

THE ROLE OF GOVERNMENT IN A DIGITAL AGE

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About This Study

This study was commissioned by the Computer & Communications Industry Association (CCIA) as an independent analysis of the appropriate role for government in an information economy. The views and opinions expressed in this study are solely those of the authors and do not necessarily reflect the views and opinions of CCIA.

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Table of Contents

	<u>Page</u>
About This Study	1
Executive Summary	4
Introduction	6
Part I: Information Technology and Government Policy	11
I. The Impact of Information Technology on the Economy, Business, and Government	12
<i>Impact of information technology on the economy</i>	<i>12</i>
<i>Impact of information technology on business</i>	<i>16</i>
<i>Impact of information technology on government</i>	<i>25</i>
II. The Theory of the Government’s Role in a Digital Age	30
<i>Public provision versus public financing</i>	<i>36</i>
<i>The role of government in a “bricks and mortar” economy</i>	<i>38</i>
<i>The role of government in a digital economy</i>	<i>39</i>
III. Current Government Policy	47
Part II: Principles for Government Action	49
Principles for Government Provision of Goods and Services in a Digital Economy	50
Green Light Principles for Governmental Activity	53
<i>Principle 1: Providing public data and information is a proper governmental role</i>	<i>53</i>
<i>Principle 2: Improving the efficiency with which governmental services are provided is a proper governmental role</i>	<i>54</i>
<i>Principle 3: The support of basic research is a proper governmental role</i>	<i>56</i>
Yellow Light Principles for Governmental Activity	57
<i>Principle 4: The government should exercise caution in adding specialized value to public data and information</i>	<i>57</i>
<i>Principle 5: The government should only provide private goods, even if private-sector firms are not providing them, under limited circumstances</i>	<i>61</i>
<i>Principle 6: The government should only provide a service on-line if private provision with regulation or appropriate taxation would not be more efficient</i>	<i>62</i>

<i>Principle 7: The government should ensure that mechanisms exist to protect privacy, security, and consumer protection on-line</i>	64
<i>Principle 8: The government should promote network externalities only with great deliberation and care</i>	67
<i>Principle 9: The government should be allowed to maintain proprietary information or exercise rights under patents and/or copyrights only under special conditions (including national security)</i>	69
Red Light Principles for Governmental Activity	71
<i>Principle 10: The government should exercise <u>substantial</u> caution in entering markets in which private-sector firms are active</i>	71
<i>Principle 11: The government (including governmental corporations) should generally not aim to maximize net revenues or take actions that would reduce competition</i>	72
<i>Principle 12: The government should only be allowed to provide goods or services for which appropriate privacy and conflict-of-interest protections have been erected</i>	74
A Decision Tree for Policy-Makers	75
Part III: Case Studies	78
<i>Case Study: The Department of Labor's On-Line Job Market Information</i>	79
<i>Case Study: United States Postal Service eBillPay</i>	86
<i>Case Study: Lexis-Nexis</i>	98
<i>Case Study: On-Line Tax Preparation Software</i>	104
<i>Case Study: Fee-Based Search Engine from the National Technical Information Service</i>	112
Conclusions	118
Biographical Information	120
Appendix A: Circular A-76	121
Appendix B: Memorandum for the Heads of Executive Departments and Agencies on Electronic Government	130
Appendix C: Circular A-130	135

Executive Summary

- Existing rules for evaluating governmental activities need to be updated to reflect the ongoing shift toward a digital economy. Industrial developments at the beginning of the 20th century required major rethinking of the role of government, as evidenced by the creation of the Federal Reserve System, the Sherman and Clayton Anti-Trust Acts, and the Constitutional amendment allowing a Federal income tax. A substantial review is also warranted now.
- As President Clinton has emphasized, for the government, “knowing when to act and – at least as important – when not to act, will be crucial to the development of electronic commerce.” The purpose of this study is to examine when the government should act and when it should not act in a digital economy. In particular, our focus is what services the government should and should not be providing on-line.
- As the report discusses, the theoretical underpinnings behind private versus public production shift as the economy moves toward a digital one. On one hand, the public good nature of production in a digital economy, along with the presence of network externalities, may suggest a larger public role than in a bricks-and-mortar economy. On the other hand, an information-based economy may also improve the quality and reduce the cost of obtaining information, which by itself makes private markets work better than before. Furthermore, government failure may be even more pronounced in the context of rapidly moving information-laden markets than in traditional bricks-and-mortar markets.
- The lack of clear theoretical guidance regarding the separation between government and business in a digital economy makes decision-making rules all the more important. OMB Circular A-76 and other existing norms for government provision of goods and services need to be updated for the digital age. We therefore devise a set of twelve principles for government action in a digital economy (see box below), along with a decision tree for policy-makers (see page 75) to use when evaluating new government activities. The principles are divided into three categories: “green light” activities that raise few concerns; “yellow light” activities that raise increasing levels of concern; and “red light” activities that raise significant concern.
- The report applies these principles to five case studies, including the Department of Labor’s on-line job market information system, the United States Postal Service eBillPay program, private-sector dissemination of legal information, on-line tax preparation software, and a fee-based search engine from the National Technical Information Service. In some cases (e.g., the America’s Job Bank), the government seems to have struck the appropriate balance among conflicting pressures. In other cases (e.g., eBillPay), the government seems to have overstepped the boundaries that should apply to public provision of goods and services.

Principles for On-Line and Informational Government Activity

"Green Light" for On-Line and Informational Government Activity

Principle 1: Providing public data and information is a proper governmental role

Principle 2: Improving the efficiency with which governmental services are provided is a proper governmental role

Principle 3: The support of basic research is a proper governmental role

"Yellow Light" for On-Line and Informational Government Activity

Principle 4: The government should exercise caution in adding specialized value to public data and information

Principle 5: The government should only provide private goods, even if private-sector firms are not providing them, under limited circumstances

Principle 6: The government should only provide a service on-line if private provision with regulation or appropriate taxation would not be more efficient

Principle 7: The government should ensure that mechanisms exist to protect privacy, security, and consumer protection on-line

Principle 8: The government should promote network externalities only with great deliberation and care

Principle 9: The government should be allowed to maintain proprietary information or exercise rights under patents and/or copyrights only under special conditions (including national security)

"Red Light" for On-Line and Informational Government Activity

Principle 10: The government should exercise substantial caution in entering markets in which private-sector firms are active

Principle 11: The government (including government corporations) should generally not aim to maximize net revenues or take actions that would reduce competition

Principle 12: The government should only be allowed to provide goods or services for which appropriate privacy and conflict-of-interest protections have been erected

- The appropriate role of government in the economy is not a static concept: It must evolve as the economy and technology do. As economic activity shifts toward information-intensive goods and services, public policy is being presented with a series of challenges, from protecting privacy to the appropriate taxation of on-line sales and jurisdictional concerns.
- Policy-makers, analysts, and others may disagree with some of the principles and conclusions reached in this analysis. But it will have served its purpose if it helps to spur debate over these issues, regardless of whether all its conclusions are accepted.

THE ROLE OF GOVERNMENT IN A DIGITAL AGE

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Introduction

Innovations in information technology (IT) have spurred significant changes in the U.S. economy over the past two decades. Firms have invested heavily in computers and peripheral equipment, along with software, advanced telecommunications systems, and other information technology. These investments have facilitated significant improvements in inventory systems, reduced shipping costs, and allowed more effective responses to changes in consumer preferences – thus improving the efficiency of the production system. At the same time, the American public is increasingly turning to computers and the Internet for a variety of purposes, from receiving an education to investing in the stock market or buying a car.

These developments are potentially momentous for the economy and for our broader society. As Alan Greenspan recently stated, “When historians look back at the latter half of the 1990s a decade or two hence, I suspect that they will conclude we are now living through a pivotal period in American economic history.”¹ To be sure, technological improvements have been ongoing over an extended period of time. The invention of electricity and the internal combustion engine

¹ Alan Greenspan, “The revolution in information technology,” speech delivered to the Boston College Conference on the New Economy, March 6, 2000.

in the 1870s, for example, represented dramatic economic and social innovations.² But the changes engendered by advances in information technology also appear to represent a relatively rare historical development. Professor Paul David of Stanford University, for example, has compared the spread of the computer at the end of the 20th century to the spread of electricity at the end of the 19th century.³

The “pivotal period” that Alan Greenspan suspects we are currently experiencing has important implications not only for private-sector firms and American consumers, but also for the government. Just as the industrial developments at the end of the 19th century required major rethinking of the role of government – as evidenced by the creation of the Federal Reserve System (1913), the Sherman (1890) and Clayton (1914) Anti-Trust Acts, and the Constitutional amendment allowing a Federal income tax (1913) – a substantial review is warranted now.

Extant rules and norms for delineating what government should and should not do seem inadequate to the task, since they were not developed for the emerging electronic world. As Chairman Greenspan noted in a somewhat different context, today’s economy is “one that none of us has even seen before, and indeed it may be unprecedented in our history... The type of policy we have to devise has to reflect the nature of how the new economy is working. A

² Some analysts argue that the inventions at the end of the 19th century were much more significant than the current information technology innovations. See, for example, Robert J. Gordon, “Does the ‘New Economy’ Measure up to the Great Innovations of the Past?” *Journal of Economic Perspectives*, forthcoming. We do not find it necessary to compare the significance of current innovations to those of the past, which is the focus of Gordon’s analysis; the key point for our purposes is that innovations in information technology raise new public policy concerns.

³ See, for example, Paul David, “The Dynamo and the Computer: An Historical Perspective on the Modern Productivity Paradox,” *American Economic Review*, May 1990, pages 355-361, and “Computer and Dynamo: The Modern Productivity Paradox in a Not-Too-Distant Mirror,” Center for Economic Policy Research, Stanford University, Reprint Number 5, July 1995. Bob Davis and David Wessel of the *Wall Street Journal* extend the argument to include, for example, comparisons between the spread of high school education at the beginning of the 20th century and the spread of college education at the beginning of the 21st century. See Bob Davis and David Wessel, *Prosperity: The Coming 20-Year Boom and What It Means to You* (Random House: New York, 1998).

number of the old tools which we relied upon don't have relevance to this.”⁴ As the *Wall Street Journal* recently added, “The country hasn’t been in such a state since the early part of last century, when a set of decisions shaped the relationship between the industrialized economy and the government for decades to come.”⁵

The questions facing policy-makers in considering what the government should and should not produce in a digital age are particularly difficult, since the line between internal efficiency improvements and the provision of goods and services to the public often becomes blurred. For example, if travel services are re-engineered and enhanced for government employees, why not increase economies of scale, and thereby reduce costs further for the government, by offering the same services to general citizens? Similarly, if government network infrastructure expands, and bulk communications service purchasing enables low prices, why not utilize unused capacity and serve as an Internet Service Provider (ISP) to the public, or resell communications services to the public?

In short, the spread of the Internet and other information technologies raises important new questions about the appropriate role for government in producing goods and services, and in regulating private-sector activities. As President Clinton emphasized in 1997, “Governments can have a profound effect on the growth of electronic commerce. By their actions, they can facilitate electronic trade or inhibit it. Knowing when to act and -- at least as important -- when

⁴ Testimony before the Senate Banking Committee, as quoted in Richard Stevenson, "Pondering Greenspan's Next Move," *The New York Times*, Tuesday, March 21, 2000, page C1.

⁵ Bob Davis and Gerald Seib, "Policing a Wildfire: Technology Will Test a Washington Culture Born in Industrial Age," *Wall Street Journal*, May 1, 2000, page A1.

not to act, will be crucial to the development of electronic commerce.”⁶

The purpose of this study is to examine when the government should act and when it should not. In particular, our principal focus is what services the government should and should not be providing on-line. The study thus serves several purposes, including:

- Highlighting the need for re-thinking the role of government by policy-makers, the press, the business community, and academics;
- Providing policy-makers with a policy framework for evaluating whether new governmental activities would or would not be socially beneficial; and
- Using that framework to examine several recent case studies of existing or proposed public-sector activities.

The study is organized as follows: The first part provides important background to our exploration of the appropriate role for government in a digital economy. It examines the impact of information technology on the economy, business practices, and the government; the theory of the government’s role in the economy; and current government policy regarding commercial activities. The second part delineates 12 specific principles for governmental activities in a digital economy, including three “green light” principles regarding governmental activities that should elicit little concern, six “yellow light” principles regarding activities that should be undertaken only with significant caution, and three “red light” principles regarding activities that should generally not be undertaken by the government. The third part examines several case

⁶ Memorandum from President Clinton to the Heads of Executive Departments and Agencies, “Electronic Commerce,” July 1, 1997, available at <http://www.whitehouse.gov>.

studies against which these principles can be judged. A short final section offers conclusions and policy recommendations.

**PART I:
INFORMATION
TECHNOLOGY AND
GOVERNMENT POLICY**

I. The Impact of Information Technology on the Economy, Business, and Government

Information technology production and use are growing rapidly. By July 2000, for example, nearly 360 million people worldwide were connected to the Internet, up from 185 million people a year earlier.⁷ In 1990, information technology industries (including hardware, software, and communications) accounted for 5.8 percent of U.S. gross domestic income.⁸ By 1999, those industries accounted for an estimated 8.2 percent of gross domestic income. The purpose of this section is to explore how this rapid growth in information technology has affected the economy, businesses, and the government.

Impact of information technology on the economy

In the long run, productivity growth is the key to improving living standards. The most important contribution that investments in information technology can make to economic performance is thus to improve productivity.

Throughout the 1980s and 1990s, firms made substantial investments in information technology. In 1996, for example, telecommunications firms invested an average of \$29,236 in information technology *per worker*. Non-depository financial institutions invested an average of \$18,129, and radio and television firms invested an average of \$17,512.⁹

⁷ Nua Internet Surveys, available at http://www.nua.ie/surveys/how_many_online/world.html

⁸ U.S. Department of Commerce, *Statistical Abstract of the United States 1999*, Table 917, page 579.

⁹ Council of Economic Advisers, *Economic Report of the President 2000* (Government Printing Office: Washington, 2000), Table 3-2.

Until the mid-1990s, however, the dramatic investments that firms were making in IT did not appear to translate into improvements in productivity. Indeed, Robert Solow, a Nobel-prize-winning economist at the Massachusetts Institute of Technology, famously quipped that, “We see computers everywhere but in the productivity statistics.”¹⁰

By the latter half of the 1990s, on the other hand, the massive IT investments *did* appear to be making a substantial contribution to improved economic performance. Productivity growth increased from an average of 1.6 percent per year between 1991 and 1995 to 2.7 percent per year between 1996 and 1999. As Chairman Greenspan noted, “until the mid-1990s, the billions of dollars that businesses had poured into information technology seemed to leave little imprint on the overall economy...The full value of computing power could be realized only after ways had been devised to link computers into large-scale networks. As we all know, that day has arrived.”¹¹

One recent study concluded that investments in IT and efficiency improvements in the production of computers explain more than two-thirds of the increase in productivity growth between the early 1990s and the late 1990s.¹² In particular, productivity growth increased by 1.1 percentage points per year between 1991-1995 and 1996-1999 (from 1.6 percent per year to 2.7 percent per year). Of that 1.1 percentage point increase, 0.5 percentage points can be explained by investments in information technology and another 0.2 percentage points can be explained by

¹⁰ Robert M. Solow, “We’d Better Watch Out,” *New York Times Book Review*, July 12, 1987, page 36.

¹¹ Alan Greenspan, “The revolution in information technology,” speech delivered to the Boston College Conference on the New Economy, March 6, 2000.

¹² Stephen Oliner and Daniel Sichel, “The Resurgence of Growth in the Late 1990s: Is Information Technology the Story?” Federal Reserve Board of Governors, Finance and Economics Discussion Series, 2000-20, March 2000.

improved efficiency in computer and semi-conductor production. Thus, 0.7 percentage points of the 1.1 percentage point total increase was directly connected to information technologies.¹³

The disproportionate role played by information technology in bolstering aggregate productivity growth reflects, at least in part, phenomenal efficiency improvements within the sector itself. Between 1990 and 1997, for example, growth in output per worker in industries producing information technology goods and services averaged 10.4 percent, relative to 1.4 percent for the private non-farm economy as a whole.¹⁴ One recent study documents productivity growth of 42 percent per year between 1995 and 1999 in the production of computers.¹⁵

The new information technologies may have induced not only higher productivity growth, but also more *stable* growth. For example, one of the key uses of information technologies has been in the area of logistics systems. A more efficient transportation system reduces the time required in sourcing, producing, and distributing goods, as well as the error rates in the supply chain.¹⁶ It also reduces the inventories that firms must hold. The reduction in inventory holdings relative to sales over the past thirty years has been dramatic. The average lead-time for ordering materials and supplies in advance of production has declined from 72 days between January 1961 and

¹³ Stephen Oliner and Daniel Sichel, "The Resurgence of Growth in the Late 1990s: Is Information Technology the Story?" op. cit., Table 5.

¹⁴ U.S. Department of Commerce, *The Emerging Digital Economy: II*, Table 3.2, available at <http://www.ecommerce.gov>.

¹⁵ Robert Gordon, "Has the 'New Economy' Rendered the Productivity Slowdown Obsolete?" Northwestern University, June 14, 1999. It is worth noting, however, that Professor Gordon's paper suggests that there has been no cyclically-adjusted productivity growth increase in non-durable sectors that *use*, as opposed to produce, computers. Indeed, Gordon is skeptical of the "new economy" hypothesis precisely for this reason. As he argues, "Outside of durable manufacturing, the New Economy has been remarkably unfruitful as a creator of productivity growth." Gordon, "Does the 'New Economy' Measure up to the Great Inventions of the Past?" op. cit., page 46.

¹⁶ U.S. Department of Transportation, *U.S. Freight: Economy in Motion 1998*, page 4.

December 1983 to less than 50 in 1997.¹⁷ Total manufacturing and trade inventories have fallen from roughly 1.6 times monthly sales in the 1960s and 1970s to 1.3 times currently.¹⁸

These lower inventories have a variety of economic benefits, including:

- Reduced inventory carrying costs. The reduction in the inventory-sales ratio over the past three decades implies a substantial decline in the inventories firms must hold to meet current sales. Given recent levels of total manufacturing and trade sales, for example, inventories are roughly \$260 billion lower than they would have been without the improved inventory management.¹⁹ The associated reduction in carrying costs allows more capital to flow into productive equipment and machinery.
- Reduced business cycle fluctuations. Historically, fluctuations in inventory investment have contributed significantly to business cycle fluctuations. One study concludes that more efficient inventory investment has played a critical role in reducing the variability of output growth over the past 15 years.²⁰ Alan Greenspan has added that "the dramatic changes in information technology that have enabled businesses to embrace the

¹⁷ National Association of Purchasing Managers, series on average lead time for ordering production materials.

¹⁸ Council of Economic Advisers, *Economic Report of the President 2000* (Government Printing Office: Washington, 2000), Table B-55.

¹⁹ In March 2000, for example, total manufacturing and trade inventories were \$1,166 billion. If the inventory-sales ratio were 1.6 (roughly its level at the end of the 1960s), total inventories would instead have been \$1,426 billion, or roughly \$260 billion higher than their current level.

²⁰ Margaret M. McConnell, Patricia C. Mosser, and Gabriel Perez Quiros, "A Decomposition of the Increased Stability of GDP Growth," Federal Reserve Bank of New York, *Current Issues in Economics and Finance*, September 1999.

techniques of just-in-time inventory management appear to have reduced that part of the business cycle that is attributable to inventory fluctuations...."²¹

In addition, investments in information technology may produce benefits that are not measured in the traditional statistics on productivity or GDP. For example, if new information technologies make it more convenient to purchase a book (e.g., by facilitating access to an impressive array of book titles on-line at any hour of the day), the added convenience to consumers of purchasing any given book is not directly captured in the productivity statistics. As Professor Alan Blinder of Princeton University recently wrote, "Retailing over the Internet may offer many benefits to consumers, such as easier comparison shopping, removal of travel costs, and 24-hour availability. But such gains will never be counted in GDP, and so will never appear in the productivity statistics."²²

Impact of information technology on business

The aggregate economic benefits of information technology – reflected in higher productivity growth and a reduction in the degree of economic fluctuation – arise from the improvements that such technology facilitates in the production of goods and services in sectors ranging from the media to banking, and from passenger travel to automobile manufacturing. This section briefly explores some of the ways in which information technology is changing the way businesses interact with consumers and the way businesses interact with other businesses.

²¹ Alan Greenspan, "New Challenges for Monetary Policy," Speech, Jackson Hole, Wyoming, August 27, 1999.

²² Alan Blinder, "The Internet and the New Economy," Brookings Institution Policy Brief #60, June 2000, page 5.

Business-to-consumer e-commerce

E-commerce is fundamentally changing the relationship between businesses and consumers, by increasing convenience and choice while saving time and money. Private-sector forecasts suggest that e-commerce will continue to grow rapidly; Internet retailing – which was estimated to be \$5.5 billion in the second quarter of 2000 – may rise to as high as \$80 billion by 2002.²³

Four industries that are being dramatically altered by the e-commerce boom are:

- The Book Industry. One prominent example of a retail “e-business” is Amazon.com, which became the first Internet retailer in the on-line book selling market. The emergence of Amazon forced its “bricks and mortar” competitors (e.g., Barnes and Noble) to reconsider their own e-commerce strategies. As a virtual retailer, Amazon has no physical store infrastructure. According to the Department of Commerce, rent and depreciation represent less than 4 percent of Amazon’s sales, compared to 13 percent, on average, for traditional retailers.²⁴ Amazon also has lower labor costs and less capital tied up in inventory: book turnover averages 20-40 times per year relative to two to two-and-a-half times per year, on average, for traditional retailers.²⁵ As a result, Amazon is able to reduce the sales price of books. Indeed, a study by Professors Erik Brynjolfsson and Michael Smith of MIT found that prices for books and CDs on-line are 9 to 16 percent less expensive than in conventional outlets.²⁶ Lower prices, furthermore, have

²³ Forrester Research, Inc. “Post-Web Retail--Market Overview,” September 1999, and Department of Commerce, Bureau of the Census, “Retail E-commerce Sales in Second Quarter 2000 Increased 5.3 Percent from First Quarter 2000, Census Bureau Reports,” August 31, 2000.

²⁴ U.S. Department of Commerce, *The Emerging Digital Economy*, Appendix 5, page 9, available at <http://www.ecommerce.gov>.

²⁵ Ibid.

²⁶ Erik Brynjolfsson and Michael Smith, “A Comparison of Internet and Conventional Retailers” *Management Science*, April 2000. However, another study found that 107 titles sold by 13 on-line and two physical bookstores had essentially the same cost. See Karen Clay, Ramayya Krishnan, Eric Wolff, and Danny Fernandes, “Retail

spurred a substantial increase in volume. In 1999, Amazon's revenue totalled \$1.6 billion, up 168 percent from 1998.²⁷ With 20 million customers in 160 countries, Amazon has clearly changed the dynamics of the book-selling industry.²⁸

- Travel Planning Industry. From driving directions to hotel prices, the Internet has changed the way people obtain travel information. The largest on-line travel business is the sale of airline tickets. In 1996, consumers bought \$276 million worth of airline tickets on-line. In 1999, on-line travel sales reached an estimated \$9.4 billion – or 12.3 percent of the amount spent in the U.S. on air travel.²⁹ Forrester Research predicts that on-line travel purchases will quadruple, to \$40.7 billion, by 2003.³⁰ As in the book-selling example, on-line ticket processing offers cost savings. For example, according to the Air Transport Association of America, it costs an average of \$6 to \$8 to process an airline ticket booked by a travel agent, relative to just \$1 for a customer-booked “electronic ticket.” Airlines are also using the Web to implement more sophisticated pricing strategies. For instance, “e-fares” allow airlines to sell tickets to leisure travelers on flights that have a large number of open seats – thereby price discriminating among different types of customers to fill available capacity. As the Department of Commerce noted: “Every Monday or Tuesday, American Airlines looks at its yield management results and picks out low-performing markets. Midweek, more than one million

Strategies on the Web: Price and Non-price Competition in the On-line Book Industry,” Working Paper, December 1, 1999, available at <http://dnet.heinz.cmu.edu/dcsrg/books/papers/paper1.pdf>.

²⁷ Standard & Poor, Amazon.com Stock Report, April 22, 2000. Available at: <https://trading.etrade.com/cgi-bin/gx.cgi/applogic+ResearchStock>.

²⁸ See About Amazon.com at <http://www.amazon.com>

²⁹ E. Scott Reckard, “Threatened by the Web, Travel Agents Adopt New Tactics,” *Los Angeles Times*, April 30, 2000.

³⁰ E. Scott Reckard, “Threatened by the Web, Travel Agents Adopt New Tactics,” op. cit. Jupiter Communications forecasts somewhat lower growth in on-line travel sales: they predict on-line travel purchases to reach \$28.2 billion in 2005.

'NetSAAver' subscribers receive an e-mail from American Airlines listing special discounted fares for travel in selected markets during the upcoming weekend. The NetSAAver program has generated tens of millions of incremental dollars for the airline since its launch in March 1996."³¹ As a result of cost savings and revenue enhancements from the Internet, Merrill Lynch estimates that Delta Airlines will benefit by as much as \$500 million from e-commerce over the next five years.³²

- The Expedited Freight Industry. One beneficiary of the growth in e-commerce has been the expedited freight industry. Indeed, *Forbes* recently stated that UPS was the "missing link in the burgeoning world of e-commerce."³³ *Business Week* similarly described, "UPS delivery folks as the foot soldiers of the dot.com revolution."³⁴ Transportation Secretary Rodney Slater has recognized the crucial role of express services in a digital world, arguing that "the time-definite, point-to-point delivery needs of e-commerce require an even more flexible and resilient transportation network...You can order 'Steaks from Omaha' on-line, but you can't download them to your plate. E-commerce delivery still requires transportation to move products from the warehouse to your house."³⁵ Reflecting the core role of express services in the rapid growth of e-commerce, the number of packages per day shipped by on-line vendors is expected to rise from 650,000 in 1999 to 4,200,000 in 2003 – an annual growth rate of 59.4 percent.³⁶

³¹ U.S. Department of Commerce, *The Emerging Digital Economy*, page 29, available at <http://www.ecommerce.gov>.

³² Merrill Lynch, *e-Commerce: Virtually Here*, April 1999, page 43.

³³ *Forbes*, "Logistics in Brown," January 10, 2000.

³⁴ *Business Week*, "Out of the Box at UPS," January 10, 2000.

³⁵ Remarks of Secretary of Transportation Rodney Slater to the Executive Forum on "Delivering E-Commerce," Atlanta, Georgia, February 11, 2000.

³⁶ Forrester Research, Inc., available at <http://www.forrester.com>

- The Media Industry. The Internet has made it possible for consumers to receive news from around the world. Today, there are approximately 4,500 newspapers available on-line, with approximately 65 percent based in the United States.³⁷ There are hundreds, and perhaps thousands, of television stations with Web sites. One recent survey found that nearly 90 percent of Web users go on-line to get news and information.³⁸ As a result of this “new media,” the old media – such as broadcast television stations and traditional newspapers and magazines – have changed their business models. For example, America On-Line (a new media firm) recently proposed purchasing Time-Warner (an old media conglomerate). One of Time-Warner’s motivations for agreeing to the acquisition was the need to adapt to the new economy. Time-Warner understood that the Internet allows consumers the ability to get highly specialized information (e.g., *Agricultural and Resource Economics Review*) and more general media (e.g., the *New York Times* and the *Washington Post*). Furthermore, the World Wide Web also allows consumers to receive more information than is often available in the print version. For example, *Business Week* provides access to archives of its magazine and special reports not available in the print version. And unlike print versions, digitally stored material can be used repeatedly since there is little or no extra cost for the marginal viewer.

Business-to-business e-commerce

While e-commerce is changing the business-to-consumer relationship, it is also profoundly changing the business-to-business relationship. A recent forecast by Forrester Research found that “more than 90% of firms described plans to buy and sell on the Internet.”

³⁷ See <http://emedia1.mediainfo.com/emedia/> for list of newspapers available on-line, along with their locations.

³⁸ U.S. Department of Commerce, *The Emerging Digital Economy*, op. cit., page 24.

In February 2000, Forrester predicted that U.S. business-to-business e-commerce would reach \$2.7 trillion in 2004.³⁹ Estimates of business-to-business e-commerce growth, however, are highly uncertain, and other studies forecast even faster growth. For example, Boston Consulting Group has forecasted that business-to-business e-commerce would be \$4.8 trillion in 2004, while the Gartner Group has predicted growth to \$7.3 trillion and Bank of America has predicted it would reach \$13 trillion in that year.⁴⁰

This growth in business-to-business e-commerce will increase the efficiency of American businesses. As the Second Annual Report of the President's Electronic Commerce Working Group report stated, "electronic commerce means reduced inventory loads, lower cycle times, more efficient and effective customer service, lower sales and marketing costs, and new sales opportunities." In addition, one recent study found that U.S. companies using Internet technologies to improve core business processes will save over \$600 billion on an annual basis by 2002.⁴¹ And American Express claims that its purchasing card, when combined with an on-line purchasing system, can streamline processes and create savings of up to 95 percent.⁴²

Three examples of how business-to-business e-commerce is fundamentally changing the business practices include:

³⁹ Forrester Research, Inc., "eMarketplaces Will Lead US Business eCommerce To \$2.7 Trillion In 2004, According to Forrester," February 7, 2000, available at <http://www.forrester.com>.

⁴⁰ Boston Consulting Group, available at http://www.bcg.com/media_center/media_press_release_subpage22.asp, September 11, 2000; Gartner Group, January 26, 2000; and *Fortune*, May 15, 2000.

⁴¹ "Global Annual Cost Savings From Electronic Commerce Will Reach \$1.25 Trillion by 2002," August 5, 1999, available at <http://www.gigaweb.com>.

⁴² Available at http://home3.americanexpress.com/corporateservices/purchasing_center/leverage_ecommerce.html.

- The Automobile Industry. Last year, both Ford and GM announced plans to develop an automotive e-business supply chain to streamline purchasing transactions with more than 30,000 suppliers. Ford stated that this new electronic marketplace will “dramatically reduce” purchasing costs and make its production process more efficient through an integrated supply chain system.⁴³ Similarly, GM stated that its effort would create “the world’s largest ‘virtual marketplace’ for a wide array of products, raw materials, parts, and services.”⁴⁴ In February 2000, Ford, GM, and DaimlerChrysler announced that they were combining their efforts to form a single on-line business-to-business supplier exchange. As Jacques Nasser, the President and CEO of Ford, stated, this on-line business-to-business exchange “is another example of how the Internet is transforming every piece of our company and our industry.”⁴⁵ The on-line exchange will ultimately handle \$250 billion in direct purchases by these automobile manufacturers, which should reduce inventory costs and raise productivity. While it would initially bring together suppliers, partners, and dealers with manufacturers, Ford, GM, and DaimlerChrysler hope to expand the on-line exchange to encompass other industries.
- The Steel Industry. The steel industry is perhaps the paragon of the “old economy.” But, recently, the steel industry has begun to utilize on-line business-to-business exchanges, such as MetalSite and e-steel.com. Today, approximately \$500 million of steel is sold on MetalSite each year. However, only a small proportion of steel producers currently take

⁴³ “Ford and Oracle To Create Multi-Billion-Dollar Business-to-Business Internet Venture,” Ford Motor Company Press Release, November 2, 1999, available at <http://www.ford.com>.

⁴⁴ “General Motors Joins Forces With Commerce One to Move into Business-to-Business E-Commerce with Innovative Internet Purchasing Enterprise,” General Motors Press Release, November 2, 1999, available at <http://www.gm.com>.

⁴⁵ “Ford, GM, and DaimlerChrysler Create World’s Largest Internet-Based Virtual Marketplace,” Ford Motor Company Press Release, February 25, 2000, available at <http://www.ford.com>.

advantage of the Internet. A recent Andersen Consulting survey found that while 91 percent of steel companies knew about the Internet-based business-to-business portals, less than one-quarter were using them.⁴⁶ As a result, there is significant room for growth. One estimate suggests that steel e-commerce transactions could reach \$44 billion in 2004 and \$200 billion by 2010. Morgan Stanley Dean Witter predicts that on-line transactions will involve 5 to 6 million tons of steel this year and double that in 2001.⁴⁷ As Richard Riederer, the President and Chief Executive Officer of Weirton Steel, said, “Metal Site is revolutionizing the way metal is bought and sold, making the process more efficient and effective. This is just the beginning of a truly independent global marketplace.”⁴⁸

- The Data Networking Industry. Cisco Systems dominates the data networking industry that provides the basic underpinnings of the Internet, including items such as switches, routers, and network hubs. Cisco controls nearly half of the \$36 billion data-networking industry.⁴⁹ With traffic on the Internet doubling every 100 days, Cisco has grown rapidly. In 1999, for example, Cisco’s revenues increased from \$8.5 billion to \$12.2 billion, a 44-percent increase. Cisco uses the Internet to improve its own internal operations: 90 percent of its internal communications are done on Internet-based systems;⁵⁰ nearly 80 percent of its orders are completed on-line;⁵¹ and the vast majority (80 percent) of its customer-service issues are handled over the Internet, which saves

⁴⁶ Nikki Tait, “Steel sector slow to embrace e-commerce,” *Financial Times*, March 27, 2000.

⁴⁷ Scott Robertson, “Analysts size up impact of e-commerce on steel,” *American Metal Market*, March 30, 2000.

⁴⁸ Steve Boni, “Steel Producer Cashes in On E-commerce Web Site,” *Newsbytes*, December 30, 1999.

⁴⁹ Jason Krause, “The Evangelist: John Chambers, the Most Important Infrastructure Builder,” *The Industry Standard*, May 1, 2000, page 250.

⁵⁰ *Ibid.*

⁵¹ *Towards Digital eQuality*, U.S. Government Working Group on Electronic Commerce, 2nd Annual Report (1999), available at <http://www.ecommerce.gov>.

Cisco an estimated \$125 million per year.⁵² Cisco uses the Internet to recruit and screen job candidates, saving them millions of dollars in human resource costs. The company will also have the ability within a year to be the first company capable of “virtually” closing its books on any given day. Finally, Cisco Systems uses the Internet to streamline its production process; about half of its on-line orders are directed to the outside company that actually makes the product and ships it to the customer. As *Business Week* wrote: “For these orders, no Cisco employee ever touches a piece of paper until a check arrives in the mail to pay for the goods. Soon, with e-payment, even the check could be a thing of the past.”⁵³ Cisco estimates that using the Internet to conduct its business operations (from technical support to marketing materials) has saved \$363 million per year – or approximately 17.5 percent of total operating costs.⁵⁴

- The Aircraft Maintenance Industry. In November 1996, Boeing launched its Part Analysis and Requirements Tracking (PARTS) business-to-business web site, which provides its customers with a one-stop shop for on-line ordering and maintenance information. The PARTS web site provides airlines and maintenance firms with a direct link to half a million different types of spare parts stored in seven distribution centers worldwide. With 11,000 Boeing and McDonnell Douglas jetliners in service around the world today, the volume of transactions on PARTS has grown 100 percent *each year*

⁵² U.S. Department of Commerce, *The Emerging Digital Economy*, Appendix 3, page 13, and *Towards Digital eQuality*, U.S. Government Working Group on Electronic Commerce, 2nd Annual Report (1999), both of which are available at <http://www.ecommerce.gov>.

⁵³ Andy Reinhardt, “The Man Who Hones Cisco’s Cutting Edge,” *Business Week*, September 13, 1999.

⁵⁴ U.S. Department of Commerce, *The Emerging Digital Economy*, Appendix 3, page 13, available at <http://www.ecommerce.gov>.

since 1996.⁵⁵ As a result, nearly 85 percent of all spare parts ordered from Boeing are now ordered electronically. The web site processes about 18,000 transactions on an average day (this includes orders as well as inquiries about shipping status, inventory levels, and pricing).⁵⁶ While the primary intent of PARTS was to improve customer service, it is also helping to reduce operating costs and administrative errors as more and more customers communicate using the Internet. For example, in 1997, Boeing processed 20 percent more shipments per month than it did in 1996 with the same number of data-entry workers.⁵⁷ Boeing has also used the Internet to provide airline mechanics with technical drawings and support. According to one estimate, providing technical drawings electronically will save a mid-sized airline approximately \$5 million per year.⁵⁸

Impact of information technology on government

Just as information technology has transformed the economy and businesses, it is altering how government operates and how it provides services to the public. The Internet allows the government to disseminate a wealth of information about its goods and services directly to the public – from the most recent economics statistic release at the Bureau of the Census to the President’s speeches on the White House web page.

Six examples of how the government is working to use information technology include:

⁵⁵ “Boeing Spare Parts Web Site: E-Commerce Success Story,” November 23, 1999. Available at: http://www.boeing.com/news/releases/1999/news_releases_991123a.html.

⁵⁶ Ibid.

⁵⁷ U.S. Department of Commerce, *The Emerging Digital Economy*, op. cit., Appendix 3, page 17.

⁵⁸ Ibid, page 20.

- The Internal Revenue Service. Taxpayers can download and retrieve tax publications and forms on the IRS web site. Between the beginning of this year and April 17 (tax filing day), the IRS web site recorded 968 million hits, which made it one of the most frequently visited sites on the World Wide Web.⁵⁹
- National Weather Service. When Hurricane Floyd was approaching the East Coast of the United States, people visited the National Hurricane Center web site to track the weather on-line. In a two-day period, the web site received 27 million hits for information on Hurricane Floyd.⁶⁰
- Student Financial Aid. The Department of Education has made it possible for students to apply for an estimated \$51.4 billion in federal grants, loans, and work-study opportunities on-line. During the 1998-1999 lending cycle, the Department of Education processed 672,728 loan applications electronically.⁶¹ Electronic filing is not only faster, but also less error-prone. An estimated 12 to 14 percent of paper applications are returned for errors; by filing electronically, students can avoid delays because the software immediately identifies errors and allows for on-the-spot corrections.⁶²

⁵⁹ Internal Revenue Service, "Electronic Transactions Set Records in Successful IRS Tax Season," April 26, 2000.

⁶⁰ Remarks by Secretary of Commerce William M. Daley, Northern Virginia Technology Council, September 17, 1999, available at: <http://www.doc.gov>.

⁶¹ *Towards Digital eQuality*, U.S. Government Working Group on Electronic Commerce, 2nd Annual Report (1999), available at <http://www.ecommerce.gov>.

⁶² Department of Education, "Applying For Student Financial Aid Quick," February 10, 2000, available at: <http://www.ed.gov/PressReleases/02-2000/easy.html>.

- Patent and Trademark Office. The Patent and Trademark Office has put on-line two million patents dating back to 1976, and one million trademarks dating back to 1870. By the end of 2001, every patent ever issued by the United States will be available on-line, and by the following year, more than 14 million Japanese and European patents will be also.⁶³ The databases are searchable, so visitors can find the patent or trademark information they need on the Internet. In addition, the Patent and Trademark Office allows people to file for trademarks on-line and is piloting a system to allow patents to be filed electronically. Finally, like many private-sector entities, the Patent and Trademark Office is using the Web to recruit employees: so far, they have hired at least 700 patent examiners from on-line applications.⁶⁴
- Environmental Information. The Environmental Protection Agency's (EPA) award-winning web site – EnviroMapper – allows consumers to access environmental information for their local neighborhood. The database includes information on drinking water, toxic and air releases, hazardous waste, water discharge permits, and Superfund sites. It also links to text reports, which provide more information.⁶⁵ The EPA spends approximately \$400 million per year to collect these data. Posting them on the Web saves EPA an estimated \$5 million per year in reduced labor and other costs.⁶⁶
- The Department of Commerce. Last summer, then-Secretary Daley committed to moving the Department of Commerce from a “paper-based bureaucracy to a truly Digital

⁶³ Remarks of Secretary of Commerce William M. Daley, E-GOV 99 Conference, July 1, 1999, available at: <http://www.doc.gov>.

⁶⁴ Ibid.

⁶⁵ Available at <http://www.epa.gov/enviro/html/em/index.html>.

⁶⁶ “Maps: Web Sites Provide Enviro Information For Public,” *Greenwire*, December 7, 1999.

Department” by the year 2002.⁶⁷ The plan entailed ensuring that personnel actions, procurement, and as much internal business as feasible would be conducted on a secure Intranet. These actions should help to increase productivity of government workers and save taxpayers money. (It should nonetheless be noted that the promised benefits of a “paperless” office have often been elusive. The World Bank’s effort to move toward a paperless system, for example, has created significant difficulties.)

In addition to the above examples, President Clinton has directed Federal agencies to take additional steps to utilize the Internet to provide government goods and services. (See Appendix B: Memorandum for Heads of Executive Departments and Agencies on Electronic Government.)

Examples of the steps the President directed agencies to take include:

- Create One-Stop Access for Existing Government Information. The President directed the Administrator of the General Services Administration, in conjunction with other government entities, to create a portal for government information, based “not by agency, but by the type of service or information that people may be seeking; the data should be identified and organized in a way that makes it easier for the public to find the information it seeks.” (In June 2000, President Clinton announced that firstgov.gov, a free web site that will provide a single point of entry to all government on-line resources, would be created. In September 2000, the site became operational.)

⁶⁷ Remarks of Secretary of Commerce William M. Daley, E-GOV 99 Conference, July 1, 1999, available at: <http://www.doc.gov>.

- Put Most-Used Government Forms On-Line. The President directed each government agency to put their most-used government forms on-line by December 2000.
- Agencies Should Use Electronic Commerce for Government Procurement. The President directed government agencies to use electronic commerce, where possible, for government procurement. The hope is that electronic procurement will make government ordering faster and cheaper, as it has for the private sector.
- Act as Leader to Protect On-Line Privacy of Citizens. The President directed agencies to post privacy policies visibly for customers to see. In addition, he directed that each government web site aimed at children should adopt and implement the required information policies to protect the children's information on-line.

II. The Theory of the Government's Role in a Digital Age

To evaluate what activities the government should or should not be undertaking on-line, it is important to examine the role of government in the economy. The government plays an important but secondary role in the U.S. economy. It is directly involved in economic activities ranging from the conduct of monetary and fiscal policy to public education, bank deposit insurance, housing subsidies, Medicare, electricity generation, and regulatory oversight of a number of industries. The government owns roughly 25 percent of the land in the United States.⁶⁸ Federal government outlays on goods, services, and transfer payments currently amount to 18.7 percent of Gross Domestic Product, down from the recent peak of 23.5 percent in 1983 but still a significant share of the overall economy.⁶⁹ The government also provides the overall legal structure in which private-sector economic activity takes place.

The United States thus has a “mixed economy,” in which the government plays an important – but not the predominant – role. The purpose of this section is to explore the economic theory that could help to inform decisions about what the government should or should not do, or about the appropriate “mix” between government and the private sector.

Views regarding the role of government have fluctuated over time and across countries.⁷⁰ In the 16th, 17th, and 18th centuries, for example, many economics writers supported an active role for

⁶⁸ U.S. Department of Commerce, *Statistical Abstract of the United States 1999*, Table 394, page 240.

⁶⁹ Office of Management and Budget, *Budget of the United States Government: Fiscal Year 2001* (Government Printing Office: Washington, 2000), Historical Tables, Table 1.2.

⁷⁰ For a discussion of how these views have evolved in different countries throughout the 20th century, see Daniel Yergin and Joseph Stanislaw, *The Commanding Heights: The Battle Between Government and the Marketplace That is Remaking the Modern World* (Simon & Schuster: New York, 1998).

government, arguing that the government should promote trade and exports. One of the best-known of these mercantilists was Thomas Mun of England, whose *England's Treasure by Foreign Trade* was published posthumously in 1664.⁷¹ Another famous mercantilist was Jean Baptiste Colbert, the finance minister for King Louis XIV of France.

Partly in response to the prevalence of mercantilist ideas, Adam Smith published his seminal work, *The Wealth of Nations*, in 1776. Smith advocated a limited role for government, arguing that competition and the profit motive would best promote public well-being. In perhaps one of the book's most famous passages, Smith writes, "He intends only his own gain, and he is in this as in many other cases, led by an invisible hand to promote an end which was no part of his intention. Nor is it always the worse for society that it was no part of it. By pursuing his own interest he frequently promotes that of the society more effectually than when he really intends to promote it." Subsequent scholars elaborated on this laissez-faire doctrine, in which the private sector plays the predominant role in the economy.⁷²

In the laissez-faire framework that traces its origins to Adam Smith, the government's role in the economy should be limited to correcting the imperfections that may arise out of private production. Since Smith's work, economists have elaborated upon the justifications for governmental action. In particular, there are eight potential rationales for government activity:⁷³

⁷¹ John Kenneth Gailbraith, *Economics in Perspective* (Houghton Mifflin: Boston, 1987), pages 37-45.

⁷² An active role for the government reemerged following the Great Depression and World War II. Maurice Allais, a French economist who later won the Nobel prize in economics, even suggested in 1947 that some firms in each industry should be publicly owned. See Maurice Allais, "Le Probleme de la Planification Economique dans une Economie Collectiviste," *Kyklos*, 1974, II, pages 48-71.

⁷³ For further discussion of these rationales for government activity, see Joseph E. Stiglitz, *Economics of the Public Sector* (W.W. Norton: New York, 1988), pages 71-83.

1. Failure of competition. In the absence of effective competition, the potential gains from private production may not be realized. Those potential gains include lower prices and higher productivity. As the President’s Council of Economic Advisers recently argued, “Industries in which companies compete vigorously tend to be more productive. Conventional economic logic argues that companies operate efficiently and innovate whenever there is the chance of a profit payoff. In practice, however, companies can become complacent and keep doing things the old way even when new, more profitable methods are available. The pressures of competition encourage change and force companies to adopt the more productive methods.”⁷⁴ In the absence of effective competition, these benefits are lost. The government therefore has a role to play in ensuring effective competition in private markets.
2. Public goods. Public goods have two critical properties: First, no additional costs are involved in providing the good to an additional person (formally, the good has zero marginal costs and is referred to as being “nonrivalrous”). Second, it is impossible to exclude individuals from benefiting from the good (formally, the good is “nonexcludable”). A classic example of a public good is national defense: Defending 270 million people does not necessarily cost more than defending 260 million people, and it is generally not possible to exclude anyone from the benefit of national defense. In general, private markets will not supply public goods – or not supply them in sufficient quantities – and therefore the government has a role to play in providing them.

⁷⁴ Council of Economic Advisers, *Economic Report of the President 2000*, op. cit., page 30.

3. Externalities. An externality arises when the actions of one firm or individual affect the well-being of another, but in which the first entity does not compensate (or receive compensation from) the second entity. For example, a negative externality arises when one individual imposes additional costs on another individual, without having to pay the second individual for those additional costs. The classic example of a negative externality is pollution. An example of a positive externality is technology. In general, the government has a role to play in correcting negative externalities or promoting positive externalities. Without government involvement, private markets will typically under-produce goods with positive externalities and over-produce goods with negative externalities.⁷⁵

4. Incomplete markets. A fourth possible justification for government activity is incomplete markets. For example, imperfections in capital and insurance markets – such as the absence of insurance coverage for certain types of risks – may warrant government involvement. A classic example of an imperfect capital market is the inability to borrow against higher future earnings, which justifies a government role in providing loans or loan guarantees for post-secondary education expenses. In addition, certain types of goods or services may require large-scale coordination, which may be possible but difficult to achieve without governmental assistance.

5. Information failures. Government activity may be justified by imperfect information in private markets. For example, the Truth-in-Lending legislation requires lenders to

⁷⁵ The Coase theorem shows that under very restrictive conditions, the externality can be corrected by voluntary private actions even if the role of government is limited to enforcing property rights.

provide clear information about the true rate of interest on loans, and the Wheeler-Lea Act of 1938 made “deceptive” trade practices illegal. As discussed in greater detail below, information is in some ways a public good – and therefore this rationale for government is similar to the second rationale.

6. Macroeconomic fluctuations. The government has a role to play in correcting macroeconomic imbalances, such as those that lead to periodic problems with high unemployment, inflation, or recession.⁷⁶

7. Redistribution. Even if private markets produce goods and services efficiently, society may not like the distribution of income that results. The government may therefore have a role in redistributing income – for example, through a progressive tax system – to produce a more equal distribution of income.

8. Merit goods. Finally, there may be cases in which individuals would make “bad” decisions if left to their own devices, and in which government paternalism is therefore warranted. For example, the government compels individuals to attend school or wear seat belts largely because it is concerned that people will not do “what’s best” in the absence of such mandates. The government may sometimes be justified in compelling individuals to consume “merit goods” (such as elementary education).

⁷⁶ Some economists view the macroeconomic justification for government action as a result of interactions among the other market failures listed.

It is important to emphasize that these factors offer only the *potential* for social gain from governmental activity. They do not automatically justify a governmental role, nor do they define precisely how the government should intervene. In particular, in addition to the potential shortcomings in private markets delineated above, the government itself may suffer from so-called governmental failure – basically, inefficiency in its activities. Only if the government can succeed in effectively correcting a shortcoming in private markets should it undertake the activity.

Viewing governments and government agencies as economic agents, in other words, highlights that they suffer from many of the failures, especially related to incentives that could also affect the private sector. Inefficiencies in the public sector could arise from many sources, including:⁷⁷

1. Lack of bankruptcy threat. Government enterprises usually do not face the same threat from bankruptcy as private-sector firms. In effect, government enterprises often have a “soft budget constraint,” in that they do not face the same limits on their ability to run operating deficits as private-sector firms do.
2. Weak incentives for workers. Public-sector employees are often difficult to dismiss for poor performance; the lack of a credible threat to their employment may attenuate the incentives for strong performance.

⁷⁷ For further discussion of these potential explanations of public-sector inefficiencies, see Joseph E. Stiglitz, *Economics of the Public Sector*, op. cit., pages 198-212.

3. Skewed incentives for managers. Public-sector managers may maximize the size of their agency, rather than social benefits.⁷⁸

4. Risk aversion. Public-sector agencies often do not bear the costs that they impose on others, and the lack of competition insulates them from the discipline of market forces. Bureaucrats may in particular act in a more risk-averse manner than is desirable, because they bear the full costs of failure but do not reap the full rewards of success.

5. Dynamic inconsistency. The government can serve as the enforcer of private contracts. But who is the enforcer of public contracts? The lack of higher enforcement authority may mean that the government is unable to make credible commitments over extended periods of time.

These government failures may play an important role in deciding *how* the government should intervene in private markets, if such government intervention is warranted. The next sub-section emphasizes the different ways in which government action is possible.

Public provision versus public financing

Government involvement in the economy need not take the form of governmental production or provision of goods and services. For example, economic theory suggests that private-sector firms will not produce (or not produce sufficient amounts of) public goods. Therefore, some form of government intervention is warranted. But the government does not need to produce or

⁷⁸ W.A. Niskanen, *Bureaucracy and Representative Government* (Adline: Chicago, 1971).

provide the public good itself. Instead, it could *finance* the production of the good, but leave the actual production to a private-sector entity. Indeed, Andrei Shleifer of Harvard University argues that “when the opportunities for government contracting are exploited, the benefits of outright state ownership become elusive, even when social goals are taken into account.”⁷⁹ For example, national defense is typically classified as a public good. But in 1997, the Defense Department spent roughly \$107 billion in contract awards to businesses in the United States, including roughly \$20 billion for services on military bases and other facilities.⁸⁰

In addition to contracting with private firms, the government can use its taxation and regulatory powers to align private and public interests should such intervention be necessary. For example, a negative externality (such as pollution) associated with the production of some good does not require government provision of the underlying good to address it. Instead, the government can impose a tax on the pollution created during the production process. The tax then aligns private incentives and social objectives.

To be sure, some goods and services must be produced or provided directly by the government, rather than being contracted out to private firms. For example, we can contract to buy military uniforms, but not to wage war.⁸¹ The key point is that government intervention need not take the form of government production. Our focus in this report is primarily on such direct government provision, but it is important to remember that the government’s role is not – and should not be –

⁷⁹ Andrei Shleifer, “State versus Private Ownership,” *Journal of Economic Perspectives*, Volume 12, Number 4, Fall 1998, page 135.

⁸⁰ U.S. Department of Commerce, *Statistical Abstract of the United States 1999*, Table 579, page 370. The \$107 billion represented roughly 40 percent of total Federal outlays for national defense in 1997 (\$270.5 billion).

⁸¹ The hiring of Hessian soldiers during the Revolutionary War, however, suggests that even waging war could be contracted to outsiders, although the scope for such contracting has always been limited and may be even more limited today.

limited to such direct action. In the principles section below, we discuss some of the factors that should influence the choice of both whether and how the government should intervene in private markets.

The role of government in a “bricks and mortar” economy

To a significant degree, a “bricks and mortar” economy is characterized by the conditions required for the government to play a secondary, supporting role. In other words, public goods account for a relatively small share of the overall basket of goods and services produced and demanded in such an economy, and information problems – while significant and typically underestimated – are often not so substantial as to warrant a predominant role for the government. While government intervention can improve economic performance, the scope for such improvements is thus somewhat limited, especially once government failure is taken into account.

In bricks and mortar activities, empirical evidence generally supported this rough theoretical preference for private-sector production – as long as markets were competitive. For example, the World Bank examined studies on bricks-and-mortar markets such as airlines and trucking, and concluded that “on balance...theory and the available microeconomic evidence suggests that, in competitive or potentially competitive markets, private firms are more efficient than state-owned firms.”⁸² (The World Bank study, however, often compared government monopolies with competitive private markets, and failed to distinguish clearly the importance of private ownership versus competition.) John Vickers and George Yarrow conclude that “privately

⁸² The World Bank, *Bureaucrats in Business: The Economics and Politics of Government Ownership* (Oxford University Press: Oxford, 1995), page 40.

owned firms tend, on average, to be the more internally efficient when competition in product markets is effective...However, when market power is significant, and particularly when company behavior is subject to detailed regulation, there is little empirical justification for a general presumption of either type of ownership, and case-by-case evaluation of the various tradeoffs is therefore in order.”⁸³ The evidence thus generally suggests that if markets are competitive, private-sector firms are more internally efficient than public-sector firms.

The role of government in a digital economy

As the economy shifts more toward information-based production, however, the prevalence of public-good-type and informational concerns loom larger.

Public goods were defined above as having two critical characteristics: zero marginal cost and non-excludability. In other words, a public good exists if providing the good to another person involves no additional cost (zero marginal cost), and it is impossible to exclude that person from enjoying the benefits of the good (non-excludability). In practice, however, goods are likely to have one property or the other to varying degrees – very few goods are pure public goods, in the sense that they literally meet both conditions for being a public good. For example, a lighthouse is often used as an example of a pure public good: Shining a light that illuminates the way for one ship does not generally cost more than allowing that same light to illuminate the way for two ships. And it is difficult to prevent ships from benefiting from the light. But it is at least

⁸³ John Vickers and George Yarrow, *Privatization: An Economic Analysis* (MIT Press: Cambridge, MA, 1988), page 40.

theoretically possible for the lighthouse owner to shut off the light if there were no fee-paying ships in the vicinity – so that excludability may be possible to some degree.⁸⁴

Information is, in many ways, a public good.⁸⁵ As Thomas Jefferson realized almost two hundred years ago: “If nature has made any one thing less susceptible than all others of exclusive property, it is the action of the thinking power called an idea, which an individual may exclusively possess as long as he keeps it to himself; but the moment it is divulged, it forces itself into the possession of everyone, and the receiver cannot dispossess himself of it. Its peculiar characters, too, is that no one possesses the less, because every other possesses the whole of it.”⁸⁶ As Professor Danny Quah of the London School of Economics trenchantly argues, “When economic value – produced and consumed – is embedded in bits rather than atoms, Jefferson’s comments can be addressed not just to inventors and research scientists but to every economic agent.”⁸⁷

The movement toward an information-based economy thus implies an expansion in public goods, which may be inconsistent with a laissez-faire approach to economic activity. Indeed, as Joseph Stiglitz and others have argued, the public good nature of information suggests that

⁸⁴ Indeed, there were privately provided lighthouses in 19th century England. Ronald Coase, “The Lighthouse in Economics,” *Journal of Law and Economics*, 1974, pages 357-76. But Professor Bradford DeLong of the University of California at Berkeley notes that these “private” lighthouses had the power to tax ships that entered harbors regardless of whether the ships wished to make use of the lighthouses’ services. Coase’s private lighthouses thus were not truly “private” in the sense of a simple market exchange without coercion. Personal communication from Prof. Bradford DeLong, June 13, 2000.

⁸⁵ Information is also almost always an “experience good,” in that consumers must experience it to know its value. Carl Shapiro and Hal Varian of the University of California at Berkeley emphasize that individuals do not know the value of a newspaper, for example, until they have read it. As a result, media producers have invested heavily in branding and reputation. See Carl Shapiro and Hal Varian, *Information Rules: A Strategic Guide to the Network Economy* (Harvard Business School Press: Boston, 1999), pages 5-6.

⁸⁶ Thomas Jefferson, Letter to I. McPherson, August 13, 1813.

⁸⁷ Danny T. Quah, “The Invisible Hand and the Weightless Economy,” Centre for Economic Performance Occasional Paper No. 12, London School of Economics, April 1996, page 6.

individuals will have little incentive to invest in obtaining information (since they earn little return from doing so). Yet if no one invests in obtaining the information, information imperfections arise and private markets are not necessarily efficient.

Professor Bradford DeLong of the University of California at Berkeley and Professor Michael Froomkin of the University of Miami have similarly argued that the shift toward a digital economy may attenuate the presumption that private-sector activity is necessarily more efficient than public-sector activity. They note the “assumptions which underlie the microeconomics of the invisible hand fray when transported into tomorrow’s information economy. Commodities that take the form of single physical objects are rivalrous and are excludible: there is only one of it, and if it is locked up in the seller’s shop no one else can use it. The structure of the distribution network delivered marketplace transparency as a cheap byproduct of getting the goods to their purchasers. All of these assumptions did fail at the margin, but the match of the real to the ideal was reasonably good.”⁸⁸ But, they wonder, “What will happen in the future should problems of non-excludability, of non-rivalry, of non-transparency come to apply to a large range of the economy?”

As one example of the distortions that arise in information-driven markets, DeLong and Froomkin discuss public television. During the 1960s and 1970s, television was basically a public good – it was impossible to exclude receipt of the television signal, and providing that signal to five people cost no more than providing it to four people. Despite this public good nature of television, however, the broadcasting industry survived through advertising. That is, it

⁸⁸ J. Bradford DeLong and A. Michael Froomkin, “Speculative Microeconomics for Tomorrow’s Economy,” unpublished draft, University of California at Berkeley, November 14, 1999.

did not charge for what it was truly producing – television programming – but rather charged for “advertising attention.” DeLong and Fromkin argue that the depth of audience attention to advertisements was not necessarily connected to the depth of audience attention to the programming. Thus, a bias was created toward “lowest-common-denominator-programming.”

In particular, DeLong and Fromkin note that a program with 30 million slightly interested viewers would likely be worth more in advertising terms than a program with 500,000 extremely interested viewers – even if the 500,000 extremely interested viewers were willing to pay more for their program (in total) than the 30 million slightly interested viewers were for theirs. They conclude that, “In the absence of excludability, industries today and tomorrow are likely to fall prey to analogous distortions. Producers’ revenue streams – wherever they come from – will be only tangentially related to the intensity of user demand. Thus the flow of money through the market will not serve its primary purpose of registering the utility to users of the commodity being produced. There is no reason to think *ex ante* that the commodities that generate the most attractive revenue streams paid by advertisers or others ancillary will be the commodities that ultimate consumers would wish to see produced.”⁸⁹

Two other aspects of an information-based economy are worth emphasizing, because they can affect the efficiency of private-sector production without any government role. The first is so-called network externalities. A network externality arises when the value of using a specific type of product depends on how many other people are using it. For example, a telephone is more valuable if many other people own one than if no one else does. Similarly, fax machines are more valuable if most offices (and even homes) have them than if they are rare. Network

⁸⁹ Ibid.

externalities thus exhibit positive feedback: The more people use the network, the more valuable the network is, and therefore the more people use it. As Treasury Secretary Lawrence Summers recently noted, “An information-based world is one in which more of the goods that are produced will have the character of pharmaceuticals or books or records, in that they involve very large fixed costs and much smaller marginal costs. And it is one in which network effects will be much more pervasive. Think about a lonely fax machine; it is a hunk of metal that is best used as a door stop. Now think about 100,000 fax machines; that is 10 billion possible connections.”⁹⁰

In the presence of such network externalities and positive feedback, private markets are not necessarily efficient. The market may never develop, or it may evolve toward a specific technology that is not necessarily better than other technologies, but that survives solely because everyone else is using it. This phenomenon is sometimes referred to as the “QWERTY” effect, after the layout of letters on typewriters and now computer keyboards.⁹¹ (The QWERTY story is itself an example of a network externality, however: The underlying story is not actually correct, but the story is nonetheless perpetuated through time.⁹²) As Paul Krugman emphasizes, “In a QWERTY world, markets cannot be relied upon to get things right.”⁹³

The second aspect of a digital economy that may undermine a laissez-faire approach is its “winner-take-all” potential, in which low (or zero) marginal costs combined with the possibility

⁹⁰ Lawrence Summers, “The New Wealth of Nations,” Address to the Hambrecht & Quist Technology Conference, San Francisco, May 10, 2000.

⁹¹ See Paul Krugman, *Peddling Prosperity: Economic Sense and Nonsense in the Age of Diminished Expectations* (W.W. Norton: New York, 1994), Chapter 9.

⁹² See Stan Leibowitz and Stephen E. Margolis, “Policy and Path Dependence: From QWERTY to Windows 95,” *Regulation*, Volume 18, Number 3, Fall 1995.

⁹³ “Path Dependence,” *Investor's Business Daily*, November 22, 1995, page B1.

of exclusion imply that small differences in quality produce large differences in returns. In such situations, the price commanded by top performers is the difference in value between their product and the next best alternative. The reduction in communication costs associated with the digital economy may thus create such a “superstar” phenomenon in any given field.⁹⁴ As Professor DeLong has noted, “IT and the Internet amplify brain power in the same way that the technologies of the industrial revolution amplified muscle power.”⁹⁵ This phenomenon can generate both substantial income inequality, and also excessive investment in attempts to become the best in a specific field. The outcome can be inefficient from a social perspective.

The shift toward an economy in which information is central rather than peripheral may thus have fundamental implications for the appropriate role of government. In particular, the public good nature of production, along with the presence of network externalities and winner-take-all markets, may remove the automatic preference for private rather than public production. In addition, the high fixed costs and low marginal costs of producing information and the impact of network externalities are both associated with significant dangers of limited competition.

On the other hand, the reduction in communication costs associated with the Internet and other information technology advances may also attenuate information imperfections, which interfere with the efficient operation of private markets. Bruce Greenwald and Joseph Stiglitz have shown that given imperfect information, government interventions can at least theoretically improve the performance of the economy under a wide variety of assumptions. In other words, given the

⁹⁴ The evidence for, and ramifications of, a winner-take-all society, in which a few top people in each field enjoy the vast majority of benefits, was examined in a popular book by economists Robert Frank, of Cornell's Johnson Graduate School of Management, and Philip Cook, of Duke University. See Robert H. Frank and Philip J. Cook, *The Winner-Take-All Society* (New York: Free Press, 1995).

⁹⁵ “Untangling e-conomics,” *The Economist*, Survey on the New Economy, September 23, 2000, page 6.

absence of transparent information, the theoretical rationale for a laissez-faire approach is undermined.⁹⁶ If the information-based economy improves the quality and reduces the cost of obtaining information, that factor by itself may imply that private markets work *better* – not worse – than before. As the *Economist* stated, “by increasing access to information, IT helps to make markets work more efficiently... In other words, it moves the economy closer to the textbook model of perfect competition, which assumes abundant information, many buyers and sellers, zero transaction costs and no barriers to entry. IT makes these assumptions a bit less far-fetched.”⁹⁷ One recent study concluded that, “early research suggests that electronic markets are more efficient than conventional markets with respect to price levels, menu costs, and price elasticity...although several studies find significant price dispersion in Internet markets.”⁹⁸

Furthermore, government failure may be even more pronounced in the context of rapidly moving information-laden markets than in traditional bricks-and-mortar markets. In other words, the government may face more difficulty in “keeping up” in a digital economy than in the bricks and mortar economy. The Central Intelligence Agency’s recent moves to create a venture capital fund in Silicon Valley highlight the difficulties the government faces in retaining competency in rapidly moving technological developments.⁹⁹

⁹⁶ See Bruce Greenwald and Joseph Stiglitz, “Externalities in economies with imperfect information and incomplete markets,” *Quarterly Journal of Economics*, 1986, 101:229-264. Also see Joseph E. Stiglitz, *Whither Socialism?* (MIT Press: Cambridge, 1994), Chapter 3.

⁹⁷ “Untangling e-economics,” *The Economist*, Survey on the New Economy, September 23, 2000, page 8.

⁹⁸ Michael D. Smith, Joseph Bailey, and Erik Brynjolfsson, “Understanding Digital Markets: Review and Assessment,” in Erik Brynjolfsson and Brian Kahin, eds., *Understanding the Digital Economy* (MIT Press: Cambridge, 1999). See also the discussion in OECD, “The Impact of Electronic Commerce on the Efficiency of the Economy,” Chapter 2, in *The Economic and Social Impacts of Electronic Commerce*, 1998, available at <http://www.oecd.org>.

⁹⁹ Karen Breslau, “Snooping Around the Valley,” *Business Week*, April 10, 2000.

A related perspective on potential government failure in the digital economy is that innovation is arguably more important in such a digital economy than in a bricks-and-mortar economy. And public-sector entities often face weak incentives to innovate. As Alfred Marshall emphasized, “A Government could print a good edition of Shakespeare’s works, but it could not get them written...Every new extension of Governmental work in branches of production which need ceaseless creation and initiative is to be regarded as prima facie anti-social, because it retards the growth of that knowledge and those ideas which are incomparably the most important form of collective wealth.”¹⁰⁰

The nature of a digital economy thus may attenuate the automatic presumption that private production is more efficient than government production. But it may also involve a heightened emphasis on the type of innovation at which the government is relatively weak. The lack of clear theoretical guidance regarding the separation between government and business makes decision-making rules all the more important. We therefore turn in the next sections to current and potential future “guidelines” for deciding which activities should be governmental, and which should be provided by the private sector.

¹⁰⁰ Alfred Marshall, “The Social Possibilities of Economic Chivalry,” *Economic Journal*, 1907, pages 7-29.

III. Current Government Policy

Current government policy on commercial activities is governed by Circular Number A-76. The basic policy inherent in Circular A-76 was established in Bureau of the Budget Bulletins issued in 1955, 1957, and 1960; Circular A-76 itself was originally issued in 1966 and was most recently revised in 1999. The full text of Circular A-76 is included as Appendix A.

The Circular states explicitly, “In the process of governing, the Government should not compete with its citizens. The competitive enterprise system, characterized by individual freedom and initiative, is the primary source of national economic strength. In recognition of this principle, it has been and continues to be the general policy of the Government to rely on commercial sources to supply the products and services the Government needs.” It adds, “The Federal Government shall rely on commercially available sources to provide commercial products and services. In accordance with the provisions of this Circular and its Supplement, the Government shall not start or carry on any activity to provide a commercial product or service if the product or service can be procured more economically from a commercial source.” Commercial activities are defined to include the following, among others (see Appendix A for a full list – the following is a selective list for illustrative purposes only):¹⁰¹

- Automatic data processing services
- Financial and payroll services
- Statistical analyses
- Vehicle operation and maintenance
- Air, water, and land transportation of people and things
- Trucking and hauling

¹⁰¹ The Federal Activities Inventory Reform Act of 1998, which became law on Oct 19, 1998, mandates such a list to be developed and published every year.

The Circular also notes that certain functions are inherently governmental: “Certain functions are inherently Governmental in nature, being so intimately related to the public interest as to mandate performance only by Federal employees. These functions are not in competition with the commercial sector. Therefore, these functions shall be performed by Government employees.” Inherently governmental functions comprise activities in two categories: (1) the act of governing (examples include criminal investigations; direction of Federal employees; regulation of the use of space, oceans, navigable rivers and other natural resources; and regulation of industry and commerce), and (2) monetary transactions and entitlements (including tax collection and revenue disbursements, control of the Treasury accounts and money supply, and the administration of public trusts).¹⁰²

The Circular further notes that government performance of commercial activity is authorized if there is no satisfactory commercial source available; if such performance is required for national defense; or if the government is operating or can operate the activity on an ongoing basis at an estimated lower cost than a qualified commercial source.

¹⁰² Even in these areas, however, the delineation between public and private is not as clear as it may initially appear. For example, while the government plays the central role in the court system, legal disagreements are increasingly being settled under alternative dispute resolution systems in which the private sector is central. Governments have also, in the past, used the private sector to raise taxes. Surely, the government could contract with private firms to collect tax bills.

PART II:
PRINCIPLES FOR
GOVERNMENT ACTION

Principles for Government Provision of Goods and Services in a Digital Economy

OMB Circular A-76 and other existing norms for government provision of goods and services need to be updated for the digital age. As Vinton Cerf, one of the founders of the Internet, recently stated, “In some sense, the policy issues surrounding the Internet are more important than the technological ones, and they’re harder to solve.”¹⁰³ The purpose of this section is to provide a set of principles for deciding which on-line and information activities the government should engage in, and which it should avoid. The principles, while developed to reflect recent technological advances, are intended to be applicable in both the digital and “bricks and mortar” world. In addition, as technology advances in the future, revisions to these principles may ultimately become necessary. But the principles are intended to be consistent with both current and immediately foreseeable forms of information technologies. Government agencies have a natural tendency to perpetuate themselves and their missions, even if the justification for that mission is no longer present. The principles therefore need to be applied repeatedly over time, to existing as well as new on-line activities. Such an approach will help to ensure that an activity that is appropriate initially does not expand into one that is inappropriate.

The principles are divided into three categories:

- “Green Light” activities, which the government should undertake with little concern;
- “Yellow Light” activities, which the government should undertake with caution;
- “Red Light” activities, which the government should generally not undertake.

¹⁰³ Quoted in Bob Davis and Gerald Seib, “Policing a Wildfire: Technology Will Test a Washington Culture Born in Industrial Age,” *Wall Street Journal*, May 1, 2000, page A1.

The principles include:

"Green Light" for On-Line and Informational Government Activity

- Principle 1: Providing public data and information is a proper governmental role.
- Principle 2: Improving the efficiency with which governmental services are provided is a proper governmental role.
- Principle 3: The support of basic research is a proper governmental role.

"Yellow Light" for On-Line and Informational Government Activity

- Principle 4: The government should exercise caution in adding specialized value to public data and information.
- Principle 5: The government should only provide private goods, even if private-sector firms are not providing them, under limited circumstances.
- Principle 6: The government should only provide a service on-line if private provision with regulation or appropriate taxation would not be more efficient.
- Principle 7: The government should ensure that mechanisms exist to protect privacy, security, and consumer protection on-line.
- Principle 8: The government should promote network externalities only with great deliberation and care.
- Principle 9: The government should be allowed to maintain proprietary information or exercise rights under patents and/or copyrights only under special conditions (including national security).

"Red Light" for On-Line and Informational Government Activity

- Principle 10: The government should exercise substantial caution in entering markets in which private-sector firms are active.
- Principle 11: The government (including governmental corporations) should generally not aim to maximize net revenues or take actions that would reduce competition.
- Principle 12: The government should only be allowed to provide goods or services for which appropriate privacy and conflict-of-interest protections have been erected.

Green Light Principles for Governmental Activity

Principle 1: Providing public data and information is a proper governmental role

It has long been recognized that providing basic public information and data is a public function. Such public information and data includes basic statistical information, public records, public proceedings, and regulatory notices. As Thomas Jefferson is reported to have said, “Information is the currency of democracy.” More recently, Frances Cairncross, a senior editor at the *Economist* magazine, added, “Good information is essential for effective political involvement, and the communications revolution makes information more readily accessible than ever before...Access to publicly available information is no longer confined to an elite (the media, officials, big business).”¹⁰⁴

Public information and data are fundamentally a public good. The government should therefore seek to make as much public information and data available on-line as possible. Interestingly, however, government policy has not always endorsed this objective. Indeed, the original Circular A-130 issued by the Office of Management and Budget (OMB) in 1985 called for a circumscribed role for the government in disseminating public information.¹⁰⁵ In 1989, the Federal Maritime Commission ran afoul of this policy when it proposed opening its electronic

¹⁰⁴ Frances Cairncross, *The Death of Distance* (Harvard Business School Press: Boston, 1997), pages 259-260.

¹⁰⁵ In January 1989, OMB proposed further restrictions that would have limited Federal agencies to providing public information to private firms for dissemination. After substantial protests from affected parties, the proposal was withdrawn and an alternative proposal issued in June 1989. John Markoff, “Policy Shift on Access to U.S. Data,” *New York Times*, April 10, 1989. The June 1989 proposal, entitled the “Second Advance Notice of Further Policy Development on Dissemination of Information,” recognized the public asset nature of governmental information and thus represented a significant shift relative to the January 1989 proposal.

lists of shipping rates to the public. The proposal was strongly opposed by the private firms that gathered such data from official sources and then sold the information to interested parties.¹⁰⁶

Circular A-130 was amended in 1993 to encourage agencies to maximize the information provided to the public.¹⁰⁷ (See Appendix C for the current version of Circular A-130.) The revised Circular also precluded setting user fees for information above the cost of dissemination. The Paperwork Reduction Act of 1995, passed unanimously by both houses of Congress and signed by President Clinton, adopted the A-130 principles. In addition, President Clinton recently issued a Memorandum to Executive Departments that promotes further dissemination of government information on-line (see Appendix B for the memorandum).¹⁰⁸

Principle 2: Improving the efficiency with which governmental services are provided is a proper governmental role

Improving the efficiency with which inherently governmental services are provided is socially beneficial. Therefore, shifting activities previously undertaken off-line into on-line activities should be encouraged (e.g., license and passport applications). For example, the ServiceArizona web site created by the state government in Arizona allows people to replace lost driver's licenses, renew the registrations for their vehicles, and order personalized license plates on the web rather than having to appear in person at a state office.¹⁰⁹ Undertaking internal

¹⁰⁶ John Markoff, "Giving Public U.S. Data: Private Purveyors Say No," *New York Times*, March 4, 1989.

¹⁰⁷ Bill McAllister, "White House Reverses Reagan Policy, Drops Profit Motive in Data," *The Washington Post*, July 1, 1993. The amendments had been prepared, but never signed, before the Clinton Administration took office.

¹⁰⁸ For further discussion of steps that the government should be taking to expand dissemination of data and information on-line, see Robert D. Atkinson and Jacob Ulevich, "Digital Government: The Next Step to Reengineering the Federal Government," Progressive Policy Institute, March 2000.

¹⁰⁹ <http://servicearizona.ihost.com>. See also Matthew Symonds, "Government and the Internet," *The Economist*, June 24, 2000, Survey, page 3.

governmental activities more efficiently through information technologies should also be encouraged (e.g., the development of a web-based system for managing governmental energy use).

Such improvements in efficiency should be undertaken despite any potential displacement or reduction in revenue of private firms. For example, the displacement of private-sector “facilitators,” who help to speed passport applications for a fee, should not impede the government from moving passport processing on-line. The granting of passports is an inherently governmental function, and it should be undertaken as efficiently as possible.

An example of an action that would be warranted under this principle is the publication of public filings with the Securities and Exchange Commission (SEC) through EDGAR, the Electronic Data Gathering, Analysis, and Retrieval system. The EDGAR system is an automated, on-line system of collecting and indexing submissions to the SEC required by law. According to the SEC, “Its primary purpose is to increase the efficiency and fairness of the securities market for the benefit of investors, corporations, and the economy by accelerating the receipt, acceptance, dissemination, and analysis of time-sensitive corporate information filed with the agency.”¹¹⁰

Allowing on-line access to public documents that are required by statute to be filed with the SEC – and that previously were publicly available, but difficult to obtain – represents sound policy. Yet sponsoring EDGAR on the SEC web site was the source of substantial controversy, at least

¹¹⁰ See <http://www.sec.gov/edaux/wedgar.htm>.

partly if not largely because private-sector providers were charging fees for access to the same information.¹¹¹

Principle 3: The support of basic research is a proper governmental role

Basic research is a public good. It is often difficult to exclude others from sharing in the gains from research advances, and providing the information regarding those advances to others entails no additional cost. Because it is difficult to exclude others from enjoying the benefits of innovation, despite intellectual property protections, some estimates suggest that the social gains from innovation exceed private returns by between 35 and 60 percent. Given this differential, private markets will under-provide basic research.¹¹² Government support, but not necessarily provision, of basic research is therefore appropriate.

The most prominent example of a government-sponsored research project that later produced large social benefits is the Internet itself. The precursor of the Internet was a Department of Defense project in 1969, which was created to link together government computers at different sites to share information and data. Interestingly, the Department of Defense contracted with a private firm to develop the military communications network that was the precursor of the Internet. A private technology firm, Bolt Baranek & Newman, won that contract. The initial development of the Internet thus involved public financing, but private production.¹¹³

¹¹¹ Mary Ellen Bates, "What is Happening with the Edgar Database?" *The Information Advisor*, October 1995. Interestingly, EDGAR did not originally provide access to information until 24 hours after the data were available, which allowed commercial firms (such as Moody's and Standard & Poor's) to service the market for immediate information. EDGAR now provides immediate posting of information, according to personal communications with the authors from SEC staff.

¹¹² Council of Economic Advisers, *Economic Report of the President 1993*, page 190.

¹¹³ Elinor Harris Solomon, *Virtual Money* (Oxford University Press: Oxford, 1997), page 4.

The government continued to sponsor innovations critical to the development of the Internet; the National Science Foundation, for example, funded the research that led to Mosaic, the first user-friendly web browser. The original Defense Department network began with four nodes; today, more than 300 million people worldwide have access to the Internet.

The line between basic research and applied research is often blurry, and the government should exercise increasing caution as the substance of the research moves more toward commercial applications.

Yellow Light Principles for Governmental Activity

Principle 4: The government should exercise caution in adding specialized value to public data and information

The more specialized the benefit of a government information service (i.e., that adds value to the underlying data or information), the more cautious the government should be in providing it. For example, the government should produce statistics on macroeconomic activity (e.g., Gross Domestic Product), but should be cautious in producing market studies of specific industries (e.g., analyses of the coal industry in West Virginia and the Powder Basin).

One example of this principle is the estimation of on-line retail sales. For years, private-sector firms have estimated the value of retail sales conducted on-line. Until early 2000, these firms were filling a gap in official statistics: There were no official statistics on on-line retail sales. Yet the extent of such on-line retail sales – and their projected growth – had important

implications, for issues ranging from market forecasts to sales tax revenue projections. The private-sector estimates were highly variable and often were based on different concepts. For example, estimates for on-line sales for the fourth quarter of 1999 ranged from \$4 billion to \$15 billion.¹¹⁴ In March 2000, however, the Bureau of the Census issued its own estimates of such sales; its estimate was \$5.3 billion for the fourth quarter of 1999.

Fundamentally, providing estimates of aggregate economic statistics – such as on-line sales – is justified under Principle 1 (providing public data and information is a proper governmental role).¹¹⁵ Government production of on-line retail sales estimates is thus fully justified. This example, however, also raises more complicated questions: For example, should the government attempt to forecast growth in on-line sales? Should it produce forecasts of on-line activity in very detailed sectors – such as estimating the number of “hits” on web pages with music?

Government estimation of aggregate on-line sales seems unobjectionable. In addition, government *projections* of aggregate on-line sales serve a legitimate public purpose (especially given the ongoing debate over the tax treatment of such sales). Just as the government produces forecasts of GDP growth and inflation, it could produce forecasts (which would admittedly be highly uncertain) of on-line sales. The government’s role need not be exclusive; despite official GDP forecasts from both the Administration and the Congressional Budget Office, a large number of private forecasters issue their own projections.

¹¹⁴ Maria Halkias, “Holiday e-sales fail to match hoopla,” *The Dallas Morning News*, March 3, 2000.

¹¹⁵ The entry of private-sector firms in this case reflects the government’s sluggishness in estimating on-line activity; such sluggishness, however, does not provide a justification for further delay. Indeed, the government should pursue an aggressive policy of updating national statistics for new developments in the economy.

But at what point does the government go beyond providing a public good such as basic information and data? For example, providing detailed projections of on-line sales in specific markets (e.g., forecasts of on-line book sales) would seem to go too far. Such projections fundamentally represent market research, which does not serve a direct public purpose and can be (and is) provided by the private sector. The government should exercise increasing caution as it adds more and more value to raw data or information, or as it provides a more and more specialized service.

Similarly, the government should provide search engines and “ferret” tools to assemble data, but more specialized tasks – such as “cleaning” databases or linking official information to related academic articles – should generally be left to non-governmental entities (including academic institutions, non-profit organizations, and private-sector firms). Such case- or individual-specific tasks have less of a public good nature than the underlying data.

The National Weather Service (NWS) seems to strike this balance well. The NWS is the single, “official” voice in times of weather emergencies.¹¹⁶ But more specialized private-sector forecasts also exist; indeed, private-sector weather forecasting is a \$430 million annual industry, which includes a 24-hour cable channel and 400 private enterprises.¹¹⁷

¹¹⁶ “Policy and Guidelines Governing National Weather Service and Private Sector Roles,” *NWS Operations Manual Chapter A-06*, Jul 30, 1993, <http://www.nws.noaa.gov/im/a061.htm>.

¹¹⁷ *Private Sector Survey*, September 1999.

NWS has provided at-cost access to the public of *any* information it produces, which promotes private-sector use of that basic information.¹¹⁸ According to the mission statement from the NWS Fiscal Year 2000 Annual Operating Plan, “NWS data and products form a national information database and infrastructure which can be used by other governmental agencies, the private sector, the public and the global community.”¹¹⁹ Importantly, the NWS operations manual also designates certain areas (e.g., public safety, international issues) as permissible areas for NWS activities, and other areas as the property of private weather forecasters. The manual states explicitly: “The NWS will not compete with the private sector when a service is currently provided or can be provided by commercial enterprises, unless otherwise directed by applicable law.” For example, specialized weather forecasts and analysis for industrial clients are reserved for private firms, with cooperative transmission efforts in the case of weather emergencies.¹²⁰ Thus, NWS’ approach seems to balance the public sector’s role in providing basic information with an appropriate concern about displacing specialized, value-added private-sector services.

One indication of a specialized service is a high marginal cost. The higher the marginal cost of providing the service or information to a specific user, the more specialized the benefit of the service would appear to be. For example, the Department of Commerce’s Tourism Industries office produces customized reports on overseas travel patterns, costing between “\$175 and

¹¹⁸ The Transfer of National Weather Service (NWS), Agricultural Weather Services, and NWS Non-Federal Non-Wildfire Weather Services to the Private Meteorological Sector: A Report to Congress Executive Summary, April 30, 1996, available at <http://www.nws.noaa.gov/im/transcon.htm>.

¹¹⁹ *NWS FY 2000 Annual Operating Plan*, March 8, 2000, <http://www.nws.noaa.gov/sp/aop2000.htm>

¹²⁰ Some industry representatives, however, are not satisfied with the NWS policy position. The Commercial Weather Services Association (CWSA) is lobbying Congress to pass the National Weather Service and Related Agencies Authorization Act of 1999 (H.R. 1335), to amend the 1890 Organic Act and transform NWS policy into law. CWSA claims this formalization of the policy is necessary because NWS has sometimes violated its own written policies. Perceived violations include continued provision of certain specialized services and data-for-research swaps with academic and research institutions that are not available to commercial weather forecasters, who must pay a fee capped at the marginal cost of dissemination.

\$76,000.”¹²¹ Its report on the profile of overseas travelers to 12 U.S. States costs \$1,100.¹²² These types of specific market analyses do not seem appropriate for a governmental body.

In general, therefore, the presence of a large governmental user fee for user-specific activity should raise questions about whether the activity should instead be undertaken by the private sector. (It is worth emphasizing that if the government *does* undertake activities with substantial marginal costs, user fees should be imposed. But the government should generally not be undertaking such tasks.)

Principle 5: The government should only provide private goods, even if private-sector firms are not providing them, under limited circumstances

The government may occasionally be able to “jump start” new markets or provide universal access to a private good that is deemed important enough that all citizens should have access to it.

The government’s decision to provide electricity in markets that were not adequately served by the private sector is an example of this principle. One of the original motivations for Federal production of electricity was to ensure that every household had access to it. At the beginning of the 20th century, less than 10 percent of all households had access to electricity. By the 1950s, nearly every household had electricity.¹²³ This example, however, also illustrates a danger:

¹²¹ Available at <http://tinet.ita.doc.gov/research/programs/ifs/index.html>.

¹²² Available at <http://tinet.ita.doc.gov/cat/b-1998-639-001.html>.

¹²³ Council of Economic Advisers, *Economic Report of the President 2000* (Government Printing Office: Washington, DC, 2000), page 100. It is also worth noting that, at least prior to a national electricity grid, electricity (especially hydro-electricity) likely represented a local monopoly requiring significant regulation – and therefore it is not clear that private production was more desirable than public production.

temporary government activities can often become permanent. Indeed, Federal agencies – including the Tennessee Valley Authority and the five Power Marketing Administrations – still account for roughly eight percent of the Nation’s electricity production.¹²⁴ According to the Congressional Budget Office, “Compared with other major industries, the Federal presence in what is primarily a private and local function is in many ways an anomaly, having changed little since the New Deal era of the 1930s.”¹²⁵

The “yellow light” for providing private goods suggests that the government should be cautious in entering such markets. It also suggests that, when the government decides to enter a private market, it should intervene modestly, and – whenever possible – work in conjunction with private-sector actors. Cooperative ventures with private-sector entities are a means of spurring the new activities and ensure at least a minimal level of private-sector interest, without which the long-run prospects for private-sector provision would appear to be dim.

Principle 6: The government should only provide a service on-line if private provision with regulation or appropriate taxation would not be more efficient

Even if a public good or other market imperfection is present, the government should not provide the good directly if private provision coupled with appropriate regulation (including contracting with a private provider) or taxation would be more effective. In many situations, the government may be able to achieve its social objectives more efficiently by harnessing private firms rather than by providing the good or service directly. Indeed, given the weaker incentives often faced by government employees to innovate and reduce costs, the principal motivation for direct

¹²⁴ Congressional Budget Office, *Should the Federal Government Sell Electricity?* November 1997.

¹²⁵ *Ibid.*

government provision involves imperfect information and uncertainty – in particular, when the government has difficulty in anticipating all possible contingencies or in monitoring the performance of a private provider.

Telephone service is one example of a privately provided good that is subject to regulation. Universal access to a telephone is seen as an important policy objective – both because telephones are subject to network externalities, and because access to a telephone can be important for both emergency purposes and for basic cultural interactions. Yet the government did not (and does not) provide telephone service directly. Rather, it has allowed private firms to provide such service, and then regulated those private firms. Prior to 1983, for example, AT&T was limited to markets directly related to telephone services, and it was required to provide telephone service to anyone willing to pay the government-set fees. More recently, technological developments have changed the view that telephone service is a natural monopoly, in which substantial fixed costs imply that one provider is more efficient than many providers. Regulations have therefore evolved to allow a variety of private firms to serve the telecommunications market.

Providing Internet access to schools and libraries offers another example of this principle. As part of the Telecommunications Act of 1996, the Administration and Congress established the Universal Service Fund for Schools and Libraries, popularly known as the “e-rate.” The goal of the e-rate is to provide all public and private schools and libraries across America access to affordable telecommunications and advanced technologies. The e-rate provides discounts of 20 to 90 percent on the cost of telecommunications, Internet Access, and network wiring within

school and library buildings. The discounts are paid directly to the companies that provide schools and libraries with these technology services and the size of the discount is determined by whether the school, school district or library is located in an urban or rural area and the economic status of the students, normally determined by the number of students eligible for the school lunch program (the more students eligible, the deeper the discount). This year, the program will provide discounts of \$2.25 billion to help bring information technologies to every school and library in America.

The benefit of direct provision relative to private provision with regulation/taxation depends on many factors, including the internal efficiency of the government relative to the private sector in providing the good, principal-agent and other information problems in regulating a private-sector entity, and the potential for innovation and dynamic benefits from private provision. Andrei Shleifer of Harvard University, for example, argues that public provision is preferable only when innovation is relatively unimportant, competition is weak, information problems are substantial, or private sector concerns regarding reputation are inconsequential.¹²⁶

Principle 7: The government should ensure that mechanisms exist to protect privacy, security, and consumer protection on-line

Continued growth in Internet commerce and usage requires appropriate protections for privacy, security, and consumer protection. As President Clinton emphasized during his radio address on November 27, 1999, “If we want Internet commerce to continue to grow, we all must work together to make sure that shopping on-line is just as safe as shopping in a mall.” Concerns

¹²⁶ Andrei Shleifer, “State versus Private Ownership,” *Journal of Economic Perspectives*, Volume 12, Number 4, Fall 1998, pages 139-140.

about privacy on-line are highlighted by survey data showing that 92 percent of consumers are concerned, and 67 percent very concerned, about personal information being misused on-line.¹²⁷ According to one recent study, such privacy concerns may have reduced on-line retail sales by up to \$2.8 billion in 1999.¹²⁸ Other studies project much larger lost sales over time if privacy concerns are not addressed.¹²⁹

Developing the appropriate standards for protecting privacy, security, and consumer protection is one of the most difficult tasks facing both policy-makers and Internet leaders. Before the government mandates standards in these areas, it should first encourage the private sector to develop its own voluntary standards that would be monitored by the government. As former Commerce Secretary Daley stated, “the business community must understand that its action – or lack of action – will determine how this issue is ultimately resolved.”¹³⁰ Should a voluntary approach ultimately prove ineffective, the government would have to stand ready to set the standards itself (after consultation with stakeholders).

The Clinton-Gore Administration’s efforts to promote on-line privacy provide an example of this principle. In 1997, the President directed the Secretary of Commerce and the Director of the Office of Management and Budget to “encourage private industry and privacy advocacy groups to develop and adopt within 12 months effective codes of conduct, industry developed rules, and

¹²⁷ Surveys cited in Federal Trade Commission, *Privacy Online: Fair Information Practices in the Electronic Marketplace: A Report to Congress*, May 2000, available at <http://www.ftc.gov>, page 2.

¹²⁸ Forrester Research, *Best Practice Report*, cited in *New York Times* advertisement, March 23, 2000, page A12.

¹²⁹ Surveys cited in Federal Trade Commission, *Privacy Online: Fair Information Practices in the Electronic Marketplace: A Report to Congress*, May 2000, available at <http://www.ftc.gov>, page 2.

¹³⁰ Remarks by Secretary of Commerce William M. Daley, Press Conference On First E-Retail Sales, March 2, 2000.

technological solutions to protect privacy on the Internet....”¹³¹ As a result, more than 50 of the largest companies doing business on the Internet and 15 business organizations that represent thousands of other companies formed the On-line Privacy Alliance (OPA). The private sector has also established enforcement mechanisms, which signal to consumers that certain web sites have privacy policies.¹³² For example, more than 1,200 web sites carry a privacy seal from TRUSTe, the first on-line privacy seal program.¹³³ Over 450 web sites carry the BBBOn-line privacy seal, and 28 web sites have been licensed to carry the CPA WebTrust seal.¹³⁴ Some of the largest technology companies are taking additional steps to promote privacy: a number of market-leading companies have announced that they will not advertise on web sites that do not post privacy policies.¹³⁵

As the private sector has taken steps to encourage on-line privacy, the percentage of web sites with privacy policies or information practice statements has increased substantially, from 14 percent in 1998 to 88 percent now.¹³⁶ Despite this progress in the number of sites with privacy policies, there are still significant concerns about both the quantity and quality of the privacy statements. For example, as *Business Week* noted, “few Web sites give consumers real choices

¹³¹ Presidential Directive on Electronic Commerce, Memorandum for the Heads of Executive Departments and Agencies, July 1, 1997, available at <http://www.ecommerce.gov>

¹³² If a web site publicizes adherence a particular privacy standard, but the site does not actually conform to that standard, the posting is subject to traditional FTC and state enforcement actions. Indeed, the FTC filed suit against (and then settled with) ToySmart, which had a specific privacy standard while collecting customer’s personal information, but was trying to sell that information as part of its bankruptcy workout. In addition, individuals could bring their own legal actions for fraud, false statements, or underlying negligence.

¹³³ Federal Trade Commission, *Privacy Online: Fair Information Practices in the Electronic Marketplace*, op. cit., page 6.

¹³⁴ Ibid.

¹³⁵ As of December 1999, these companies were IBM, Microsoft, Disney, Intel, Compaq, Novell, Procter and Gamble, and American Express.

¹³⁶ Federal Trade Commission, *Privacy Online: Fair Information Practices in the Electronic Marketplace*, op. cit., pages 10-11.

over the data that get collected on-line.”¹³⁷ Furthermore, while a growing number of web sites are adopting the third-party privacy seals described above, most sites still lack them: Only about 8 percent of all sites, and 45 percent of the most frequently visited sites, bear such a privacy seal.¹³⁸ In addition, privacy policies are often buried in fine print. This has recently led the Federal Trade Commission to call for minimum Federal standards for privacy.¹³⁹ The debate over whether the Federal government should impose a minimum standard will continue. But ultimately, it is government’s responsibility to ensure that consumers are protected.

Principle 8: The government should promote network externalities only with great deliberation and care

Promoting network externalities – either through direct government provision of a specific type of good or service, or through a government technology standard with which private providers must conform – is fraught with potential dangers for policy-makers. In particular, policy-makers face two types of risks: They can fail to promote a network that the private-sector is incapable of promoting (and thereby forgo the benefits from the network that would have resulted), or they can promote an inefficient technology (and thereby lock into a network with lower benefits than an alternative network that might have developed in the absence of government action).

History highlights the relevance of both types of risks. The government and the private sector have each had both successes and failures in promulgating technology standards. For example, the government’s adoption of common standards for map-making through the Federal

¹³⁷ “It’s Time for Rules in Wonderland,” *Business Week*, March 20, 2000.

¹³⁸ Federal Trade Commission, *Privacy Online: Fair Information Practices in the Electronic Marketplace*, op. cit., page ii.

¹³⁹ Federal Trade Commission, *Privacy Online: Fair Information Practices in the Electronic Marketplace*, op. cit., pages 33-38.

Geographic Data Committee seems to have been successful.¹⁴⁰ On the other hand, one of the most prominent examples of a flawed government-set standard involves color television. In the 1940s, RCA and CBS were competing to develop a color television system. RCA was working on an electronic approach, whereas CBS was developing a mechanical system. The CBS system progressed more quickly, and in 1950, the Federal Communications Commission (FCC) adopted the CBS system. Despite its superior performance during the FCC tests held in 1950, however, the CBS system had significant drawbacks: For example, it was incompatible with extant black-and-white broadcast signals without special equipment. In 1953, the FCC therefore switched and adopted the RCA technology, which had by then been sufficiently developed. The Europeans, by contrast, waited another decade to adopt color television standards – and wound up with a better system (PAL and SECAM). Arguably, the U.S. government’s intervention in the standard-setting process produced an inferior result.

The government is not alone, however, in settling on standards that appear inefficient: Private markets can also produce standards that are not efficient. Many analysts, for example, believe that Sony’s Betamax format for video cassette recorders was technically superior to JVC’s VHS format, which ultimately became the industry standard.¹⁴¹

Put simply, the presence of potential network externalities raises difficult policy choices, with no easy answers and no simple rules of thumb. As Carl Shapiro and Hal Varian of the University of California, Berkeley, argue, “...widespread availability is desirable for many kinds of networked

¹⁴⁰ See Robert D. Atkinson and Jacob Ulevich, “Digital Government: The Next Step to Reengineering the Federal Government,” Progressive Policy Institute, March 2000, page 6.

¹⁴¹ See Peter Passell, “Why the Best Doesn't Always Win”, *The New York Times Magazine*, May 5, 1996, page 60. It should be noted, however, that some analysts do not concur that VHS is technologically inferior.

goods. However, it is a large leap from there to say that such access should occur only through government provision or subsidies. After all, many goods with network externalities are provided by the private sector...”¹⁴² Paul Krugman, a Princeton University economist, adds, “...while an acknowledgement of the importance of QWERTY refutes the near-religious faith of conservatives in free markets, it is not at all easy to decide which direction the government should pursue.”¹⁴³

Principle 9: The government should be allowed to maintain proprietary information or exercise rights under patents and/or copyrights only under special conditions (including national security)

The fundamental purpose of patents and copyright protection is to provide a financial incentive to private innovators: Without such protection of their intellectual property, the incentives for investing in research and development would be substantially attenuated. It is therefore necessary to trade off the costs of the temporary monopoly granted to inventors and others against the benefits of the innovation and effort that the promise of such a temporary monopoly induces.

Public entities, however, are not governed by the same profit incentives that apply in the private sector. In particular, a patent or copyright should not generally be necessary in order to induce research or creative work within public-sector entities.¹⁴⁴ Since such an incentive effect is the

¹⁴² Carl Shapiro and Hal Varian, *Information Rules* (Harvard Business School Press: Boston, 1999), page 315.

¹⁴³ Paul Krugman, *Peddling Prosperity: Economic Sense and Nonsense in the Age of Diminished Expectations* (W.W. Norton and Company: New York, 1994), page 243.

¹⁴⁴ To some degree, the government is already limited in its ability to enjoy copyright protection. According to Title 17, Section 105 of the United States Code, “Copyright protection... is not available for any work of the United States Government, but the United States Government is not precluded from receiving and holding copyrights transferred to it by assignment, bequest, or otherwise.”

primary motivation for protecting intellectual property, the government should be allowed to exercise a patent or copyright only in very limited situations. (It may be necessary to create incentives for individual scientists employed within the government to engage in innovative activities. But those incentives need not necessarily take the form of patent rights. For example, under current law, a Federal scientist can earn up to \$150,000 per year from patents.¹⁴⁵ It is not clear that the exercise of such patent rights is the best way of rewarding government scientists for their work. Alternatives include special bonuses, awards, or other types of recognition.¹⁴⁶)

It should be noted that the *exercise* of a patent or copyright is distinct from the *holding* of such a patent. Public entities should be entitled to hold the patent on products or ideas, if only to avoid allowing the patent to be reserved by someone else. But the public sector should generally not exercise such rights – in other words, it should not restrict the use of the technology or product, or charge for its use, despite holding the patent.

More broadly, a governmental entity should generally not be allowed to withhold information from the public solely because it believes such withholding increases its net revenue. As discussed below, maximizing net revenue is generally not an appropriate objective for public-sector entities.

¹⁴⁵ The Stevenson-Wydler Act, as amended by the National Technology Transfer and Advancement Act of 1995, requires agencies to pay Federal inventors the first \$2,000 and thereafter at least 15 percent of the royalties received by the agency for the inventions made by the employee, up to a maximum individual royalty award of \$150,000 per year. Also see Guy Gugliotta, “Science Fields Offer Prestige, Few Perks,” *Washington Post*, Monday, May 8, 2000, page A21.

¹⁴⁶ It may be difficult to determine the relative contributions made by different employees. But that problem is not unique to the public sector: it may be difficult to create the proper *individual* incentives within the private sector also if such relative contributions are difficult to monitor.

Red Light Principles for Governmental Activity

Principle 10: The government should exercise substantial caution in entering markets in which private-sector firms are active

The presence of significant private-sector activity generally raises a *prima facie* case against the existence of a public good. Therefore, the presence of such firms suggests that one of the primary motivations for direct government provision of a good or service – that it is a public good – is likely to be absent.

Furthermore, the government should generally *not* enter markets to provide more competition to existing firms. If the government is concerned about the lack of competition in a market, it should use anti-trust and other tools to address the underlying barriers to such competition. To the extent that the government is concerned that extant private-sector activity is either insufficient or excessive relative to some social optimum, it should generally encourage or discourage such activity through other incentives (e.g., taxes and subsidies) rather than direct provision itself.

It should be noted that this principle does not apply to private-sector activity that results purely from governmental inefficiencies. In particular, the presence of private-sector firms as “facilitators” for an inherently governmental function should not act as an impediment to improving the efficiency of that governmental function. This principle is therefore not inconsistent with Principle #2 (improving the efficiency with which governmental services are provided is a proper governmental role).

Principle 11: The government (including governmental corporations) should generally not aim to maximize net revenues or take actions that would reduce competition

In general, maximization of net revenue (or “profits”) is not an appropriate objective for public-sector entities. Commercial activities in which the government's goal is net revenue maximization should therefore raise concern, either because the activity should be undertaken in the private sector (if no governmental role is warranted) or because the public-sector entity is not appropriately fulfilling its mission (if a governmental role is warranted).¹⁴⁷

A vivid example of the dangers associated with net revenue maximization by governmental agencies or corporations is offered by the U.S. Enrichment Corporation (USEC), a government corporation created in 1992 that was subsequently privatized in 1998.¹⁴⁸ USEC inherited the Department of Energy's role in enriching uranium for use in nuclear power reactors. As a government corporation (and subsequently as a private corporation), USEC's net revenue maximization was inconsistent with a crucial non-proliferation program of the U.S. government: the highly enriched uranium (HEU) deal with Russia, under which 500 metric tons of Russian weapons-grade uranium is blended into reactor fuel and sold to U.S. utilities. USEC serves as the U.S. government's executive agent with the Russians. But USEC's marginal cost of producing enrichment from domestic sources is significantly lower than the cost of the Russian material, so that the more it imports, the higher its costs. Net revenue maximization is therefore

¹⁴⁷ Limited circumstances may exist in which profit maximization is the best objective for a public enterprise. See, for example, G. De Fraja and F. Delbono, “Alternative Strategies of a Public Enterprise in Oligopoly,” Paper presented at the 1st Congress of the European Economic Association, 1986. We suspect, however, that the necessary conditions for this result are relatively rare in practice.

¹⁴⁸ For a discussion of USEC and the problems inherent in its privatization, see Peter R. Orszag, “Privatization of the U.S. Enrichment Corporation: An Economic Analysis,” presented at the Brookings Institution, February 2000, available at <http://www.sbgo.com/papers.htm>.

inconsistent with national security objectives (since net revenue maximization would imply importing none of the Russian material, whereas national security would be best served by importing as much of the Russian material as possible).

Governmental agencies or corporations should also not undertake actions that reduce competition – such as imposing higher costs on existing rivals, erecting entry barriers, or circumventing restrictions on below-cost pricing. Interestingly, entities that seek to maximize revenue rather than profits may have a *stronger* incentive to engage in such anti-competitive behavior than profit-maximizing entities. Indeed, researchers David Sappington and J. Gregory Sidak have identified “a variety of plausible settings in which public enterprises have stronger incentives than profit-maximizing firms to pursue activities that disadvantage competitors. Quite often, the less concerned is the public enterprise with profit, the stronger are its incentives to undertake activities that disadvantage competitors.”¹⁴⁹ Intuitively, a concern over revenue maximization could more easily lead public-sector enterprises to engage in costly activities (e.g., pricing below marginal cost) that reduce profits but raise revenue.

A related issue is that predatory pricing and other anti-trust laws do not generally apply to governmental agencies. Sappington and Sidak therefore argue that “the optimal design of antitrust law as applied to public enterprises also merits extensive study.”¹⁵⁰ The application of predatory pricing laws to public entities could help to minimize the opportunities for such entities to behave in a socially counterproductive manner.

¹⁴⁹ David E.M. Sappington and J. Gregory Sidak, “Incentives for Anticompetitive Behavior by Public Enterprises,” AEI-Brookings Joint Center for Regulatory Studies, Working Paper 99-11, November 1999, page 1. See also John R. Lott, “Predation by Public Enterprises,” *Journal of Public Economics*, 43 (1990), 237-251.

¹⁵⁰ David E.M. Sappington and J. Gregory Sidak, “Incentives for Anticompetitive Behavior by Public Enterprises,” AEI-Brookings Joint Center for Regulatory Studies, Working Paper 99-11, November 1999, page 24.

The difficulty is thus that neither profit maximization nor revenue maximization is generally an appropriate objective for public enterprises. Much more attention must be given to defining appropriate objectives for such enterprises; an objective of profit maximization or even revenue maximization should serve as a warning sign that further scrutiny is necessary.¹⁵¹

Principle 12: The government should only be allowed to provide goods or services for which appropriate privacy and conflict-of-interest protections have been erected

Data provided on-line to one government agency are often useful to another government agency. But the sharing of such information between government agencies – or for different purposes within an agency – may compromise an individual’s privacy. More broadly, individuals should have discretion over what type of information is provided to a government agency on-line, and then how that information is disseminated to others inside or outside the government. In the absence of such protections, the government should not be allowed to provide goods or services on-line.

For example, it would not be appropriate for the Bureau of the Census to share individual data with the Postal Service, in order to allow the Postal Service to better target its new eBillPay program. Similarly, it would not be appropriate for the Postal Service to share the information it

¹⁵¹ One argument sometimes proposed for profit-maximizing behavior by some governmental agencies is the cross-subsidization possibilities that the resultant profits can offer. But even if the activities that are being cross-subsidized are important policy objectives, it is not clear that the best source of revenue for them is profit-maximizing behavior. To be sure, it is possible in some situations that the distortions imposed by the profit-maximizing behavior are lower than the distortions that would be imposed by any other source of government revenue. But such situations would seem to be relatively rare, and therefore one arm of the government should generally not engage in profit-maximizing behavior merely to cross-subsidize another arm. To the extent that budgetary accounting rules encourage such cross-subsidization, modifications to the rules should be explored.

gathers as part of that program with the Internal Revenue Service, to ensure compliance with the tax code.

Recent media reports suggest that government privacy practices are sometimes deficient. For example, Scripps Howard News Service reported that the activities of individuals who visited anti-drug web sites operated by the White House were being tracked without their knowledge. In response, the Office of Management and Budget reportedly directed all government agencies to review their privacy standards and to use “cookie” programs only if there were a “compelling need.”¹⁵²

The upshot is that in addition to ensuring appropriate privacy standards for the private sector (Principle #7), government agencies themselves must ensure that visitors to their web sites are offered appropriate privacy protections. As Jacob Lew, the director of the Office of Management and Budget, wrote in June 1999, “Looking ahead, as contemplated for instance by the Government Paperwork Elimination Act, people will conduct more and more business and other activities with the Government electronically. We cannot realize the full potential of the web until people are confident we protect their privacy when they visit our sites.”¹⁵³

A Decision Tree for Policy-Makers

The preceding 12 principles can be combined into a “decision tree” for policy-makers to evaluate proposed governmental actions. The tree below illustrates the steps involved in such a decision process.

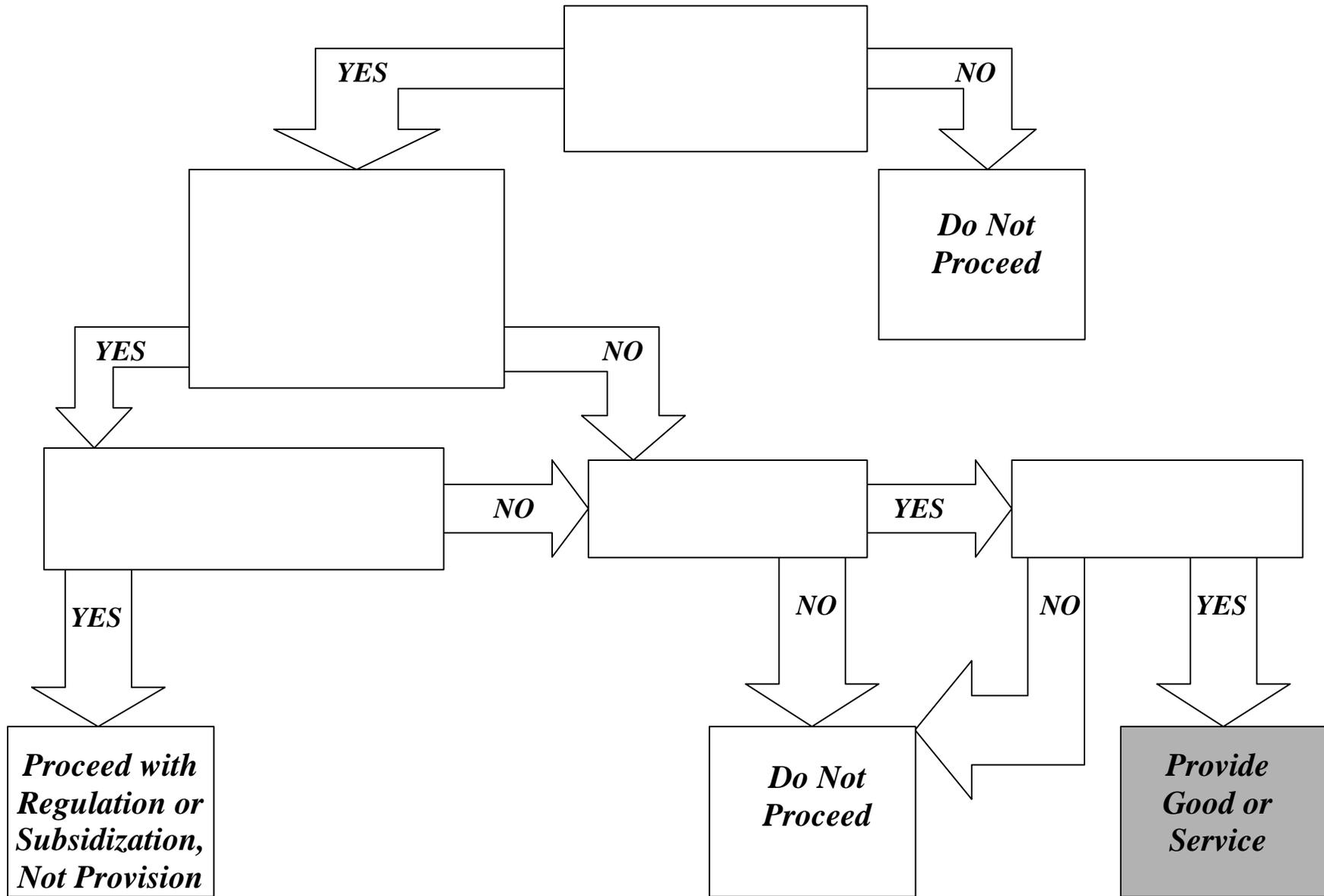
¹⁵² Lance Gay, “Federal agencies criticized for ‘snooping’ on Web sites,” Seattle Post-Intelligencer, June 24, 2000.

¹⁵³ Jacob J. Lew, “Privacy Policies on Federal Web Sites,” Memorandum for the Heads of Executive Departments and Agencies, M-99-18, June 2, 1999.

In evaluating whether a good or service should be provided by the government, the first question policy-makers should ask is whether the good or service is a public good or externalities (or other market failures) are present. If the answer to that question is no, the government should not provide the good or service. If the answer is yes, policy-makers must proceed to the next question, which is whether the good or service can be provided more efficiently through appropriate regulation or subsidization, relative to direct public provisions. If the answer to that question is yes, the government should proceed with appropriate regulation or subsidization if private-sector entities are already active, and not attempt to enter the market as a direct or indirect service provider itself. If either public-sector provision would be more efficient or if no private-sector entities exist, policy-makers should proceed with direct provision only if privacy and pricing issues have been appropriately addressed.

In practice, implementing the decision tree is difficult. For example, determining whether a good or service can be provided more efficiently through appropriate regulation or a subsidy is a complicated empirical issue. Nonetheless, the decision tree should serve as a useful framework for government policy-makers to decide whether to directly provide a good or service.

Decision Tree for Policy-Makers



PART III:
CASE STUDIES

Case Study: The Department of Labor's On-Line Job Market Information

The Department of Labor, in conjunction with state-operated Public Employment Service offices, operates America's Job Bank (www.ajb.org), the largest on-line employment database. The site includes nearly 1.5 million job listings and nearly 2.5 million registered job seekers. The Job Bank is funded through Unemployment Insurance tax revenues, and there is no charge for use to any employer or job seeker. Most of the postings are for full-time, private-sector jobs that cover all skill levels, industries and sectors.

In addition to America's Job Bank, a number of private-sector job boards exist. Indeed, a search for the term "job search" on eleven popular search engines returned over 100 job search sites, although the vast majority of them were returned only by a single search engine.¹⁵⁴ In addition, four of the search engines (About, Excite, LookSmart and Lycos) included their own job boards. Most of these private sites list all types of jobs, but some sites specialized in certain cities or states; others specialized in positions for executives, librarians, IT professionals, recent college graduates or elder care workers; and other sites focused on Federal government jobs. One site directly searches America's Job Bank, with an interface that may be easier for some people to use.¹⁵⁵

¹⁵⁴ The search engines used for this search were: About, Excite, Google, GoTo, Hotbot, LookSmart, Lycos, MSN, Netscape, NorthernLight and Snap. The search was conducted in April 2000.

¹⁵⁵ The site is <http://www.fullwebinfo.com/jobsearch.htm>.

America's Job Bank

All U.S. employers are eligible to post job openings on America's Job Bank (AJB) after registering with their state employment office. The only exceptions are that employers may not require a significant financial investment or charge a fee to a job seeker, and the position advertised cannot be involved in a labor dispute. Once an employer is registered for the service, the employer can post and update job listings. By default, jobs are posted for 45 days. During that period, employers can close the listing if the position is filled in a shorter amount of time, extend the posting period, or temporarily withdraw the listing with the option to re-post it later. In addition, registered employers may search for job-seeker resumes by occupation, keyword, or resume number. An occupation search allows employers to choose one of 22 pre-defined occupation groups,¹⁵⁶ then allows the option to further narrow the search with subcategories of the groups. A keyword search allows the employer to choose certain words important to match for the job's title, objective or skill. Both of these types of searches can be further refined by the job seeker's available location, educational attainment and desired salary range, and the date the resume was posted. Resumes are also searchable by specific resume number.

Job seekers are free to search job listings in a similar manner. Seekers can search by occupation within the 22 pre-defined groups, or by occupation sub-category, or by keyword. Seekers with a military background can also search by Military Occupation Code. These searches can also be

¹⁵⁶ The categories are the following: administrative support; cleaning and grounds maintenance; clerical, secretarial and office; community and social services; computer, IT and mathematical; construction and extractive; education and training; engineering and architectural; farming, fishing and forestry; food and lodging; health; installation, maintenance and repair; legal and compliance; management; media and arts; personal services; physical, life and social science; production and manufacturing; protective services; sales; sports and recreation; transportation and material moving.

limited by geographic area, education requirement, salary offered, and date of posting. If a job seeker chooses to register confidentially with his or her state agency, then more options are made available. Registered job seekers may save a customized job search profile, and can register for an automatic e-mail update when new matches to the profile are found. Registered seekers can also create and submit a resume to be made available to employers (for 60 days by default), and can generate on-line cover letters for posted jobs.

The America's Job Bank web page has a prominent link to the Career InfoNet – a service that also provides employment information and assistance. The information allows the user to search by skill level for occupations that are fastest growing and highest paying, or with the largest employment or the most job openings. Other options include searching for employers by name, and viewing state profiles with employment statistics and government, education, and culture resources. Another link takes the user to America's Career Kit, a site that offers advice on how to get a better job or invest in more skills, suggestions for resources for financial assistance for education and training, and more advice on job searching – including government offices to contact for help and instructions on how to write an eye-catching resume.¹⁵⁷

Industry profile

As noted above, there are a variety of private-sector job market sites. Two of the most prominent are Monster.com and Headhunter.net. Monster.com has an eye-catching interface and is organized to send users to the appropriate area depending on their needs. The site targets individuals throughout their career cycle (“Intern to CEO”), and offers advice and news

¹⁵⁷ Much of the advice is in the form of links to other websites – many of which are at Monster.com.

specifically tailored to different career stages. For example, students are told how to utilize college alumni connections to land their first jobs, while executives are offered tips on how to negotiate stock option packages. Monster.com is owned by TMP Worldwide, a recruiting firm founded in 1967. In the spring of 2000, the site was among the top 100 most-visited websites with 10.1 million unique visits per month, 5 million job seeker members, 2.3 million available resumes, and 386,000 jobs posted.

Job seekers can search listings by location, keyword, or one or more of 42 job categories, and also have the option to browse the job listings. In addition, if the job seeker fills out an optional registration form, the seeker can create multiple resumes that are searchable by employers. The site also tailors career advice and information to the user. Seekers are never charged for use of the site. Employers can list individual jobs in a single job-search category for \$275 per 60-day posting. In addition, they can purchase access to Monster's searchable resume database.

Headhunter.net has only a fraction of the number of the job postings boasted by AJB – about 169,000 jobs and 360,000 resumes were available in February 2000. But the site claims to have the largest job database of positions fewer than 30 days old, and reports that 90,000-110,000 unique users visit the site every day. Headhunter.net boasts user-friendly design and a capability for job seekers and employers to search by geography, salary, travel requirements, profession, experience and key word. It has restrictions similar to those imposed by AJB: postings are prohibited for jobs that require a monetary investment by the job seeker, for Multi-Level Marketing positions, business opportunities, and jobs related to the adult entertainment industry.

Potential employers on the Headhunter site typically pay \$50 to \$125 to post a single job in a single city. When a job seeker performs a search that returns more than one job, the results are ordered by the price paid by the employers. Jobs can be posted regionally or nationwide at rates 5- and 14-times the base price, respectively. Employers also can search for resumes by any of the categories mentioned above if they join the service – at a price of \$1,500 for 3 months to \$3,600 for a year. Job seekers can search Headhunter’s job postings for free, and can apply for jobs electronically or the old-fashioned way. Seekers can also post their resumes for free, and are given the option to upgrade their sort position – similar to the employer option – for \$10 to \$30 per month depending on the priority level.

Evaluating America’s Job Bank

The purpose of this case study is to examine whether America’s Job Bank is an appropriate activity for the Department of Labor to be sponsoring. Principles 2, 4, 10, and 12 seem particularly relevant for this case study.

America’s Job Bank could be justified under the second “green” light principle. According to Principle 2, improving the efficiency with which governmental services are provided is a proper governmental role. Although the Internet site was launched in the mid-1990s, the job-opening data themselves have been collected by states for more than 60 years, and states have shared their information to form a national database since 1979. From one perspective, therefore, America’s Job Bank is merely putting on-line information that had previously been publicly available, but more difficult to obtain.

A deeper question is whether the government *should* be collecting and disseminating job market information. Given the positive externalities from employment – including its impact on government revenues and expenditures – the government is justified in playing some role in collecting job market information.

While America’s Job Bank thus seems justified under one of the green light principles, it is possible that it runs counter to one of the yellow light or red light principles. For example, Principle 4 states that the government should exercise caution in adding specialized value to public data and information. As it currently operates, however, America’s Job Bank is fundamentally a source of information – not of substantial value added to that information.

Principle 10 states that the government should exercise substantial caution in entering markets in which private-sector firms are active. As discussed above, private-sector job market sites do exist, thus raising questions about whether America’s Job Bank is an appropriate governmental activity. However, a crucial issue involves the definition of the “market.” The private-sector sites seem skewed toward high-skill job seekers. For example, on Headhunter.net, the average salaries among jobs offered are \$50,000-100,000, and two-thirds of job seeker resumes have at least a 4-year college degree. In fact, the drop-down menu that allows job seekers to specify their degree status favors highly educated workers. It includes choices for none, college student, 2-year, 4-year, and graduate – but does not distinguish between high school diploma holders, high school dropouts, and seekers who are not currently students but have some college credit.

America's Job Bank, on the other hand, provides substantial coverage to less-skilled workers. For example, job seekers without a high school diploma find that they are eligible for over 425,000 full-time, at least six-months-a-year jobs in the nationwide job bank, compared to over 550,000 for high school graduates, and 650,000 for 4-year college degree holders. (The AJB does not limit against over-qualification. For example, if a job requires a high school education level, a college graduate's search will also turn up the position.) Since lower-skill workers are more likely to be unemployed than higher-skill workers, AJB provides a particularly valuable social service.¹⁵⁸

The final concern involves Principle 12, which states that the government should only be allowed to provide goods or services for which appropriate privacy and conflict-of-interest protections have been erected. America's Job Bank seems to have been designed with privacy concerns in mind. For example, its web site emphasizes that users are "in charge of how much information is given and when it will be given. None of your personal information will be released unless you take or have taken some action to release it. None of your personal information will be sold to mailing lists." Job seekers must agree to these provisions before using the service. A similar approval and similar privacy provisions are required for employers who are posting job offerings.

In summary, America's Job Bank seems consistent with the principles for government action.

¹⁵⁸ In March 2000, the unemployment rate for those with less than a high school diploma was 6.9 percent, compared to 3.4 percent for those with just a high school diploma and 1.6 percent for all college graduates.

Case Study: United States Postal Service eBillPay

On April 5, 2000, the United States Postal Service (USPS) announced that it would offer electronic billing and payment services. The new service is called USPS eBillPay. This case study examines the USPS's new activity in light of the principles delineated above.

Background on electronic bill presentment and payment (EBPP)

Electronic Bill Presentment and Payment (EBPP) involves the delivery of bills and the collection of payments via the World Wide Web or other digital means. In particular, EBPP comprises two services:

- First, EBPP services can consolidate all bills to a customer into a single website.
- Second, EBPP services then allow the customer to pay bills through direct debits from the customer's bank account. Customers can schedule specific dates for payment and request automatic monthly payments. For those billing vendors that do not accept electronic transfers, the EBPP service can draft checks on the customer's account and submit them.¹⁵⁹

Industry Profile

The EBPP market has two components: the user interface (i.e., the portal that customers use to pay their bills) and the financial payment infrastructure (i.e., the financial network by which

¹⁵⁹ Only court-ordered payments and state and federal taxes cannot be paid via EBPP.

funds are transferred from the customer to the billing vendor). Both components are actively provided by the private sector.

EBPP offers the opportunity for substantial cost savings in the payment process. Check clearance requires sorting, bundling, shipping, and reconciling 180 million checks each business day. Americans write about 63 billion checks every year.¹⁶⁰ According to the National Automated Clearing House Association, the average cost of processing a paper check is 35 cents, whereas the cost of processing an electronic payment is only 7 cents.¹⁶¹

The EBPP market still has substantial growth potential, since only one percent of all bill payments in 1999 were made on-line.¹⁶² Forrester Research predicts that 21 million Americans will use on-line bill payment services by 2004, accounting for 1.9 trillion annual electronic bills.¹⁶³

An established market of banks, brokerages, and web portals offers EBPP user interfaces at their sites, as well as other personal financial services. For example, Wells Fargo, Yahoo!, Bank of America, Charles Schwab, and Paytrust.com all offer EBPP. Table 1 shows consumer preferences for different types of EBPP user interfaces, as of spring 2000.

¹⁶⁰ See http://www.frbchi.org/pubs-speech/publications/BOOKLETS/electronic_money.

¹⁶¹ See <http://www.nacha.org/Facts/directdepositcost>.

¹⁶² Carrick Mollenkamp, "Entrepreneur's Tough Sell: Pay Your Bills On-line -- CheckFree Bought a Big Rival And Now Must Win Over Banks, Billers, Consumers," *Wall Street Journal*, February 18, 2000, page B1.

¹⁶³ Pete Hisey, "Outclicked in the on-line billing wars," *Credit Card Management*, 12:12, March 2000, pages 26-30.

Table 1: Current Demand Distribution in EBPP User Interface

	Percent of customers*
Bank	54
Quicken/Money	18
Brokerage	12
Web portal	10
AOL	9
Biller web site	6

* Sums to more than 100 percent because some customers use more than one site.
Source: GartnerGroup poll, reproduced from Russell Redman, "Market potential," Bank Systems & Technology; 37:4, April 2000, pages 8-9.

These various sites typically rely on other firms to route the financial payments. The oldest and largest provider of these infrastructure services is the CheckFree Corporation (www.checkfree.com), founded in 1981. In addition to providing the bulk of the infrastructure behind EBPP, CheckFree also maintains its own user interface.

The two principal competitors to CheckFree are Transpoint (a joint endeavor by Microsoft, First Data, and Citibank) and Spectrum (a bank consortium founded by Chase Manhattan Corporation, First Union, and Wells Fargo and including 11 other banks). In February 2000, CheckFree announced plans to merge with Transpoint.

While a number of smaller EBPP service providers exist,¹⁶⁴ most billing vendors rely on CheckFree or Spectrum. Due to the different technology platforms for making EBPP payments used by CheckFree, Spectrum, and other smaller competitors, many institutions sign up with multiple service providers to assure compatibility, which translates into increased investment costs for each platform. For example, although Wells Fargo, Chase Manhattan, and First Union

¹⁶⁴ For example, EBPP services are also provided by Billserv.com, Princeton eCom, and Paytrust.com. Competitor BlueGill was also bought recently by CheckFree.

co-founded Spectrum and continue to develop its EBPP technologies, they all employ CheckFree for their consolidated bill payment services.

CheckFree and most of the smaller competitors market their services as behind-the-scenes engines that allow user interface clients such as banks, brokerage houses, and web portals to retain name branding of the EBPP.¹⁶⁵ The attraction of this model is that bill-payment on-line becomes another vehicle through which user interface hosts can cultivate customer loyalty and market more products, in addition to cutting costs for printing and mailing of bills. CheckFree charges \$4 per month per user to its user interface clients, who then pass that charge on to customers at a markup or cover the cost in hopes of building a larger, more attached client base. Spectrum has focused on designing an open access platform for member banks to share billing information through a switching network for bills and provide EBPP, rather than designing a marketable EBPP service product.

USPS eBillPay

According to the Government Accounting Office, the movement from paper to electronic billing could represent a lost market of more than \$16 billion per year for the United States Postal Service (USPS), assuming that every bill now mailed is instead billed and paid on-line.¹⁶⁶ Billing statements currently represent 25 percent of the USPS revenue. In an attempt to replace some of this potential lost revenue, USPS partnered with CheckFree and a smaller provider

¹⁶⁵ Some do operate their own user interface but do not market this service aggressively.

¹⁶⁶ General Accounting Office, "U.S. Postal Service: Development and Inventory of New Products," GAO/GGD-99-15, November 24, 1998. The GAO cites an estimate from a former Postmaster General that bills and other payments account for one fourth – or roughly \$16.4 billion -- of the Postal Service's revenue.

(YourAccounts.com) to transform USPS.com into a one-stop bill payment website.¹⁶⁷ eBillPay provides the portal and CheckFree maintains the EBPP operations.

In essence, the USPS acts as a well-positioned advertising link for CheckFree, sharing the profits from customers acquired in return for mass advertisement through the USPS heavy-volume website and information at each branch office across the nation. The USPS already has client relationships with most billers and customers. Its marketing strategy for the eBillPay service emphasizes its reputation for trustworthy, rain-sleet-snow-or-hail service.¹⁶⁸ Its press release announcing the new service highlighted that the USPS is “the country’s trusted third party and universal service provider.”¹⁶⁹

Prices charged through USPS eBillPay are in the middle of the price range offered by its competitors in the spring of 2000. Despite common usage of CheckFree as the financial intermediary, different sites charged different amounts (see Table 2).

¹⁶⁷ Susan Straight, “As Tax Filers Go Electronic, Will the Post Office Go Hungry?” *Business Week* On-line, April 14, 2000, <http://www.businessweek.com/bwdaily/dnflash/apr2000/nf00414a.htm>.

¹⁶⁸ “Secure? Of Course! It’s the United States Postal Service,” <http://www.usps.gov/EBPP/splash.html>.

¹⁶⁹ “Postal Service Offers Electronic Billing and Payment,” Release Number 26, April 5, 2000, available at <http://www.usps.com>.

Table 2: EBPP Rate Comparisons

Website	Trial Period	Base Rate	Conditions	Extra Bills
USPS eBillPay	6 months free	\$6.00/month	Up to 20 bills	\$0.40 each
		\$2.00/month	\$.40 each bill	
Paytrust.com	None	\$8.95/month	25 bills/month	–
CheckFree.com	3 months free	\$12.95/month	Up to 35 bills	\$2.95/10 bills
		Free	EBPP for subscribed billers only	
Bank One	1 month free	\$4.95/month	Unlimited	
Charles Schwab	None	\$6.95/month	Up to 20 bills	\$0.50 each
		Free	High end accounts	
Stanford Federal Credit Union	3 months free	\$5.00/month	Unlimited	
Wells Fargo	2 months free	\$5.00/month	Unlimited	
		Free	\$5K min balance	
Chase Manhattan		Free	Unlimited	
Yahoo!	3 months free	\$7.00/month	Up to 25 bills	\$0.40 each
		\$2.00/month	\$0.40 each bill	

Source: Data collected from firm websites as of April 30, 2000.

Some of these price differences reflected different levels of service. For example, the USPS eBillPay lacked a link to merge data from its site with personal financing software such as Quicken or Microsoft Money. Most other bank and brokerage sites and CheckFree.com did provide this capacity. As another example, Bank One did not charge penalties for insufficient funds to pay a bill; they merely canceled payment. On the other hand, eBillPay imposed service fees for insufficient funds (in addition to any fees charged by the customer's bank). Finally, other websites typically offered financial service management tools or search tools. Despite its apparent lower level of service, eBillPay did not offer the lowest price in the market.

Evaluating the USPS eBillPay Program

As noted above, OMB Circular A-76 limits the government's ability to engage in commercial activities that compete with the private sector.¹⁷⁰ However, the eBillPay program would be explicitly allowed under the "Market Tests of Experimental Competitive Products" section of the proposed Postal Modernization Act of 1999 (H.R. 22).¹⁷¹ If passed, this act would not only confirm the USPS's ability to provide EBPP, but also would allow the USPS to cross-subsidize eBillPay rates from other operations during an experimental period. However, given the short legislative session, the plethora of competing legislative imperatives, the substantial industry opposition, and the complexity of the issues involved, H.R. 22 was not passed by Congress this year. Nonetheless, the USPS intends to continue its EBPP activities.

The introduction of the eBillPay can be evaluated under the principles for governmental activity delineated above. Principles 2, 5, 7, 8, 10, 11, and 12 are relevant to judging whether the activity is appropriate for a government (or quasi-governmental) body.

The first question is whether the activity could be justified as fulfilling Principle 2 (improving the efficiency with which governmental services are provided is a proper governmental role). Could the provision of eBillPay be considered an internal efficiency action, in which the USPS is offering services to reduce the amount of labor necessary to achieve the USPS's charge to provide universal mail service? The fundamental question is whether electronic bill payment is a

¹⁷⁰ Specifically, Circular A-76 states that, "In the process of governing, the Government should not compete with its citizens. The competitive enterprise system, characterized by individual freedom and initiative, is the primary source of national economic strength." See Appendix A for Circular A-76.

¹⁷¹ H.R. 22 is available at <http://thomas.loc.gov>. In the absence of this legislation, some would argue that the USPS lacks statutory authority to provide its eBillPay service.

governmental service. Even if physical mail delivery should be provided by the government (itself the subject of significant debate),¹⁷² the delivery of bills and payments electronically has revealed itself to be a competitive market provided by private-sector firms. Those who have on-line access do not seem to experience difficulty in obtaining electronic bill payment services.

Furthermore, the eBillPay program by itself will not provide universal access to electronic bill payment services: To use the service, individuals must have access to the World Wide Web, and the eBillPay program by itself does not provide such access. Indeed, a persistent “digital divide” exists in terms of Internet access between the information-rich (e.g., those with higher incomes, those with more education, and dual-parent households) and the information-poor (e.g., those who are younger, have lower incomes and education levels, or live in rural areas or central cities). For example, households with incomes of \$75,000 or more in urban areas are over *20 times* more likely to have access to the Internet than those at the lowest income levels living in rural areas.

The eBillPay program by itself would do nothing to narrow these gaps. Even if eBillPay were supplemented by other programs that did help to narrow the digital divide, a legitimate question exists as to the appropriate bounds for universal service objectives. As Professor Dan Spulber of Northwestern University recently noted, “The Postal Service raises its traditional argument of universal service, namely that only the government can provide a low-cost service that’s available to all. And I think that’s not really the case. The private sector is fully capable. I

¹⁷² See J. Gregory Sidak and Daniel F. Spulber, *Protecting Competition from the Postal Monopoly* (AEI Press: Washington, 1996). See also J. Gregory Sidak, editor, *Governing the Postal Service* (AEI Press: Washington, 1994).

mean, where does it stop? At some point, the same arguments could be used to justify the Postal Service delivering pizza.”¹⁷³

The eBillPay is thus difficult to justify under any of the “green light” principles. Since private-sector firms are already active in EBPP, it also does not qualify under Principle 5. And since those private-sector services seem to entail sufficient privacy and security protections, there is no need for direct government action under Principle 7 (the government has the responsibility of ensuring that mechanisms exist to protect privacy, security, and consumer protection on-line).

Principle 8 (the government should promote network externalities only with great deliberation and care) is somewhat more complicated. The EBPP market seems to be characterized by network externalities: the more billing vendors who participate, the more valuable the service is to consumers – and vice versa. But the private sector seems to be developing EBPP standards itself, and does not necessarily need further impetus from the government.

Furthermore, USPS’s association with CheckFree may inadvertently determine the standard used in EBPP. In particular, Spectrum is challenging CheckFree as a viable platform for EBPP infrastructure. Despite CheckFree’s current dominance as the standard for service provision, many unclaimed customers exist to support Spectrum’s growth and challenge to CheckFree in service provision. But the potential number of CheckFree end-users from a successful USPS eBillPay website could be enough to raise economies of scope to the point that Spectrum could not price competitively against CheckFree. Even if eBillPay does not ultimately provide

¹⁷³ National Public Radio, “US Postal Service Plans To Let People Pay Their Bills On-line With A New Service,” *All Things Considered*, April 7, 2000.

CheckFree with a larger end-user base, the magnitude of the USPS as a client for CheckFree could influence the decisions of other billers to employ CheckFree as well, possibly distorting choices of firms in the EBPP service provision market. In summary, the activity thus does not seem to be justified under the “yellow light” principles.

The “red light” principles raise significant questions about the eBillPay program.¹⁷⁴ For example, Principle 10 states that the government should exercise substantial caution in entering markets in which private-sector firms are active. As noted above, many private-sector firms are active in the EBPP market. The ability of EBPP to consolidate bill payment and the existence (often) of a fixed cost to the consumer implies that it is unlikely that a consumer will employ more than one EBPP service. As a result, the potential field of customers, while still large and uncommitted, is finite. Despite USPS spokesperson Mark Saunders argument that “There is room in this marketplace for everyone,”¹⁷⁵ the ultimately finite nature of the market means that current competitors in the user interface market consider the entry of USPS a possible threat in their race to attract as many consumers as possible to their website. Prudential Securities recently argued that “the entry of USPS into the marketplace would create a tidal wave more than sufficient to swamp fledgling businesses without the vast resources and established brand

¹⁷⁴ The General Accounting Office has raised additional questions about the Postal Service’s e-commerce activities. In testimony before Congress, Bernard Unger of GAO “identified three problem areas relating to USPS management of its e-commerce area: inconsistencies in identifying e-commerce and related initiatives and in reporting the status of these activities, which made it difficult to obtain a complete and accurate picture of USPS’ e-commerce activities; inconsistencies in following the required process for reviewing and approving its e-commerce initiatives, which raised questions as to whether the initiatives were appropriately planned and reviewed; and deficiencies in the financial information USPS provided for the e-commerce activities, which raised concerns about the accuracy and completeness of the financial reporting for e-commerce activities.” See testimony of Bernard Unger, General Accounting Office, before the Subcommittee on International Security, Proliferation, and Federal Services, Senate Committee on Governmental Affairs, “U.S. Postal Service: Electronic Commerce Activities and Legal Matters,” September 7, 2000.

¹⁷⁵ Shruti Dati, “USPS launches on-line bill payment service,” *Government Computer News*, April 17, 2000.

equity of the postal behemoth, and the threat of its entry might reasonably deter investors from funding startups however meritorious and innovative their offerings might be.”¹⁷⁶

Principle 11 states that governmental activities that are intended to maximize net revenues or reduce competition should raise substantial concern – either because the activity is not appropriately governmental, or because the public-sector entity is not properly performing its role. For example, if the USPS were attempting to provide universal electronic bill payment service through the eBillPay program, its pricing strategy seems inconsistent with that objective: To promote universal service, even among those with access to the Internet, the USPS would have adopted a lower quality-adjusted price than others in the market. The USPS has created eBillPay because it is concerned that the projected loss in paper bill revenue to electronic payments will affect its ability to subsidize its responsibility for universal mail service. But cross-subsidizing universal mail service by entering a commercial market does not necessarily represent sound public policy. Furthermore, the eBillPay program may reduce competition in the EBPP market.

Finally, Principle 12 states that the government should only be allowed to provide goods or services for which appropriate privacy and conflict-of-interest protections have been erected. A significant question is whether the privacy rules that apply to the rest of the U.S. Postal Service will be extended to the eBillPay program. Industry leaders have expressed concern that data

¹⁷⁶ Prudential Securities, “Washington E-commerce Report: U.S. Postal Service Plans Aggressive Move into Cyberspace – Including a Possible Dot-Com IPO,” January 26, 2000, page 3.

collected as part of the eBillPay program could be shared with other government agencies with no notice, permission, or due process.¹⁷⁷

In summary, the principles described above appear to raise significant questions about whether the eBillPay program is an appropriate activity for a government agency to undertake.

¹⁷⁷ See, for example, letter from Edward Black, William Archey, and Ken Wasch to Representatives Richard Armey, Billy Tauzin, and Robert Goodlatte, June 23, 2000.

Case Study: Lexis-Nexis

The Lexis-Nexis group is a private-sector entity that provides fee-based legal, business, and government information products. It boasts the largest collection of public records in the United States. Lexis-Nexis adds enhancements to this information, such as indexing, linkages, and segmentation. The Lexis branch of the group is geared to the legal profession, and the Nexis business unit is primarily intended for business leaders, government officials, and academics.

The fundamental question raised by Lexis-Nexis is whether it provides services that *should* be provided by the government. It is thus a different type of case study: one in which the question is not whether an activity that the government is undertaking is appropriate, but rather whether the government should be undertaking an activity that it is not currently.

It is worth noting that WestLaw, another private-sector provider of legal information, raises similar issues to those raised by Lexis-Nexis. We focus here on Lexis-Nexis, but many of the same questions would be relevant to an analysis of WestLaw's activities.

Background on Lexis-Nexis

Lexis began in 1973 as the first commercial, full-text legal information service, and was designed to improve the efficiency of legal practitioners' research. Nexis, the news and business arm, was added in 1979 and has grown to be the largest such on-line information service provider. The Lexis-Nexis company was originally founded as the Data Corporation in 1966, was bought by Mead Corp. in 1968, and was recently acquired by Reed Elsevier.

For a fee, Lexis allows a researcher to search for Federal and state cases by party name or citation. It also provides categories – such as Federal Cyberlaw – to browse. Lexis also provides up-to-date searchable Federal and State codes, and indexes four sources for Federal Regulations: the Federal Registry, the Code of Federal Regulations, the Federal Acquisition Regulations (FAR), and the US Attorney General Opinions. For completeness, Lexis also has a searchable database of European Union law.

Lexis provides searchable Tax Code documents such as the Internal Revenue Bulletin, the Internal Revenue Code, Treasury regulations, and various IRS Actions and Memoranda. (Lexis also provides non-government documentation on taxes from publishers like the ABA.) Lexis also indexes patents from 1971 to present, although coverage from January 5, 1971 through December 3, 1974 is incomplete.

Lexis also includes a secondary literature service, which includes news articles from legal newspapers, magazines and newsletters, as well as also articles from law reviews. One of Lexis's substantial advantages is that this literature service is integrated with the other legal search capabilities – so that, for example, the various academic articles written about a specific question involved in a specific case can be easily accessed. In addition, Lexis includes a career information area, including the Martindale-Hubbell directory of lawyers, law school directories, and tips on choosing a law school.

Government provision of legal information

Surprisingly, much official legal information is not easily available from official government sources. Until April 2000, the Supreme Court did not even have its own homepage; instead, one was hosted at Cornell Law School's Legal Information Institute (LII) site.¹⁷⁸ The LII site has all Supreme Court decisions from 1990 through today indexed and searchable. For cases decided before 1990, selected historic decisions are posted at LII. The Supreme Court's website points users to government sites that provide free access to Supreme Court decisions between 1937 and 1975. These decisions are available and searchable by case number and key word on two government web sites (FedWorld and GPO Access).

State courts generally have their own home pages, but are often slow and difficult to navigate. These sites often include very recent decisions but lack significant archives. For example, California posts its decisions immediately but, until recently, those decisions were removed from the site after 100 days and web users were redirected to Westlaw.com's fee-based service to access them. Some states and all Circuits of the U.S. Courts of Appeal have websites hosted by law schools.

The government has several of its own law-related sites linked from Thomas, the Library of Congress's search engine for Congressional actions. The Government Printing Office (GPO) Access web site allows users to search five different versions of the U.S. Code – each version has another year included, so one can search for laws in effect in January of any year 1995-1999.

¹⁷⁸ The new Supreme Court homepage (www.supremecourtus.gov) is still in its infancy. Many topics are well covered: there is information about visiting the Court and about the Justices, and Bar Admissions forms are available on-line. Other pieces could use improvement: for example, most links are cumbersome downloadable .pdf files and not interactive pages.

The databases, however, are often updated with a lag. GPO also provides access to the Federal Register back to 1995, and has searchable access to the Code of Federal Regulations.

The IRS website has issues of the Internal Revenue Bulletin downloadable in .pdf format back to 1996, but the Bulletins are not easily searchable. The IRS website does not provide indexed versions of IRS General Counsel Memos, or Actions on Decisions and Technical Memos, although they are accessible for experienced users through the electronic-FOIA Reading Room.

The U.S. Patent and Trademark Office's website offers searches of all U.S. patents by keyword, classification or patent number back to 1976. (As noted in Section I, by the end of 2001, every patent since the 1700s will be available on-line, and by the following year, more than 14 million Japanese and European patents will be too.¹⁷⁹) Trademarks are also easily searchable at the Patent and Trademark Office site. Copyrights are searchable at the Library of Congress web site, although the interface is difficult to use and the Copyright Office does not offer any assistance with it.

Evaluating what legal information services the government should provide

In evaluating what legal information the government should provide, Principles 1, 2, and 4 appear to be particularly relevant.

Principle 1 states that providing public data and information is a proper governmental role. Therefore, some governmental role is warranted in furnishing legal and other information. The

¹⁷⁹ Remarks of Secretary of Commerce William M. Daley, E-GOV 99 Conference, July 1, 1999, available at: <http://www.doc.gov>.

key question is the precise scope of that role. For example, should the government provide all the services currently provided by Lexis-Nexis, or is the appropriate governmental role more limited than that?

Principle 2 states that improving the efficiency with which governmental services are provided is a proper governmental role. There is significant room for improvement in the efficiency with which even basic legal information is disseminated on-line. For example, although the famous *Roe v. Wade* (1973) decision turns up in both Lexis and at the Fedworld's 1937-75 decision database, more difficult cases are either absent or hard to find on government sites. The Supreme Court's 1988 *Hazelwood v. Kuhlmeier* decision (denying First Amendment privileges to school-sponsored student newspapers) was not available on a government website, but it was written up as a selected historic decision on Cornell's LII site linked from a government page. The U.S. District Court decision in *United States of America v. State of Missouri* (1975), which de-segregated suburban St. Louis schools, was also not available on the public sites.

Indeed, the Center for Democracy & Technology identifies court briefs from the Department of Justice and Federal Circuit Court web sites as two of the top 10 "most wanted" categories of governmental data that should be put on the Web, but are not. As the Center argues, "The federal Circuit and District Courts have been slow to embrace the Web. Only 5 of the 12 Circuit Courts of Appeals have Web sites providing access to opinions at no cost. While a number of law schools have stepped in to fill the gap, all circuit courts should have official sites providing the public with free access to court opinions. If five can do it, why can't the rest?"¹⁸⁰

¹⁸⁰ See <http://www.cdt.org>.

Principle 4 states that the government should exercise caution in adding specialized value to public data and information. For example, Lexis-Nexis provides linked access to academic and other non-governmental information regarding legal cases. While the government should provide on-line access to the court decisions themselves, the argument for providing such extensive value-added enhancement seems more dubious. To do so may go beyond the government's role in providing basic public information.

The bottom line is thus that the government should provide more information and improve the search capabilities, especially with regard to legal decisions, on its web sites. Some of this additional information would duplicate information currently available through Lexis-Nexis. That duplication does not justify failing to post the information on official web sites – especially if the goal is to promote public understanding and access to information, since Lexis-Nexis charges fees for access to its service. At the same time, however, parts of the Lexis-Nexis service – such as the linkages to relevant journal articles and the searchable news databases – should probably not be provided by the government, because they represent significant value-added that could be more efficiently provided by the private sector.

Case Study: On-Line Tax Preparation Software

During the 1998 tax year, 400,000 people filed their taxes on-line. Forrester Research estimated that this number increased to 1.25 million (still only one percent of all returns filed) for the 1999 tax year.¹⁸¹

On-line tax preparation is neither necessary nor sufficient for “electronic filing.” Electronic filing is the act of electronically transmitting a completed return, and therefore includes returns that are prepared off-line and then submitted electronically to the Internal Revenue Service (e.g., the return is prepared with a commercial software package on a desktop computer and then transmitted to the IRS). On-line tax preparation covers only those returns that are actually prepared through the World Web Wide (i.e., the return is filled out through a web browser without the downloading of any software). Note that on-line tax preparation need not imply on-line tax *filing*; many customers choose to prepare their tax returns on-line, and then print them out and mail them to the IRS.

The purpose of this case study is to explore what the government, and particularly the IRS, should and should not be doing in the area of on-line tax preparation. The issue is particularly important because on-line tax preparation is expected to grow rapidly. Indeed, one (admittedly somewhat controversial) estimate suggests that by 2003, more tax returns will be prepared using on-line services than the number prepared using traditional software packages.¹⁸²

¹⁸¹ *Business Week*, April 17, 2000, page 200.

¹⁸² Mike Hogan, “Tax Time Arrives: Tax,” *PC World*, January 13, 2000.

Industry profile

Intuit and H&R Block operate the two largest on-line tax preparation sites. Intuit's Turbo Tax site drew one million hits in January 2000 and two million in February, while H&R Block had close to half a million and one million in those months. Turbo Tax is estimated to account for roughly 80 percent of filers who actually prepared their returns on web sites.¹⁸³ Intuit is also a leader in personal tax software, which is often used for electronic filing: For example, roughly one in five tax returns were prepared with a TurboTax product for the 1998-1999 filing season.

Intuit also offers a service, the "Quicken Tax Freedom Project," in which use of the company's on-line Turbo Tax web-based product (www.turbotax.com) is provided free to taxpayers preparing and filing 1040EZ return.¹⁸⁴ The Project also offers free Federal and state return preparation and filings for families and individuals with less than \$20,000 in Adjusted Gross Income filing traditional 1040 returns. For other customers, Intuit charges \$9.95 per return (either Federal or State) for web-based electronic tax preparation. Intuit's software also enables taxpayers to transfer information from their Quicken personal financial management software into their Turbo Tax income tax returns, and guarantees the accuracy of return information.¹⁸⁵

Intuit is also planning to introduce, within a few years, a fully automated tax return service.

Under such a service, a financial vendor such as Intuit would be able, at a taxpayer's discretion,

¹⁸³ *Business Week*, April 17, 2000, pages 200-202.

¹⁸⁴ Taxpayers were eligible to file a 1040EZ for the 1999 tax year if they (1) were single or married filing jointly; (2) claimed no dependents; (3) did not claim a student loan interest deduction or educational credit; (4) were under age 65 and not blind; (5) had taxable income of less than \$20,000; (6) had income only from wages, salaries, tips, unemployment compensation, taxable scholarships and fellowships, Alaska Permanent Fund dividends, and taxable interest income not exceeding \$400; (7) did not receive advance earned income credit payments; and (8) owed no household employment taxes on wages paid to a household employee.

¹⁸⁵ Turbo Tax will pay any penalties plus interest if the defect is due to a calculation error in the program.

to collect electronically most of the data needed to prepare a tax return (from employers, banks, and brokers) and automatically prepare a pro-forma return for the taxpayer. The taxpayer could then review, modify, and approve the return.

H&R Block also brings substantial tax preparation experience to on-line tax preparation. H&R Block is a diversified company providing a wide range of financial products and services through its tax office network and Web site. During tax season 2000, H&R Block served 16.9 million taxpayers and generated \$1.4 billion in revenues through its 9,210 U.S. offices. That accounts for the company filing one out of every seven returns processed by the IRS in 2000. In addition, the company processed nearly one-half of all electronically filed returns accepted by the IRS this past tax season.

The H&R Block Web site (www.hrblock.com) includes both an online tax preparation program and tax preparation software that can be downloaded. Taxpayers who fill out a 1040EZ return can prepare and file for free through hrblock.com. All other taxpayers pay \$9.95 to file a federal return and \$4.95 for a state return. The Web site also offers taxpayers the option of getting an Electronic Refund Advance of up to \$5,000 (for a \$19.95 fee).

Other sites for on-line tax preparation include Preptax.com (www.preptax.com), Etax Corporation (www.tax1.com), H.D. Vest Technology Services (www.hdvest.com), freetaxprep.com (www.freetaxprep.com), and others.¹⁸⁶ Table 3 below shows the prices charged for on-line Federal and state filing by different providers; some of the price differences in the table reflect different service levels (e.g., live call-in assistance).

¹⁸⁶ For a complete list of on-line filing software companies, see http://www.irs.gov/elec_svs/company.html

Table 3: Selective on-line filing services

	<i>On-line filing charge for 1040 Federal return</i>	<i>On-line filing charge for state return</i>
Intuit's TurboTax	\$9.95*	\$9.95*
H&R Block	\$9.95*	\$4.95*
Preptax.com	\$14.95**	**
Etax's Tax1	\$7.95	Not available
HD Vest	Free	Free
freetaxprep.com***	Free***	Free***

* No charge for taxpayers preparing and filing form 1040EZ. Intuit's site also offers free returns for individuals with less than \$20,000 in Adjusted Gross Income, regardless of 1040EZ eligibility.

** Includes state return

*** Effective tax year 2000

The Internal Revenue Service

Between the beginning of this year and tax filing day, the IRS web site recorded 968 million hits, making it one of the most frequently visited sites on the World Wide Web.¹⁸⁷ The web site allows taxpayers to download and retrieve tax publications and forms. For example, the site includes a 53-page form that provides detailed information on all aspects of the 1040 form, including worksheet spaces for necessary computations.¹⁸⁸ The IRS does not, however, allow consumers to prepare tax returns directly on its web site. Instead, the IRS simply points customers to an authorized provider, such as those firms mentioned above.¹⁸⁹

Evaluating the IRS role in on-line tax preparation services

In the IRS Restructuring and Reform Act of 1998, Congress outlined a series of ambitious goals for the agency with regard to electronic filing. Specifically, Congress stated that the IRS should

¹⁸⁷ Internal Revenue Service, "Electronic Transactions Set Records in Successful IRS Tax Season," April 26, 2000.

¹⁸⁸ ftp.fedworld.gov/pub/irs-pdf/i1040gi.pdf

¹⁸⁹ The IRS allows for certain filers to file over the telephone. To file via the telephone, a taxpayer must receive a TeleFile tax package from the IRS in the mail and plan on filing a 1040EZ. TeleFiler's must also have no dependents, have interest income of less than \$400, be under the age of 65, and have a total taxable income of less than \$50,000. The TeleFiler can pay any tax liability with a credit or debit card, or can mail a check to an IRS processing center. Additional information on the TeleFile program is available at http://www.irs.gov/elec_svs/telefile.html

cooperate with the private sector to expand competition and increase electronic filings, so that by 2007 at least 80 percent of all tax returns would be filed electronically. The legislation creates an Electronic Commerce Advisory Group to help the IRS fulfill this goal.

Delineating the proper role for the IRS in an electronic age involves difficult trade-offs. Our focus here is whether the IRS should provide on-line tax preparation service directly on its own web site. It should be emphasized that the IRS itself has not endorsed such a proposal, and is not officially planning its own tax preparation software. Nonetheless, some industry experts believe that the IRS is currently considering such a proposal.

The wealth of information on the IRS web site is one reason that it is so frequently visited. Providing clear and concise information, along with detailed explanations for those who require them, is consistent with Principle 1 (providing public data and information is a proper governmental role). The IRS should therefore continue to provide information and data on-line.

The legislatively mandated goal of promoting electronic filing is also consistent with Principle 2 (improving the efficiency with which governmental services are provided is a proper governmental role). Over time, electronic filing is expected to become significantly less costly for the IRS than paper filing. According to *Business Week*, “In 1999, e-returns cost \$4.14 to process, compared to \$4.28 for paper. But as more e-filers spread out the costs of filing on-line, the IRS expects this to drop to less than \$2.00 per form in 2007.”¹⁹⁰ The cost differential may be even more substantial once differential “downstream” costs, such as those involving audits, are included.

¹⁹⁰ Susan Straight, “As Tax Filers Go Electronic, Will the Post Office Go Hungry?” *Business Week*, April 14, 2000.

The crux of this case study, however, involves more complicated issues than whether the IRS should be providing information on-line or promoting electronic filing. The key question is whether the IRS should be providing its own on-line tax preparation software. Evaluating that question involves tradeoffs among various principles. For example, from one perspective, providing on-line filing services is merely improving the efficiency with which governmental services are provided – it makes tax filing easier than it currently is.

The tax preparation itself, however, may represent significant value, as evidenced by the existing and extensive industry of tax attorneys and preparers to help taxpayers with individualized tax guidance. Allowing the IRS to provide on-line tax preparation services may therefore conflict with Principle 4 (the government should exercise caution in adding specialized value to public data and information). Given the number of private-sector firms already providing on-line filing, furthermore, an IRS on-line service may also conflict with Principle 10 (the government should exercise substantial caution in entering markets in which private-sector firms are active).

In addition, tax preparation involves sensitive financial information. An IRS on-line tax preparation service could therefore conflict with Principle 12 (the government should only be allowed to provide goods or services for which appropriate privacy and conflict-of-interest protections have been erected). In particular, the IRS's legitimate interest in ensuring revenue collection may conflict with legal tax avoidance activities by taxpayers. For example, would putative IRS tax preparation software ensure that taxpayers were aware of all possible (legal) deductions available to them? Would it record whether a taxpayer used an "override" option to

circumvent the pre-programmed algorithm in certain circumstances? What happens when a taxpayer using IRS software is later audited and/or prosecuted by the IRS? Is there an inherent conflict between the “preparer” and “enforcer” roles that the IRS would be assuming?

More broadly, Principle 6 states that the government should not directly provide a service on-line if private provision with regulation or appropriate taxation would be more efficient. On-line tax preparation seems amenable to private provision with appropriate regulation, especially since the IRS is in the midst of a crucial and substantial computer modernization program that absorbs significant technical resources.¹⁹¹

The existence of private providers, the potential efficiencies gained by regulation or subsidization, the privacy concerns that could arise if the Internal Revenue Service provided on-line tax preparation software directly, the high opportunity costs of diverting technical IRS resources away from its computer modernization effort, and the value-added that such software represents for many returns all raise substantial questions about the merit of direct IRS provision of such software.

At the same time, however, there is a legitimate public policy interest in ensuring that low-income taxpayers have access to subsidized tax preparation services. The public policy objective of ensuring subsidized access to tax preparation services need not be met, however, through

¹⁹¹ Creating IRS on-line tax preparation software could divert resources away from this core modernization effort. For a brief discussion of IRS efforts to improve its information technology systems, see David C. Williams, Treasury Inspector General For Tax Administration, “Progress and Problems in Implementing the Internal Revenue Service Restructuring and Reform Act Of 1998,” Joint Hearing before Committees of the United States Senate and House of Representatives, May 3, 2000.

direct government provision.¹⁹² Indeed, private firms are already providing subsidized access to on-line tax preparation services.¹⁹³ Therefore, given the economies of scale in producing software, and the privacy protections and other limitations that would have to be placed on direct government provision even for the simplest returns, it seems difficult to justify the direct provision of on-line tax preparation services by the IRS at this time.¹⁹⁴ In other words, applying the principles delineated in this report suggests that the IRS should not provide direct on-line tax preparation services, even if private firms were not already providing subsidized access to low-income taxpayers. Instead, the government should combine private provision with appropriate subsidies for low-income families.

¹⁹² In its Fiscal Year 2001 Budget, the Clinton Administration proposed a temporary, refundable tax credit of \$10 for non-TeleFiler electronic filers and \$5 for TeleFilers. Although this proposal does not appear to be politically viable at this time, it does demonstrate one type of policy through which the government can ensure subsidized access to on-line tax preparation services without providing such services directly.

¹⁹³ Both Intuit and H&R Block, as mentioned above, already provide free on-line tax preparation and filing to those filing Form 1040EZ, and Intuit also provides free filing to anyone with Adjusted Gross Income below \$20,000. Intuit processed roughly 700,000 returns this year at no cost to the taxpayer, while H&R Block expects several hundred thousand taxpayers to use its free service next year. Furthermore, two providers – HD Vest and freetaxprep.com – provide free web-based tax preparation and filing to taxpayers of any income (freetaxprep.com’s services will be operational for next year’s filing season).

¹⁹⁴ Another proposal that has been discussed is to allow relaxed privacy protections to private providers in exchange for no-cost on-line tax preparation and filing services. Again, it is important to emphasize that the IRS has not proposed such a relaxation. Nonetheless, such a proposal would contradict the principles delineated above.

Case Study: Fee-Based Search Engine Service from The National Technical Information Service

On May 17, 1999, the National Technical Information Service (NTIS) – a small agency within the Department of Commerce – announced a joint partnership with Northern Light Technology, a privately held search engine company in Cambridge, Massachusetts. The goal of this partnership was to provide a fee-based Internet search engine to access documents spread across more than 20,000 Federal government web sites.

Several hours after the announcement, the Department of Commerce “abruptly put it on hold pending a review of whether it complies with federal policy on public access to government documents.”¹⁹⁵ Administration officials were concerned that the subscription fee associated with the search engine service was inconsistent with OMB Circular A-130, which states that agencies should “set user charges for information dissemination products at a level to recover the cost of dissemination but no higher.”

The purpose of this case study is to examine whether providing a fee-based search engine service is consistent with the principles delineated above.¹⁹⁶

¹⁹⁵ Leslie Walker, “Commerce Dept. Shuts Web Site Over Fee Issue,” *Washington Post*, May 18, 1999, page E03.

¹⁹⁶ There are additional issues within NTIS that could be examined, including its provision of web services to other government entities. However, we have chosen to focus on the issue of whether the government should provide a fee-based search engine.

The National Technical Information Service

NTIS was created in 1950 to serve as a clearinghouse for the collection and dissemination of government scientific, technical, and engineering information. In creating NTIS, Congress directed it to be self-sustaining to the fullest extent possible. While NTIS charged customers for documents in its clearinghouse, it also received an appropriation from Congress until late 1980s.

In the 1980s, the Reagan Administration proposed privatizing NTIS.¹⁹⁷ While these efforts were ultimately unsuccessful, they did focus Congressional attention on the problems facing NTIS. In the end, Congress passed legislation making NTIS operate on a “self-sustaining” basis without receiving an annual appropriation. (As noted below, this case study may raise questions about the wisdom of setting up a public agency on this basis: the self-sustaining restriction may suggest that the activities of the agency need not be undertaken by the government. In addition, as we will see below, the self-sustaining restriction creates incentives for the government agency to enter new markets – even if such activity does not serve the public interest.)

As the Department of Commerce noted last fall, “the rapid growth of the Internet has fundamentally changed the way NTIS’ customers acquire and use information. Federal agencies are now able to offer their publications directly to the public over the Internet – for free.”¹⁹⁸

With customers going elsewhere to obtain access to government scientific, technical, and engineering information, NTIS lost significant revenue in its clearinghouse function: Between

¹⁹⁷ In 1988, then-Secretary of Commerce C. William Verity stated, “that the private sector, rather than the Federal sector should be responsible for the operation of those programs that are commercial in nature... This privatization effort will be implemented by developing one or more contracts for private sector performance of current NTIS activities.”

¹⁹⁸ Department of Commerce, *A Report on the National Technical Information Service (NTIS)*, Fall 1999.

fiscal year 1993 and fiscal year 1998, revenue declined 18 percent, falling from \$23.7 million to \$19.4 million. The number of documents that NTIS sold also dropped dramatically, from almost 2.3 million in 1993 to 1.3 million in 1998.¹⁹⁹

Since NTIS is required by law to remain self-sustaining, the agency developed new business lines to offset the loss in clearinghouse revenue. One example provided by Robert Mallett, the Deputy Secretary of Commerce, is NTIS' production and sale of IRS tax forms on a CD-ROM.²⁰⁰ NTIS has used revenues from these new business lines to remain "self-sustaining." However, the Commerce Department's Inspector General expressed concern that these new business lines may compete with the private sector. Specifically, the Inspector General stated: "We are also concerned that in order to replace lost sales, NTIS is seeking business opportunities on the perimeter of its statutory mission, where it risks competing against private businesses."²⁰¹

In order to offset its deteriorating financial position and to more efficiently provide an important government service (searching government information), NTIS initiated a partnership with Northern Light to develop a highly efficient search engine of Federal government information. The service, www.usgovsearch.com, would allow people to simultaneously search about 3.8 million Federal government web pages, three million government research documents, and millions of articles Northern Light had collected from commercial publishers.²⁰²

¹⁹⁹ Department of Commerce, *A Report on the National Technical Information Service (NTIS)*, Fall 1999.

²⁰⁰ Testimony of Deputy Secretary of Commerce Robert Mallett Before the Senate Subcommittee on Science, Technology, and Space on the National Technical Information Service, October 21, 1999.

²⁰¹ Department of Commerce, Office of the Inspector General, *Semiannual Report to the Congress*, September 30, 1998, page 12.

²⁰² Leslie Walker, "Untangling the Web of Federal Net Sites," *The Washington Post*, May 17, 1999, page F06.

Under the plan announced on May 17, 1999, customers would be charged \$15 for a one-day pass, \$30 for monthly access, and \$250 for annual access, plus fees of \$1 to \$4 to access certain documents. In addition, the consumer would have to pay any fees associated with obtaining the document they were looking for (e.g., if the document currently costs \$15 to view through the NTIS web site, the customer would have to still pay that amount for access to the document). In other words, the fee was solely for access to this powerful search engine. Under the plan, Northern Light and NTIS would split the revenue generated by the search engine.

After reviewing NTIS' proposed joint venture with Northern Light, the Clinton Administration determined that the appropriate course of action would be for NTIS to withdraw from its partnership with Northern Light and allow the private-sector firm to administer the search engine on its own.²⁰³ Subsequently, in June 2000, President Clinton announced the creation of firstgov.gov, a free site that will allow citizens to search all on-line government documents at no charge. According to media reports, the site will be able to search 500 million documents in less than a quarter of a second, and be capable of handling at least 100 million searches per day.²⁰⁴

Evaluation

Three of our principles seem relevant for this case study (Principles 2, 10, and 11).

NTIS' effort to improve the search capability of Federal government information is entirely consistent with Principle 2 (improving the efficiency with which governmental services are

²⁰³ Leslie Walker, "On-line Search Service Loses U.S. Backing," *The Washington Post*, June 15, 1999, page E04. Interestingly, Northern Light maintained the same fee structure for annual and monthly subscriptions, but lowered its daily subscription from \$15 to \$5. In addition, it granted free access to public libraries and secondary schools.

²⁰⁴ Tim Ryan, "Government to Create Web Portal, Clinton Says," *Reuters*, June 24, 2000.

provided is a proper governmental role). Since 1992, NTIS had offered a search engine of government web sites on its FedWorld.gov web site. However, this service searched only the home pages of Federal agencies and a limited number of other web pages linked to them. As described above, the usgovsearch.com search engine would have enabled individuals to search millions of Federal government web pages. Improving access to government information is clearly a proper governmental role.

Principle 10 is also relevant. A number of private-sector search engines provide access to governmental information. For example, Google (www.google.com/unclesam) and GovBot provide access to nearly as many Federal web pages as the proposed usgovsearch.com.²⁰⁵ (Both of these alternative search engine services are free.) Since a number of private-sector entities already exist, Principle 10 (the government should exercise substantial caution in entering markets in which private-sector firms are active) would suggest that the government should be careful in providing a search engine service. Nonetheless, if the government service were priced at marginal cost (i.e., effectively free), the benefits from Principle 2 would likely dominate the concerns associated with Principle 10, and such a service would appear to be beneficial.

The most important principle in this case study, however, is Principle 11, which states that the government should generally not aim to maximize net revenues or take actions that would reduce competition. Given NTIS' recent history, it seems clear that one reason NTIS decided to partner with Northern Light was to maximize revenues. Indeed, the presence of a fee – especially one

²⁰⁵ Ray Matthews, "Northern Light Connect with NTIS," *Econtent*, October 1, 1999.

as large as proposed when the partnership was announced – suggest that NTIS was trying to maximize net revenue, which is inconsistent with Principle 11.

Principle 11 raises serious questions about whether NTIS should be a “self-sustaining” agency. The core clearinghouse function of NTIS, which entails the collection and dissemination of government scientific, technical, and engineering information, is certainly a proper government role (see Principle 1). But based on the principles described above, it would be more appropriate for Congress to appropriate funds for this public good function than to require that NTIS offset losses in the clearinghouse with other business lines.²⁰⁶

In summary, the principles for government action on-line would suggest that NTIS should seek to improve the ability of individuals to access Federal government information through more powerful search engines. However, the existence of a user fee beyond the marginal cost of providing such a service is inappropriate. Therefore, private entities should generally provide any fee-based search engine services, not the public sector. In the end, this is precisely what happened in this case.

²⁰⁶ In August 1999, the Department of Commerce proposed transferring the clearinghouse function of NTIS to the Library of Congress and shutting down the remaining operations. Congress has not acted on the Department’s proposal. Consistent with the principles in this study, a recent report from the National Commission of Libraries and Information Sciences concluded that NTIS’ operating costs should be “defrayed by appropriated funds.” See U.S. National Commission on Libraries and Information Science, “Preliminary Assessment of the Proposed Closure of the National Technical Information Service (NTIS): A Report to the President and the Congress,” March 2000, page 3.

Conclusions

The appropriate role of government in the economy is not a static concept: It must evolve as the economy does. As economic activity shifts toward information-intensive goods and services, public policy is being presented with a series of challenges, from protecting privacy to the appropriate taxation of on-line sales and jurisdictional concerns. This report has presented a set of principles and a decision tree that are intended to help public policy-makers adapt to the digital economy. The case studies have helped to illuminate the boundaries of appropriate governmental action. In some cases (e.g., the America's Job Bank), the government seems to have struck the appropriate balance among conflicting pressures. In other cases (e.g., eBillPay), the government seems to have over-stepped the boundaries that should apply to public provision of goods and services.

As part of this year's Presidential campaign, Vice President Gore and Texas Governor George W. Bush have proposed "e-government" initiatives; for example, the Vice President has called for placing nearly every government service on-line by 2003 and Governor Bush has proposed creating a \$100 million fund to support inter-agency e-government initiatives.²⁰⁷ As more agencies move toward an e-government concept, the issues explored in this report become more acute. Policy-makers, analysts, and others may disagree with some of the principles and conclusions reached in this analysis. But this report will have served its purpose if it helps to spur debate over these issues, regardless of whether all its conclusions are accepted.

²⁰⁷ Information on Vice President Gore's and Governor Bush's e-government proposals are available at www.algore.com and www.georgewbush.com, respectively.

Failing to reconsider the appropriate role of government in a digital age, and blindly applying old principles to new challenges, would be a serious mistake for policy-makers to make. The difficulties of delineating principles such as those described in this report should not serve as an excuse for not tackling the policy issues facing government decision-makers. To ensure continued strong economic performance, a rigorous debate is necessary over how the role of government should evolve in an increasingly information-driven economy.

Biographical Information

Dr. Joseph Stiglitz is Professor of Economics at Stanford University, and also serves as Senior Director and Chairman of the Advisory Committee at Sebago Associates, Inc. Previously, Dr. Stiglitz served as the World Bank's Chief Economist and Senior Vice President for Development Economics. Before joining the Bank, he was the Chairman of the President's Council of Economic Advisers. He has also served as a professor of economics at Princeton, Yale, and All Souls College, Oxford. As an academic, Dr. Stiglitz helped create a new branch of economics – "The Economics of Information" – which has received widespread application throughout economics. In the late 1970s and early 1980s, Dr. Stiglitz helped revive interest in the economics of technical change and other factors that contribute to long-run increases in productivity and living standards. Dr. Stiglitz is also a leading scholar of the economics of the public sector. The *Economist* magazine recently stated that Dr. Stiglitz's "brilliant work on the economics of information assures him a Nobel prize." [12/18/99] In 1979, the American Economic Association awarded Mr. Stiglitz its biennial John Bates Clark Award, given to the economist under 40 who has made the most significant contributions to economics.

Dr. Peter Orszag is President of Sebago Associates, Inc., and a lecturer in economics at the University of California, Berkeley. Prior to founding Sebago Associates, he served as Special Assistant to the President for Economic Policy at the White House, where his portfolio included Social Security, climate change, electricity restructuring, personal bankruptcy reform, and a variety of other economic policy issues. He has also served as an economic adviser to the Russian Government, and as Senior Economist and Senior Adviser on the President's Council of Economic Advisers. He graduated *summa cum laude* from Princeton University, where he was elected to Phi Beta Kappa, and obtained a M.Sc. and a Ph.D. in economics from the London School of Economics, which he attended as a Marshall Scholar. In describing Dr. Orszag, President Clinton's top economic adviser noted that "On the most complicated and technical areas I've had to deal with, he's the key person I turn to over and over again." [National Journal, 5/2/98.]

Jonathan Orszag is the Managing Director of Sebago Associates, Inc. Prior to joining Sebago Associates, Mr. Orszag served as the Assistant to the Secretary of Commerce and Director of the Office of Policy and Strategic Planning. In this capacity, Mr. Orszag was the Secretary of Commerce's chief policy adviser, responsible for coordinating the development and implementation of policy initiatives within the Department. He worked on a number of projects, including telecommunications issues, e-commerce, broadband deployment, and the "digital divide." Mr. Orszag previously served as an Economic Policy Advisor on President Clinton's National Economic Council (NEC) and as an economic aide to the Secretary of Labor. He received a M.Sc. in Economic and Social History from Oxford University, which he attended as a Marshall Scholar. He received his A.B. *summa cum laude* from Princeton University, was elected to Phi Beta Kappa, and was named a *USA Today* Academic All-American.

Appendix A: Circular A-76

EXECUTIVE OFFICE OF THE PRESIDENT
OFFICE OF MANAGEMENT AND BUDGET
WASHINGTON, D.C. 20503

CIRCULAR NO. A-76 (REVISED 1999)

August 4, 1983

TO THE HEADS OF EXECUTIVE DEPARTMENTS AND ESTABLISHMENTS

SUBJECT: Performance of Commercial Activities

1. **Purpose.** This Circular establishes Federal policy regarding the performance of commercial activities and implements the statutory requirements of the Federal Activities Inventory Reform Act of 1998, Public Law 105-270. The Supplement to this Circular sets forth the procedures for determining whether commercial activities should be performed under contract with commercial sources or in-house using Government facilities and personnel.
2. **Rescission.** OMB Circular No. A-76 (Revised), dated March 29, 1979; and Transmittal Memoranda 1 through 14 and 16 through 18.
3. **Authority.** The Budget and Accounting Act of 1921 (31 U.S.C. 1 *et seq.*), The Office of Federal Procurement Policy Act Amendments of 1979. (41 U.S.C. 401 *et seq.*), and The Federal Activities Inventory Reform Act of 1998. (P. L. 105-270).
4. **Background.**
 - a. In the process of governing, the Government should not compete with its citizens. The competitive enterprise system, characterized by individual freedom and initiative, is the primary source of national economic strength. In recognition of this principle, it has been and continues to be the general policy of the Government to rely on commercial sources to supply the products and services the Government needs.
 - b. This national policy was promulgated through Bureau of the Budget Bulletins issued in 1955, 1957 and 1960. OMB Circular No. A-76 was issued in 1966. The Circular was previously revised in 1967, 1979, and 1983. The Supplement (Revised Supplemental Handbook) was previously revised in March 1996 (Transmittal Memorandum 15).
5. **Policy.** It is the policy of the United States Government to:
 - a. *Achieve Economy and Enhance Productivity.* Competition enhances quality, economy, and productivity. Whenever commercial sector performance of a Government operated commercial activity is permissible, in accordance with this Circular and its Supplement, comparison of the cost of contracting and the cost of in-house performance shall be performed to determine who will do the work. When conducting cost comparisons, agencies must ensure that all costs are considered and that these costs are realistic and fair.

- b. *Retain Governmental Functions In-House.* Certain functions are inherently Governmental in nature, being so intimately related to the public interest as to mandate performance only by Federal employees. These functions are not in competition with the commercial sector. Therefore, these functions shall be performed by Government employees.
 - c. *Rely on the Commercial Sector.* The Federal Government shall rely on commercially available sources to provide commercial products and services. In accordance with the provisions of this Circular and its Supplement, the Government shall not start or carry on any activity to provide a commercial product or service if the product or service can be procured more economically from a commercial source.
6. **Definitions.** For purposes of this Circular:
- a. A *commercial activity* is one which is operated by a Federal executive agency and which provides a product or service that could be obtained from a commercial source. Activities that meet the definition of an inherently Governmental function provided below are not commercial activities. A representative list of commercial activities is provided in Attachment A. A commercial activity also may be part of an organization or a type of work that is separable from other functions or activities and is suitable for performance by contract.
 - b. A *conversion to contract* is the changeover of an activity from Government performance to performance under contract by a commercial source.
 - c. A *conversion to in-house* is the changeover of an activity from performance under contract to Government performance.
 - d. A *commercial source* is a business or other non-Federal activity located in the United States, its territories and possessions, the District of Columbia or the Commonwealth of Puerto Rico, which provides a commercial product or service.
 - e. An *inherently Governmental function* is a function which is so intimately related to the public interest as to mandate performance by Government employees. Consistent with the definitions provided in the Federal Activities Inventory Reform Act of 1998 and OFPP Policy Letter 92-1, these functions include those activities which require either the exercise of discretion in applying Government authority or the use of value judgment in making decisions for the Government. Services or products in support of inherently Governmental functions, such as those listed in Attachment A, are commercial activities and are normally subject to this Circular. Inherently Governmental functions normally fall into two categories:

(1) The *act of governing*; i.e., the discretionary exercise of Government authority. Examples include criminal investigations, prosecutions and other judicial functions; management of Government programs requiring value judgments, as in direction of the national defense; management and direction of the Armed Services; activities performed exclusively by military personnel who are subject to deployment in a combat, combat support or combat service support role; conduct of foreign relations; selection of program priorities; direction of Federal employees; regulation of the use of space, oceans, navigable rivers and other

natural resources; direction of intelligence and counter-intelligence operations; and regulation of industry and commerce, including food and drugs.

(2) *Monetary transactions and entitlements*, such as tax collection and revenue disbursements; control of the Treasury accounts and money supply; and the administration of public trusts.

- f. A *cost comparison* is the process of developing an estimate of the cost of Government performance of a commercial activity and comparing it, in accordance with the requirements of the Supplement, to the cost to the Government for contract performance of the activity.
- g. *Directly affected parties* are Federal employees and their representative organizations and bidders or offerors on the instant solicitation.
- h. *Interested parties* for purposes of challenging the contents of an agency's Commercial Activities Inventory under the Federal Activities Inventory Reform Act of 1998 are:

(1) A private sector source that (A) is an actual or prospective offeror for any contract or other form of agreement to perform the activity; and (B) has a direct economic interest in performing the activity that would be adversely affected by a determination not to procure the performance of the activity from a private sector source.

(2) A representative of any business or professional association that includes within its membership private sector sources referred to in (1) above.

(3) An officer or employee of an organization within an executive agency that is an actual or prospective offeror to perform the activity.

(4) The head of any labor organization referred to in section 7103(a) (4) of Title 5, United States Code that includes within its membership officers or employees of an organization referred to in (3) above.

7. **Scope.**

- a. Unless otherwise provided by law, this Circular and its Supplement shall apply to all executive agencies and shall provide administrative direction to heads of agencies.
- b. This Circular and its Supplement apply to printing and binding only in those agencies or departments which are exempted by law from the provisions of Title 44 of the U.S. Code.
- c. This Circular and its Supplement shall not:

(1) Be applicable when contrary to law, Executive Orders, or any treaty or international agreement;

(2) Apply to inherently Governmental functions as defined in paragraph 6.e.;

(3) Apply to the Department of Defense in times of a declared war or military mobilization;

(4) Provide authority to enter into contracts;

(5) Authorize contracts which establish an employer-employee relationship between the Government and contractor employees. An employer-employee relationship involves

close, continual supervision of individual contractor employees by Government employees, as distinguished from general oversight of contractor operations. However, limited and necessary interaction between Government employees and contractor employees, particularly during the transition period of conversion to contract, does not establish an employer-employee relationship.

(6) Be used to justify conversion to contract solely to avoid personnel ceilings or salary limitations;

(7) Apply to the conduct of research and development. However, severable in-house commercial activities in support of research and development, such as those listed in Attachment A, are normally subject to this Circular and its Supplement; or

(8) Establish and shall not be construed to create any substantive or procedural basis for anyone to challenge any agency action or inaction on the basis that such action or inaction was not in accordance with this Circular, except as specifically set forth in Part 1, Chapter 3, paragraph K of the Supplement, "Appeals of Cost Comparison Decisions" and as set forth in Appendix 2, Paragraph G, consistent with Section 3 of the Federal Activities Inventory Reform Act of 1998.

d. The requirements of the Federal Activities Inventory Reform Act of 1998 apply to the following executive agencies:

- (1) an executive department named in 5 USC 101,
- (2) a military department named in 5 USC 102, and
- (3) an independent establishment as defined in 5 USC 104.

e. The requirements of the Federal Activities Inventory Reform Act of 1998 do not apply to the following entities or activities:

- (1) the General Accounting Office,
- (2) a Government corporation or a Government controlled corporation as defined in 5 USC 103,
- (3) a non-appropriated funds instrumentality if all of its employees are referred to in 5 USC 2105(c), or
- (4) Depot-level maintenance and repair of the Department of Defense as defined in 10 USC 2460.

8. **Government Performance of a Commercial Activity.** Government performance of a commercial activity is authorized under any of the following conditions:

a. *No Satisfactory Commercial Source Available.* Either no commercial source is capable of providing the needed product or service, or use of such a source would cause unacceptable delay or disruption of an essential program. Findings shall be supported as follows:

(1) If the finding is that no commercial source is capable of providing the needed product or service, the efforts made to find commercial sources must be documented and made available to the public upon request. These efforts shall include, in addition to consideration of preferential procurement programs (see

Part I, Chapter 1, paragraph C of the Supplement) at least three notices describing the requirement in the *Commerce Business Daily* over a 90-day period or, in cases of *bona fide* urgency, two notices over a 30-day period. Specifications and requirements in the solicitation shall not be unduly restrictive and shall not exceed those required of in-house Government personnel or operations.

(2) If the finding is that a commercial source would cause unacceptable delay or disruption of an agency program, a written explanation, approved by the assistant secretary or designee in paragraph 9.a. of the Circular, must show the specific impact on an agency mission in terms of cost and performance. Urgency alone is not adequate reason to continue in-house operation of a commercial activity. Temporary disruption resulting from conversion to contract is not sufficient support for such a finding, nor is the possibility of a strike by contract employees. If the commercial activity has ever been performed by contract, an explanation of how the instant circumstances differ must be documented. These decisions must be made available to the public upon request.

(3) Activities may not be justified for in-house performance solely on the basis that the activity involves or supports a classified program or the activity is required to perform an agency's basic mission.

b. *National Defense.*

(1) The Secretary of Defense shall establish criteria for determining when Government performance of a commercial activity is required for national defense reasons. Such criteria shall be furnished to OMB, upon request.

(2) Only the Secretary of Defense or his designee has the authority to exempt commercial activities for national defense reasons.

c. *Patient Care.* Commercial activities performed at hospitals operated by the Government shall be retained in-house if the agency head, in consultation with the agency's chief medical director, determines that in-house performance would be in the best interests of direct patient care.

d. *Lower cost.* Government performance of a commercial activity is authorized if a cost comparison prepared in accordance with the Supplement demonstrates that the Government is operating or can operate the activity on an ongoing basis at an estimated lower cost than a qualified commercial source.

9. **Action Requirements.** To ensure that the provisions of this Circular and its Supplement are followed, each agency head shall:

a. Designate an official at the assistant secretary or equivalent level and officials at a comparable level in major component organizations to have responsibility for implementation of this Circular and its Supplement within the agency.

b. Establish one or more offices as central points of contact to carry out implementation. These offices shall have access to all documents and data pertinent to actions taken under the Circular and its Supplement and will respond in a timely manner to all requests concerning inventories, schedules, reviews, results of cost comparisons and cost comparison data.

c. Be guided by Federal Acquisition Regulation (FAR) Subpart 24.2 (Freedom of Information Act) in considering requests for information.

- d. Implement this Circular and its Supplement with a minimum of internal instructions. Cost comparisons shall not be delayed pending issuance of such instructions.
 - e. Ensure the reviews of all existing in-house commercial activities are completed within a reasonable time in accordance with the Federal Activities Inventory Reform Act of 1998 and the Supplement.
10. **Annual Reporting Requirement.** As required by the Federal Activities Inventory Reform Act of 1998 and Appendix 2 of the Supplement, no later than June 30 of each year, agencies shall submit to OMB a Commercial Activities Inventory and any supplemental information requested by OMB. After review and consultation by OMB, agencies will transmit a copy of the Commercial Activities Inventory to Congress and make the contents of the Inventory available to the public. Agencies will follow the process provided in the Supplement for interested parties to challenge (and appeal) the contents of the inventory.
11. **OMB Responsibility and Contact Point.** All questions or inquiries should be submitted to the Office of Management and Budget, Room 6002 NEOB, Washington, DC 20503. Telephone number (202) 395-6104, FAX (202) 395-7230.
12. **Effective Date.** This Circular and the changes to its Supplement are effective immediately.

Attachment A
OMB Circular No. A-76

EXAMPLES OF COMMERCIAL ACTIVITIES

Audiovisual Products and Services

Photography (still, movie, aerial, etc.)
Photographic processing (developing, printing, enlarging, etc.)
Film and videotape production (script writing, direction, animation, editing, acting, etc.)
Microfilming and other microforms
Art and graphics services
Distribution of audiovisual materials
Reproduction and duplication of audiovisual products
Audiovisual facility management and operation
Maintenance of audiovisual equipment

Automatic Data Processing

ADP services - batch processing, time-sharing, facility management, etc.
Programming and systems analysis, design, development, and simulation
Key punching, data entry, transmission, and teleprocessing services
Systems engineering and installation
Equipment installation, operation, and maintenance

Food Services

Operation of cafeterias, mess halls, kitchens, bakeries, dairies, and commissaries
Vending machines
Ice and water

Health Services

Surgical, medical, dental, and psychiatric care
Hospitalization, outpatient, and nursing care
Physical examinations
Eye and hearing examinations and manufacturing and fitting glasses and hearing aids
Medical and dental laboratories
Dispensaries
Preventive medicine
Dietary services
Veterinary services

Industrial Shops and Services

Machine, carpentry, electrical, plumbing, painting, and other shops
Industrial gas production and recharging
Equipment and instrument fabrication, repair and calibration
Plumbing, heating, electrical, and air conditioning services, including repair
Fire protection and prevention services
Custodial and janitorial services
Refuse collection and processing

Maintenance, Overhaul, Repair, and Testing

Aircraft and aircraft components
Ships, boats, and components
Motor vehicles

- Combat vehicles
- Railway systems
- Electronic equipment and systems
- Weapons and weapon systems
- Medical and dental equipment
- Office furniture and equipment
- Industrial plant equipment
- Photographic equipment
- Space systems

Management Support Services

- Advertising and public relations services
- Financial and payroll services
- Debt collection

Manufacturing, Fabrication, Processing, Testing, and Packaging

- Ordnance equipment
- Clothing and fabric products
- Liquid, gaseous, and chemical products
- Lumber products
- Communications and electronics equipment
- Rubber and plastic products
- Optical and related products
- Sheet metal and foundry products
- Machined products
- Construction materials
- Test and instrumentation equipment

Office and Administrative Services

- Library operations
- Stenographic recording and transcribing
- Word processing/data entry/typing services
- Mail/messenger
- Translation
- Management information systems, products and distribution
- Financial auditing and services
- Compliance auditing
- Court reporting
- Material management
- Supply services

Other Services

- Laundry and dry cleaning
- Mapping and charting
- Architect and engineer services
- Geological surveys
- Cataloging
- Training – academic, technical, vocational, and specialized
- Operation of utility systems (power, gas, water steam, and sewage)
- Laboratory testing services

Printing and Reproduction

Facility management and operation

Printing and binding – where the agency or department is exempted from the provisions of Title 44 of the U.S. Code

Reproduction, copying, and duplication

Blueprinting

Real Property

Design, engineering, construction, modification, repair, and maintenance of buildings and structures; building mechanical and electrical equipment and systems; elevators; escalators; moving walks

Construction, alteration, repair, and maintenance of roads and other surfaced areas

Landscaping, drainage, mowing and care of grounds

Dredging of waterways

Security

Guard and protective services

Systems engineering, installation, and maintenance of security systems and individual privacy systems

Forensic laboratories

Special Studies and Analyses

Cost benefit analyses

Statistical analyses

Scientific data studies

Regulatory studies

Defense, education, energy studies

Legal/litigation studies

Management studies

Systems Engineering, Installation, Operation, Maintenance, and Testing

Communications systems - voice, message, data, radio, wire, microwave, and satellite

Missile ranges

Satellite tracking and data acquisition

Radar detection and tracking

Television systems - studio and transmission equipment, distribution systems, receivers, antennas, etc.

Recreational areas

Bulk storage facilities

Transportation

Operation of motor pools

Bus service

Vehicle operation and maintenance

Air, water, and land transportation of people and things

Trucking and hauling

Appendix B: Memorandum for the Heads of Executive Departments and Agencies on Electronic Government

THE WHITE HOUSE

Office of the Press Secretary

For Immediate Release

December 17, 1999

December 17, 1999

MEMORANDUM FOR THE HEADS OF EXECUTIVE DEPARTMENTS AND AGENCIES

SUBJECT: Electronic Government

My Administration has put a wealth of information on-line. However, when it comes to most Federal services, it can still take a paper form and weeks of processing for something as simple as a change of address.

While Government agencies have created "one-stop-shopping" access to information on their agency web sites, these efforts have not uniformly been as helpful as they could be to the average citizen, who first has to know which agency provides the service he or she needs. There has not been sufficient effort to provide Government information by category of information and service - rather than by agency - in a way that meets people's needs.

Moreover, as public awareness and Internet usage increase, the demand for on-line Government interaction and simplified, standardized ways to access Government information and services becomes increasingly

important. At the same time, the public must have confidence that their on-line communications with the Government are secure and their privacy protected.

Therefore, to help our citizens gain one-stop access to existing Government information and services, and to provide better, more efficient, Government services and increased Government accountability to its citizens, I hereby direct the officials in this memorandum, in conjunction with the private sector as appropriate, to take the following actions:

1. The Administrator of General Services, in coordination with the National Partnership for Reinventing Government, the Chief Information Officers' Council, the Government Information Technology Services Board, and other appropriate agencies shall promote access to Government information organized not by agency, but by the type of service or information that people may be seeking; the data should be identified and organized in a way that makes it easier for the public to find the information it seeks.
2. The heads of executive departments and agencies (agencies) shall, to the maximum extent possible, make available on-line, by December 2000, the forms needed for the top 500 Government services used by the public. Under the Government Paperwork Elimination Act, where appropriate, by October 2003, transactions with the Federal Government should be available on-line for on-line processing of services. To achieve this goal, the Director of the Office of Management and Budget shall oversee agency development of

responsible strategies to make transactions available on-line.

3. The heads of agencies shall promote the use of electronic commerce, where appropriate, for faster, cheaper ordering on Federal procurements that will result in savings to the taxpayer.
4. The heads of agencies shall continue to build good privacy practices into their web sites by posting privacy policies as directed by the Director of the Office of Management and Budget and by adopting and implementing information policies to protect children's information on web sites that are directed at children.
5. The head of each agency shall permit greater access to its officials by creating a public electronic mail address through which citizens can contact the agency with questions, comments, or concerns. The heads of each agency shall also provide disability access on Federal web sites.
6. The Director of the National Science Foundation, working with appropriate Federal agencies, shall conduct a 1-year study examining the feasibility of on-line voting.
7. The Secretaries of Health and Human Services, Education, Veterans Affairs, and Agriculture, the Commissioner of Social Security, and the Director of the Federal Emergency Management Agency, working closely with other Federal agencies that provide benefit assistance to citizens, shall make a broad range of benefits and services available through private and secure electronic use of the Internet.

8. The Administrator of General Services, in coordination with the Secretary of the Treasury, the Secretary of Commerce, the Government Information Technology Services Board, the National Partnership for Reinventing Government, and other appropriate agencies and organizations, shall assist agencies in the development of private, secure, and effective communication across agencies and with the public, through the use of public key technology. In light of this goal, agencies are encouraged to issue, in coordination with the General Services Administration, a Government-wide minimum of 100,000 digital signature certificates by December 2000.

9. The heads of agencies shall develop a strategy for upgrading their respective agency's capacity for using the Internet to become more open, efficient, and responsive, and to more effectively carry out the agency's mission. At a minimum, this strategy should involve:
 - (a) expanded training of Federal employees, including employees with policy and senior management responsibility;

 - (b) identification and adoption of "best practices" implemented by leading public and private sector organizations;

 - (c) recognition for Federal employees who suggest new and innovative agency applications of the Internet;

 - (d) partnerships with the research community for experimentation

with advanced applications; and

(e) mechanisms for collecting input from the agency's stakeholders regarding agency use of the Internet.

10. Items 1-8 of this memorandum and my July 1, 1997, and November 30, 1998, memoranda shall be conducted subject to the availability of appropriations and consistent with agencies' priorities and my budget, and to the extent permitted by law.

11. The Vice President shall continue his leadership in coordinating the United States Government's electronic commerce strategy. Further, I direct that the heads of executive departments and agencies report to the Vice President and to me on their progress in meeting the terms of this memorandum, through the Electronic Commerce Working Group in its annual report.

WILLIAM J. CLINTON
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Appendix C: Circular A-130

MEMORANDUM FOR HEADS OF EXECUTIVE DEPARTMENTS AND ESTABLISHMENTS

SUBJECT: Management of Federal Information Resources

1. Purpose
2. Rescissions
3. Authorities
4. Applicability and Scope
5. Background
6. Definitions
7. Basic Considerations and Assumptions
8. Policy
9. Assignment of Responsibilities
10. Oversight
11. Effectiveness
12. Inquiries
13. Sunset Review Date

1. Purpose: This Circular establishes policy for the management of Federal information resources. Procedural and analytic guidelines for implementing specific aspects of these policies are included as appendices.

2. Rescissions: This Circular rescinds OMB Circulars No. A-3, A-71, A-90, A-108, A-114, and A-121, and all Transmittal Memoranda to those circulars.

3. Authorities: This Circular is issued pursuant to the Paperwork Reduction Act (PRA) of 1980, as amended by the Paperwork Reduction Act of 1995 (44 U.S.C. Chapter 35); the Privacy Act, as amended (5 U.S.C. 552a); the Chief Financial Officers Act (31 U.S.C. 3512 et seq.); the Federal Property and Administrative Services Act, as amended (40 U.S.C. 759 and 487); the Computer Security Act (40 U.S.C. 759 note); the Budget and Accounting Act, as amended (31 U.S.C. Chapter 11); Executive Order No. 12046 of March 27, 1978; and Executive Order No. 12472 of April 3, 1984.

4. Applicability and Scope:

a. The policies in this Circular apply to the information activities of all agencies of the executive branch of the Federal government.

b. Information classified for national security purposes should also be handled in accordance with the appropriate national security directives. National security emergency preparedness activities should be conducted in accordance with Executive Order No. 12472.

5. Background: The Paperwork Reduction Act establishes a broad mandate for agencies to perform their information resources management activities in an efficient, effective, and economical manner. To assist agencies in an integrated approach to information resources management, the Act requires that the Director of OMB develop and implement uniform and consistent information resources management policies; oversee the development and promote the use of information management principles, standards, and guidelines; evaluate agency information resources management practices in order to determine their adequacy and efficiency; and determine compliance of such practices with the policies, principles, standards, and guidelines promulgated by the Director.

6. Definitions:

a. The term "agency" means any executive department, military department, government corporation, government controlled corporation, or other establishment in the executive branch of the Federal government, or any independent regulatory agency. Within the Executive Office of the President, the term includes only OMB and the Office of Administration.

b. The term "audiovisual production" means a unified presentation, developed according to a plan or script, containing visual imagery, sound or both, and used to convey information.

c. The term "dissemination" means the government initiated distribution of information to the public. Not considered dissemination within the meaning of this Circular is distribution limited to government employees or agency contractors or grantees, intra- or inter-agency use or sharing of government information, and responses to requests for agency records under the Freedom of Information Act (5 U.S.C. 552) or Privacy Act.

d. The term "full costs," when applied to the expenses incurred in the operation of an information processing service organization (IPSO), is comprised of all direct, indirect, general, and administrative costs incurred in the operation of an IPSO. These costs include, but are not limited to, personnel, equipment, software, supplies, contracted services from private sector providers, space occupancy, intra-agency services from within the agency, inter-agency services from other Federal agencies, other services that are provided by State and local governments, and Judicial and Legislative branch organizations.

e. The term "government information" means information created, collected, processed, disseminated, or disposed of by or for the Federal Government.

f. The term "government publication" means information which is published as an individual document at government expense, or as required by law. (44 U.S.C. 1901)

g. The term "information" means any communication or representation of knowledge such as facts, data, or opinions in any medium or form, including textual, numerical, graphic, cartographic, narrative, or audiovisual forms.

h. The term "information dissemination product" means any book, paper, map, machine-readable material, audiovisual production, or other documentary material, regardless of physical form or characteristic, disseminated by an agency to the public.

- i. The term "information life cycle" means the stages through which information passes, typically characterized as creation or collection, processing, dissemination, use, storage, and disposition.
- j. The term "information management" means the planning, budgeting, manipulating, and controlling of information throughout its life cycle.
- k. The term "information resources" includes both government information and information technology.
- l. The term "information processing services organization" (IPSO) means a discrete set of personnel, information technology, and support equipment with the primary function of providing services to more than one agency on a reimbursable basis.
- m. The term "information resources management" means the process of managing information resources to accomplish agency missions. The term encompasses both information itself and the related resources, such as personnel, equipment, funds, and information technology.
- n. The term "information system" means a discrete set of information resources organized for the collection, processing, maintenance, transmission, and dissemination of information, in accordance with defined procedures, whether automated or manual.
- o. The term "information system life cycle" means the phases through which an information system passes, typically characterized as initiation, development, operation, and termination.
- p. The term "information technology" means the hardware and software operated by a Federal agency or by a contractor of a Federal agency or other organization that processes information on behalf of the Federal government to accomplish a Federal function, regardless of the technology involved, whether computers, telecommunications, or others. It includes automatic data processing equipment as that term is defined in Section 111(a)(2) of the Federal Property and Administrative Services Act of 1949. For the purposes of this Circular, automatic data processing and telecommunications activities related to certain critical national security missions, as defined in 44 U.S.C. 3502(2) and 10 U.S.C. 2315, are excluded.
- q. The term "major information system" means an information system that requires special management attention because of its importance to an agency mission; its high development, operating, or maintenance costs; or its significant role in the administration of agency programs, finances, property, or other resources.
- r. The term "records" means all books, papers, maps, photographs, machine-readable materials, or other documentary materials, regardless of physical form or characteristics, made or received by an agency of the United States Government under Federal law or in connection with the transaction of public business and preserved or appropriate for preservation by that agency or its legitimate successor as evidence of the organization, functions, policies, decisions, procedures, operations, or other activities of the government or because of the informational value of the data in them. Library and museum material made or acquired and preserved solely for reference or

exhibition purposes, extra copies of documents preserved only for convenience of reference, and stocks of publications and of processed documents are not included. (44 U.S.C. 3301)

s. The term "records management" means the planning, controlling, directing, organizing, training, promoting, and other managerial activities involved with respect to records creation, records maintenance and use, and records disposition in order to achieve adequate and proper documentation of the policies and transactions of the Federal Government and effective and economical management of agency operations. (44 U.S.C. 2901(2))

t. The term "service recipient" means an agency organizational unit, programmatic entity, or chargeable account that receives information processing services from an information processing service organization (IPSO). A service recipient may be either internal or external to the organization responsible for providing information resources services, but normally does not report either to the manager or director of the IPSO or to the same immediate supervisor.

7. Basic Considerations and Assumptions:

a. The Federal Government is the largest single producer, collector, consumer, and disseminator of information in the United States. Because of the extent of the government's information activities, and the dependence of those activities upon public cooperation, the management of Federal information resources is an issue of continuing importance to all Federal agencies, State and local governments, and the public.

b. Government information is a valuable national resource. It provides the public with knowledge of the government, society, and economy – past, present, and future. It is a means to ensure the accountability of government, to manage the government's operations, to maintain the healthy performance of the economy, and is itself a commodity in the marketplace.

c. The free flow of information between the government and the public is essential to a democratic society. It is also essential that the government minimize the Federal paperwork burden on the public, minimize the cost of its information activities, and maximize the usefulness of government information.

d. In order to minimize the cost and maximize the usefulness of government information, the expected public and private benefits derived from government information should exceed the public and private costs of the information, recognizing that the benefits to be derived from government information may not always be quantifiable.

e. The nation can benefit from government information disseminated both by Federal agencies and by diverse nonfederal parties, including State and local government agencies, educational and other not-for-profit institutions, and for-profit organizations.

f. Because the public disclosure of government information is essential to the operation of a democracy, the management of Federal information resources should protect the public's right of access to government information.

- g. The individual's right to privacy must be protected in Federal Government information activities involving personal information.
- h. Systematic attention to the management of government records is an essential component of sound public resources management which ensures public accountability. Together with records preservation, it protects the government's historical record and guards the legal and financial rights of the government and the public.
- i. Agency strategic planning can improve the operation of government programs. The application of information resources should support an agency's strategic plan to fulfill its mission. The integration of IRM planning with agency strategic planning promotes the appropriate application of Federal information resources.
- j. Because State and local governments are important producers of government information for many areas such as health, social welfare, labor, transportation, and education, the Federal Government must cooperate with these governments in the management of information resources.
- k. The open and efficient exchange of scientific and technical government information, subject to applicable national security controls and the proprietary rights of others, fosters excellence in scientific research and effective use of Federal research and development funds.
- l. Information technology is not an end in itself. It is one set of resources that can improve the effectiveness and efficiency of Federal program delivery.
- m. Federal Government information resources management policies and activities can affect, and be affected by, the information policies and activities of other nations.
- n. Users of Federal information resources must have skills, knowledge, and training to manage information resources, enabling the Federal government to effectively serve the public through automated means.
- o. The application of up-to-date information technology presents opportunities to promote fundamental changes in agency structures, work processes, and ways of interacting with the public that improve the effectiveness and efficiency of Federal agencies.
- p. The availability of government information in diverse media, including electronic formats, permits agencies and the public greater flexibility in using the information.
- q. Federal managers with program delivery responsibilities should recognize the importance of information resources management to mission performance.

8. Policy:

- a. Information Management Policy

1. Information Management Planning. Agencies shall plan in an integrated manner for managing information throughout its life cycle. Agencies shall:
 - (a) Consider, at each stage of the information life cycle, the effects of decisions and actions on other stages of the life cycle, particularly those concerning information dissemination;
 - (b) Consider the effects of their actions on members of the public and ensure consultation with the public as appropriate;
 - (c) Consider the effects of their actions on State and local governments and ensure consultation with those governments as appropriate;
 - (d) Seek to satisfy new information needs through interagency or intergovernmental sharing of information, or through commercial sources, where appropriate, before creating or collecting new information;
 - (e) Integrate planning for information systems with plans for resource allocation and use, including budgeting, acquisition, and use of information technology;
 - (f) Train personnel in skills appropriate to management of information;
 - (g) Protect government information commensurate with the risk and magnitude of harm that could result from the loss, misuse, or unauthorized access to or modification of such information;
 - (h) Use voluntary standards and Federal Information Processing Standards where appropriate or required;
 - (i) Consider the effects of their actions on the privacy rights of individuals, and ensure that appropriate legal and technical safeguards are implemented;
 - (j) Record, preserve, and make accessible sufficient information to ensure the management and accountability of agency programs, and to protect the legal and financial rights of the Federal Government;
 - (k) Incorporate records management and archival functions into the design, development, and implementation of information systems;
 1. Provide for public access to records where required or appropriate.
 2. Information Collection. Agencies shall collect or create only that information necessary for the proper performance of agency functions and which has practical utility.
 3. Electronic Information Collection. Agencies shall use electronic collection techniques where such techniques reduce burden on the public, increase efficiency of government programs, reduce costs to the government and the public, and/or provide better service to the public. Conditions favorable to electronic collection include:
 - (a) The information collection seeks a large volume of data and/or reaches a large proportion of the public;
 - (b) The information collection recurs frequently;
 - (c) The structure, format, and/or definition of the information sought by the information collection does not change significantly over several years;
 - (d) The agency routinely converts the information collected to electronic format;

- (e) A substantial number of the affected public are known to have ready access to the necessary information technology and to maintain the information in electronic form;
- (f) Conversion to electronic reporting, if mandatory, will not impose substantial costs or other adverse effects on the public, especially State and local governments and small business entities.

4. Records Management. Agencies shall:

- (a) Ensure that records management programs provide adequate and proper documentation of agency activities;
- (b) Ensure the ability to access records regardless of form or medium;
- (c) In a timely fashion, establish, and obtain the approval of the Archivist of the United States for, retention schedules for Federal records; and
- (d) Provide training and guidance as appropriate to all agency officials and employees and contractors regarding their Federal records management responsibilities.

5. Providing Information to the Public. Agencies have a responsibility to provide information to the public consistent with their missions. Agencies shall discharge this responsibility by:

- (a) Providing information, as required by law, describing agency organization, activities, programs, meetings, systems of records, and other information holdings, and how the public may gain access to agency information resources;
- (b) Providing access to agency records under provisions of the Freedom of Information Act and the Privacy Act, subject to the protections and limitations provided for in these Acts;
- (c) Providing such other information as is necessary or appropriate for the proper performance of agency functions; and
- (d) In determining whether and how to disseminate information to the public, agencies shall:

- (i) Disseminate information in a manner that achieves the best balance between the goals of maximizing the usefulness of the information and minimizing the cost to the government and the public;
- (ii) Disseminate information dissemination products on equitable and timely terms;
- (iii) Take advantage of all dissemination channels, Federal and nonfederal, including State and local governments, libraries

and private sector entities, in discharging agency information dissemination responsibilities;

(iv) Help the public locate government information maintained by or for the agency.

6. Information Dissemination Management System. Agencies shall maintain and implement a management system for all information dissemination products which shall, at a minimum:
 - (a) Assure that information dissemination products are necessary for proper performance of agency functions (44 U.S.C. 1108);
 - (b) Consider whether an information dissemination product available from other Federal or nonfederal sources is equivalent to an agency information dissemination product and reasonably fulfills the dissemination responsibilities of the agency;
 - (c) Establish and maintain inventories of all agency information dissemination products;
 - (d) Develop such other aids to locating agency information dissemination products including catalogs and directories, as may reasonably achieve agency information dissemination objectives;
 - (e) Identify in information dissemination products the source of the information, if from another agency;
 - (f) Ensure that members of the public with disabilities whom the agency has a responsibility to inform have a reasonable ability to access the information dissemination products;
 - (g) Ensure that government publications are made available to depository libraries through the facilities of the Government Printing Office, as required by law (44 U.S.C. Part 19);
 - (h) Provide electronic information dissemination products to the Government Printing Office for distribution to depository libraries;
 - (i) Establish and maintain communications with members of the public and with State and local governments so that the agency creates information dissemination products that meet their respective needs;
 - (j) Provide adequate notice when initiating, substantially modifying, or terminating significant information dissemination products; and
 - (k) Ensure that, to the extent existing information dissemination policies or practices are inconsistent with the requirements of this Circular, a prompt and orderly transition to compliance with the requirements of this Circular is made.

7. Avoiding Improperly Restrictive Practices. Agencies shall:
 - (a) Avoid establishing, or permitting others to establish on their behalf, exclusive, restricted, or other distribution arrangements that

interfere with the availability of information dissemination products on a timely and equitable basis;

- (b) Avoid establishing restrictions or regulations, including the charging of fees or royalties, on the reuse, resale, or redissemination of Federal information dissemination products by the public; and,
- (c) Set user charges for information dissemination products at a level sufficient to recover the cost of dissemination but no higher. They shall exclude from calculation of the charges costs associated with original collection and processing of the information. Exceptions to this policy are:
 - i. Where statutory requirements are at variance with the policy;
 - ii. Where the agency collects, processes, and disseminates the information for the benefit of a specific identifiable group beyond the benefit to the general public;
 - iii. Where the agency plans to establish user charges at less than cost of dissemination because of a determination that higher charges would constitute a significant barrier to properly performing the agency's functions, including reaching members of the public whom the agency has a responsibility to inform; or
 - iv. Where the Director of OMB determines an exception is warranted.

8. Electronic Information Dissemination. Agencies shall use electronic media and formats, including public networks, as appropriate and within budgetary constraints, in order to make government information more easily accessible and useful to the public. The use of electronic media and formats for information dissemination is appropriate under the following conditions:

- (a) The agency develops and maintains the information electronically;
- (b) Electronic media or formats are practical and cost effective ways to provide public access to a large, highly detailed volume of information;
- (c) The agency disseminates the product frequently;
- (d) The agency knows a substantial portion of users have ready access to the necessary information technology and training to use electronic information dissemination products;
- (e) A change to electronic dissemination, as the sole means of disseminating the product, will not impose substantial acquisition or

training costs on users, especially State and local governments and small business entities.

9. Safeguards. Agencies shall:

- (a) Ensure that information is protected commensurate with the risk and magnitude of the harm that would result from the loss, misuse, or unauthorized access to or modification of such information;
- (b) Limit the collection of information which identifies individuals to that which is legally authorized and necessary for the proper performance of agency functions;
- (c) Limit the sharing of information that identifies individuals or contains proprietary information to that which is legally authorized, and impose appropriate conditions on use where a continuing obligation to ensure the confidentiality of the information exists;
- (d) Provide individuals, upon request, access to records about them maintained in Privacy Act systems of records, and permit them to amend such records as are in error consistent with the provisions of the Privacy Act.

b. Information Systems and Information Technology Management

1. Evaluation and Performance Measurement. Agencies shall promote the appropriate application of Federal information resources as follows:

- (a) Seek opportunities to improve the effectiveness and efficiency of government programs through work process redesign and the judicious application of information technology;
- (b) Prepare, and update as necessary throughout the information system life cycle, a benefit-cost analysis for each information system:
 - i. at a level of detail appropriate to the size of the investment;
 - ii. consistent with the methodology described in OMB Circular No. A-94, "Guidelines and Discount Rates for Benefit-Cost Analysis of Federal Programs;" and
 - iii. that relies on systematic measures of mission performance, including the:

(a) effectiveness of program delivery; (b) efficiency of program administration; and (c) reduction in burden, including information collection burden, imposed on the public;

(c) Conduct benefit-cost analyses to support ongoing management oversight processes that maximize return on investment and minimize financial and operational risk for investments in major information systems on an agency-wide basis; and

(d) Conduct post-implementation reviews of information systems to validate estimated benefits and document effective management practices for broader use.

2. Strategic Information Resources Management (IRM) Planning. Agencies shall establish and maintain strategic information resources management planning processes which include the following components:

(a) Strategic IRM planning that addresses how the management of information resources promotes the fulfillment of an agency's mission. This planning process should support the development and maintenance of a strategic IRM plan that reflects and anticipates changes in the agency's mission, policy direction, technological capabilities, or resource levels;

(b) Information planning that promotes the use of information throughout its life cycle to maximize the usefulness of information, minimize the burden on the public, and preserve the appropriate integrity, availability, and confidentiality of information. It shall specifically address the planning and budgeting for the information collection burden imposed on the public as defined by 5 C.F.R. 1320;

(c) Operational information technology planning that links information technology to anticipated program and mission needs, reflects budget constraints, and forms the basis for budget requests. This planning should result in the preparation and maintenance of an up-to-date five-year plan, as required by 44 U.S.C. 3506, which includes:

- i. a listing of existing and planned major information systems;
- ii. a listing of planned information technology acquisitions;
- iii. an explanation of how the listed major information systems and planned information technology

- acquisitions relate to each other and support the achievement of the agency's mission; and
 - iv. a summary of computer security planning, as required by Section 6 of the Computer Security Act of 1987 (40 U.S.C. 759 note); and
 - (d) Coordination with other agency planning processes including strategic, human resources, and financial resources.
3. Information Systems Management Oversight. Agencies shall establish information system management oversight mechanisms that:
- (a) Ensure that each information system meets agency mission requirements;
 - (b) Provide for periodic review of information systems to determine:
 - i. how mission requirements might have changed;
 - ii. whether the information system continues to fulfill ongoing and anticipated mission requirements; and
 - iii. what level of maintenance is needed to ensure the information system meets mission requirements cost effectively;
 - (c) Ensure that the official who administers a program supported by an information system is responsible and accountable for the management of that information system throughout its life cycle;
 - (d) Provide for the appropriate training for users of Federal information resources;
 - (e) Prescribe Federal information system requirements that do not unduly restrict the prerogatives of State, local, and tribal governments;
 - (f) Ensure that major information systems proceed in a timely fashion towards agreed-upon milestones in an information system life cycle, meet user requirements, and deliver intended benefits to the agency and affected publics through coordinated decision making about the information, human, financial, and other supporting resources; and
 - (g) Ensure that financial management systems conform to the requirements of OMB Circular No. A-127, "Financial Management Systems."
4. Use of Information Resources. Agencies shall create and maintain management and technical frameworks for using information resources that document linkages between mission needs, information content, and information technology capabilities. These frameworks should guide both strategic and operational

IRM planning. They should also address steps necessary to create an open systems environment. Agencies shall implement the following principles:

- (a) Develop information systems in a manner that facilitates necessary interoperability, application portability, and scalability of computerized applications across networks of heterogeneous hardware, software, and communications platforms;
- (b) Ensure that improvements to existing information systems and the development of planned information systems do not unnecessarily duplicate information systems available within the same agency, from other agencies, or from the private sector;
- (c) Share available information systems with other agencies to the extent practicable and legally permissible;
- (d) Meet information technology needs through intra-agency and inter-agency sharing, when it is cost effective, before acquiring new information technology resources;
- (e) For Information Processing Service Organizations (IPSOs) that have costs in excess of \$5 million per year, agencies shall:
 - i. account for the full costs of operating all IPSOs;
 - ii. recover the costs incurred for providing IPSO services to all service recipients on an equitable basis commensurate with the costs required to provide those services; and
 - iii. document sharing agreements between service recipients and IPSOs; and
- (f) Establish a level of security for all information systems that is commensurate with the risk and magnitude of the harm resulting from the loss, misuse, or unauthorized access to or modification of the information contained in these information systems.

5. Acquisition of Information Technology. Agencies shall:

- (a) Acquire information technology in a manner that makes use of full and open competition and that maximizes return on investment;
- (b) Acquire off-the-shelf software from commercial sources, unless the cost effectiveness of developing custom software to meet mission needs is clear and has been documented;
- (c) Acquire information technology in accordance with OMB Circular No. A-109, "Acquisition of Major Systems," where appropriate; and

- (d) Acquire information technology in a manner that considers the need for accommodations of accessibility for individuals with disabilities to the extent that needs for such access exist.

9. Assignment of Responsibilities:

a. All Federal Agencies. The head of each agency shall:

1. Have primary responsibility for managing agency information resources;
2. Ensure that the information policies, principles, standards, guidelines, rules, and regulations prescribed by OMB are implemented appropriately within the agency;
3. Develop internal agency information policies and procedures and oversee, evaluate, and otherwise periodically review agency information resources management activities for conformity with the policies set forth in this Circular;
4. Develop agency policies and procedures that provide for timely acquisition of required information technology;
5. Maintain an inventory of the agencies' major information systems, holdings and information dissemination products, as required by 44 U.S.C. 3511.
6. Implement and enforce applicable records management policies and procedures, including requirements for archiving information maintained in electronic format, particularly in the planning, design and operation of information systems.
7. Identify to the Director, OMB, statutory, regulatory, and other impediments to efficient management of Federal information resources and recommend to the Director legislation, policies, procedures, and other guidance to improve such management;
8. Assist OMB in the performance of its functions under the PRA including making services, personnel, and facilities available to OMB for this purpose to the extent practicable;
9. Appoint a senior official, as required by 44 U.S.C. 3506(a), who shall report directly to the agency head to carry out the responsibilities of the agency under the PRA. The head of the agency shall keep the Director, OMB, advised as to the name, title, authority, responsibilities, and organizational resources of the senior official. For purposes of this paragraph, military departments and the Office of the Secretary of Defense may each appoint one official.
10. Direct the senior official appointed pursuant to 44 U.S.C. 3506(a) to monitor agency compliance with the policies, procedures, and guidance in this Circular. Acting as an ombudsman, the senior official shall consider alleged instances of agency failure to comply with this Circular and recommend or take corrective action as appropriate. The senior official shall report annually, not later than February 1st of each year, to the Director those instances of alleged failure to comply with this Circular and their resolution.

b. Department of State. The Secretary of State shall:

1. Advise the Director, OMB, on the development of United States positions and policies on international information policy issues affecting Federal Government information activities and ensure that such positions and policies are consistent with Federal information resources management policy;

2. Ensure, in consultation with the Secretary of Commerce, that the United States is represented in the development of international information technology standards, and advise the Director, OMB, of such activities.

c. Department of Commerce. The Secretary of Commerce shall:

1. Develop and issue Federal Information Processing Standards and guidelines necessary to ensure the efficient and effective acquisition, management, security, and use of information technology;
2. Advise the Director, OMB, on the development of policies relating to the procurement and management of Federal telecommunications resources;
3. Provide OMB and the agencies with scientific and technical advisory services relating to the development and use of information technology;
4. Conduct studies and evaluations concerning telecommunications technology, and concerning the improvement, expansion, testing, operation, and use of Federal telecommunications systems and advise the Director, OMB, and appropriate agencies of the recommendations that result from such studies;
5. Develop, in consultation with the Secretary of State and the Director of OMB, plans, policies, and programs relating to international telecommunications issues affecting government information activities;
6. Identify needs for standardization of telecommunications and information processing technology, and develop standards, in consultation with the Secretary of Defense and the Administrator of General Services, to ensure efficient application of such technology;
7. Ensure that the Federal Government is represented in the development of national and, in consultation with the Secretary of State, international information technology standards, and advise the Director, OMB, of such activities.

d. Department of Defense. The Secretary of Defense shall develop, in consultation with the Administrator of General Services, uniform Federal telecommunications standards and guidelines to ensure national security, emergency preparedness, and continuity of government.

e. General Services Administration. The Administrator of General Services shall:

1. Advise the Director, OMB, and agency heads on matters affecting the procurement of information technology;
2. Coordinate and, when required, provide for the purchase, lease, and maintenance of information technology required by Federal agencies;
3. Develop criteria for timely procurement of information technology and delegate procurement authority to agencies that comply with the criteria;
4. Provide guidelines and regulations for Federal agencies, as authorized by law, on the acquisition, maintenance, and disposition of information technology, and for implementation of Federal Information Processing Standards;
5. Develop policies and guidelines that facilitate the sharing of information technology among agencies as required by this Circular;
6. Manage the Information Technology Fund in accordance with the Federal Property and Administrative Services Act as amended;

f. Office of Personnel Management. The Director, Office of Personnel Management, shall:

1. Develop and conduct training programs for Federal personnel on information resources management including end-user computing;
2. Evaluate periodically future personnel management and staffing requirements for Federal information resources management;
3. Establish personnel security policies and develop training programs for Federal personnel associated with the design, operation, or maintenance of information systems.

g. National Archives and Records Administration. The Archivist of the United States shall:

1. Administer the Federal records management program in accordance with the National Archives and Records Act;
2. Assist the Director, OMB, in developing standards and guidelines relating to the records management program.

h. Office of Management and Budget. The Director of the Office of Management and Budget shall:

1. Provide overall leadership and coordination of Federal information resources management within the executive branch;
2. Serve as the President's principal adviser on procurement and management of Federal telecommunications systems, and develop and establish policies for procurement and management of such systems;
3. Issue policies, procedures, and guidelines to assist agencies in achieving integrated, effective, and efficient information resources management;
4. Initiate and review proposals for changes in legislation, regulations, and agency procedures to improve Federal information resources management;
5. Review and approve or disapprove agency proposals for collection of information from the public, as defined by 5 CFR 1320.3;
6. Develop and maintain a Government-wide strategic plan for information resources management.
7. Evaluate agencies' information resources management and identify cross-cutting information policy issues through the review of agency information programs, information collection budgets, information technology acquisition plans, fiscal budgets, and by other means;
8. Provide policy oversight for the Federal records management function conducted by the National Archives and Records Administration, coordinate records management policies and programs with other information activities, and review compliance by agencies with records management requirements;
9. Review agencies' policies, practices, and programs pertaining to the security, protection, sharing, and disclosure of information, in order to ensure compliance, with respect to privacy and security, with the Privacy Act, the Freedom of Information Act, the Computer Security Act and related statutes;
10. Resolve information technology procurement disputes between agencies and the General Services Administration pursuant to Section 111 of the Federal Property and Administrative Services Act;

11. Review proposed U.S. Government Position and Policy statements on international issues affecting Federal Government information activities and advise the Secretary of State as to their consistency with Federal information resources management policy.

12. Coordinate the development and review by the Office of Information and Regulatory Affairs of policy associated with Federal procurement and acquisition of information technology with the Office of Federal Procurement Policy.

10. Oversight:

a. The Director, OMB, will use information technology planning reviews, fiscal budget reviews, information collection budget reviews, management reviews, and such other measures as the Director deems necessary to evaluate the adequacy and efficiency of each agency's information resources management and compliance with this Circular.

b. The Director, OMB, may, consistent with statute and upon written request of an agency, grant a waiver from particular requirements of this Circular. Requests for waivers must detail the reasons why a particular waiver is sought, identify the duration of the waiver sought, and include a plan for the prompt and orderly transition to full compliance with the requirements of this Circular. Notice of each waiver request shall be published promptly by the agency in the Federal Register, with a copy of the waiver request made available to the public on request.

11. Effectiveness: This Circular is effective upon issuance. Nothing in this Circular shall be construed to confer a private right of action on any person.

12. Inquiries: All questions or inquiries should be addressed to the Office of Information and Regulatory Affairs, Office of Management and Budget, Washington, D.C. 20503. Telephone: (202) 395-3785.

13. Sunset Review Date: OMB will review this Circular three years from the date of issuance to ascertain its effectiveness.