



# A Federal Chief Technology Officer in the Obama Administration: Options and Issues for Consideration

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## Summary

President Barack Obama has expressed his intention to establish a federal chief technology officer (CTO). In campaign and presidential transition documents, the President identified several specific areas of responsibility for a CTO, including transparency of government operations, computer and network security (sometimes referred to as cybersecurity), identification and adoption of best technologies and practices by federal agencies, and interoperability of emergency communications technologies for first responders.

In addition, some commentators have speculated on broader roles that a CTO might be asked to undertake. In particular, many have raised the question of whether a CTO might go beyond what might be considered traditional CTO responsibilities and also serve as the lead federal advocate for technology and innovation-related programs, policies, and investments.

Neither the campaign nor transition documents provide details such as where a CTO would be located organizationally; whether a CTO would be a single position or supported by a staff, office, or agency; and how the duties and authorities of a CTO would be aligned and integrated with existing offices and agencies charged with similar responsibilities, such as the White House Office of Science and Technology Policy, Federal Communications Commission, and the National Telecommunications and Information Administration.

A CTO is likely to face a variety of challenges in executing the mission envisioned by the President. Among the early challenges will be negotiating domains of responsibilities, formal and informal, within the White House (if that is where President Obama or Congress decides to establish a CTO) and with executive branch agencies that have overlapping missions. Some commentators have expressed concerns about the impact a CTO might have on existing offices and agencies with respect to the allocation and coordination of authorities and responsibilities. Others commentators have asserted that a high-level CTO could serve as an advocate for technological innovation and foster increased knowledge sharing among federal agencies to more effectively implement information technology solutions to meet disparate mission requirements.

The President has not indicated whether he intends to establish a CTO position by executive order or other administrative process, or whether he will seek legislation. Congress may elect to provide a statutory foundation for a CTO, define the roles and authorities of a CTO, authorize and appropriate funds, provide for oversight, and address other aspects of the position.

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## Background

In November 2007, Senator Barack Obama announced his intention, if elected president, to appoint a chief technology officer (CTO). His announcement was accompanied by a campaign position paper on technology and innovation that included the following description of the role envisioned for a CTO:

Bring Government into the 21<sup>st</sup> Century: Barack Obama will use technology to reform government and improve the exchange of information between the federal government and citizens while ensuring the security of our networks. Obama believes in the American people and in their intelligence, expertise, and ability and willingness to give and to give back to make government work better.

Obama will appoint the nation's first Chief Technology Officer (CTO) to ensure that our government and all its agencies have the right infrastructure, policies and services for the 21<sup>st</sup> century. The CTO will ensure the safety of our networks and will lead an interagency effort, working with chief technology and chief information officers of each of the federal agencies, to ensure that they use best-in-class technologies and share best practices.

The CTO will have a specific focus on transparency, by ensuring that each arm of the federal government makes its records open and accessible as the E-Government Act requires. The CTO will also focus on using new technologies to solicit and receive information back from citizens to improve the functioning of democratic government.

The CTO will also ensure technological interoperability of key government functions. For example, the Chief Technology Officer will oversee the development of a national, interoperable wireless network for local, state and federal first responders as the 9/11 commission recommended. This will ensure that fire officials, police officers and [emergency medical technicians] from different jurisdictions have the ability to communicate with each other during a crisis and we do not have a repeat of the failure to deliver critical public services that occurred in the aftermath of Hurricane Katrina.<sup>1</sup>

Following his election in November 2008, President-elect Obama reiterated his intention to appoint a CTO on Change.gov, the website of the Office of the President-elect:

Bring Government into the 21<sup>st</sup> Century: Use technology to reform government and improve the exchange of information between the federal government and citizens while ensuring the security of our networks. Appoint the nation's first Chief Technology Officer (CTO) to ensure the safety of our networks and lead an interagency effort, working with chief technology and chief information officers of each of the federal agencies, to ensure that they use best-in-class technologies and share best practices.<sup>2</sup>

Many of the details related to the position remain uncertain. For example, as the Obama Administration begins implementing policies, some commentators have speculated that a CTO may be given a broader range of duties and authorities than explicitly specified in these documents (see discussion on pages 3 and 4 of this report). In addition, neither the campaign

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<sup>1</sup> Obama '08, *Barack Obama: Connecting and Empowering All Americans Through Technology and Innovation*, November 2007. Available at [http://www.barackobama.com/pdf/issues/technology/Fact\\_Sheet\\_Innovation\\_and\\_Technology.pdf](http://www.barackobama.com/pdf/issues/technology/Fact_Sheet_Innovation_and_Technology.pdf).

<sup>2</sup> Website of the Office of the President-elect. Available at [http://change.gov/agenda/technology\\_agenda/](http://change.gov/agenda/technology_agenda/).

position paper nor the transition website addresses organizational issues related to the position, such as whether President Obama intends to seek legislation to create a statutory foundation for a CTO position, and whether he intends for a CTO to be a solitary position, a new White House office with supporting staff, or part of a federal agency or existing White House office. This report addresses issues related to the potential scope of duties and authorities of a CTO, as well as other issues Congress may choose to consider if it opts to exert oversight or to develop legislation to create the position and/or office of a CTO.

## Potential Scope of Duties and Authorities

A fundamental question related to a CTO position is: What would be the scope of duties and authorities given to this position? Two potential broad roles for a CTO appear to have emerged. The first role, explicitly articulated on President Obama's earlier campaign and transition websites, might be described as a supra-chief information officer with the mission of using information technology to improve the delivery of government services, increasing transparency of government policymaking, and opening channels for increased citizen participation in government, as well as ensuring that the nation's information and communications (ICT) infrastructure is robust and secure. In this capacity, a CTO would also ensure that "best practices" are identified, shared, and implemented across agencies.

The second role for a CTO might be described as an advocate for technological innovation in support of national interests such as economic growth, job creation, improvements to quality of life, national defense, and homeland security. Some have speculated that President Obama might charge a CTO with a wider scope of responsibilities, including development and advocacy of national ICT policies (e.g., net neutrality, broadband access),<sup>3</sup> technology policies intended to spur innovation and economic growth, intellectual property enforcement,<sup>4</sup> and oversight of a federally-backed venture capital fund to support deployment of "clean" technologies—technologies with less environmental impact than ones currently in use—that President Obama proposed during the campaign.<sup>5</sup>

This speculation may have been fueled, in part, by two statements. First, the section of the campaign position paper that first articulated Senator Obama's intent to appoint a CTO and which explicitly stated the intended roles of a CTO also included a final paragraph that alluded to a more significant role in economic policymaking for people with technology experience:

In the 21<sup>st</sup> century, our economic success will depend not only on economic analysis but also on technological sophistication and direct experience in this powerful engine of our economy. In an Obama administration, the government's economic policy-making organizations and councils will include individuals with backgrounds in our technology industry.<sup>6</sup>

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<sup>3</sup> Kim Hart, "Role of Federal Tech Czar to Be Defined by Obama," *Washington Post*, November 14, 2008, p. A02.

<sup>4</sup> Dan Farber, "Obama's CTO: Watch out for the turf wars," *CNET News*, November 9, 2008.

<sup>5</sup> Stephanie Condon, "Obama's Search for a CTO," *CNET News*, November 6, 2008.

<sup>6</sup> Obama '08, *Barack Obama: Connecting and Empowering All Americans Through Technology and Innovation*, November 2007. Available at [http://www.barackobama.com/pdf/issues/technology/Fact\\_Sheet\\_Innovation\\_and\\_Technology.pdf](http://www.barackobama.com/pdf/issues/technology/Fact_Sheet_Innovation_and_Technology.pdf).

Although this paragraph does not specifically mention a CTO, its proximity to paragraphs defining the scope of duties of a CTO might lead some to believe that a CTO could play a role in the broader scope of technology policy issues affecting the nation's economy.

Second, candidate Obama stated at a campaign event in Silicon Valley that one of the reasons behind his plan to appoint a CTO is to "make certain we incorporate technology into every decision we make," according to a press report.<sup>7</sup> This statement, too, might be interpreted by some to mean that a CTO would play a broad and important role in Administration policy deliberations and decisions.

Several analysts have proposed broader roles that a CTO might play. Stanford University professor Lawrence Lessig has asserted that a CTO could play an important role in bringing an understanding of how technology might be used to address national challenges:

The CTO could be a critically important position, from deciding how to make government more efficient and transparent through technology, to helping advance public policy questions like those surrounding global warming.<sup>8</sup>

A CTO could play an important role in national economic policy according to Andrew D. Lipman, a telecommunications attorney with Bingham McCutchen, LLP. Lipman has asserted that

[President] Obama sees greater broadband penetration as an enormous economic engine, much like the railroads were a century ago. That is why the CTO will play such a critical role in any recovery plan.<sup>9</sup>

Ed Felten, a Princeton University professor of computer science and public affairs and director of Princeton's Center for Information Technology Policy, likewise sees a broad role for a CTO in innovation policy:

The CTO could act as the cybersecurity czar, ensuring that reliability of the government infrastructure is protected. And much like the role of the presidential science advisor, the CTO could offer advice to the President on all areas of technology. The role could be a catalyst to push us closer to being a more entrepreneurial, high-tech country.<sup>10</sup>

The Center for American Progress (CAP) and New Democracy Project (NDP), public policy institutes, have proposed that a CTO serve as a champion for information and communications technologies broadly. CAP/NDP propose a CTO be given three roles: advising the president on the use of ICT to create a more open and efficient government; working with OSTP to advise the president on all issues that have a critical ICT component, including economic, national security, health care, and education policies; and helping to ensure ICT platforms deployed across the United States are robust, broadly available, and affordable to all sectors. CAP/NDP anticipate this latter role would "straddle the public and private sectors" to maximize private innovation for the public good.<sup>11</sup>

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<sup>7</sup> "Barack Obama expected to be the first US 'Tech President,'" *Agence France-Presse*, November 5, 2008.

<sup>8</sup> Tom Lowry, "The Short List for U.S. Chief Technology Office," *BusinessWeek*, October 19, 2008.

<sup>9</sup> *Ibid.*

<sup>10</sup> *Ibid.*

<sup>11</sup> *Change for America: A Progressive Blueprint for the 44<sup>th</sup> President*, Center for American Progress and New (continued...)

In contrast, the Association of American Universities (AAU), an association of research universities, recommended to President Obama that a CTO be given a more narrow role:

If a new Chief Technology Officer position is created, this individual's responsibilities primarily should be to oversee the use of technology within the White House and to coordinate the use of technology within the Executive Branch.<sup>12</sup>

In addition, the AAU urged that OSTP remain the sole presidential advisor for science and technology:

[The president should] retain a single presidential advisor for science and technology with a strong associate director for technology and innovation.... The responsibility for coordinating and helping to shape science and technology policy across government agencies should remain that of the OSTP Director, as has historically been the case.<sup>13</sup>

Three factors are likely to play key roles in defining the duties and authorities of a CTO: first, the role that President Obama wants a CTO to play (including authorities derived from formal processes, such as an executive order, and non-formal means, such as presidential expressions of support for, and confidence in, a CTO); second, congressional oversight of any actions by the Obama Administration; and, third, statutory duties and authorities, if any, that Congress may elect to confer upon the position and/or office.

Further, while the duties envisioned for a CTO may affect President Obama's choice for the appointment, the attributes of the person appointed to serve as CTO may, in part, define the role of CTO. Several general and trade press stories on the CTO proposal have included speculation about who might be selected for the position. Candidates mentioned for a CTO position include those with backgrounds in politics, business management, technology, computer science, and public policy. The candidates—some well-known, others not—have been, or currently are, elected officials, chief executives of major technology companies, university professors, information technology visionaries, and lawyers.

## Organizational Precedents

In defining the duties and authorities of a CTO, Congress and/or the Obama Administration may opt to draw from the duties and authorities of agency-level chief information officers (CIOs) and CTOs; the Bush Administration's use of the Office of Management and Budget (OMB) to handle CIO, CTO, and e-government responsibilities; the Clinton Administration's "reinventing government" initiative; the Commerce Department's recently-eliminated Technology Administration and its agency predecessors; and the White House Office of Science and Technology Policy (OSTP). An overview of each is provided below.

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(...continued)

Democracy Project, November 12, 2008.

<sup>12</sup> *Policy Recommendations for President-elect Obama*, Association of American Universities, December 2008, available at [[http://www.aau.edu/policy/policy\\_recommendations\\_new\\_admin.aspx?id=7710](http://www.aau.edu/policy/policy_recommendations_new_admin.aspx?id=7710)].

<sup>13</sup> *Ibid.*

## **Agency CIOs, CTOs, and the Chief Information Officers Council (CIO Council)**

As information technology began to play an increasingly important (and more costly) role in federal agency operations and services, agencies began to appoint CIOs to manage information technology systems and acquisitions. According to the CIO Council (discussed below) the mandate of federal CIOs is

to ensure the rapid and effective implementation of information management and information technology (IM/IT) solutions within each agency and to create a more results-oriented, efficient, and citizen-centered Federal government.<sup>14</sup>

In 1996, Congress enacted the Clinger-Cohen Act<sup>15</sup> which, among other things, requires the establishment of a CIO in each federal agency. The duties assigned CIOs under the act include providing information management advice and policy to the agency head; developing, maintaining, and facilitating information systems; and evaluating, assessing, and reporting to the agency head on the progress made developing agency information technology systems.<sup>16</sup>

Following passage of the Clinger-Cohen Act, President Bill Clinton issued Executive Order 13011<sup>17</sup> which directs agencies to establish the position of chief information officer to provide clear accountability for information resources management activities; identifies the broad responsibilities of federal agency CIOs; and establishes a federal Chief Information Officer Council (CIO Council) chaired by the OMB deputy director for management. The CIO Council was later codified by the E-Government Act of 2002 (P.L. 107-347), which designated it

the principal interagency forum for improving agency practices related to the design, acquisition, development, modernization, use, operation, sharing, and performance of Federal Government information resources.<sup>18</sup>

No parallel council exists in the federal government for CTOs, nor has Congress statutorily defined the duties, responsibilities, and qualifications of CTOs in a manner comparable to that for CIOs under the Clinger-Cohen Act. The position of chief technology officer first emerged in the private sector in the 1980s. Since then, some federal agencies have established CTO positions. In general, a CTO is responsible for monitoring, assessing, and selecting new technologies for applications to improve an organization's performance. Such applications of technology can be focused on developing new products and services or on improving internal processes. Given the ubiquitous role technology plays in most organizations today, CTOs often work with a wide variety of stakeholders, including chief executives, scientists, engineers, research managers, and marketing professionals.<sup>19</sup> In federal agencies, CTOs are responsible for developing and/or

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<sup>14</sup> Chief Information Officers Council website, <http://www.cio.gov>.

<sup>15</sup> Incorporated as sections D and E of the National Defense Authorization Act for Fiscal Year 1996 (P.L. 104-106)

<sup>16</sup> For additional information, see CRS Report RL34492, *Reauthorization of the E-Government Act: A Brief Overview*, by Jeffrey W. Seifert. This report also provides perspectives on the anticipated benefits and drawbacks of establishing a chief federal CIO position.

<sup>17</sup> Executive Order 13011, "Federal Information Technology," 61 *Federal Register* 37657, July 19, 1996.

<sup>18</sup> P.L. 107-347.

<sup>19</sup> Roger D. Smith, "The Chief Technology Officer: Strategic Responsibilities and Relationships," *Research Technology Management*, July/August 2003.

implementing technologies that enable the agency to better perform its missions. The role of a CTO in a federal agency can be similar to, and the title sometimes used interchangeably with, the CIO.<sup>20</sup> In many cases, agency CTOs report to the CIO and have a focus on information technology. However, some CTOs have responsibility for a wider scope of technologies and technical issues. For example, the CTO for the Department of Homeland Security's Transportation Security Administration is responsible for "implementation and development of security technologies across several modes of transportation."<sup>21</sup>

## **CIO, CTO, and e-Government Positions at OMB**

Under President George W. Bush, the deputy director of management for OMB has served as the federal CIO, providing oversight of agency-level CIOs and coordinating e-government initiatives. In 2001, OMB established the position of associate director for information technology and e-government at OMB to serve as "the leading federal e-government executive," and was given responsibility for the e-government fund, directing the activities of the CIO Council, and advising on the appointments of agency CIOs.<sup>22</sup> The associate director for information technology reported to the OMB deputy director for management.

In 2002, Norman Lorentz became the first chief technology officer at OMB, reporting to the associate director for information technology and e-government. The CTO was tasked to lead and coordinate multiple efforts to identify and develop the technological architecture needed to support federal e-government and other information technology initiatives.<sup>23</sup>

## **National Performance Review/National Partnership for Reinventing Government**

The Clinton Administration's National Performance Review (NPR)/National Partnership for Reinventing Government (also known as the reinventing government initiative or ReGo) had certain functions similar to ones outlined for a CTO in President Obama's campaign document. In March 1993, President Bill Clinton announced the establishment of the NPR under Vice President Al Gore "to make the entire Federal Government both less expensive and more efficient ... [and to search for] ways to improve services to our citizens and to make our Government work better ... [in part through] better uses of technology."<sup>24</sup> Information technology was one of the tools used to achieve these ends. In 1998, the NPR was renamed the "National Partnership for Reinventing

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<sup>20</sup> The close linkage between the duties of a CTO and CIO is illustrated by dual assignments held in some agencies. For example, the Department of Education, NASA, and the U.S. Fish and Wildlife Service have CTOs who concurrently hold the title of Deputy CIO. To further illustrate the linkage, at NASA's Goddard Space Flight Center, the CTO is located in the Office of the Chief Information Officer.

<sup>21</sup> Transportation Security Administration, U.S. Department of Transportation, [http://www.tsa.gov/press/releases/2006/press\\_release\\_12112006.shtm](http://www.tsa.gov/press/releases/2006/press_release_12112006.shtm).

<sup>22</sup> Office of Management and Budget, "Mark Forman Named Associate Director for Information Technology and E-Government," 14 June 2001, <http://www.whitehouse.gov/omb/pubpress/2001-13.html>.

<sup>23</sup> For additional information, see CRS Report RL30914, *Federal Chief Information Officer (CIO): Opportunities and Challenges*, by Jeffrey W. Seifert.

<sup>24</sup> *Weekly Compilation of Presidential Documents*, Government Printing Office, vol. 29, Mar. 8, 1993, p. 350.

Available at

<http://frwebgate4.access.gpo.gov/cgi-bin/TEXTgate.cgi?WAISdocID=854991445865+0+1+0&WAIAction=retrieve>.

Government” reflecting the administration’s intent to shift from “review” to “reinvention,” with an emphasis on the use of information technology to transform government operations.<sup>25</sup> In January 2001, the E-Gov website reported

The National Partnership for Reinventing [Government] urged agencies to use information technology and the Internet to transform how citizens interact with government. Reinvention evolved into e-gov and the goal was to provide better access to government services. Today e-gov is putting people “online, not in line.” By the end of 2000, nearly 40 million Americans were doing business with the government electronically. On a regular basis, people are accessing information to solve problems themselves through the Internet, via telephones, and through neighborhood kiosks.<sup>26</sup>

Organizationally, the director of the National Partnership for Reinventing Government served as senior policy advisor to Vice President Gore.<sup>27</sup>

Among ReGo’s technology focused efforts were Access America, which sought the “integration of services across different federal agencies so citizens [could] ‘custom-tailor’ government to their specific needs,” and G-Gov, the use of geographic information and information technology to improve government services.<sup>28</sup>

## **Department of Commerce Technology Administration**

The role of chief government advocate for U.S. civilian technological innovation was previously performed largely by the Commerce Department’s Technology Administration (TA) and its predecessors, the Office of Productivity, Technology and Innovation (OPTI)<sup>29</sup> and the Office of Industrial Technology (OIT).<sup>30</sup> The Technology Administration was headed by an Under Secretary for Technology and included an analytical arm, the Office of Technology Policy (OTP).<sup>31</sup> In 2007, the Technology Administration, including the positions of Under Secretary for Technology and Assistant Secretary for Technology Policy, were eliminated under the provisions of the America COMPETES Act (P.L. 110-69). The act eliminated the duties of the Technology Administration and did not reassign any of them to other agencies. Some or all of these duties might be assigned to a CTO in the context of serving as chief advocate for technological innovation, including:

- to conduct technology policy analyses to improve United States industrial productivity, technology, and innovation;

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<sup>25</sup> Remarks of Morley Winograd, director, National Partnership for Reinventing Government, at the Virtual Government ’99 Conference, February 23, 1999, available at [<http://govinfo.library.unt.edu/npr/library/speeches/022399.html>]

<sup>26</sup> The National Partnership for Reinventing Government website, January 2001, as archived at [<http://govinfo.library.unt.edu/npr/initiati/index.html>].

<sup>27</sup> For additional information on the NPR/ National Partnership for Reinventing Government, see CRS Report RL30596, *The National Performance Review and Other Government Reform Initiatives: An Overview, 1993-2001*, by Harold C. Relyea, Maricele J. Cornejo Riemann, and Henry B. Hogue.

<sup>28</sup> Ibid.

<sup>29</sup> OPTI was established by the Federal Technology Transfer Act of 1986 (P.L. 99-502).

<sup>30</sup> OIT was established by the Stevenson-Wylder Technology Innovation Act of 1980 (P.L. 96-480).

<sup>31</sup> TA and OTP were established by the National Institute of Standards and Technology Authorization Act for Fiscal Year 1989 (P.L. 100-519).

- to determine the relationships of technological developments and international technology transfers to the output, employment, productivity, and world trade performance;
- to determine the influence of economic, labor and other conditions, industrial structure and management, and government policies on technological developments in particular industrial sectors worldwide;
- to identify technological needs, problems, and opportunities within and across industrial sectors that, if addressed, could make a significant contribution to the economy of the United States;
- to assess whether the capital, technical and other resources being allocated to domestic industrial sectors which are likely to generate new technologies are adequate;
- to propose and support studies and policy experiments to determine the effectiveness of measures with the potential of advancing United States technological innovation;
- to encourage and assist the creation of centers and other joint initiatives by State or local governments, regional organizations, private businesses, institutions of higher education, nonprofit organizations, or Federal laboratories to encourage technology transfer, to stimulate innovation, and to promote an appropriate climate for investment in technology-related industries;
- to propose and encourage cooperative research to promote the common use of resources, to improve training programs and curricula, to stimulate interest in high technology careers, and to encourage the effective dissemination of technology skills within the wider community;
- to serve as a focal point for discussions among United States companies on topics of interest to industry and labor, including discussions regarding manufacturing and discussions regarding emerging technologies; and
- to consider government measures with the potential of advancing United States technological innovation and exploiting innovations of foreign origin.<sup>32</sup>

## **White House Office of Science and Technology Policy**

The Office of Science and Technology Policy is the White House office with primary responsibility for science and technology issues.<sup>33</sup> OSTP traces its organizational roots to the Office of Scientific Research and Development that was established within the Executive Office

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<sup>32</sup> These and other duties were assigned to the Technology Administration and its predecessor organizations by the Stevenson-Wydler Technology Innovation Act of 1980 (P.L. 96-480), the Federal Technology Transfer Act of 1986 (P.L. 99-502), and the National Institute of Standards and Technology Authorization Act for Fiscal Year 1989 (P.L. 100-519).

<sup>33</sup> Other White House offices—such as the Council on Environmental Quality, the National Economic Council (NEC), Office of Management and Budget (OMB)—also play important roles in the development, coordination, and implementation of science and technology policies. For additional information about OSTP, see CRS Report RL34736, *The President's Office of Science and Technology Policy: Issues for Congress*, by Deborah D. Stine.

of the President in 1941 by President Franklin Roosevelt under Executive Order 8807.<sup>34</sup> In 1976, Congress directed the establishment of OSTP in the National Science and Technology Policy, Organization, and Priorities Act (P.L. 94-282), charging the office with serving “as a source of scientific and technological analysis and judgment for the President with respect to major policies, plans, and programs of the Federal Government.” The act authorizes OSTP to:

- advise the President and others within the Executive Office of the President on the impacts of science and technology on domestic and international affairs;
- lead an interagency effort to develop and implement sound science and technology policies and budgets;
- work with the private sector to ensure Federal investments in science and technology contribute to economic prosperity, environmental quality, and national security;
- build strong partnerships among Federal, State, and local governments, other countries, and the scientific community; and
- evaluate the scale, quality, and effectiveness of the Federal effort in science and technology.

OSTP is led by a director who, in some presidential administrations, has also carried the title of assistant to the president for science and technology. The director of OSTP is often informally referred to as the President’s science advisor. Some have anticipated that a CTO might similarly be ascribed the informal title of “President’s technology advisor,” a role the director of OSTP has implicitly played. During the Bush Administration, two associate directors reported to the director of OSTP, including an associate director for technology.<sup>35</sup> If a CTO position or office is to be established in the White House, President Obama and Congress may wish to consider how to integrate and coordinate its duties and responsibilities with those of OSTP.

## Potential Challenges

Among the early challenges a CTO may face are defining and communicating the roles of the position; identifying and recruiting talent, from both inside and outside of government; and negotiating domains of responsibilities, formal and informal, within the White House (if that is where the Obama Administration or Congress decides to establish a CTO) and with executive branch agencies that have overlapping missions. Beyond these initial challenges, a CTO would need to establish goals and milestones, set priorities, secure resources, and develop and execute a strategy. If the position or office of a CTO is not established by Congress and provided with statutory authorities and a dedicated budget, it may be difficult for a CTO to affect change in individual federal agencies or systemically throughout the federal government. In such a case, the efficacy of a CTO may depend largely on the mandate provided by President Obama to a CTO (and agencies’ perception of the mandate), the imprimatur of the White House, and the personal attributes of a CTO (e.g., relationship with the President, past accomplishments, knowledge, professional reputation, persuasiveness).

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<sup>34</sup> Available at [<http://www.presidency.ucsb.edu/ws/index.php?pid=16137>].

<sup>35</sup> In addition to the associate director for technology, there was an associate director for science.

Perhaps one of the most difficult and enduring challenges a CTO may face would be “turf wars” associated with overlapping responsibilities with other executive agencies and their principals on issues such as technology and innovation policy, computer and network security, and intellectual property enforcement. For example, there are several organizations within the Executive Office of the President (EOP) that have potentially overlapping authorities, including:

- The Office of Science and Technology Policy, on matters related to research, development, and technological innovation, as well as for telecommunications, and emergency communications systems;
- The Office of Management and Budget (as discussed on page 6 of this report);
- The National Economic Council (NEC), on issues related to technological innovation. For example, the NEC might evaluate federal policies intended to promote technological innovation as an option for achieving the President’s economic policy objectives;
- The President’s Council on Innovation and Competitiveness,<sup>36</sup> which is charged under the America COMPETES Act with providing advice to the President with respect to global trends in competitiveness and innovation and allocation of Federal resources in education, job training, and technology research and development in the context of global trends in competitiveness and innovation, as well as making recommendations to the heads of executive agencies to improve innovation; and
- The Intellectual Property Enforcement Coordinator, on technology-centered intellectual property rights (e.g., digital copyright).<sup>37</sup>

Potential conflict between a CTO and these offices might be magnified if a CTO position/office is established as a new office within the EOP or within an existing EOP office.

The CTO’s responsibilities may also overlap with other executive branch agencies, such as the Federal Communications Commission (FCC) and/or the Department of Commerce’s National Telecommunications and Information Administration (NTIA) on issues such as information and communication technology, and with agency CIOs and CTOs.

Finally, the manner in which a CTO may be established may affect the position/office’s ability to transcend presidential administrations. If a CTO were to be established solely under the President’s executive authority (through an executive order, for example), then its continued existence would be at the sole discretion of the current or future Presidents. In contrast, if a CTO were to be established by statute (as OSTP was, for example), then the position/office would continue to exist through changes of presidential administrations unless eliminated by statute.

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<sup>36</sup> The America COMPETES Act (P.L. 110-69) directs the President to establish a President’s Council on Innovation and Competitiveness.

<sup>37</sup> The Prioritizing Resources and Organization for Intellectual Property Act of 2008 (P.L. 110-403) directs the President to appoint an Intellectual Property Enforcement Coordinator to serve within the Executive Office of the President.

## Issues for Consideration by Congress

Congress faces the stated plans of the incoming Obama Administration to appoint a CTO. It has the opportunity to consider and oversee any such plans.

Although the campaign position paper and transition website provide explicit information on at least some of the duties of a CTO, they do not provide information on a CTO's organizational placement, structure, or relationship to existing offices. In addition, neither the paper nor website states whether the president intends to establish this position/office by executive order or whether he would seek legislation to create a statutory foundation for its duties and authorities.

If Congress chooses to establish a CTO position through statute, there are a several issues it may wish to consider. For example:

- What mission, duties, and authorities should be given a CTO? Should a CTO serve as both the chief CIO for the federal government as well as the lead champion for U.S. technological innovation?
- What level of funding should be authorized and/or appropriated for a CTO?
- Should a CTO be placed in the Executive Office of the President or elsewhere in the executive branch? If in the EOP, should a CTO be a direct report to the president, or a part of another EOP agency? Who should a CTO report to? Should the appointment of a CTO be subject to Senate confirmation?
- Should a CTO be a stand-alone position or an office or agency with its own staff? If a CTO is established together with a supporting office or agency, how many full-time equivalent positions should be authorized? What should be the composition of the staff with respect to occupation (e.g., scientists, engineers, IT professionals, lawyers, managers, administrators); political appointees and career civil servants; and permanent employees and employees on detail from other agencies?
- How should the work of a CTO differ, overlap, and/or complement the duties and authorities of offices in the Executive Office of the President, and other executive branch agencies?
- What should be the relationship between the president's CTO and the existing CTOs and CIOs of individual departments and agencies?

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