stabilization that has been achieved and the prospect of a recovery. But the general public seems to hold a completely different opinion. In the United Kingdom, United States and European Union, trust in central banks dramatically decreased in the six months following September 2008, just as they were rolling out substantial crisis-response initiatives.²

1.1 Crisis response websites
1.1.1 Tracking public funds
1.1.2 The value of low-cost solutions
1.1.3 Coordination across agencies
1.2 From transparency to participation
1.3 Data access and civil society
1.3.1 Government as a platform
1.3.2 The economics of open data
1.3.3 Who guards the e-guardians?
1.4 Conclusions

Figure 1.1 Net trust in the European Central Bank (euro area 12), 1999-2009

Source: Gros and Roth (2009).
Net trust is defined here as the percentage of respondents surveyed indicating that they trust the European Central Bank minus the percentage who indicate they do not trust it, based on twice-annual Eurobarometer surveys.
Part of the public’s unease may be attributed to the vast sums involved and the shock of financial calamity. General anxiety over tax increases and future obligations has combined with uncertainty about the implications of the crisis to sour the public mood.

Another cause of unease may be the highly specialized nature of the field. The technicalities of governmental responses to the crisis are not easily understood by the general public. The intricacies of public finance provoke anxiety with discussion of such things as direct capital injections, purchase of assets and lending by treasuries, liquidity provision to financial institutions, market guarantees and preferential taxes – all on top of the ‘simple’ task of monitoring government spending. When citizens of the United Kingdom, United States and European Union were asked whether central banks had responded appropriately to the challenges of the economic downturn, 40 percent said they were not sure.3

E-government has much to contribute in addressing such a situation. Information services, knowledge-sharing, and tools for participation and collaboration may all serve to reduce uncertainty and assuage public unease. An increasing number of studies suggest a positive relationship between e-government and improvement in citizens’ attitudes towards government.4 Research in Canada and the United States, for example, suggests that using the Internet to transact with government has a positive impact on trust as well as public perceptions of government responsiveness.5 Also, satisfaction levels may increase when government uses the Internet to solicit ideas from citizens and engage them in decision-making. Citizen participation, in turn, can make it easier to implement policy and is likely to lead to better outcomes as a result of increased public awareness and buy-in.

### 1.1 Crisis response websites

Governments around the world have created websites that enable citizens to track stimulus packages and other public funds committed to addressing the financial and economic crisis. A total of 115 such sites were analysed to determine the extent to which ICT was being used to increase the overall effectiveness of government responses. Three issues were explored in depth:

- The degree of transparency in crisis-response programmes;
- Whether citizens are engaged in decisions about the types of response, how much money and to whom funds should be made available;
- Current policies on information disclosure and the extent to which civil society is able to use government information to raise awareness of particular issues.

The selection criteria for these cases were designed to maximize geographical coverage, include national and sub-national levels, and consider the work of both governmental and non-governmental actors. Finally, preference was given to cases that offered readily transferable policy lessons or that simply provided a greater amount of information for the study. It should be stressed, however, that the final ensemble of cases was the result of a stocktaking exercise and is neither a fully representative nor exhaustive listing of relevant e-government initiatives.

#### 1.1.1 Tracking public funds

Citizens can recognize transparency – and the lack thereof – when they see it, and providing the public with more and better information on decisions taken and the reasons for them is a major need to be addressed by governments.6 At least for the moment, many appear to be responding. Some 83 percent of crisis-response websites studied have as a common denominator the use of ICT to increase transparency.

Indeed, governments can easily provide general information on stimulus spending policies and amounts committed to various interventions. This is the case for Switzerland’s State Secretariat of Economic Affairs website, which includes a section containing general information about the stabilization measures taken by the Government,

<table>
<thead>
<tr>
<th>Group</th>
<th>Number of cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>National governments and European Union</td>
<td>31</td>
</tr>
<tr>
<td>Sub-national governments</td>
<td>63</td>
</tr>
<tr>
<td>International organizations</td>
<td>2</td>
</tr>
<tr>
<td>Non-governmental organizations</td>
<td>19</td>
</tr>
<tr>
<td>Total</td>
<td>115</td>
</tr>
</tbody>
</table>
describing the three phases of the country’s stabilization plan and domains of intervention such as infrastructure and employment.

Similarly, a section on the website of the Swedish Government provides general information on measures taken in different sectors, such as warranty programmes for financial institutions and support for Swedish municipalities. This is also the case for a section of the Korean Ministry of Strategy and Finance website, which outlines policies related to fiscal stimulus measures, employment and support to various industries. The website for the Philippines’ Resiliency Action Plan provides useful information on the country’s stimulus plan and fiscal measures as well as updated information on the latest measures taken by the Government and other news related to the crisis.

In contrast to the fairly simple initiatives described above, other governments have taken advantage of interactive tools to assist in the provision of information. German citizens are invited to ask questions concerning their government’s recovery measures on the website of the German Ministry of Finance, which added this feature in an attempt to make its section on the economic crisis more attractive to its users by allowing for a more interactive experience. Prominently displayed in the main section dedicated to the crisis is a tool that allows citizens to enter an e-mail address and to ask questions that are later answered by the Ministry’s staff, which posts the answers online. This simple application bears the potential of creating a direct link between concerned citizens who would like to have further information on the actions taken by the Government, and the Government itself. In addition, by publicizing the questions that are asked, the civil servants in charge of replying can avoid answering duplicate inquiries on an individual basis (i.e. recurrent questions), consequently reducing the workload when it comes to responding to the public.

Funds committed to addressing the crisis often can be linked to a geographic area, and citizens might well be interested in finding out how much money is directed to nearby places, and for what purposes. Governments are using geographic information systems to provide information in a more contextualized and attractive manner, while facilitating users’ comprehension of the data conveyed. Forty percent of the websites identified present geo-referenced information.

Kazakhstan’s crisis response website, for example, offers an interactive map and with just a few clicks the user is able to localize the areas where investments are made, along with detailed descriptions of projects (e.g. amount of resources allocated, name of contractor, how to contact the person in charge of the project, time for the realization of the project, number of jobs created by the project). All of this information is conveyed through an interactive map that enables the user to identify the regions where funds are being allocated as well as the agencies responsible for the projects. Similarly, on France’s stimulus website the user can click on a map and find information on the allocation of recovery funds in the area selected and the total costs of individual projects taking place in the region. In a Brazilian example, the national government’s Programme to Accelerate Growth is explained using an interactive map that provides information on investments by regions of the country and the public works taking place.

Other online tools also provide geographical information. The United States Recovery Act and Australian Economic Stimulus Plan websites both allow users to track funds by entering their postal codes. The State of Arkansas in the United States allows users to track recovery funds by county using their mobile phones. In addition to the generalist websites described above, some e-government initiatives serve very specific purposes. Innovative e-government solutions address specific needs raised by the crisis. A United
Chapter One
Stimulus packages and financial bailouts

States federal Government website assists recipients of recovery funds to meet quarterly reporting requirements by providing them with the means to submit project updates online. The system allows the recipients to view and comment on reports, as well as update and correct them whenever necessary. It illustrates the role that e-government tools might play in providing faster, more standardized and more effective transactions between the recipients of crisis funds and governments.

1.1.2 The value of low-cost solutions

The websites studied represent varying levels of sophistication, as illustrated above, yet there appears to be no correlation between the resources invested in technology (e.g. in website costs) and the quality and quantity of transparency that is achieved. Moreover, there is widespread evidence that expressive results can be achieved at very low costs, which in a context of constrained budgets is important for policy makers to know as they debate to what extent governments should prioritize e-government applications (e.g. websites) as a means to increase transparency.

Governments should not lose sight of the fact that the benefits obtained through improved monitoring and oversight of public spending are most likely to outweigh the initial costs of setting up sites for communicating with citizens online.

Figure 1.3 Crisis-response website objectives, October 2009

<table>
<thead>
<tr>
<th>Objective</th>
<th>Prevalence (percent)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Public scrutiny of funds</td>
<td>84</td>
</tr>
<tr>
<td>Management of funds</td>
<td>36</td>
</tr>
<tr>
<td>Government to business communication</td>
<td>41</td>
</tr>
<tr>
<td>Social protection information</td>
<td>34</td>
</tr>
<tr>
<td>Feedback</td>
<td>27</td>
</tr>
</tbody>
</table>

The technological capability of a given government is another relatively insignificant factor affecting the actual level of transparency achieved. Consider the variance in transparency across the different countries, and their level of e-government development as measured, for example, by the quality and scope of their Web presence. There is no evidence that governments that perform better in terms of e-government development are necessarily those delivering the most efficient services for monitoring crisis-response funds. That is, evidence suggests that there is no correlation between the level of technological development of governments – as measured by its level of e-government development – and the factual provision of transparency with regards to crisis-response funds that are allocated by governments around the world.

When comparing cases at the international level, however, one is bound by serious limitations, given the disparity in aspects such as institutional frameworks (e.g. federal versus unitary) and crisis-response measures. An example from the state level will help to render this question of e-government and transparency more evident and less anecdotal. At this level, analysis can be carried out in a controlled environment where institutional traits are equal among all the sub-units (i.e. states) of the federation. In other words, cases are more comparable than at the international level. In the United States, where all of the states currently run stimulus websites, the use of public funds from the American Recovery and Reinvestment Act is subject to calls for transparency.

The scatterplot below illustrates the relationship between the transparency that is conveyed by those websites with regard to the allocation of recovery funds, in contrast to the e-government development of each State’s government.

Clearly, in this instance, no correlation at all can be found between the two factors. That is, a State’s level of e-government development does not predict its efficient use of ICT to track public
stimulus funds. The extreme cases make the point. Delaware scores the highest on e-government development, yet its transparency website has one of the lowest scores. Conversely, Maryland’s website is considered by far the best website for monitoring stimulus funds, yet the state ranks 48 out of 50 at the bottom of the index for State e-government development in the United States.

Evidence gathered at the international level, added to this analysis at the sub-national level, suggests a rather limited relationship between e-government development and the provision of transparency – as counter-intuitive as it might seem. Likewise, as mentioned above, little relation can be found between the cost of crisis-response websites designed to enhance transparency and their quality.

This bodes well for reformers at a moment when budgets for investing in technology are limited, particularly in countries in which e-government structures are less developed. Transparency policies, in the context of the global economic crisis, might produce better results when implemented incrementally and when taking advantage of existing ICT solutions that can be deployed without constituting an additional burden to governments’ budgets.

In sum, rather than focusing on the expensive implementation of unnecessarily sophisticated technology, governments might provide better value for money by creatively utilizing pre-existing and low-cost ICT infrastructures to provide comprehensive and detailed information in a single point of access, and in an accessible and timely manner.12

1.1.3 Coordination across agencies

The global nature of the financial crisis, with the depression being highly connected as between regions and nations, requires more of government ICT initiatives. It requires that not just a few but all governments endeavour to build up networks to provide transparent information for the public, and to do so in a coordinated fashion.

It is naturally the case that the progress achieved towards building e-government systems will be different in different localities. Generally, according to a study of Spanish regional governments,13 regions with higher performance usually play an outstanding role, disclosing higher amounts of financial information on the Internet. To address this point, countries may need to foster regional e-government systems via programmes supported by the central government. In particular, central government can provide regional governments and agencies with basic website frameworks. These frameworks can be developed by special projects, or outsourced from coordinated developers to ensure their interconnection. From such support by central government, the construction of e-government systems in comparatively backward regions and departments can be promoted, and the overall cost can be reduced by copyright-trading or economies of scale in software development.

Following on from the above point, common software standards are needed to realize inter-connectivity, integration of data and convenience for users. Open standards are often good candidates because open software is fundamentally interoperable.

Web 2.0 is a popular term with advocates of e-government. Web 2.0 applications provide decentralized patterns for data submission and analysis, and provide a platform for the provider-user interaction, in contrast to non-interactive websites where users can only passively view information. Since the financial sector is a broad-wide connected industry, users in a variety of locations may find value in data and analysis of different locations and different investors. Therefore, the demands on data usage (e.g. downloading and

There appears to be no correlation between the resources invested in an established website and the quality and quantity of transparency that is achieved.
applying) and interaction is correspondingly broad-wide. However, data integration and interaction can be achieved only by smooth data interconnection. In other words, there will be no true Web 2.0, no integration and application, if there is no broad interconnection across the relevant scope.

In fact, this lack of interconnection is at the heart of the current weakness of e-government systems being built. Taking the e-government projects that present economic recovery plans in the United States as an example, it becomes evident that most geographic information systems applied by state and local governments are not the same, frequently incompatible, and based on proprietary standards. Regarding this point, the International Monetary Fund issued a set of recommended standards and codes after the Asian financial crisis of the late 1990s. Such principles ought to be taken up and advanced further as a partial solution to the ongoing financial crisis.

In many countries, information and services provided are not often presented in a centralized and coordinated manner, which requires business actors to navigate any number of different websites in order to gather the information they need. To address this problem, the Lithuanian economic stimulus plan website provides businesses with extensive information on crisis-response measures, policies and opportunities for different categories of businesses. In a similar vein, the French website for business development and employment provides useful information for small- and medium-sized enterprises in a format structured around thematic clusters (e.g. financing and investment support), functioning then as a single entry point to all information relevant to businesses in the context of the crisis.

Better delivery of services depends on the extent to which services offered take user-centricity as a guiding principle, and it does not refer to the size or level of sophistication of e-government structures. In many cases, the creation of a simple website that centralizes and organizes useful information that had been previously scattered across different government agency portals constitutes by itself a major step towards offering better support for citizens and businesses.

Information is a resource that individuals might not be willing to spontaneously share unless specific settings and motivations to do so are generated. It is important to bear in mind the resistance that reformers might face when confronted with the logics of the public sector. This is particularly so in contexts where esprit de corps is deep-rooted and where information-sharing is the exception, rather than the standard procedure. Beyond changes of a technological nature, deeper structural and organizational changes are necessary to bring about change in the way governments use and provide data and ICT services. Policies aimed at transparency can achieve their goals when governments create suitable institutional and organizational frameworks, incentives, and means such as e-government technologies that promote information-sharing at the collective and individual.

### 1.2 From transparency to participation

Most government websites with aims of transparency tend to be one-directional in their provision of information, enabling citizens to track and monitor government spending but not to take a more active role. More advanced websites, however, offer features and facilities enabling citizen participation and engagement. These websites are geared towards active interactions. In this regard, citizens are no longer passive consumers of government-provided information but active participants in the related content and information generation.

A range of opportunities for citizen participation are offered by Web 2.0, a term that refers to web applications that facilitate interactive information sharing, interoperability, user-centred design and collaboration. In the particular context of crisis-response funds and their usage, it is generally observed that governments lag behind non-governmental actors. The findings here seem to confirm this relationship when it comes to ICT in relation to crisis-response funds and policies aimed at mitigating the effects of the economic downturn. As shown by the figure below, only 23 percent of government crisis-response websites make any usage of Web 2.0 tools, compared to 57 percent of websites sponsored by non-governmental actors.
Few governments are taking advantage of the prospects offered by interactive technologies to foster participation with relation to economic crisis issues, although they could be reaping the benefits of inclusive policy-making while doing so at lowered implementation costs. No more than 27 percent of cases had explored the prospects of ICT for promoting some kind of citizen feedback or participation, as modest as these attempts might be, through traditional means such as e-mail or through the usage of Web 2.0 tools.

In other words, only a minority of cases explore the prospects of ICT tools for supporting a modality of engagement with external audiences. The budget consultation website of the Canadian province of British Columbia, for example, invites citizens to submit videos with their views on alternative ways of addressing the economic crisis and their indications of budgetary priorities. Another interesting deployment of ICT tools occurred in June 2009, when a message on the Twitter account of the Governor of California invited citizens to provide feedback on policies to address the State budget deficit. In August of the same year, a website was designed specifically to aggregate all the responses received from citizens via Twitter, with a user-based system also allowing users to rate each others’ ideas in an attempt to identify the best submissions.

A misleading assumption frequently made with regard to public participation, be it ICT-enabled or not, is that the simple creation of channels for citizens to interact with governments necessarily engenders citizen participation. Evidence shows that most e-participation experiences have repeatedly shown disappointingly low levels of participation, despite the multiple and varied initiatives implemented by governments in recent years to engage citizens online, and apart from a few highly publicized examples. Likewise, discussion groups, blogs and other forums on the topic of crisis-response funds report that, in most of the cases, participation has been extremely low.

By contrast, participatory budgeting has been reasonably successful. The practice, which can be broadly defined as the participation of citizens in decisions about budget allocation and in the monitoring of public spending, has been identified with a number of positive outcomes. These include increased transparency, innovative delivery of public services and reduction of tax delinquency. In Belo Horizonte, Brazil, and La Plata, Argentina, 10 percent of the population has voted on budget proposals online or via mobile telephones. Citizens in the municipality of Pune, India, have made suggestions for budget allocations online through the municipality’s e-budgeting application. In Freiburg, Germany, the city has combined the use of an electronic budget planner with an online moderated deliberation and aggregation of results in wikis edited by the participants.

More specifically related to the management of crisis-response funds is an example from the district of Heathcote, Australia, where citizens were invited to decide through the Internet on the allocation of stimulus funds from the State Government. Through a website, users prioritized the eligible proposals formulated by local community organizations, indicating which projects were the most deserving of existing funds. Citizens cast more than 20,000 votes in a short period of time, with groups actively engaged in canvassing campaigns both online and offline, some setting up stands and others launching online campaigns through social networks. The meaningful involvement of citizens in budgeting processes is one of the most efficient ways to generate an awareness of the existing tradeoffs when allocating limited resources. This opens up space for dialogue and cooperation, while allowing policy makers to identify citizens’ preferences and demands. Participatory budgeting initiatives illustrate how meaningful e-participation can be achieved.

Interactive technologies offer governments a way to reap the benefits of inclusive policy-making on economic crisis issues at relatively low cost.
Open data enhances public sector efficiency by transferring some of the analytical demands of government to NGOs, research institutes and the media, which have been found to combine data from various sources in original and inventive ways.

1.3 Data access and civil society
Much of the innovation in the use of ICT to enhance management of crisis-response funds comes from the use of open data by non-governmental actors providing services of high public value without governments having to bear the costs. The aim of the open data movement is to make information freely available to everyone, without restrictions from copyright or patents and in standard machine-readable formats that can be exploited without the use of any given piece of software.

Open data enhances public sector efficiency by transferring some of the analytical demands of government to third parties such as non-governmental organizations, research institutes and the media, which have been found to combine data from various sources in original and inventive ways. The potential for actors outside of government to provide such services when government data is made freely available is suggested by Subsidyscope, an initiative of a non-profit foundation based in the United States. Its website draws on publicly available records to deliver high-quality information on the disposition of financial bailout funds by the government.

Through the global economic crisis, it has also become clear that an ability to perceive and understand the concept of risk is important for citizens to master and, indeed, a competency of citizens that is important for the long-term health of the financial system. Such building of competencies (e.g. through formal education) and capabilities (e.g. through learning by doing and by using) among the citizens would require the use of data.

1.3.1 Government as a platform
The idea of ‘government 2.0’ is generally associated with the use of social media by the public sector. Recently, the notion has assumed greater definition through its association with government as a ‘platform’ or provider of data and services for others to exploit as they see fit. Advocates for the concept of government as a platform privilege the role that governments should play as providers of web services, allowing third parties to innovate by building upon government data and applications. They believe that if governments provide data in a non-proprietary and predictable format, third parties are more likely to maximize the value of this information, hence providing services that better respond to users’ expectations and needs. Consequently, it is claimed that governments should use the Internet to provide free data in formats that are open, structured and machine-readable, while the Web presence of governments is incrementally reduced as third parties start to provide information to the general public.

The creation of the data.gov website by the United States Government is one of the most substantial steps taken so far to provide such a platform for third parties. Launched in 2009, the website functions as a clearinghouse for datasets generated by the government in an accessible developer-friendly format. The United Kingdom and the State of Sao Paulo in Brazil are following a similar path towards the creation of websites that will serve as a single point of access to public data. With the intention of providing added value, both Governments have invited application developers to provide feedback on the conception of the sites. Similar feedback was sought for the second version of United States Recovery Act website by the United States Recovery Accountability and Transparency Board, which asked the community of developers for their views on the most convenient format for disclosing data on crisis-response funds.

For the moment, the provision of open government data via online and mobile channels is limited primarily to developed countries. Nevertheless, the prospect of third parties delivering services of high public value, which would otherwise have to be provided using taxpayer funds, is a path that should not be underestimated for both developed and developing countries.
1.3.2 The economics of open data

In recent years, third parties have shown not only that they are able to deliver online services of great public value but also, in many cases, that they are able to provide such services even more efficiently than governments. To increase this kind of innovative work, the first step is to create a structure to ensure that governments provide data and web services in an appropriate manner. This will promote the co-production of public goods that foster transparency and deliver better services.

Most governments possess an extensive amount of data that could be reused and combined in groundbreaking ways by third party actors, but this data is dispersed across agencies of different levels and diverse branches of government. To put it bluntly, most governments may not be fully aware of how much and what data they create and dispose of, or from where it can be sourced. The majority of these highly dispersed datasets are unlikely to be available in structured and machine-readable formats.

In organizational terms, addressing the problem of data dispersion and the lack of common standards would require governments to implement and enforce policies for shared standards of data gathering and reporting across public agencies at different levels and branches. Finally, acquiring the structure necessary for the delivery of data to third parties entails the provision of a single point of access, conveying and updating all the data gathered in a developer-friendly manner. The steps involved in the appropriate provision of data, as briefly described above, produce better results when they occur simultaneously and in a gradual manner. For instance, governments might achieve their goals more efficiently if they release their data as it becomes available, rather than waiting to reach a hypothetical threshold or target before starting to release their data.

The deployment of human and financial resources to create the structure required for open data is a particularly sensitive matter for governments in the context of an economic downturn and tightening budgets, and it is a major issue at any given time for developing countries. Thus, the incentives to bear these costs rely on the expectation of concrete medium- and long-term results. The delivery of value-for-money when building a structure for the provision of open data is highly dependent on whether third parties will actually come into play or not. That is, for an existing offer of data there must be a corresponding demand, and vice-versa. The economics of open data is about releasing governments from the costly delivery of services online26 while decreasing marginal costs for the provision of government-held data. The prospect of completing this virtuous cycle, which offsets governments’ initial investments, is the compelling argument for governments to deploy efforts to incrementally reinforce their role as providers of data and Web services.

The economics of open data, with governments as data providers and third parties delivering the information to the public in more innovative and creative ways, has an inevitable resemblance to economic models that privilege market efficiency with the least governmental intervention. It is particularly interesting that such views are put forward precisely at a moment of increased government interventionism and scepticism towards unregulated markets. Will third parties increasingly co-produce online services if governments are to continuously withdraw from their previous roles as information providers? To what extent will non-governmental parties be able to address public demands and needs once governments start providing the necessary infrastructure in the form of datasets and Web services? If governments free the data, will third parties come?

Third parties have proven their ability to innovate and deliver, yet their range of action has been generally restricted to certain sectors of government activity and mainly concentrated in developed countries. It is still too early to paint a clear picture of the

Figure 1.7 United States federal open data initiative

United States: Data.gov

Federal datasets openly available for public use. Visitors are invited to suggest ideas for additional data and other site enhancements.

http://www.data.gov
The economics of open data, with governments as data providers and third parties delivering information to the public, has a resemblance to economic models that privilege market efficiency with the least governmental intervention.

capability of non-governmental actors in scaling up their existing efforts. Non-governmental actors have demonstrated their ability to go beyond simple resilience under difficult circumstances by actually mobilizing resources for the increased provision of online services of high public value. The majority of initiatives led by non-governmental studied in the United Nations e-Government Survey blossomed precisely during the worst moments of the economic downturn. In general, evidence suggests that the demand by third parties for data by far exceeds governments’ offerings. Despite the possible existence of a limit on the extent to which third parties may come into play – in empirical and normative terms – there is clearly a potential to be explored, which may prove to be an exceptional model to be further explored.

As previously highlighted, there are sufficient incentives for governments to incrementally strengthen their role as providers of data and Web services, but the cycle is only completed with the intervention of third parties. The costs of innovation for non-governmental actors are, obviously, significantly reduced when governments provide data in a suitable format.27 In addition, much of the technology that is developed by third parties in developed countries is conceived in open source formats that allow non-governmental actors from developing countries to use and adapt applications developed elsewhere. However, third parties still require technological capabilities in order to build upon government data – capabilities that might be scarce or under-mobilized for public purposes in developing countries.

Even in presumably adverse contexts, non-governmental actors are increasingly harnessing the potential of the convergence between ICT and government-held data for increased accountability and the provision of services of public value, according to anecdotal evidence. In Argentina, the website Dinero y Politica allows citizens to monitor expenses, budgets and campaign contributions to political parties. In a similar vein to the United States Open Congress website, a group of developers in Brazil have joined forces in the development of MeuParlamento a website for monitoring legislative action at all levels and inviting citizens to provide feedback on the lawmaking process.28 Similar initiatives led by non-governmental actors that build on government-held data can be found in countries such as Georgia, India, Jordan, Kenya, Lebanon and Lithuania. In Kenya, for example, the Budget Transparency Tool allows citizens to track the allocation of development funds and to report, via mobile SMS messages or e-mail, any irregularities identified by citizens.

Evidence, albeit anecdotal, implies the potential of third parties to provide online applications and services of public value by building upon government data. In developing countries, some governments might initially play a role in supporting the development and mobilization of the technological capability of third parties. In other words, under certain circumstances in the context of developing countries, some governmental intervention might be necessary, going beyond the simple provision of a structure for open data. The costs of such interventions would have to be offset by the services and applications subsequently provided by third parties. The initiative Apps for Democracy,30 implemented in the United States by the District of Columbia, offers a pertinent example. Launched in 2008, Apps for Democracy featured a contest with awards for the best applications built upon data supplied by the district government. In thirty days, at a cost of $50,000 in awards, participants developed 47 applications that would have cost $2.6 million if developed internally by the District. Such a model provides high value for money while mobilizing and leveraging technological capabilities for public use, all factors important to the sustainability of the open data model.

International cooperation may also prove to be a valuable means for leveraging the capacity of non-governmental actors from developing countries to co-produce services of public value. A current project led by MySociety, a non-governmental organization in the United Kingdom, provides funding and technical support to individuals and organizations in Central and Eastern Europe to build ICT tools to enhance public transparency and accountability.31 Governments and donor organizations might well consider following a similar path, encouraging partnership and cooperation among communities of technology actors from developed and developing countries. This approach carries the promise of fostering the sharing of technological knowledge among non-governmental actors at an international
level, ultimately strengthening the capabilities of third parties from both developed and developing countries in the co-production of services.

1.3.3 Who guards the e-guardians?

A paramount value of public service is the extent to which it is amenable to public accountability. While third parties increasingly use ICT as a means to enhance transparency and empower citizens to hold governments accountable, the absence of mechanisms to hold third parties accountable remains an issue to be addressed. This is even more pertinent if governments are to increasingly redefine their role as ‘platforms’, with third parties becoming gradually more significant in their emerging roles as techno-political intermediaries between governments and the public.

If governments are to act mainly as providers of data and Web services, third parties come into play as the central actors in the definition of how data is presented and contextualized. The positive aspect of this is that third parties have shown a greater ability to represent data in innovative and accessible ways. This is useful if the consequent representation can reduce cognitive overload from access to so much information, improve its understanding and highlight patterns and associations that might otherwise go unnoticed. Yet, the manner in which data is represented, as well as the patterns and correlations highlighted, are the fruit of human judgement. It remains to be seen how skilled third parties will be in helping the public to see the validity behind the information.

The techno-mediation deployed by third parties has proven valuable and their legitimacy has not been seriously challenged to date. However, if their role is expected to develop further, labels such as ‘non-partisan’ and ‘non-profit’ might not be sufficient to ensure public trust and accountability in the long term. Last but not least, the competition for audiences online should not be regarded as a mechanism capable by itself of rewarding the third parties that are committed to the values of transparency and public good. The emerging role of third parties in providing information to the public calls for creative and considered reflection on ways to ensure that public trust, both in governments and third parties, is not being taken for granted or undermined.

1.4 Conclusions

E-government tools have been used in an unprecedented manner as a means to support policies to alleviate and cope with the effects of the recent global economic crisis. They have played a major role in providing transparency of crisis-response measures, conveying relevant information and support to citizens and businesses, and encouraging feedback from citizens on alternatives for addressing the effects of the economic downturn.

The capacity to convey transparency is within the reach of, if not all, most national governments around the world. Moreover, there is growing evidence that the provision of transparency – and the use of e-government tools to support it – constitutes an approach wherein the initial investments required are quickly offset by the outcomes generated, such as increased savings and enhanced public trust.

Third parties can play an important role in the co-provision of services of high public value by deploying technologies in a manner that is creative and innovative. By enacting open data principles, governments lay down the foundations that reduce the entry barriers for non-governmental parties, thus allowing for the co-production of public services at minimal costs for governments and, consequently, for taxpayers.

The extent to which user-centricity is a component of each of the initiatives is a factor in its success. There exists a nearly systematic discrepancy between the offer of e-government facilities and the actual take-up of the services offered. This indicates that, less than a technological issue, users' take-up depends ultimately on the extent to which services are able to effectively address their needs and preferences.

Participatory practices, when appropriately designed and implemented, can address users’ needs. Interactive ICT tools have proven to be an effective means for policy makers to identify the needs, demands and preferences of citizens. However, it is not sufficient to simply create of ICT-mediated channels of communication between governments and citizens. It is essential to identify users’ needs, be it for the design of new e-government services or for the allocation of resources. This implies not
only creating channels to give a voice to citizens, but also creating the means to listen to the citizens and to provide them with meaningful responses.

The capacity of governments to address the issues that emerge as the economic crisis continues to unfold constitutes the core element through which trust can be renewed and reinforced, while transparency is also enhanced. As governments find themselves with constrained budgets and mounting demands, the need for providing better value for money has never been so pressing in the recent history of the public sector.

Although governments cannot easily afford to make mistakes, risk-aversion should not have the upper hand over innovation. The more prudent action is to move away from the comfort zone of standard procedures and logics anterior to the crisis, as paradoxical as this may seem. The current environment should be regarded as an opportunity for change in the way governments operate and interact with society. As experience with crisis-response websites shows, the Internet offers governments an opportunity to reinvent themselves even as they address a host of financial and economic challenges.
### Table 1.2 Features of selected crisis-response websites

<table>
<thead>
<tr>
<th>Country</th>
<th>Initiative</th>
<th>Objectives</th>
<th>Tools</th>
<th>Draws on pre-existing site</th>
</tr>
</thead>
<tbody>
<tr>
<td>Breakdown of stimulus plan and tracking stimulus projects at local level. Enables interactivity (ask a question). Links to sub-national websites of similar scope. Makes link to national jobs website, a pre-existing initiative that helps mitigate the effect of the crisis. Subscription to updates.</td>
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<tr>
<td>Intergovernmental site explaining recovery measures for business.</td>
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<tr>
<td>Aims to provide simple and centralized place to find information that is available on the Internet, regarding federal and regional measures that promote employment both for business and for the unemployed. By filling in a profile the business or the jobseeker can find which measures and opportunities are applicable.</td>
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<tr>
<td>Government’s programme for accelerated growth. Information on the allocation of funds by region and sector. Link also to the pre-existing government budget consultation.</td>
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<tr>
<td>Fiscal stimulus budget consultation.</td>
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<tr>
<td>Outlines Canada’s Economic Action Plan. Links to Facebook, Flickr, Twitter, Youtube and Myspace.</td>
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<tr>
<td>National Development and Reform Commission website with information on the Chinese stimulus plan.</td>
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<tr>
<td>Details projects being carried out under stimulus package. Link to relance TV. Specific section for incentives for companies willing to hire, given that one of the objectives of the initiative is protection of employment.</td>
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<tr>
<td>G2B2G (government to business to government interaction) portal centralizing information relevant to businesses, e.g. information on where small and medium enterprises (SME) can find relevant information on how to access funds deployed by the government to address the crisis.</td>
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<tr>
<td>Ministry of Finance. Details of financial crisis and bank bailouts. Page allows citizens to ask questions online and the answers are also displayed online. Functions as a FAQ (frequently asked questions) that relies on user-generated content.</td>
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<tr>
<td>The Iceland government web-portal prominently features a link on the economic crisis on each page. Seriously affected by the crisis, Iceland provides a simple website with provision of general information in English concerning policies to address the crisis, which might indicate some effort to regain confidence from the external public and markets.</td>
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**Mgmt.** Management of funds  
**G2B** Government to business communication  
**Social protect.** Social protection information
<table>
<thead>
<tr>
<th>Country</th>
<th>Website</th>
<th>Description</th>
<th>Objectives</th>
<th>Tools</th>
<th>Drawbacks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ireland</td>
<td><a href="http://www.losingyourjob.ie/">http://www.losingyourjob.ie/</a></td>
<td>Public service information for those who are currently unemployed or are becoming unemployed. Aggregates information from pre-existing policies and websites.</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
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<tr>
<td>Kazakhstan</td>
<td><a href="http://www.e.gov.kz/">http://www.e.gov.kz/</a></td>
<td>Portal for the country’s e-government department. In-depth description of the country’s plan for economic restoration and individual stages of implementing action plans. Videos of meetings, speeches, government sessions. The website <a href="http://dorkata.ebek.gov.kz/">http://dorkata.ebek.gov.kz/</a> focuses on crisis strategy (‘dorkata’ translates as ‘roadmap’). It includes plans, projects, timelines and contact names for housing, schools, social projects, training, etc. by region. Also news, regulatory document downloads and an interactive map.</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
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<tr>
<td>Republic of Korea</td>
<td><a href="http://www.mof.go.kr/recover_eng/">http://www.mof.go.kr/recover_eng/</a></td>
<td>Section of Ministry of Strategy and Finance website. Sections on general policies, fiscal policies, employment, industries and green growth actions to overcome the crisis. Information provision with some FAQ.</td>
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<tr>
<td>Lithuania</td>
<td><a href="http://www.skatinimoplanas.lt/">http://www.skatinimoplanas.lt/</a></td>
<td>Specific website by Ministry of Economy introduces the stimulus package.</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
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<tr>
<td>Malaysia</td>
<td><a href="http://www.rangsanganekonomi.treasury.gov.my/">http://www.rangsanganekonomi.treasury.gov.my/</a></td>
<td>Details spending under the two stimulus plans: graphs, questions, downloads and RSS Web feed.</td>
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<tr>
<td>Philippines</td>
<td><a href="http://www.reda.gov.ph/erp/">http://www.reda.gov.ph/erp/</a></td>
<td>ERP Watch is the Economic Resiliency Plan website. It is a section within the National Economic and Development Authority website.</td>
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<td></td>
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<tr>
<td>Portugal</td>
<td><a href="http://www.portugal.gov.pt/pt/GC17/Governo/ProgramasEPlanos/Pages/Programas.aspx">http://www.portugal.gov.pt/pt/GC17/Governo/ProgramasEPlanos/Pages/Programas.aspx</a></td>
<td>Some pages of the government website, with list of recovery programmes and links to more information.</td>
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<td>Singapore</td>
<td><a href="http://www.singaporebudget.gov.sg/">http://www.singaporebudget.gov.sg/</a></td>
<td>Singapore Budget 2009 page with interactive tools including a benefits calculator for households and businesses, games, essay and video competitions, and coverage of mock parliamentary debates in schools. Recovery programme document download and summary of citizen feedback on budget issues. More specifically, the online game ‘If I were the Finance Minister’ gives users an idea of what it is like to steer fiscal policies and address the challenges and trade. The citizen feedback summarized on the website was solicited by the government via an online portal, budget dialogue sessions, e-townhall discussions, commentaries in media forums and SMS feedback channel. Link to page that explains what is available to citizens: <a href="http://www.mof.gov.sg/budget_2009/attachment/GovtHelp2009.pdf">http://www.mof.gov.sg/budget_2009/attachment/GovtHelp2009.pdf</a>.</td>
<td>✔</td>
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<tr>
<td>Spain</td>
<td><a href="http://www.plane.gob.es/">http://www.plane.gob.es/</a></td>
<td>Plan “E” is the government website on economic stimulus and employment, in five languages to reflect the country’s linguistic diversity. Pages provide information on courses of action, video interviews with public officials, and links to local-level project information. Periodic online chats serve as a platform for dialogue between public officials and citizens. News can be followed on Twitter. Interactive animation allows the user to see the results of the recovery plan, e.g. estimates of jobs that have been retained by the programme.</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Switzerland</td>
<td><a href="http://www.seco.admin.ch/stabilisierungsmassnahmen/">http://www.seco.admin.ch/stabilisierungsmassnahmen/</a></td>
<td>Overview of stabilization measures.</td>
<td>✔</td>
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Table 1.2 Features of selected crisis-response websites (cont.)
Table 1.2 *Features of selected crisis-response websites* (cont.)

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<tr>
<td>Introduces Building Britain’s Future, the government’s plan for economic recovery. Outlines campaigns in consumer rights, crime, education, health, housing, low carbon and youth jobs and citizens can upload comments/videos on these commitments. The government is soliciting citizen feedback on the plan. Use of Twitter and blogs.</td>
<td>Advice for citizens on how to cope with the financial crisis (e.g. homeowners, business, jobs). Possible to search for initiatives at the local level concerning the recovery plan as a whole.</td>
<td>The government’s official website to ‘track the money’ with data related to United States Recovery Act spending. For citizens to track the development of the recovery for greater transparency and accountability. Links to existing jobs websites. Use of Twitter, Facebook, MySpace and YouTube.</td>
<td>Website on the financial stability plan. News, reports and relevant information, for example on the local impact of the capital purchase programme.</td>
<td>Details federal spending including that related to stimulus funds. Includes ‘IT Dashboard’ to follow investments in the information technology sector. The dashboard is considered to be one of the most innovative tools to enhance public scrutiny of government spending.</td>
<td>Business to government (B2G) website that serves as the central data collection system for Federal Agencies and Recipients of Federal awards under the United States Recovery Act. Registered users submit quarterly reports and review data. It provides support online through a live chat.</td>
<td>Part of the Whitehouse website. Introduces the President’s SAVE Award to enable Federal employees to submit their ideas for how government can save money and perform better, as part of annual budget process.</td>
<td>Online dialogue on solutions to improve the design of the recovery.gov website. Hosted the Recovery Accountability and Transparency Board with the National Academy of Public Administration. Now closed.</td>
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<table>
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<tr>
<th><strong>Objectives</strong></th>
<th><strong>Tools</strong></th>
<th><strong>Draws on pre-existing site</strong></th>
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<tr>
<td>Public scrutiny of funds</td>
<td>Mgmt.</td>
<td>G2B</td>
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Governments are deploying new information and communications technology in response to the global financial crisis. These electronic government technologies have the potential to deliver imaginative options for policy-making processes as well as for the debates that surround them. For governments, the current most critical issue is how to rebuild trust in a system of financial weaknesses and governmental responses that has proved so highly untrustworthy to date. At this time, however, no one knows what these attempts at rebuilding trust might consist of, much less what they could possibly achieve in terms of refashioning the entire financial system – ideally, a system with more effective policies in place for financial regulation and monitoring.

In two historical analogies – the Great Depression and the Asian financial crisis – new technology embedded in capital formation alongside government efforts played some part in the subsequent stages of recovery. These historical comparisons demonstrate how alike the ‘causes’ of past and present financial crises may be, as well as the patterns of circumstances and behaviours that emerge. Moreover, these comparisons inform the discussion about the role of new technology and especially governmentally underpinned technology (such as rural electrification in the 1930s) in recovery. In the recent Asian experience, government actually made use of ICT, which provides the technological backbone of e-government, to advance recovery.
2.1 E-government risks and benefits

E-government has a great deal to offer in the reform of the financial regulatory system. Such reform should aim to promote the transparency, integrity and efficiency of the financial sector and sectors that are linked to it. This is what e-government does best, so long as its practitioners are well-versed in carrying out such objectives. E-government carries the additional advantage of being able to effect such outcomes in ‘real time’.¹

Most e-government is embedded in ICTs, which are connecting more and more people to a wider variety (‘breadth’) and profundity (‘depth’) of information. ICTs are connecting participants who had not previously been connected, which is enhancing the complexity in ‘breadth’ (the number of connections involved) of the market and the product.²

Consider the number of participants in the home mortgage, for example: homeowners, commercial banks, savings and loan associations, investment banks and other issuers of mortgage-backed securities, purveyors of collateralized debt obligations and credit default swaps, mortgage lenders, brokers, servicers, trustees, credit-rating agencies, insurance companies, investors (including hedge funds, pension funds, sovereign wealth funds and mutual funds), regulators, government-sponsored enterprises, and politicians and their constituents. The number of financial institutions and investors entering this sector increased as a result of the in-depth securitization following the 1980s and the repeal of Glass-Steagall Act in 1999. At the same time, the increasing complexity of the product design attracted increasing numbers of consumers who had not been able to access the traditional mortgage.

As the number of connections has grown, so too has the sophistication of the financial sector. This increasing ‘breadth’ can be seen in the design of more and more sophisticated financial products, based on advanced mathematical models. The derivative products are designed as portfolios originating from different sources and including multi-layer securities. In this way, securitization has broken down the traditional relationship between borrowers and lenders.

This leap forward in terms of complexity both in breadth and in depth in the financial sector created ideal conditions for the use of e-government technology in problem-solving efforts. In the recent mortgage meltdown, however, as the regulators and major product providers worked to resolve the problems there proved to be a ‘downside’ associated with e-government. Regulators encountered problems linked to secrecy rather than transparency, problems associated with the skills and competences of those individuals entrusted with coping with e-government, and problems with the opacity of the new derivative financial products themselves. In terms of e-government, all of these factors lowered the performance of regulators.

Another potential downside is that once e-government begins to develop and become more sophisticated, citizens will be compelled to interact electronically with the government on a larger scale, which could potentially lead to a lack of privacy for civilians as their government obtains more and more information on them. Increased contact between government and its citizens can be a positive or negative experience. Other pitfalls of particular relevance to financial monitoring include the potential for high cost for little return on investment, lack of access for groups such as the poor, and a false impression of transparency given that governments control the information.

E-governance

E-government refers to a rather motley and eclectic variety of front-office and back-office operations that happen to be carried out by government and that has in places become properly systemic. There is a broader term than e-government. The notion of ‘e-governance’ refers to the wider process of bringing about the corresponding transformation in society.³ Pippa Norris, McGuire Lecturer in Comparative Politics at the John F. Kennedy School of Government at Harvard University, describes the difference in views held by optimists and pessimists about e-government:

> “Cyber-optimists are hopeful that the development of interactive services, new channels of communication, and efficiency gains from digital technologies will contribute towards the revitalisation of the role of government executives in representative democracies, facilitating communication between citizen and the state. In contrast, cyber-pessimists express doubts about the capacity of governments to reform the conditions of their civic environment in the public interest.”

The leap forward in complexity both in breadth and in depth in the financial sector has created ideal conditions for the use of e-government in problem-solving efforts.
of governments to adapt to the new environment, stressing that it is naive to expect technology to transform government departments as organisations that are inherently conservative, hierarchical and bureaucratic.4

For practitioners of policy, neither of these extreme viewpoints might appear particularly useful, yet Norris offers the promise of effective ICT based on good governance:

“If practitioners bear in mind the factors of inclusiveness, equity, democratic accountability, transparency, civic engagement and other values embedded in the notion of ‘good governance’ to provide a substantial ethical grounding for e-government, it is possible to devise and implement a series of interventions involving ICTs that help address ... key challenges facing governments in developing nations today.”5

Thus good e-government can be said to be founded on good e-governance. However, the converse is also true: good e-government also contributes to realizing good e-governance.

An interim assessment

E-government is becoming a meaningful solution to providing better communication between the government (as policy maker and implementer) and citizens, and between the government (as regulator) and the financial sector. In fact, e-government has been put into practice since the early 1990s in industrialized countries such as the United States. However, in most of these countries, e-government has been used on a task-by-task basis rather than in a systemic manner. Certainly, the construction and implementation of e-government is a dynamic and ongoing process.6 Many e-government websites, particularly those established and operated by governmental agencies, are still in their infancy stage and cannot as yet provide services that are satisfactory in either quantity or quality.7

To deal with the financial crisis in particular, the central issues promoted here are transparency, integrity and productivity, which are precisely the objectives that the introduction of e-government has the potential to improve. Since these can permit the extension of operations. Eventually, this could result in the emergence of a new system of government and a new paradigm for governance.8 The road from a task-by-task basis to a properly functioning system is, however, a long and rather tortuous one, involving cutting through or across many vested interests. Again there is much to gain from contemplating past historical evidence on how large systems came together, e.g. in electricity or railway networks.9

Regarding citizen participation, e-government issues remain somewhat controversial, and the impact seems to be evolving unevenly across populations. Some researchers argue that an increase in citizen participation in government decision-making could not be relied on to produce positive effects.10 Moreover, the transparency of information disclosure may actually worsen the digital divide.11 This may be the case if the policy makers are risk-averse, or if they are simply addressing the interactive comments they receive from certain vocal citizen participants rather than fulfilling their mandate or responding to the public interest.12 A study of the central banks found that it was the independence of central banks that brought about their transparency, and not the reverse.13

In contrast to these pessimistic critics, proponents of citizens’ participation via the Internet or other ICT methods are making their case. Michael R. Ward suggests that the spread of Internet usage would reduce the cost of political activities, as well as the possibility of ‘circlet politics’, though he emphasizes that the conclusion still needs to be tested through empirical studies.14 Steven L. Clift suggests democracy can be deepened and become more participatory with the effective implementation of ICTs.15 Many ICT industry observers, along with members of the current United States administration under President Barack Obama, also advocate the democratization of data.16

In any event, citizen participation via the Internet is not in the foreground of our discussion about e-government and the financial crisis. It is generally agreed that ‘transparency of information’ is good for democracy, the quality of regulation, international coordination and the competency of the general public in dealing with corresponding matters.
Beyond this point, the discussion is organized into four main sections. In each section, the largely defensive, reactive tone in the earlier parts is replaced later by scenarios in which a better society could be built by making more aggressive and proactive use of e-government, and by shifting focus from surviving in the short run, to faring better in the medium- to long-term.

2.2 Restoring trust after times of volatility

Beginning in mid-2007, a number of influential people issued warnings at various stages about the global financial situation. Most of the financial sector and the general public ignored these warnings, thereby propelling themselves and their societies into recession and then depression. Questions remain concerning the following:

- Would societies have listened to ‘better’ information and advice had it been offered, as the concept of ‘social capabilities’ suggests, or is this possibility refuted by propositions like ‘irrational exuberance’, ‘herd instinct’ and ‘herd mentality’?  
- Did the e-technologies linking global financial centres actually make things worse than the absence of such technologies in the past?  
- Could better and wiser governance of financial systems have averted recession, not to say depression, especially through more extensive adoption of e-government principles? And if so, did the basic shortcomings lie in the institutions associated with those financial systems, or can they be attributed to the failings of individuals and/or the particular organizations in which they were embedded?

Stated in this fashion, these questions cannot be adequately answered from the information currently available. The more enduring question to ask instead is: What are the opportunities for using e-government to ward off crises in the future? The pressing challenge then becomes one that has been skirted around several times already in this chapter, of how to go about restoring trust in what is widely regarded as a failed system. But to what extent can this be done without being in possession of a valid ‘model’ of the ways in which the present system may be malfunctioning?

The remainder of chapter two thus looks at financial regulation first in terms of models and then in terms of risk and other problems, before turning to what e-government might do better.

2.2.1 Starting from the right financial model

With the views of economists and policy makers subject to change and sometimes caprice, who is correct? For any solution to financial problems, including the use of e-government technology, the key is to start from a valid viewpoint or model. This can be seen, for example, in approaches to financial regulatory policy, whether we are discussing the Great Depression in the 1930s and its aftermath or the ongoing financial crisis of recent times.

By the 1980s the monetarist school of thought had eclipsed the rival Keynesian school and was putting forward as its base the theory of ‘rational expectations’, a modeling theory in which outcomes do not differ systematically from what people expect them to be. Rational expectations are based on probabilistic choices, as opposed to irrational expectations based on instinct. One of the direct implications of the rational expectations theory was an overt preference for government policies to follow certain rules. The reasoning behind the preference for governments following expressed rules was twofold: i) it reduced the risks and uncertainties involved in decision-making by the private sector; and ii) it would reduce and maybe even eliminate arbitrary decision-making by the ‘untrustworthy’ public sector.

Monetarist economists therefore for a time pursued the enforcement of ‘rules’, in particular rules about what could and could not be done in terms of expanding the country’s money supply, in order to avoid inflation with all its costs. By way of a riposte to the asserted preference for rules, an opposing financial economist named Charles Goodhart formulated one rule (or ‘law’) that did always seem to work, namely that the imposition of any particular rule would ultimately subvert that rule. This would cause people to divert their efforts towards devising clever ways of circumventing the original ‘rule’, thereby negating the opportunity for the rule to work as it was designed to do.
When the limitations of the monetarist focus on rules became evident, this left the way clear in principle for exercising the obvious alternative of ‘discretion’ in policy-making, for instance in being more flexible about monetary expansion than the imposition of rules would allow. In an approach favouring discretion, e-government measures and techniques would seem to be ideal.

The most basic point to emphasize is that one cannot make any real progress through e-government or any other technological ‘fix’ if one begins from a specious set of assumptions about how the world really works, i.e. from the wrong model. The clear inference is that to implement a policy one must first make a serious effort to get the ‘initial conditions’ at least roughly correct or valid.

Systemic risk
The essence of the ongoing financial crisis is that the capability for control lags behind the pace of innovation in the financial sector. Therefore, the complexity of the activity has kept driving it onwards. For many years, the situation has been one in which the regulatory controls have failed to catch up with, for example, the proliferating markets for derivatives or the new methods for handling mortgages. The e-government solution could come into play through a call for greater transparency or greater speed, to allow the government to establish a much firmer and more responsive basis for a decision to intervene (or not) in the operations of a particular bank.

The transparency offered by e-government, however, often runs counter to practices in a highly competitive activity such as modern finance. Participants are in practice usually more inclined to maintain their own business secrets, rather than having them out in the open. Several elements have been widely blamed as being inaccurate or too opaque, including the risk evaluations of rating agencies, the creation of structured investment vehicles, and the design of other derivative financial products offered by hedge funds and banks. To the financial product providers, these non-transparent aspects contributed to their competitiveness, and were even encouraged by the government and regulators in the name of risk-sharing. The pursuit of high-profit investment opportunities was backed by massive foreign capital inflows, and long-term interest rates remained low over the course of nearly a decade – in turn, these factors encouraged financial practitioners to head for profit-taking in spite of risks they did not properly understand. So-called experts were not able to manage the risks effectively and often could not even define and measure the risks explicitly.18

The kinds of risks described above are rooted in financial systems; they are ‘systemic’ in that sense. ‘Systemic risk’ here refers to risks associated with enlarging operations at the level of macro ‘systems’, such as the financial system or the foreign trade system at the national level. ‘Cross-systemic risk’ refers to those linked to any conflict among those substantial components, such as barriers between the financial system and the technological or industrial system.

As regards the source of systemic risk in the global financial sector of recent times, there are a variety of viewpoints. Some insider experts insist that the crisis was caused by discontinuities in the financial market. These serious hiccups were based on "the innate human responses that result in swings between euphoria and fear" and were taken as "only a peripheral addendum to business-cycle and financial modeling”.19 This is to claim that low-probability events caused by the ‘animal spirits’ of human beings, i.e. contexts not portrayed in previous risk-related econometric models of 'rational expectations', destroyed these models in practical terms.20 In other words, much like Milton Friedman said of the Great Depression, the systemic collapse was triggered by a chain of accidents.

Other insider experts argue that such systemic risk was essential to the relevant risk-related econometric models. However, the developers of these models were unable to inform the public about the risk, or maybe did not take on the ethical responsibility to do so.21 Still others argue that the point is not whether the modeller ever informed the public about the systemic risks; rather, they say that the formal mathematical models essentially could not help to understand the complex relational structures and mechanisms involved, because of the inherent analytical biases in those models.22 This position has much in common with the Keynesian views of Eichengreen and Temin regarding the 1930s, cited in section 2.1.1 above.
Yet another stance is taken by Peter Gowan, who suggests that both modelers and regulators did perceive the systemic risk beforehand, but thought they could control the risk. The required financial technical innovations had been developed and were in place before 2001, before the rise of the housing bubble that led to the ongoing crisis. Therefore, the bubble inflated under the intentional gaze, and in some cases the actual participation, of these modelers and regulators – just as had happened with bubbles before.

The rapid decline in the housing and real estate services sectors, the financial services sector, then primary materials and finally secondary industry suggests that the individual sectors are not isolated from each other, nor from even broader, macro-level interactions. This raises the possibility of the dynamics of deflation in the style depicted by Kindleberger for the late 1920s and beyond, operating at the cross-systemic level. What this phrase suggests is the association – or sometimes collision – between already highly aggregated ‘systems’.

Cross-systemic risk
Handling such a situation might sound like a classic application of risk management and containment, but success depends on first knowing how the policies for financial regulation are to be chosen. Rather than (insurable) ‘risk’, this would raise issues of genuine ‘uncertainty’ or worse: a lack of knowledge (or true ‘ignorance’) about what the present problems actually are. Without going into great detail about either the causes or the course of the ongoing financial crisis, it does not seem difficult to aver that the problems rapidly became systemic, and indeed in our sense cross-systemic.

Thus, as in the United States or Europe in the 1930s or South-East Asia in the late 1990s, the difficulties quickly began to pervade the real as well as monetary facets of globally oriented economies. The loss of faith in first one and then the other recalls Kindleberger’s notion of the (interacting) ‘dynamics of deflation’, and worked like a pair of pincers by greatly exacerbating systemic risk and uncertainty.

So what could e-government improvements have done about ‘systemic risk’? Or what might they do in any future re-run of this scenario? The answer depends a lot on how much emphasis one places on social psychology, and on such beliefs in the vagaries of human nature as ‘herd mentality’. Using the Internet allows incorrect information as well as correct information to be circulated more rapidly; so how is any recipient in a position to arbitrate between seeing a particular item of information as correct or incorrect, especially when in reality the alternatives are likely to be much greater in number and much grayer in contrasting tones (i.e. offering less stark situations than choosing between black and white)?

Raising awareness that there is a problem can be half the struggle, though unfortunately not many governments are brave enough to do this when it matters most, namely at the outset. Clearly much will depend on the citizens’ faith in the governmental office or officers concerned.

The ‘shadow banking system’
The scale of the non-bank financial system (the ‘shadow banking system’) had been growing very rapidly before the crisis set in. According to Timothy F. Geithner, the aggregate size of shadow banking, including the structured investment vehicles, auction-rate preferred securities, tender option bonds and variable-rate demand notes, along with assets financed overnight in tri-party repos (repurchasing agreements) and hedge funds, was approaching the asset levels of the traditional deposit banking system by early 2007. The neglect of regulation of the shadow banking system was a key factor underlying the financial crisis, as noted by Geithner and Krugman. The shadow banking system had not been regulated nearly as strictly as the depository banking system, especially in terms of capital reserves and liquidity. This allowed the shadow system a remarkable degree of leverage on its capital, mainly via borrowing from the short-term, highly liquid money market, to speculate in long-term, less liquid markets.

From the mid-1980s on, few efforts were made to extend regulation to the growing shadow banking system. On the contrary, moves were made in the opposite direction. Before the crisis, even regulators had no idea as to approximately how much capital had been engaged in such a system, and also had no clear mastery of the practical process
of transactions. In the words of the director of regulation at Spain’s central bank, structured investment vehicles and conduits were “like banks but without capital or supervision”.

Without effective regulation, the increasingly complex structures of derivatives as financial products promoted resource allocation (for speculation), while becoming, in Warren Buffett’s words, “financial weapons of mass destruction.”

In the continuing absence of the kinds of fundamental reforms that must be carried out, it can be predicted with a high degree of confidence that introducing or developing e-government practices will remain largely irrelevant. As it is, too large a proportion of financial speculation activity nowadays still takes place below the radar of regulation. On the other hand, this lacuna offers great prospects for e-government once the gap in regulation is successfully overcome. At that stage, e-government can fully come into play, both to aid in the implementation of the regulatory code itself, and to monitor its consequences.

2.2.2 Roles for e-government in financial monitoring

Effective communication should be regarded as the foundation of measures to allow the financial services sector to recover, especially in light of the complexity in breadth and depth of the issues involved. The transparency of the financial engineering is important for regulators trying to build up a robust supervision system. Information disclosure is also critical to restore the confidence of the entire market, and to maintain long-term rationality in customer attitudes towards the market after the crisis has abated.

E-government can add agility and flexibility in real-time responsiveness to events that will inevitably arise, and this is important in light of calls for more dynamic regulation. As the CEO of Goldman Sachs said in a recent speech:

“Capital, credit and underwriting standards should be subject to more ‘dynamic regulation’. Regulators should consider the regulatory inputs and outputs needed to ensure a regime that is nimble and strong enough to identify and appropriately constrain market excesses, particularly in a sustained period of economic growth.”

Financial activities will be reformed in a number of countries, as is currently being emphasized by global leaders. The focus for reform is stricter regulation of shadow banking systems, and correspondingly the securitized derivative financial products. In July 2009, for example, the incoming Obama administration proposed legislation to require hedge-fund managers, as well as managers of private equity funds and venture capital funds, to register with the Securities and Exchange Commission. However, in an ever-changing and for the most part advancing world, it would seem unlikely that the regulation of the financial sector would be pulled back to the situation that existed before the mid-1980s, which would imply sharp declines in, say, speculation via securitization and/or hedge funds. Rather, governments and regulators will try to promote the effectiveness and efficiency of monitoring. This means that the targets of reform should be at least twofold, involving promoting the safety of derivative financial activity, and minimizing the depressive effects brought about by the reform of financial innovations.

The critical point of reform is not to discourage financial innovation, but to require information transparency, and enhanced supervisory capabilities on the part of regulators. Currently, a series of reforms is likely to be carried out, as has been observed by regulators around the world over the past few months. E-government can provide effective tools for these reforms as a platform to buttress communication among different actors from the government, industries and the public.

In addition, to promote regulation, some responsibilities attributed to particular regulatory agents would be strengthened. Some government entities, including the United States Department of the Treasury, propose that this kind of regulation could be carried out partly through representation by professional departments and agencies. However, this has to be balanced against the likely augmentation of relevant regulatory bodies. In a context of ‘lean regulation’ or in Obama’s terminology ‘smart regulation’, accelerating the ICT foundation of regulation to promote information transparency...
and process supervision would appear to be a
good way forward. In constructing an e-gov-
ernment system, it is also helpful to build up 
the capacity for systematic analysis by the unit 
responsible for supervision in the country con-
cerned, so that it can respond to the ebbs and 
flows and general processes of the crisis. A case
in point is the Capital Markets Safety Board re-
cently proposed by Andrew Lo,\textsuperscript{32} which would 
appear to be a more flexible and comprehensive 
way of coping with the rapid and progressive dy-
namic evolution of the financial sector.

To collect information
E-government can provide information tools for 
regulators to develop and then implement regu-
lations related to the shadow banking system. 
Reform of the shadow banking system should 
aim to put the system back on the radar screen of 
regulators. Most requirements to the deposit banks 
would be transplanted to the shadow banking sys-
tem, such as the requirement of adequate capital 
reserves, liquidity, and so on.

Regulators need to uncover more informa-
tion compared with what has to be supplied 
under the existing regulations. The activities of 
banking are highly connected, and their trans-
actions, as previously emphasized, do not hap-
pen in traditional ways, i.e. in regulated venues 
and via transparent counterparties. Therefore, 
new categories of information should be ex-
plored and collected to support the analysis 
of the regulators, as is broadly recognized by 
industrial practitioners and regulators. For ex-
ample, Verena Ross of the United Kingdom’s 
Financial Services Authority, says that more re-
sources should be devoted to the supervision of 
high-impact firms, and more focus ought to fall on 
the details of bank accounting.\textsuperscript{33} Generally 
speaking, data may need to be revealed to the 
regulators regarding the shadow banking sys-
tem’s leverage, liquidity, correlation, concentra-
tion, sensitivities and connectedness.

Mass information should be explored and ana-
alyzed by regulators, as it is rapidly increasing in 
terms of both depth and breadth. E-government 
is a suitable method for regulators to carry out the 
data collection.

To undertake process supervision
Considering the complexity of the financial sec-
tor at present, static data at a particular point of 
time are not sufficient to master the dynamics of 
the transactions. To avoid another credit crisis, 
regulators should address the financial engineer-
ing process of derivative product designs. In other 
words, the requirement of transparency should 
cover credit rating, product package modeling, 
pricing among counterparties, and so on. If regu-
lators can obtain such data, this would enhance the 
competency levels of the regulators.

In fact, the proposed reforms aim to build 
a capillary network of information to cover the 
financial sector both in depth and in breadth. 
Only an ICT-based network can achieve such a 
target. It requires not only the construction of 
ICT infrastructure, but also the building of new 
institutional arrangements. New compulsory 
regulation procedures could be closely connected 
to an ICT network.

To improve the timeliness of regulation
E-government is important if regulators are to ef-
fect timely supervision. In comparison with tra-
tditional bank activities, those needed to regulate 
derivative activities have special characteristics, 
especially those developed for over-the-counter 
markets (OTC derivatives). These transactions 
could occur without standard contracts, and with-
out transparent and regulated venues and counter-
parties.\textsuperscript{34} These features allow the current shadow 
banking system greater flexibility to adjust to the 
dynamics of targeted industries and price fluctua-
tions. The transactions can be carried out flexibly 
with respect to both time and place (of course, 
before the crisis, many activities were even held 
offshore). This flexibility is an important source of 
the competitiveness of the shadow banking sys-
tem led by United States and United Kingdom. 
For the regulators, however, it becomes very dif-
ficult to master the complexity of the financial 
ingineering process.

Timely monitoring is critical. Only a digital 
regulatory network can work compatibly with the 
automated data feeds of regulation. Through a Web 
2.0 framework and the Internet accounts of these 
financial institutions, data on the transactions
could be collected automatically by the timely input of financial practitioners, for analysis and supervision by the regulators.

**To prevent periodic bubbles**

The ultimate solution is to prevent economic bubbles from forming in the first place—a conclusion drawn by reconsidering the economic bubbles and bursts in recent decades, when the leading countries were implementing aggressive monetarist policies. An economic wave is usually the outcome of an interaction between technological and industrial changes and financial investment. It reflects the natural reaction of human beings, with their capital and limited rationality, to pursue potentially highly profitable opportunities. However, according to events witnessed in the past few decades, some of the bubbles came about in the context of overheated ‘exuberance’, with the blind following the blind, and neglect on the part of analysts and regulators. Therefore, as a counterpart institutional arrangement, governmental intervention should have the capability to influence the formation of such bubbles more directly and effectively if need be. In fact, the existing e-government methods do have the potential to influence the financial markets, as is demonstrated in a case study in Russia by Melvin et al.

The intervention of government should be associated with a coherent structure of regulation towards all components of the financial system, as well as an effective communication system with the public, namely the common investors. A potential system needs to be explored via e-government. The question is how to express the information supplied to and from the regulators clearly and directly in the market, and how to build a bridge for such information and the market feedback to reach the public, while also stressing minimum disturbance to the operation of the market.

Common standards are required to realize effective information communication via e-government. Common standards of data collecting and processing are needed for the different agencies, namely those in different places and those in charge of different professional tasks. Only with such cohesive cooperation can regulators build up an integrated capability to cope with the systemic risks of the increasingly more complex financial sector.

### 2.3 Confidence, capabilities and competencies

#### 2.3.1 Panics and restoring confidence

Panics among common investors and even among financial managers and institutional investors are not difficult to understand as being a natural human response to the downturn of the bubble economy, as happened during 1930-1933, 1997-1998 and 2000-2001. Unlike in the past, however, the recent panics also arose from people’s inability to handle the complexity of financial products and markets. As already seen, the securitized derivative products of recent times had actually broken down any effective information channel between borrowers and lenders. People felt fearful in the face of downhill potentials they did not know well and evidently were not able to measure. Through these means, the panics were more likely to be the consequence than the cause of the industrial structure and the absence of effective regulation.

The crowded nature of the financial markets also contributed to the panics because when a downturn signal was identified, people knew that it was impossible for everyone to get out at once. The panic among financial practitioners and investors resulted in a herd-like crowding into a flight-to-quality in asset holdings. For the highly connected financial sector, the fear quickly spread to other parts of the industry. Finally, the highly leveraged derivative products became a ‘death spiral’ confronting their investors, and the whole financial system collapsed. The supposedly super-safe, super-senior derivative products, such as collateralized debt obligations, rapidly tumbled to the level of becoming junk securities.

There are lessons here for the operation of markets. Thus the head of Goldman Sachs has implicitly argued for what are frequently referred to as ‘organized markets’:

“To increase overall transparency and help ensure that book value really means book value, regulators should require that all assets across financial institutions be similarly valued. Fair value accounting gives investors more clarity with respect to balance sheet risk. How can one justify that the same instruments or risks are priced differently because they reside in different parts of the balance sheet within the same institution?”}

E-government offers financial transparency and the improvement of citizens’ capabilities in risk assessment and risk control—these are the twin keys to promoting market confidence and public trust.
"But, if we abandon, as opposed to regulate, market mechanisms created decades ago, like securitization and credit default swaps, we may end up constraining access to capital and the efficient hedging and distribution of risk, when we ultimately do come through this crisis.”

This authority draws the conclusion that markets cannot thrive without confidence:

“We have to safeguard the value of risk capital ... while enhancing investor confidence through meaningful transparency, effective oversight and strong governance. But, there should be no doubt: markets simply cannot thrive without confidence.”

E-government offers information transparency of the financial system and the improvement of citizens‘ capabilities in risk assessment and risk control – these are the twin keys to promoting market confidence and public trust, which are regarded as critical for restoring a robust financial sector.

2.3.2 Shortcomings in skills and abilities

The more irrational social desires cannot be eliminated by the effective communication or information transparency brought about by e-government, yet the goal of pursuing better lives is a worthy one. Indeed, this goal is the basic motivation for continuing economic development. To what extent do social desires for improvement conflict with social capabilities to bring about a self-sustaining development process? To resolve this and similar issues in regard to implementing e-government, we need to dig deeper into the nature of ‘capabilities’ – a subject that existing studies normally take for granted.

To exchange knowledge and change in real time

No amount of purely technical inputs into e-government will work in the absence of the skills (competencies and capabilities) needed to supply, produce and use equipment and technological inputs. In contrast with much of the management literature, which tends to use these terms interchangeably, we are here sharply differentiating – at least in theory – the nature of ‘capabilities’ from that of ‘competences’ or ‘competencies’. If the problem is one of incompetence, the individuals who might be blamed for the financial crisis fell short of the minimum actions required by the circumstances, notwithstanding their apparent qualifications to do the job at hand, as reflected in résumés and other standard measures of ‘human capital’. If, on the other hand, the problem is one of incapability, then other factors, including many that would lie outside the individuals’ power to do much about, could be held to account for much of the current crisis.

Seminal studies by Wesley Cohen and Daniel Levinthal have explored the development of ‘absorptive capacity’, i.e. the ability of a firm or other organization to master and utilize technologies taken from others. They argue that it rests to a considerable degree on trying to replicate the findings of earlier research and development efforts by those others, partly because of the gamut of difficulties that are likely to arise by simply copying ideas previously developed elsewhere. In a later paper, these authors argued that "such a capability [‘absorptive capacity’] not only enables a firm to exploit new extramural knowledge, but to predict more accurately the nature of future technological advances.”

Two kinds of capabilities are of special concern to the development of e-government specifically and indeed to production practices in all walks of life. One type refers to ‘interactive capabilities’, and involves knowledge exchange with other entities. This knowledge exchange may take place along a supply chain (a company is likely to be involved in many of these); with corporate or non-corporate organizations in research, finance and marketing, etc.; and with transnational organizations and corporations in other countries (‘international technology transfer’ or interchange). A second type of capability concerns the now-popular phrase ‘dynamic capabilities’, implying the ability to change one’s capability base in ‘real time’, i.e. within a time period that is appropriate for dealing with pressing competition (explicit or implicit) that may be arising on a number of fronts at roughly the same time. Dealing successfully with such ‘dynamic competition’ will normally involve having adaptable, flexible and communicable resources in the system. It is worth bearing in mind that all that has just been said about the capabilities and competencies of firms applies equally to non-profit organizations such as state universities or governments.

This is where e-government comes back to center stage. It is the mixture of flexibility and agility with transparency, integrity and efficiency that is
the key to ‘success’ in this arena, but all of these elements involve good people capable of working on good equipment. While in the financial industry certain actors are being blamed for the financial crisis, it is predicted that e-government and associated e-technologies might curtail such negative outcomes in the future.

Specific failings in the broader system

As it stands, the specific problems can be summarized as follows:

1) The rating agents and their inaccurate credit ratings on mortgages created the bubble in the housing market. This whole area of more or less collective blunder has been blamed on many factors. Some question the agents’ underlying business model and argue that the implicit conflicts with practice inclined them to give unduly high ratings. Lo discloses the continual ‘brain-drain’ from the rating agencies to their clients, namely the banks and shadow banks, which usually benefited the rating agencies in the short run but over the medium term deprived them of sufficient talent to deal with the complex situation that they were now confronting.

2) Regarding the oversights in relation to the shadow banking system (see section 2.2.1 above), one of the key questions relates to enhancing the competencies and capabilities of the regulators. In terms of their capabilities, regulators must have sufficient methods and means to identify and supervise the growing number and coverage of innovative financial activities, in terms of competencies, and display better understanding of the world they are facing, including the realm of shadow banking. Otherwise Goodhart’s Law will prevail, such that the imposition of any rule will ultimately undermine the effectiveness of that rule.

3) The financial sector, given its scale and scope, lacks qualified human resources. For example, in 2007 the Massachusetts Institute of Technology produced only four PhD graduates in finance, compared with 337 in various fields of engineering. To make up for the shortages of expertise in advanced mathematics and modelling, many financial institutions recruited employees from technically sophisticated disciplines, such as physics, mathematics, computer sciences and astronomy to work as technical supporting forces. However, these employees were not essentially financially educated, and had only limited ability to respond to the sophisticated dynamic market evolution. This led to weaknesses in risk assessment, risk management and control.

4) Financial model developers did not inform the public about the systemic risks. Colander et al. argue that systemic risk did exist, and the financial model developers, namely the financial economists and financial engineers, did not inform the financial sector in general, much less the public at large. Lawson and recently Hodgson insist that the fundamental problem is not whether the modelers had ever been informed; it was that the pre-selected mathematical models could not interpret the complex, highly interconnected and dynamically evolving economic practices. The former interpretation relates to cases involving ‘asymmetries of information’ and thus competencies, while Lawson’s position has much more in common with what we refer to as ‘asymmetries of knowledge’, and therefore with (inadequate) capabilities.

5) The integrity of managers in the financial sector was called into question, for example over their compensation and ‘bonuses’, which struck many of the more moderate public observers (including the Governor of the Bank of England) as immodest in scale and positively harmful in terms of the incentives on offer. The incentives actually appeared to negate the clear need to enhance risk accounting, as well as the need to reform the regulatory requirements on corporate governance to make sure that risk management was effectively deployed in the financial sector. Meanwhile, transparency of information is also needed for regulators to identify their transactions properly.

6) The securitized derivative financial products were so sophisticated that they disrupted effective information connections between borrowers and lenders. The derivatives products were in theory designed to disperse risk. Regulators such as the United States Department of the Treasury admit that the very process of securitization created conflicts of interest; it did so by breaking down the traditional relationships between borrowers and lenders, which market discipline failed to correct. As previously mentioned, even many financial managers did not fully understand the products they transacted, to say nothing of the common investors, who
were at the mercy of rating agencies that often failed to describe the risks of relevant products accurately. Originally, the motive behind bundling derivative financial products was to disperse risks. However, over the past 20 years these products gradually became extremely risky, especially after 1999, when they became more or less totally opaque to buyers. In fact, they became a major source of contagion.

2.3.3 A platform to reconsider public expectations
E-government can aid in providing a platform for the public to reconsider their expectations. In the financial system as it was, the ‘animal spirits’ of people at large were also included among the factors involved in the making of the bubble. This came to be associated in the public mind with the political desires and vanities of politicians, in spite of the increasingly huge trade deficit that underlay a comparatively slow or stagnant growth of productivity. The rapid expansion of the housing sector was achieved by the massive participation of citizens, while the governmental solution to advocate and support such desires was also to create structured investment vehicles such as Fannie Mae and Freddie Mac (which provided “creative accounting”54 for the domestic housing industry in the United States). The inappropriately fast and continuous expansion of desires finally contributed to the primary determinant of this crisis, even though it is technically termed systemic risk.

The ongoing crisis provides its citizens and opinion leaders with a chance to re-think the essential problems of social, political and economic life. E-government, with the transparent data, analysis and interaction it can exhibit, can provide a valid instrument for individuals to connect themselves with practical macro analysis, which might help to promote an understanding of the internal conflicts in society.

2.4 International cooperation and e-government

2.4.1 Problems from a global perspective
With financial markets integrated worldwide, the crisis inevitably went global, as the United Kingdom’s Verena Ross asserts:

“The current crisis has been truly global in its nature and has highlighted significant shortcomings in the international regulatory framework. Growing risks were not properly identified and monitored, standard-setting bodies varied in their effectiveness and cross-border crisis management arrangements did not work well.”55

Global architecture
A paper from the International Monetary Fund acknowledges that the present financial crisis “has revealed important flaws in the current global architecture” and specifically identifies four areas where the “existing architecture failed to respond adequately as growing vulnerabilities eventually produced a crisis.”56 Of these areas, two are related to systemic risk, namely across-the-board financial regulation and the international coordination of macro-prudential responses to such risk. The other two areas noted by the IMF are the need for cross-border coordination and arrangements for financial regulation “to avoid a repetition of the ‘go-it-alone’ strategies seen in this crisis”, and the need for additional IMF-style funding.

In the ongoing crisis, a global perspective is crucial for understanding the transmission, overall dimensions and causes of the crisis, which had deep roots in imbalances in international trade and capital flows and the disparity of regulation across countries. There is an element of chaos theory operating across international frontiers, in which something as small as the flutter of a butterfly’s wing in China might affect the weather in New York City. The part of the butterfly was played by an Austrian bank in 1931 (the Creditanstalt), by property-price inflation in Bangkok in 1997, and by Icelandic banks in 2007/8. The lessons learned so slowly and painfully in the mid-1930s about the necessity for international cooperation at the highest levels (“hang together lest we hang separately”) were then forgotten until recently, when economic crises again became painfully evident.

The international level of the crisis can be seen in the flows of credits from one part of the world to another. This flood of credit was supported by low long-term interest rates, which were in turn supported by enormous growth in the amount of foreign capital flows. These massive foreign capital...
inflows were linked to imbalances in international trade, significant global macroeconomic misalignments over the last decade, and in particular the build-up of large current account surpluses in Asian and oil exporting countries. Meanwhile, there were growing current account deficits in the United States as well as in the United Kingdom and other European countries. Thus foreign exchange surpluses were accumulated by China, other East Asian countries and countries exporting oil in large volumes.57 Much of this money went back to the major countries such as the United States and the United Kingdom through investing in a large capital pool, or buying up substantial portions of the national debts. This provided support for their levels of ‘over-consumption’ based on credit and for the prosperity of asset-backed trading and other securities, both directly as well as indirectly (via the domestic credit-fueled booms).

In principle, the international situation has e-government in its solution – yet e-government is usually national in nature. Most e-government schemes up to the present day, other than those launched by supranational or international bodies, start from a national and sometimes rather nationalistic perspective, with corresponding sets of political and policy assumptions. These assumptions may not square with the need for international tact and discretion, much less training programmes. Lloyd Blankfein of Goldman Sachs notes the need for supervision at the global level and what it would require to be effective:

“As recognized at the recent G20 Summit, the level of global supervisory coordination and communication should reflect the global interconnectedness of markets. Regulators should implement more robust information sharing and harmonized disclosure, coupled with a more systemic, effective reporting regime for institutions and major market participants. Without these, regulators will lack essential tools to help them understand levels of systemic vulnerability in the banking sector and in financial markets more broadly.”58

Regulating offshore funds
Regulators are presented with a critical difficulty in the case of offshore transactions, and especially those linked with the shadow banking system. Most activities of this kind do not have transparent, regulated venues and counterparties for their transactions.

About half of all hedge funds in existence in 2008 were registered offshore, according to estimates. Tax havens were the most popular location for the offshore hedge funds. Offshore havens were located in places such as Bahrain, Bermuda, British Virgin Islands, Cayman Islands, Ireland, Luxembourg and the Netherlands Antilles. Onshore havens were located in the United Kingdom and United States. Registering in tax havens freed the hedge funds from paying tax on the increase in the value of their portfolios. More importantly, the host countries of the offshore hedge funds built up accommodating jurisdictions, which on the one hand attracted the relocation and residency of relevant pools of capital, and on the other hand freed the hedge funds from ‘annoying’ regulatory interference. Policing such offshore operations was not impossible, but was considerably more difficult. Moreover, for a long time the general consensus, at least in the United States, was that there was no need for such policing.59 This exacerbated disparities in regulation, and added to the difficulties of regulators trying to identify the prices, values and processes of the shadow banking system.

International coordination or greater national powers?
Potential room for misalignment between national and global regulatory policy was paralleled by potential room for misalignment in e-government principles and practices. Take, for example, the Icelandic banks operating in the United Kingdom. As Ross points out in relation to the gap in regulatory power:

“Landsbanki was free to operate in the UK as a branch over which the FSA [Financial Services Authority] only had limited powers, as responsibility for its prudential supervision rested with the Icelandic regulator. UK depositors were also later dependent on the Icelandic deposit insurance scheme, with resources that proved inadequate and requiring the intervention of the UK authorities.”60

The complex international situation has e-government in its solution – yet e-government is usually national in nature with a corresponding potential for misalignment of e-government principles and practices.
The ‘options’ seemed to consist of strengthening internal controls on the national front vs. greater external coordination on the supranational (European) front. The Financial Services Authority could see the benefits of pursuing both at the same time, without dwelling too much on the costs side of that particular ledger. This is what political scientists tend to refer to as ‘multi-level governance’, in which spatial hierarchies dominate political decision-making, and from time to time find their ‘solutions’ in setting up top-heavy bureaucratic nightmares.

To manage such contexts satisfactorily, and to avoid their worst excesses, e-government becomes essential. It is not merely an elegant accessory but an indispensable tool when one is even considering such a complex system (or ‘system of systems’). Whether the ground-rules for effective e-government can hold is open to debate. Desiderata such as transparency and integrity may prevail to greater or lesser extents. But any derogation of decision-making duties to ICT networks must at the same time be sustained by the very diversity of the e-government structures which they would already have helped to create.

It seems unlikely that powerful new international agents will be set up to establish international e-government that is transparent and satisfies international needs. Citizens and nations ought to enhance the potential for information-sharing and harmonized disclosure offered by e-government, based on existing international platforms such as The Group of Twenty Finance Ministers and Central Bank Governors, IMF, Organisation for Economic Co-operation and Development, and United Nations.

2.4.2 Common standards for better regulation

Regulators have come to realize that common accounting principles and regulation standards should be implemented in countries where financial activities, such as those based on securitized derivative products, have developed Internet-based connectivity far beyond the country’s borders. There is, however, the additional need for these electronic networks to be inter-connectable, which is what makes information-sharing practical. For this purpose, cross-national coordination is needed during the process of building or reforming e-government in such countries. Effective international cooperation depends on common standards for data collecting and processing, common or interoperable software platforms and high-speed communications. These elements are crucial. The most critical need is for mutual understanding, which would permit the countries to share data and analysis in real time, and to achieve coordinated action. Perhaps this could be implemented firstly in international alliances, such as the European Union, OECD, North American Free Trade Agreement, and United Nations Conference on Trade and Development.

In fact, in the economic stimulus packages of different countries, large amounts have been invested in the infrastructure category, which
includes the investment in ICT infrastructure. This could provide an opportunity to appeal to member countries of these international entities to build up harmonized software platforms and coordinated institutions. But at more or less the same time as the East Asian economies – inspired by China in this respect – have begun to embrace the concept of harmony, western nations have rejected harmonization, in the EU’s case in favour of ‘open methods of coordination’, i.e. the primacy of national over supranational systems.

**Standards and codes**

After the Asian financial crisis of the 1990s, the IMF prepared a set of recommended Standards and Codes that remain relevant to e-government. Countries subject to reporting to the IMF and World Bank would be required to prepare Reports on the Observance of Standards and Codes, as explained in a statement made when the recommendations were published:

“The IMF and World Bank have endorsed internationally recognized standards and codes in 12 areas as important for their work and for which Reports on the Observance of Standards and Codes (ROSCs) are prepared. Standards in the areas of data, fiscal transparency, and monetary and financial policy transparency have been developed by the Fund while others have been developed by other standard setting bodies including the World Bank, the Basel Committee on Banking Supervision, and the Financial Action Task Force (FATF).

“ROSCs are prepared and published at the request of the member country by the IMF and/or World Bank in each of the 12 areas. ROSCs covering financial sector standards are usually prepared in the context of the Financial Sector Assessment Program. In some cases, detailed assessments of countries’ observance of standards are also published.”

The IMF and World Bank published their list of ROSCs in November 2002. The areas addressed in this list could also serve as set of principles to guide countries as they seek to use e-government.

2.4.3 The financial crisis and developing countries

Developing countries face the challenge of ‘catching-up’ to developed countries when it comes to investing in e-government. On the one side are the cyber-optimists (to re-use Norris’s helpful phrase), who speak in terms of ‘leapfrogging’ and even overtaking the more advanced industrial countries. Being unencumbered with the ‘penalty of an early start’, in the form here of large fixed landline communication systems and networks, developing nations are supposedly free to invest in cheaper and much more flexible mobile systems. On the other side again lie the cyber-pessimists, who envisage these high-tech activities as almost inevitably being dominated by the advanced industrial countries.

To be sure, a number of the larger developing countries, led by the so-called BRIC countries (Brazil, Russia, India and China), have public sectors that are large enough to keep some of the alleged depredations of multinational companies at bay, but most of them do not fall into this category. In the meantime, the countries best equipped in terms of e-skills (both competencies and capabilities as in section 2.3.2 above) are likely to wrest away most of the gains which, in their view, would belong to the knowledge-rich, earlier-industrializing countries. In the end, the predictions of the pessimists may turn out to fit reality better. But at the same time, e-government opportunities are within the grasp of each developing country itself – not simply in the hands of over-powerful foreigners.

One reason for this positive conclusion is that a fairly small country or region may have a comparative advantage if it has relatively stable existing social networks lodged within a communicative social structure. This may explain the good overall position of e-government development of countries such as Estonia and New Zealand. The growing accentuation of a positive role for public procurement in policy-making is another point that can favour a small- to medium-sized developing country, so long as it maintains a clear vision of what it stands for, as in the Republic of Korea’s approach to high-speed broadband.

The concerns of developing countries in respect to e-government lie less in any natural barriers to the diffusion of e-government and more on the side of human resources and their disposition, i.e. their ‘capabilities’ in policy-making, technology and consumption, as per a study by Guida and Crow. Their main points are quoted in the following page:
From a practitioner’s perspective, the most challenging issues in the implementation of technology-dependent government services derive from the governance aspects of the initiatives;

For governments in the developing world, the most important benefits of adopting a standards-based architecture lie in the area of procurement of applications and application-based services;

Mobile phones, in providing affordable broadband network access, can offer a valuable means of delivering e-government services;

There is high risk associated with e-government investments, and though the rewards are potentially substantial they may be hard to quantify;

Capacity-building and formal change management strategies are essential if e-government programmes are to be effective.68

The above factors range quite broadly over the terrain covered in this chapter, including references to governance, standards, risk and capabilities, as well as to technology. It is time to draw some conclusions from our study.

2.5 Conclusions

E-government clearly has a potential role in alleviating the worst symptoms of the ongoing financial crisis. The benefits in comparison with the costs are likely to rise over time, as a consequence of two mutually reinforcing trends: the improvement in e-government systems themselves, including more widespread access, faster operating and transmission speeds, and the increasing capabilities – and willingness – of the public to make use of the technologies involved.

At the same time, it is all too easy to fall into the trap of advocating little more than a technological ‘fix’ for the problems that have arisen. Certainly, such ‘fixes’ by themselves will not work. Potential roadblocks include inadequate competencies (e.g. hemorrhaging of talent, poor models) and limited capabilities (e.g. lack of exercise of good judgment). Technology alone will not cure these deficiencies, even if it becomes more user-friendly, and fault-tolerant. It remains a challenge for e-government to attempt to make processes more transparent as well as more accurate. An example of this would be in formulating credit ratings.

The main point to emerge from recent history is much the same as for the Great Depression: no amount of good practice by e-government or other means can withstand the consequences of beginning with a false set of assumptions.69 Included among these faulty assumptions must be the notion that freedom from regulation is the solution. Another misleading assumption is that the solution lies in only allowing self-regulation, which has its limits:

“For policymakers and regulators, it should be clear that self-regulation has its limits. At the very least, fixing a system-wide problem, elevating standards or driving the industry to a collective response requires effective central regulation and the convening power of regulators.”70

That is, in the words of the CEO of Goldman Sachs, allowing the financial world to monitor and regulate itself would be a measure based on the erroneous idea that the effects of systemic and especially cross-systemic risks can be safely overlooked.

Coping with financial panics requires immediately addressing the first signals of the crisis. This calls for what we can describe in this summary as ‘dynamic interactive capabilities’, so as to achieve a robust financial system and effective regulation. It may be recalled that ‘dynamic’ refers to real-time responses, which probably require a set of relevant and effective system-oriented competencies to be already present and at hand. The term ‘interactive’ refers to functioning two-way interchanges already in place in the financial system and around its edges. Both the dynamism and the interactivity could in theory be augmented by new approaches based on high-speed technologies, such as e-government. These possibilities can be drawn on for solving some of the longer-term negative fallouts from the crisis, especially through using e-technologies.

All stakeholders admit that there were considerations beyond the previous economic models and regulatory systems that destroyed the stable pattern of development preceding the global financial crisis. In the past 20 years, human response in periods of fear ought to be included in these models and mind-sets, as they are at least equally important as those of the “euphoria” noted by Alan Greenspan, former Chairman of the United States Federal Reserve. But this view is not widely welcomed by
the public which, on the contrary, is more inclined towards the comment from Krugman\textsuperscript{72} that systemic risks come from neglect on the part of regulators. Therefore, it would seem reasonable that critics and the general public question the ethical responsibilities of the model developers, and possibly the regulators as well.

E-government provides the public with an opportunity to have their views expressed. Whether governments take notice may be another matter, but they will have their ‘wriggle-room’ drastically reduced, as a result of the associated increase in transparency and democratization. If the technology is correctly deployed and suitable governance systems are in place, it still may be possible end up with the happy situation of both more government intervention for a while but more freedom for markets – admittedly ‘organized markets’ – to function as they ought to in due course. Thus paradoxically, in this scenario, more government discretion in the short run may lead to less arbitrary forms of government discretionary power over the longer haul. There are any number of precedents for such an optimistic outcome to be realized, yet innate pessimists will match this story of an upward-pointing virtuous circle or spiral by citing possibilities of downward vicious circles.

What then of the balance between cyber-optimism and cyber-pessimism? For the last words on this, consider the conclusion of the Economist Intelligence Unit, which had this to say in 2009 on the subject of e-government development:

*In rich and poor countries alike, however, thorny policy issues arising from the very success of digital development remain largely unresolved... The delicate social contract between digital consumers and the operators of digital channels will be tested in the coming years, as intensified revenue pressure increases service providers’ need to utilise the Internet for intrusions that are both annoying (for example, inbound advertising) and potentially privacy-infringing (‘deep-packet’ inspection systems).*

The environmental impact of ICT usage is also likely to remain a concern for governments as long as climate change and carbon reduction remain high on the global agenda... The expansion of one of the global economy’s most essential resources – information – is having an unintended knock-on effect on other precious resources... [E]-readiness is not fostered in a digital vacuum, but rather in a complex web of social, cultural, economic and political factors, ultimately driven by the usage imperative.\textsuperscript{72}

In other words, the cross-systemic risk factor is evident at the national and global levels, and not just within the ICT sector itself.

Can e-government then be recommended on balance for financial regulation? Yes, but if government policies enable financial players to escape scrutiny, then e-government will not improve regulation although it can still enhance efficiency. Overall, e-government is built for speed and for managing complexity, qualities that make it well-suited to financial monitoring and regulation. At the same time, it should not be regarded as a technological ‘fix’. E-government especially, of all the e-buzzwords, can only be as good as the ‘dynamic interactive capabilities’ of the policy makers who apply their principles and models to its design, together with those of the people who construct and operate its systems.
Chapter Three
E-service delivery and the MDGs

The world economic crisis has savaged government finances. Policy makers are facing the harsh reality of substantially diminished revenues at a time when social protection services and business support schemes are in great demand. Given mounting public debt as well as budget deficits ranging from 6 to 12 percent of Gross Domestic Product (GDP) in developed regions and 5 to 6 percent of GDP in many developing countries, 2010 looks to be a difficult year for politicians and administrators trying to assure the delivery of essential public services.1 Even governments currently using stimulus spending to compensate for financial shortfalls are discussing so-called exit strategies, in the knowledge that such large-scale borrowing cannot continue indefinitely.

The effects of the deterioration in public finances are likely to extend to official development assistance budgets on which many low-income countries rely, depending on the funds to supplement their volatile commodity and trade-related revenues.2 Sub-national governments are in an even tighter bind, with limited authority to raise revenues on their own and no possibility of tailoring monetary policy to local economic conditions.
3.1 Why e-services?
Short of devaluing currencies or defaulting on public debt, governments are finding themselves with few options as they try to balance diminished revenues and increased expenditures. The most immediate response would be to reduce public services. Indeed, policy makers in both high- and middle-income countries are considering austerity measures of the sort once reserved for low-income recipients of multilateral financial aid. In so doing, social protection, health and education budgets will inevitably come under pressure. Another approach, less reactive and more strategic, is to mitigate the effects of the crisis on public finances by enhancing public sector capacity – providing services more efficiently as well as more effectively and aligning them with the results people expect. But how?

Here e-government can play a very important role. Just as technology has always been an important determinant of productivity in the broader economy, so too is the application of information technology in the rate and quality of public service delivery. In a time of economic stress, improved communications and faster response times can make a critical difference to those most at risk.

The overall trend of e-government development is conducive to such efforts. The number of initiatives related to e-government has continued to grow. In Australia, the Internet has replaced contact in person and by telephone as the most common way citizens make contact with their government.3 Since the United Nations E-Government Survey was launched in 2003,4 there has been steady progress in the implementation of the electronic delivery of government services (e-service delivery) in both developed and developing countries, and by now the benefits are well known.

Chief among the benefits of e-service delivery are efficiency gains. Efficiency is especially important given the current financial crisis, which has drastically increased demand for public services, including unemployment benefits, food vouchers, health services and the provision of information on debt relief. The British Financial Services Authority is a case in point. Overwhelmed by the demand for face-to-face debt advice, the Authority launched a new website to facilitate the provision of debt-related information.

In addition to new initiatives, some countries may also benefit from existing e-government infrastructure. Singapore has provided rapid cash transfers to those most in need, including older persons and members of other vulnerable groups, by linking the databases of different government departments with the direct deposit systems of the nation’s banks. These e-government efforts can make a difference to citizens, especially in a country such as Singapore, which has allocated some 52 percent of its stimulus funds to social protection measures, and which has a high level of e-government development and a corresponding agility in the delivery of public services under a variety of conditions.5

In other countries, reports about the slow distribution of stimulus funds to citizens and businesses are reflections of the limited administrative capacity of government agencies. This situation has prompted some countries to initiate accelerated service delivery through online channels. The United States has created a website for processing stimulus grants that guides prospective recipients to benefits for which they may be eligible. The United Kingdom’s website Real Help Now provides detailed information on stimulus opportunities for homeowners, pensioners and employers, as well as those looking for a job or needing assistance with personal finances. Initiatives are broken down by region and accessed through an interactive map. What these and other initiatives have in common is a relatively high degree of e-government development as a result of prior, related investments.

Public feedback and collaboration will not guarantee better service delivery but, at very little cost to the taxpayer, participatory methods can help policy makers set priorities, encourage more citizens to ‘buy in’ to programmes, increase satisfaction levels and thus augment the chances of successful policy outcomes. For example, social networking sites such as Facebook, YouTube and Twitter, as well as blogging software and mobile technology, allow governments to tap into the collective knowledge of society quickly and directly. In this way, citizens move from being passive consumers of government services...
to advisers and innovators contributing ideas that are in better accord with their individual and group needs.\(^6\)

Despite speed, efficiency, citizen participation and other benefits of e-service delivery, the usual caveats apply. E-services cannot substitute for traditional methods if citizens do not have ready access to the requisite infrastructure (including a reliable supply of electricity), or if they lack basic education or the means to pay for access to the Internet. Measured in purchasing power parity dollars, broadband Internet subscriptions are 10 times more expensive in developing countries than in developed regions.\(^7\) Policy makers should also bear in mind problems related to time lags and the delayed impact of new e-government applications; the high failure rate of information technology projects; and the inevitability of rapid technological change, with the corresponding obsolescence of e-government systems.\(^8\) Moreover, the proportion of the Internet population providing original content to social networking sites is still very small, even in developed regions, which limits the scope of participatory public service delivery.\(^9\)

These are and other constraints are also discussed in some detail in chapter two of this report.

### 3.2 Delivering e-services with a view towards achieving the MDGs

Fewer resources and greater demand – at heart this is a public sector delivery and capacity issue. The situation calls for greater agility, efficiency and reach of public services, especially in the sectors of health, education, gender, environment and employment, which are important in their own right and central to achievement of the MDGs. E-government can be of great use in this regard. The purpose of this section is to present the reader with some potential e-government solutions, based on the experiences of others, which may help public authorities to continue on the path towards internationally agreed development goals, despite the current economic situation.

For each of five priority areas drawn from the United Nations Millennium Declaration, specific development problems and issues arising from the current crisis are briefly recalled, followed by possible e-government solutions and an account of recent actions.

#### 3.2.1 Employment services for poverty eradication

**The issue**

Poverty eradication is one of the most urgent and compelling development goals. There is serious concern that the ‘near poor’ are becoming the new poor. The World Bank estimates that an additional 53 million people in developing countries will fall into poverty on top of the 130 million to 155 million who became poor due to the impact of the food and oil crisis in 2008. This crisis caused a drop in GDP rates in many developing countries, including in African countries, which registered a 2.9 percent fall, as seen in table 3.1.

Productive employment is the key element for poverty reduction. The current financial and economic crisis exacerbates large-scale structural unemployment, under-employment and poverty for many developing countries, especially those considered least-developed. The global economy has been relying on demand fuelled by credit rather than earnings from productive activity, greatly contributing to the ‘jobless growth’. Therefore, enhancing employment opportunities is an important and urgent issue for the international community.

Faced with the prospect of a prolonged global increase in unemployment, poverty and inequality, and the continuing collapse of enterprises, the International Labour Organization adopted a Global Jobs Pact on 19 June 2009. It is designed to guide national and international policies aimed at stimulating economic recovery, generating jobs and providing protection to working people and their families. Although the Pact was designed with all regions in mind, it may be difficult for developing countries with limited fiscal and policy space to promote job creation in the absence of innovative and cost-effective means of implementing the Pact. Against this background, e-government tools are increasingly considered as a potential solution.

| Table 3.1 Real GDP growth (percent) before and after the economic crisis of 2008-2009 |
|---|---|---|---|---|
| | Real GDP growth | Before crisis | After crisis | | GDP change | After crisis |
| Africa | 5.9 | 5.9 | 5.7 | 2.8 | 2.9 |

Source: African Development Bank (2009)
Possible solutions
Most of the policy options enumerated in the Global Jobs Pact appear to lend themselves to a variety of e-government responses. E-service delivery can contribute to efforts to address poverty, employment and the impacts of the financial and economic crisis.

In many countries, crisis-response measures aim to attenuate the effects of the economic crisis on employment, and e-government tools can play a significant role in ensuring that pro-employment policies reach their targets. Governments can provide online public information services to job seekers and online vocational and technical training and entrepreneurial skills development for those who have lost or are at risk of losing their job as well as to vulnerable groups.\(^{10}\) In addition, they can provide ICT-based assessment, tracking and monitoring of the activities of the unemployed through the various parts of the employment services system, which is useful in the current situation.

These potential solutions need to be innovative and geared towards pro-poor services for poverty eradication and employment, especially in rural areas, where the majority of populations in developing countries live. Such e-government orientation is deemed particularly essential in rural areas, as most national e-government programmes have tended to focus on internal efficiency rather than public service delivery, and are mostly focused on urban areas.\(^{11}\)

Recent actions
An innovative e-government response to rural poverty and unemployment is India’s e-payment system for the National Rural Employment Guarantee Scheme, which makes use of biometric smart cards. The card uniquely identifies every citizen, with a finger print scanner to the benefit of illiterate citizens. This card initiative was motivated by the need to ensure that the poor and marginalized receive wages and social welfare benefits intended for them.\(^{12}\) It enhances transparency and accountability. Pension and wages underwritten by the scheme are paid through these smart cards in many Indian villages.

Another example of an e-government initiative in employment is the multimedia project ‘Oman Royal Court Affairs – Mobile Recruitment’, which won the World Summit Award in 2009 with an electronic evaluation system that receives job applications via short messaging system (SMS).\(^{13}\) It was one of eight winners in a contest following on the United Nations’ World Summit on the Information Society, and is not identified as a direct response to the crisis. Every job application is processed in a few seconds and the recruitment process is completed in about two weeks. The system simplifies filtering of candidates by integrating the National Manpower Register with a mobile-based job application, screening and short-listing of jobseekers. Results of automated screening process are forwarded via SMS. The automated mobile recruitment system saves time, cost and effort.\(^{14}\)

The current financial and economic crisis has led governments in different parts of the world have taken explicit steps to reduce unemployment including the creation of websites as part of their response.

- Employment is among the discussion topics in My Better Estonia, a civil initiative that invites citizens to brainstorm for a better Estonia and to propose solutions for various problems, including those related to the country’s financial crisis. Public opinions are then published on a website and good ideas yielded by online brainstorming events nationwide are used in making policy decisions. As regards employment, the Ministry of Social Affairs is currently implementing a project that will create new jobs, based on citizen feedback collected online.\(^{15}\)

- Ireland’s website Losing Your Job, provides public service information to the newly unemployed and potential job-seekers with a user-tailored design that make it easy to access relevant information.\(^{16}\)

- In Belgium, the website Au Travail (Off to work)\(^{17}\) contains an application that allows jobseekers to find the specific employment measures and opportunities that concern them. Users can complete an online form describing their work history before being directed to stimulus measures about work and employment that are relevant to their profile. This presentation of measures allows citizens to assess whether they are eligible for some form of assistance under the country’s stimulus plan. If so, they are told how to apply; if not, they are advised on alternative measures.
The most recent initiative, in direct response to the crisis, comes from the United States. The newly developed SMART 2010 (short for Skills Matching and Referral Technology) is an e-government tool connecting unemployed New Yorkers with available jobs. A completed résumé in electronic format is fed into the State Department of Labor’s SMART 2010 system at a career centre. The computer program analyses résumés for skills and work experience and then electronically contacts unemployed New Yorkers via e-mail, recommending job openings in their areas based on their experience and skills. Within 24 hours of submitting a résumé, the individual will receive an e-mail message containing job matches from a database of employment opportunities.

3.2.2 Weathering difficult times in education

The issue
There has been real progress towards universal primary education in many developing countries since 2000. But the current financial and economic crisis threatens the significant gains that these countries have made in improving education outcomes. Governments in developing countries have thus far managed to protect their education budgets from the crisis, yet it remains to be seen how long they can continue to do so. There are concerns over ability of governments to sustain educational expansion and maintain the quality of educational service. The crisis is reducing the ability of both households and governments to invest in education.

At the same time, there are new, beneficial developments such as allocation of stimulus funding to education. Not only developed countries (e.g. Finland, the Netherlands) but also some developing countries (e.g. Kenya, Mexico, Namibia, Thailand) have been using their stimulus packages for investment in education. The focus differs, however. Developed countries such as the Netherlands and Switzerland have focused on supporting professional schools for the unemployed. In contrast, developing countries (including China) tend to focus on primary education and access to education. The Thai stimulus package to respond to the current financial and economic crisis includes a 15-year free education policy that aims to reduce the financial burdens on parents and enable Thai children to have equal access to high-quality education.

The overall impact is too early to assess, yet there is a sense of real danger that some developing countries, which have made progress towards the Millennium Development Goal of universal primary education, will suffer setbacks as result of the financial and economic crisis. Countries such as Bangladesh, Ethiopia, Mali, Rwanda and Senegal are at particular risk. Aid to education had already begun to fall prior to the crisis and may further drop by $1.1 billion in 2010, according to the 2009 Education for All Global Monitoring Report. Nearly 75 million children are out of school, the report says. Case studies of countries such as Mongolia show that the financial and economic crisis has had a major impact on school attendance and school quality, increasing school dropout rates at every level of schooling. This finding is in contrast to the past Asian financial crisis of the 1990s, when school enrolment rates did not decline as much as feared, partly due to household and school-level adjustment.

Possible solutions
E-government delivery of educational service can help countries to weather difficult times in education. It is a powerful medium for education, with 24-hour Internet accessibility over distance. The reach of schools can dramatically be expanded. The ever-increasing possibility for remote education is particularly exciting and important for developing countries. Generally speaking, potential e-government solutions include provision of information on topics such as finding a school, identifying the right colleges for students, finding teaching opportunities for teachers, and receiving test results. Solutions may also be found in the use of ICTs to enhance student education and teacher training.

If these potentials are to materialize, e-government services for education need to be underpinned by affordable and reliable Internet connectivity and other vital infrastructure such as school computers and universal access facilities where ICT can be effectively used in educational and training tools.
Chapter Three
E-service delivery and the MDGs

3.1 Online alerts about schools and H1N1 flu

Schools already face the challenges of financial and economic crisis. Add to this the threat of H1N1 flu, which is leading to increasing efforts on the part of United States government and school districts to put information online. Through such learning measures people can be alerted to possible closures or teacher and student absences because of a H1N1 flu outbreak. In particular, the United States Department of Education has asked Curiki – an open-source online repository of free curricular materials from commercial vendors, government and professional organizations and educators – to establish a ‘continuity of learning plan’ as part of a nationwide readiness initiative.

Source: Ash (2009)

The use of ICT in education is too often constrained by a lack of computer stations and other infrastructure. Ensuring the basic infrastructural backbone has been and continues to be a major concern for developing countries.

Recent actions

In developed countries, stimulus packages are prompting substantial new initiatives in the educational sector. The United States’ stimulus package set aside $650 million to invest in school technology and broadband, cover expenses for schools to install or improve Internet connections to broadband, and to help teachers learn how technology can be used to improve their lessons. In the same country, several states initiated recent actions to monitor and analyze the effectiveness of their programmes, such as the use of Economic Recovery Fund Tracking technology by the Arkansas Department of Education. Through funding from the American Recovery and Reinvestment Act, states are now being encouraged to create statewide longitudinal data systems to help track student achievement. Also, on a different topic, it is interesting to observe how e-technology has been applied to deal with the outbreak of H1N1 flu (see box 3.1).

The current situation of financial hardship has motivated countries to place financial information online, including information about scholarships and financial aid. The Irish Government’s website called Student Finance25 is particularly useful in this regard.

In many developing countries, the focus has been primarily on ensuring that students and teachers have ICT skills (‘Education for ICT’) rather than using ICTs for better learning and teaching process (‘ICT for Education’).26 An example is the e-Schools Initiative of the New Partnership for Africa’s Development (NEPAD). Despite the current financial and economic crisis, the initiative has achieved some progress.27 Initiated in 2003, it aims to impart ICT skills to African schoolchildren, equip them with ICT apparatus, and provide teachers with ICT skills. It is a good example of integrated approaches with its teacher development framework for teacher training and professional development.

ICT applications are becoming more important for remote education and virtual classrooms. Long before the current economic crisis, several developing countries had initiated steps to provide education to students in remote areas. These include Mauritius’ Cyber Caravan Project, Egypt’s video-conference distance learning linking 27 sites across the country to provide learning facilities in remote areas, Guinea’s adult literacy programmes conducted via the Internet, and Burkina Faso’s Classe Rurale En Langue Nationales project, a distance-learning programme in local languages targeting rural people, including those who are illiterate. E-education services in Australia are successfully applied to overcome geographical distance and enable educators to reach remote communities (see box 3.2).

Mobile technology is becoming an important aspect of educational services, and it is a noticeable trend in the field of student education and teacher training. In the Philippines, the mobile phone and SMS are being used as the primary means for interactive learning and for providing information to students. In the United Republic of Tanzania, the BridgeIT project used mobile phones to provide support for teacher training.28 Mobile technology has rapidly gained in importance across the educational sector. Some even say that the current state of mobile education technology, or

3.2 ‘Shrinking’ Australia with e-education services

When it comes to Australia, with its vast area and sparse population, going the distance and providing teachers and students with ICT educational tools is extremely important. E-education services help ‘shrink’ Australia. Motivated to invest in ICT by its geographical characteristics, Australia enjoys the benefits of remote education and is now home to many remote e-education companies.

Source: Smart Technology (2007)
m-education, may be at the stage where mobile health, or m-health, was just a few years ago. In Bangladesh, more than 50 percent of the population gained access to mobile phones in the past decade. Mobile applications for English-language teachers in Bangladesh enable them to access training materials including audio and video at all times. Soon the mobile applications will be linked to the Government’s school curriculum, textbooks and assessment procedures.

Mobile devices (e.g. cell phones, handheld devices and handheld computers) are among the most ubiquitous technologies in children’s lives today in countries like the United States. Mobile applications are likely to become an important part of a more effective approach to learning in the near future, which has an important implication for governmental educational services as they prepare to facilitate and encourage ‘anywhere, anytime’ learning.

In addition to the emergence of m-education applications, there is an increasing trend towards learning as a more participative and collaborative process, which should be encouraged by governments. Learning is becoming a more participative and collaborative process in which Web 2.0 tools facilitate activities of teachers and students as co-producers of knowledge and educational content. An illustrative example is the School of Tomorrow project at the Aruba Pedagogical Institute, which has engaged in group-blog collaborations with Dutch students and others, incorporating ICTs into many aspects of teaching and learning in its technology-rich model classroom. It is also interesting to note that Iceland, one of the most crisis-affected countries in the world, has started promoting free and open source software in the country’s schools, which will open up new opportunities for more collaborative learning processes (see box 3.3).

3.2.3 Gender-inclusive approaches to public service delivery

The issue
Seventy percent of the world’s poor are women, and the financial and economic crisis has gender-specific impacts. Women tend to face greater income insecurity, and cuts in social spending also tend to disproportionately affect access to education and health services for women and girls. The United Nations Conference on the World Financial and Economic Crisis and Its Impact on Development recognized that crisis responses need to have a strong gender perspective.

Including women in economic development is an issue high on the current agenda of the international community. There is consensus that the adverse impacts of the crisis on women’s economic empowerment, including women’s employment, present a major challenge to governments worldwide. Economic empowerment is mainly about securing economic opportunities. It includes mobilizing women to eliminate gender gaps in access to resources and services that are a major obstacle to women’s development. Microenterprise development, job creation and security, and above all, availability of microfinance loans are important.

Access to the labour market has much to do with economic empowerment for women. Women are often in vulnerable employment and overrepresented in insecure, part-time and short-term jobs, including particularly, in the agricultural sector. As regards women’s unemployment, the Millennium Development Goals Report 2009 highlights its critical importance and notes that the crisis may hold back progress towards gender equality by creating new hurdles to women’s employment. The United Nations Committee on the Elimination of Discrimination against Women also warns that the current crisis is likely to have a serious impact on the realization of gender equality, especially in relation to employment.

Female employment and microfinance are key issues arising from the financial and economic crisis. According to the World Bank, loss of

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Box 3.3 Promoting free and open source software in schools in a crisis-affected country

The Ministry of Education in Iceland recently announced its plan to promote the use of free and open source software in schools across the country. This is based on the government’s policy on free and open source software for all institutions that are operated by public funds, with the objective of augmenting students’ skills in ICTs, which present cost-effective educational method for schools. The key advantage of open source software for education is its openness enabling any organization or individual to use free of charge, change and improve the software for one’s own use and thereby explore a new idea about learning. When combined with open software standards, open source becomes even more powerful, emerging as new kinds of software to support collaborative learning.

Source: ePractice.eu (2009)
employment constitutes the first round impact of the crisis on women and families, mainly as a result of the drop in aggregate demand and exports. Another important first round impact is the fall in lending resources from microfinancing institutions, as a result of tightened credit markets.36

It is in view of these problems, the United Nations Millennium Campaign has called for the establishment of a ‘vulnerability fund’ in which each developed country would devote 0.7 percent of its stimulus package to aid poor countries to set up safety net programmes, including microfinance institutions. Governments are also urged to design and implement the packages, with explicit consideration of the labour market disadvantage that women face, and set explicit employment growth targets for women.37 It is important to ask if the current stimulus packages contain gender-specific provisions for empowerment and employment opportunities (see box 3.4).

The gender impact of the economic crisis in terms of unemployment rates is expected to be more detrimental for females than for males in most regions, and especially so in Latin America and the Caribbean. Figure 3.1 shows gender-disaggregated employment-to-population ratios prior to the crisis.

Possible solutions

E-government can be effectively leveraged for women’s economic empowerment and employment in the crisis. Employment-related e-government solutions include online provision of information on job opportunities for women, in particular for women who can use skills for the global digital economy beyond the limits of their local economy; online skills training for female jobseekers; and online distance learning.

E-government can also enhance information service delivery for much-needed women’s economic empowerment. It can help women to weather the crisis by disseminating information on income-generating opportunities, and by alerting women to other relevant information services. Women need information about microenterprise loans and other forms of capital for female entrepreneurship, as well as local, regional and global market information and market pricing information. Indeed, uninterrupted flows of microfinance are key to the economic empowerment of women, especially in a time of decreased lending. E-government can provide information about financial and other forms of assistance provided by governments, international donors and nongovernmental organizations. In addition to these information services, women need to know about online business training and support for women-headed microenterprises, online marketing assistance and online financial services.

A number of conditions would facilitate the delivery of information to women, including: (a) public access (e.g. mobile Internet kiosks, especially in rural areas); (b) free access to training on the use of the technology; (c) technological solutions that promote targeted access to women, such as voice recognition for people with little or no formal

![Figure 3.1: Gender-disaggregated employment-to-population ratios](image_url)

*2008 are preliminary estimates
Source: ILO (2009a)
education, graphic interfaces and touch screens; and (d) the provision of information that rural women in developing countries need in an accessible language and format.

Recent actions
Some countries have taken steps in fiscal stimulus packages to protect and increase funding to microfinance lending institutions, which are important to women’s empowerment. It is also important that public expenditure monitoring systems are in place to ensure that stimulus funding and other budgetary allocations actually reach the intended groups, including women. In this regard, the latest ICT applications for tracking and monitoring of stimulus funding are likely to be useful, especially in countries like Uganda, which is one of the first developing countries to successfully implement a public expenditure tracking system and which has already built relevant capacity.

In direct response to the financial and economic crisis, China focused on women in the area of information service and assistance for female jobseekers and entrepreneurs. The Women’s Federation of the City of LianYunGang made a significant effort to improve the female employment rate in the city during the current crisis. The Federation reported that more than 60 per cent of the female population was unemployed. Events were organized to strengthen employment placement services for women, and the Federation established a database for unemployed women. The qualifications of female jobseekers were analysed and the Federation then recommended women to various organizations for employment according to their qualifications. The database is updated once every quarter, which aids in monitoring the employment situation. The Federation also created a special website column, where women could post their experiences with successful start-up microenterprises and published handbooks for female entrepreneurs.

A good example of a microfinance initiative comes from India, where commercial banking entities including State Bank of India have linked with the respective Service Centre Agencies in the states under the framework of the National e-Governance Plan to provide Banking Correspondent status to the Common Service Centres equipped with ICT infrastructure, and have provided microfinance services through them. For the cost of sending an SMS message, the microfinance client uses an application stored on her mobile phone to initiate an account transfer to her bank account. Applications for microfinance may be led by the private sector, with government and non-governmental organizations in support. In this case, the government has also routed various developmental schemes through microfinance.

A trend observed is the growing importance of mobile usage, especially for women entrepreneurs, who need access to credit and capital. This development seems similar to the growing importance of mobile applications in other priority areas of the MDGs, such as m-education and m-health. There are some indications that it is one of the more accessible technologies for women. In fact, women’s mobile phone access in Africa is equal to that of men.

3.2.4 Health care and the advent of m-health

The issue
The financial and economic crisis may have a serious impact on the health-related MDGs. In the crisis, governments around the world are under increasing pressure to maintain the level and quality of health services with limited and decreasing resources. Even more demands will be placed on public health services as income decreases and governments cut their budgets. The crisis is expected to negatively impact HIV/AIDS treatment programmes in one third of countries surveyed in 2009, with its adverse effects worsening over the year. The crisis will inevitably impact and exacerbate many of the problems facing healthcare. Previous crises in Asia and Latin America show the negative impact that crises can have on access to health outcomes. Women and children are especially vulnerable.

Possible solutions
ICT applications in the health sector can bring efficiency gains, much as they can for education, employment and other priorities of the MDGs. ICT applications could, for example, improve the
monitoring of demand for and supply of HIV/AIDS drugs, which would be highly relevant given the current lack of funding for these drugs. The current crisis is intensifying the challenge of maintaining access to HIV treatment and prevention, especially in high-prevalence countries in Eastern and Southern Africa.\textsuperscript{42}

ICT applications can engage citizens in participatory decision-making about health care, considerably expanding the scope of e-participation. These technologies offer the potential to empower citizens with medical information and knowledge that can facilitate improved decision-making and care. They can enable for stakeholders such as patient groups and providers to agree on priorities and then streamline services to make them more efficient, which can reduce costs and help to mitigate the impact of the crisis.\textsuperscript{43}

**Recent actions**

E-health, a process of administering health care through ICT tools, is rapidly growing in importance in all parts of the world. Telemedicine, for example, is a process of accessing health care from a distance through ICT tools. Telemedicine has been successfully implemented in several developing countries, including Bhutan, Ghana, Indonesia, Niger, Nigeria, Pakistan, Peru and South Africa.

Electronic health records are another example of ICT use in this sector. The stimulus package in the United States contains $19 billion for health care technology spending and the adoption of electronic health records.\textsuperscript{44} The use of computerized medical records has slowly been adopted in many developed countries such as Singapore and several European countries. In Qatar, electronic health records are a key component of the national e-health programme for all, which aims to increase the efficiency and effectiveness of the healthcare system. The Supreme Council of Information and Communication Technology, ictQATAR, will first promote the standardization of health records and the creation of the Electronic Patient Record, and will then focus on providing online healthcare information and services through portals and applications with a view to developing an integrated health network.\textsuperscript{45}

In the United Kingdom, recent initiatives are taking advantage of technology in innovative ways and building on Web 2.0 technologies. One example is the Wii platform development, which extends telehealth and telecare systems to include a range of new devices around the home. The technology creates a virtual community of connected carers and cared-for, and it enhances community-based care and health information. The aim is to help prolong independent living for elderly and chronically ill patients.\textsuperscript{46} Another e-health project is PatientOpinion, which allows patients of the British National Health Service to share their experiences at local hospitals, hospices and mental health services and to rate them based on criteria such as standard of medical care, being treated with respect and dignity, clear information and cleanliness.

More than half of all patients between the ages of 25 and 34 in the United States are influenced by social media when it comes to health care decisions, recent studies have found. Social media is a group of Internet-based applications that allow users to generate and exchange content, including blogs, wikis, podcasts, instant messaging and other social networking and communications software applications. The concentration of such activity in the most developed countries may result in an accentuation of the digital divide in health care, urgently necessitating a concerted effort for more inclusive e-health care on a global scale.

Using mobile phones, m-health stands out among the many emerging uses of ICT in healthcare. It delivers health services and information (over distance) to patients and has become a critical
segment of e-health in recent years. M-health is the fastest growing part of e-health, and its importance is increasing. Documented results reveal that mobile technology improves the efficiency of health-care delivery. The rapidly increasing importance of mobile phones as a platform for healthcare delivery in recent years is mainly attributable to substantial price reductions and the resulting rapid expansion of mobile phone use around the world (see figure 3.2). 

There are presently 4 billion to 5 billion mobile phones in the world.

Mobile phone use has been rapidly expanding, especially in Africa (see figure 3.3). When compared to the growth rate of telephone lines, that of mobile phone subscriptions in Africa is dramatically faster.

Capabilities of mobile phones are rapidly expanding to include voice, text messages, email and even full Internet browsers, leading many experts in the field of technology to agree that mobile access is the communication medium of the future. This offers unprecedented opportunities to improve the health of people living in underserved communities that lack health care facilities or medical staff. Information provided via mobile phones can help to diagnose and treat illness and assist in the early detection and containment of epidemics. For many countries, mobile technology may be the only feasible way to reach out to the wider population, especially in rural areas.

M-health has demonstrated a positive impact on health care and has the potential to deliver health care more efficiently. To date, key applications for m-health in developing countries and accruing benefits include:

- Disease and epidemic outbreak tracking and dissemination of public health information to citizens (e.g. AESSIMS system in India);
- Remote data collection and remote monitoring to closely track and minimize treatment interruptions (e.g. Cell-PREVEN initiatives in Peru, Dokoza System in South Africa);
- Medication reminders (e.g. reminders for tuberculosis patients in Thailand) and applications for protection of patients from fake medicines (e.g. mPedigree application to check drugs in Ghana);
- Diagnostic and treatment support in rural and marginalized areas (e.g. M-DOK project in the Philippines, Mobile Telemedicine System). 

The adoption of mobile phones as a platform for health care delivery can be found even in least-developed countries such as Rwanda (see box 3.4).

### 3.2.5 Keeping up environmental management

#### The issue

The current financial and economic crisis could have an adverse impact on a number of environmental services. There is concern that the environmental agenda could be sidelined, countries could be distracted from addressing climate change and other environmental problems, and they could potentially make substantial cuts in their investments in new technology and environmental services.

Cuts in funds could hurt environmental services, but there are also some positive developments created by stimulus packages in response to the current economic crisis. For example, stimulus packages in developed countries such as Rwanda (see box 3.4).

#### Box 3.4 Mobile phones support life-saving HIV/AIDS electronic records system in Rwanda

*Rwanda sees mHealth as part of a larger eHealth vision*

—eHealth Coordinator for Rwanda’s Ministry of Health

A major component of Rwanda’s e-health programme is the country’s rapidly growing m-health portfolio, which is being used to deliver vital health services even in the most remote rural areas. TRACnet is an electronic records system that can be uploaded to mobile phones. It was created in Rwanda in 2005 for remote data collection by the TRAC Centre, part of the Ministry of Health. The system is used to manage critical information on HIV/AIDS patients, ensure drug adherence, monitor anti-retroviral treatment (ART) programmes nationwide, and access the most up-to-date information about HIV/AIDS care and treatment. TRACnet was designed for use with all types of technology and information systems, but today 90 percent of the system’s users access it on their mobile phones. Given the popularity of mobile phones, Rwanda’s Ministry of Health is piloting a Phones-for-Health programme and has registered interest in using mobile phones to report on maternal mortality and to track progress towards reaching the health-related MDGs.

Source: mHealth Alliance (2009)
crisis. ‘Green growth’ makes up an important portion of stimulus packages after infrastructure investments, education and research and development, including specific ‘green measures’ in the proposed or announced fiscal stimulus packages in China, Germany, Japan, the Republic of Korea and the United States. Substantial amounts of money are directed at green technology research areas. Some tropical countries have announced stimulus packages with programmes such as Indonesia’s tree-planting and forest rehabilitation programmes.

In most developing countries, the mobilization of funds and the proportion earmarked for green investment will be limited. Missing the opportunity to stimulate green investments in developing countries now, and to unlock low-carbon opportunities, even as their economies are in a downturn, could mean storing up problems for the future that are far larger than the current financial and economic crisis.

**Possible solutions**

Environmental protection needs to be an integral part of countries’ recovery from the crisis, and ICT can help countries to achieve their goals in more cost-effective ways. It is estimated that ICT-enabled improvements in non-ICT sectors could save about 15 percent of total carbon emissions by 2020. Significant ICT-enabled energy efficiency gains are expected to be achievable in the short term in buildings and construction, in transport, logistics and energy end-use. It is estimated that the wider use of applications such as online public services and applications, and advanced collaboration technologies could save at least 1 to 2 percent of total energy use by 2020 worldwide. For some, broadband is green technology. In fact, it is an enabler of efficiencies that could drive major reductions in carbon emissions.

E-government applications are already in position to bring substantial gains for environmental transactional services including, for example, cash-back incentives for green products, subsidies, tax rebates and environmental permit applications. These efficiency gains are particularly significant at a time of financial and economic crisis, when many stimulus packages include direct public spending and tax incentives to support green investments.

ICT-enabled environmental services also include provision of public environmental information and data, and enhance opportunities for monitoring and public awareness. In an example from the water sector, the Seoul Metropolitan Government in the Republic of Korea recently initiated an online real-time water quality assessment service to assess and monitor the quality of tap water. With the system, citizens can check online and in real-time the quality of water supplied to their houses from water purification plants. In an example from the forestry sector, geographic information systems (GIS) are considered powerful tools for tracking and monitoring deforestation (see box 3.5).

**Recent actions**

Only recently have countries recognized the potential of ICT-based innovations to contribute to environmental issues. Yet they are already being recognized for their contributions, as in the case of an e-catalog for procurement by government agencies in the United States, which has improved the tracking and monitoring of green purchases. The country’s General Services Administration has been using social media tools to ask citizens how to do better at procuring environmental goods and services.

E-government has a uniquely low-carbon delivery process for its services, and this is being recognized for its positive impact to environment. In the United Kingdom, a study of the Sunderland City Council demonstrated how e-government service delivery can serve the environmental objectives of government. The study examined the carbon footprint of five services provided by the local government, and found that a shift towards

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**Box 3.5 Spatially enabled e-government tools for forest management**

The Asian financial crisis provides ample evidence that illegal forest activities at both industrial and subsistence levels increase in terms of economic strife. Deforestation is an important climate change issue and a significant contributor of CO2.

E-government tools can support the environmental services offered by the initiative Reducing Emissions from Degradation and Deforestation (REDD) and related initiatives. REDD is a crucial strategy for dealing with climate change that requires slowing the growth of agriculture, forestry and cattle ranching to protect forests in places such as Brazil and Indonesia.

GIS can play an important role in assisting government agencies in tracking and monitoring. This system enables an effective use of geographic information, designed for the collection, storage and analysis of objects, where geographic location is critical to the analysis. It aids users in organizing the data about problems, understanding their spatial relationship associations, and analyzing and synthesizing information about them.

Source: ESRI (2009)
greater provision of these services via e-mail and the Internet would lead to a reduction in the Council’s carbon footprint.\textsuperscript{54}

Governments were already grappling with many environmental issues prior to the crisis. After the onset of the crisis, some existing e-government tools were being scaled up or new tools were created. The spatially enabled e-government tools such as GIS, mentioned earlier, are increasingly being used to track and monitor environmental changes. A case in point comes from the United Kingdom’s National Weather Service, which features an interactive map on the Met Office website that demonstrates the impact of global warming in decades to come.

Another trend in e-government is the use of applications that enhance public participation to improve environmental service delivery. Social media tools enable active social networking and consensus-building among environmental activists, who are one of the most vocal groups. Some governments actively encourage citizen participation in combating climate change, using innovative e-government tools. Examples include the Climate Atlas of the German Federal Environment Ministry on the new online portal, Es ist Dein Klima (It’s your climate).\textsuperscript{55} The Atlas shows who is committed to tackling climate change in individual municipalities. The objective is to motivate citizens and encourage participation in combating climate change.

### 3.3 Conclusions

Faced with pressure to do more with less, governments find themselves in the position of having to be more efficient and agile in delivering public services in order to meet national development objectives. The ‘e’ of e-government services brings several important advantages in the current financial and economic crisis, most notably improved efficiency. These benefits, however, need to be assessed against existing constraints and limitations. Potential and actual e-government applications vary across countries and groups. Issues of public service delivery arising from the current financial and economic crisis also vary across countries and group. This high degree of variation is reflected in the many different e-government approaches taken in employment, education, women’s empowerment, health care and the environment – five selected priority areas of the MDGs. For example, ICT tools have helped female jobseekers and entrepreneurs find opportunities for jobs and loans; m-health has delivered vital health services even in remote rural areas of developing countries, including services for HIV/AIDS; and ICT tools have enhanced environmental monitoring and raised awareness through effective provision of public environmental information.

Across these varied sectors there are common features and trends, due in part perhaps to the shared experience of the financial and economic crisis.

- A major part of the current e-government activity entails the provision and delivery of information service, a finding common to the five selected areas of the MDGs. ICT-enabled transactional services have been used to meet the drastically increasing demand for social welfare and other benefits, and they have gained in importance and usage.

- E-transaction services present an important issue in connection with stimulus funding, not only to enhance transparency (see chapter 1 of the United Nations E-Government Survey) but from the perspective of public service delivery. E-government tools can expand and enhance public service delivery capacity through, for example, efficient processing and distribution of stimulus grants.

- Another important trend involves e-participation, closely linked to public service delivery. Many countries, especially developed countries, show increasing use of new Web 2.0 and other social media tools to create a more interactive environment between governments and citizens. Several countries have invested substantial resources and effort into experimenting with these tools, finding innovative ways to use them for more effective delivery of public services.

- One of the most noteworthy developments is the rapid and ubiquitous emergence of mobile technology as a powerful tool for public service provision and delivery, especially in developing countries. Mobile service delivery is becoming pervasive in employment, education, women’s empowerment and the environment but nowhere it is advancing more quickly than in the health sector. It is at an
A country’s capacity to achieve the MDGs can be greatly enhanced with the right e-government applications.

Early and dynamic stage, and the scope of its application is rapidly expanding. The mobile platform is widely seen as the direction of the future and will continue to play an increasingly important role in public service delivery. Despite the current crisis, the mobile technology industry shows resilience.

Governments responded to the financial and economic crisis by developing new e-government tools, scaling up existing initiatives and by refocusing or stepping up their overall e-government efforts. Some governments benefit from pre-existing e-government systems and initiatives. E-government work, which has already carried out has proven invaluable in the current crisis, allowing some governments to accelerate their e-government programmes, with a view to realizing benefits such as enhanced efficiency, effectiveness and financial savings on the delivery of public services.

Looking ahead, constant progress in ICTs is driving rapid change, presenting both new challenges and new opportunities for public service delivery. Technological developments will continue to provide new possibilities for e-government to address both immediate problems such as those arising from the current financial and economic crisis and long-term challenges for public service delivery. At the present time, due to pressures on ICT budgets, many countries have cancelled or postponed their ICT projects. Ultimately, however, the crisis may act as a powerful catalyst for improvement in the delivery of public services by governments, which could prove advantageous in the long run.

Progress in ICT infrastructure will help advance e-government and service delivery in all areas including, in particular, those advancing the MDGs. It follows, for example, that the provision of interactive public services is high in countries with large broadband penetration. There are encouraging developments in this regard, especially in Africa, and despite the global financial and economic crisis. Rwanda, for example, continues to invest in ICT applications and e-government. In South Africa, the government has said that ICT sector would be used to deal with the current crisis. Plans to develop Internet connections in developing countries are making steady progress despite the global financial and economic crisis. The Eastern Africa Submarine Cable System has been successfully launched, which could drastically reduce the cost of Internet access in East Africa and landlocked central regions in the near future. The future progress of e-government depends on this kind of infrastructural progress.

E-government is practical today as well as being an investment in the future, yet an example from the past helps make the point. In the Asian financial crisis of the 1990s, the Republic of Korea continued and even enhanced its investment in ICT development and use of ICTs for public service delivery, experiencing particular success with its e-procurement system. This continuing investment contributed to the country’s economic recovery.