

Foundation (NSF). The DOE Office of Science and DOE National Nuclear Security Administration will execute a joint program focused on advanced simulation through a capable exascale computing program emphasizing sustained performance on relevant applications and analytic computing to support their missions. NSF will play a central role in scientific discovery advances, the broader HPC ecosystem for scientific discovery, and workforce development. DOD will focus on data analytic computing to support its mission. The assignment of these responsibilities reflects the historical roles that each of the lead agencies have played in pushing the frontiers of HPC, and will keep the Nation on the forefront of this strategically important field. The lead agencies will also work with the foundational research and development agencies and the deployment agencies to support the objectives of the NSCI and address the wide variety of needs across the Federal Government.

(b) *Foundational Research and Development Agencies.* There are two foundational research and development agencies for the NSCI: the Intelligence Advanced Research Projects Activity (IARPA) and the National Institute of Standards and Technology (NIST). IARPA will focus on future computing paradigms offering an alternative to standard semiconductor computing technologies. NIST will focus on measurement science to support future computing technologies. The foundational research and development agencies will coordinate with deployment agencies to enable effective transition of research and development efforts that support the wide variety of requirements across the Federal Government.

(c) *Deployment Agencies.* There are five deployment agencies for the NSCI: the National Aeronautics and Space Administration, the Federal Bureau of Investigation, the National Institutes of Health, the Department of Homeland Security, and the National Oceanic and Atmospheric Administration. These agencies may participate in the co-design process to integrate the special requirements of their respective missions and influence the early stages of design of new HPC systems, software, and applications. Agencies will also have the opportunity to participate in testing, supporting workforce development activities, and ensuring effective deployment within their mission contexts.

SEC. 4. Executive Council. (a) To ensure accountability for and coordination of research, development, and deployment activities within the NSCI, there is established an NSCI Executive Council to be co-chaired by the Director of the Office of Science and Technology Policy (OSTP) and the Director of the Office of Management and Budget (OMB). The Director of OSTP shall designate members of the Executive Council from within the executive branch. The Executive Council will include representatives from agencies with roles and responsibilities as identified in this order.

(b) The Executive Council shall coordinate and collaborate with the National Science and Technology Council established by Executive Order 12881 of November 23, 1993, and its subordinate entities as appropriate to ensure that HPC efforts across the Federal Government are aligned with the NSCI. The Executive Council shall also consult with representatives from other agencies as it determines necessary. The Executive Council may create additional task forces as needed to ensure accountability and coordination.

(c) The Executive Council shall meet regularly to assess the status of efforts to implement this order. The Executive Council shall meet no less often than twice yearly in the first year after issuance of this order. The Executive Council may revise the meeting frequency as needed thereafter. In the event the Executive Council is unable to reach consensus, the Co-Chairs will be responsible for documenting issues and potential resolutions through a process led by OSTP and OMB.

(d) The Executive Council will encourage agencies to collaborate with the private sector as appropriate. The Executive Council may seek advice from the President's Council of Advisors on Science and Technology

through the Assistant to the President for Science and Technology and may interact with other private sector groups consistent with the Federal Advisory Committee Act.

SEC. 5. Implementation. (a) The Executive Council shall, within 90 days of the date of this order, establish an implementation plan to support and align efforts across agencies in support of the NSCI objectives. Annually thereafter for 5 years, the Executive Council shall update the implementation plan as required and document the progress made in implementing the plan, engaging with the private sector, and taking actions to implement this order. After 5 years, updates to the implementation plan may be requested at the discretion of the Co-Chairs.

(b) The Co-Chairs shall prepare a report each year until 5 years from the date of this order on the status of the NSCI for the President. After 5 years, reports may be prepared at the discretion of the Co-Chairs.

SEC. 6. Definitions. For the purposes of this order: The term "high-performance computing" refers to systems that, through a combination of processing capability and storage capacity, can solve computational problems that are beyond the capability of small- to medium-scale systems.

The term "petaflop" refers to the ability to perform one quadrillion arithmetic operations per second.

The term "exascale computing system" refers to a system operating at one thousand petaflops.

SEC. 7. General Provisions. (a) Nothing in this order shall be construed to impair or otherwise affect:

- (i) the authority granted by law to an executive department, agency, or the head thereof; or
- (ii) the functions of the Director of OMB relating to budgetary, administrative, or legislative proposals.

(b) This order shall be implemented consistent with applicable law and subject to the availability of appropriations.

(c) This order is not intended to, and does not, create any right or benefit, substantive or procedural, enforceable at law or in equity by any party against the United States, its departments, agencies, or entities, its officers, employees, or agents, or any other person.

BARACK OBAMA.

§ 5502. Purposes

The purposes of this chapter are to help ensure the continued leadership of the United States in high-performance computing and its applications by—

- (1) expanding Federal support for research, development, and application of high-performance computing in order to—

(A) expand the number of researchers, educators, and students with training in high-performance computing and access to high-performance computing resources;

(B) promote the further development of an information infrastructure of data bases, services, access mechanisms, and research facilities available for use through the Internet;

(C) stimulate research on software technology;

(D) promote the more rapid development and wider distribution of computing software tools and applications software;

(E) accelerate the development of computing systems and subsystems;

(F) provide for the application of high-performance computing to Grand Challenges;

(G) invest in basic research and education, and promote the inclusion of high-performance computing into educational institutions at all levels; and

(H) promote greater collaboration among government, Federal laboratories, industry, high-performance computing centers, and universities;

(2) improving the interagency planning and coordination of Federal research and development on high-performance computing and maximizing the effectiveness of the Federal Government's high-performance computing network research and development programs;

(3) promoting the more rapid development and wider distribution of networking management and development tools; and

(4) promoting the rapid adoption of open network standards.

(Pub. L. 102-194, § 3, Dec. 9, 1991, 105 Stat. 1594; Pub. L. 105-305, § 3(b), Oct. 28, 1998, 112 Stat. 2920.)

AMENDMENTS

1998—Pub. L. 105-305, § 3(b)(1), substituted “Purposes” for “Purpose” as section catchline.

Pub. L. 105-305, § 3(b)(2), substituted “purposes of this chapter are” for “purpose of this chapter is” in introductory provisions.

Par. (1)(A). Pub. L. 105-305, § 3(b)(3), redesignated subpar. (B) as (A) and struck out former subpar. (A) which read as follows: “establish a high-capacity and high-speed National Research and Education Network;”.

Par. (1)(B). Pub. L. 105-305, § 3(b)(3), (4), redesignated subpar. (C) as (B) and substituted “Internet” for “Network”. Former subpar. (B) redesignated (A).

Par. (1)(C) to (I). Pub. L. 105-305, § 3(b)(3), (5), redesignated subpars. (D) to (I) as (C) to (H), respectively, and struck out “and” at end of par. (H).

Par. (2). Pub. L. 105-305, § 3(b)(6), substituted “network research and development programs;” for “efforts.”

Pars. (3), (4). Pub. L. 105-305, § 3(b)(7), added pars. (3) and (4).

§ 5503. Definitions

As used in this chapter, the term—

(1) “Director” means the Director of the Office of Science and Technology Policy;

(2) “Grand Challenge” means a fundamental problem in science or engineering, with broad economic and scientific impact, whose solution will require the application of high-performance computing resources and multidisciplinary teams of researchers;

(3) “high-performance computing” means advanced computing, communications, and information technologies, including supercomputer systems, high-capacity and high-speed networks, special purpose and experimental systems, applications and systems software, and the management of large data sets;

(4) “Internet” means the international computer network of both Federal and non-Federal interoperable data networks;

(5) “Network” means a computer network referred to as the National Research and Education Network established under section 5512 of this title;

(6) “Program” means the National High-Performance Computing Program described in section 5511 of this title; and

(7) “Program Component Areas” means the major subject areas under which related individual projects and activities carried out under the Program are grouped.

(Pub. L. 102-194, § 4, Dec. 9, 1991, 105 Stat. 1595; Pub. L. 105-305, § 7(b), Oct. 28, 1998, 112 Stat. 2924; Pub. L. 110-69, title VII, § 7024(a)(2), Aug. 9, 2007, 121 Stat. 689.)

AMENDMENTS

2007—Par. (2). Pub. L. 110-69, § 7024(a)(2)(A), inserted “and multidisciplinary teams of researchers” after “high-performance computing resources”.

Par. (3). Pub. L. 110-69, § 7024(a)(2)(B), struck out “scientific workstations,” after “technologies, including” and “(including vector supercomputers and large scale parallel systems)” after “supercomputer systems”, substituted “applications” for “and applications”, and inserted “, and the management of large data sets” after “systems software”.

Par. (4). Pub. L. 110-69, § 7024(a)(2)(C), struck out “packet switched” before “data networks”.

Par. (7). Pub. L. 110-69, § 7024(a)(2)(D)–(F), added par. (7).

1998—Pars. (4) to (6). Pub. L. 105-305 added par. (4) and redesignated former pars. (4) and (5) as (5) and (6), respectively.

SUBCHAPTER I—HIGH-PERFORMANCE COMPUTING RESEARCH AND DEVELOPMENT

§ 5511. National High-Performance Computing Program

(a) National High-Performance Computing Program

(1) The President shall implement a National High-Performance Computing Program, which shall—

(A) provide for long-term basic and applied research on high-performance computing, including networking;

(B) provide for research and development on, and demonstration of, technologies to advance the capacity and capabilities of high-performance computing and networking systems, and related software;

(C) provide for sustained access by the research community throughout the United States to high-performance computing and networking systems that are among the most advanced in the world in terms of performance in solving scientific and engineering problems, including provision for technical support for users of such systems;

(D) provide for widely dispersed efforts to increase software availability, productivity, capability, security, portability, and reliability;

(E) provide for high-performance networks, including experimental testbed networks, to enable research and development on, and demonstration of, advanced applications enabled by such networks;

(F) provide for computational science and engineering research on mathematical modeling and algorithms for applications in all fields of science and engineering;

(G) provide for the technical support of, and research and development on, high-performance computing systems and software required to address Grand Challenges;

(H) provide for educating and training additional undergraduate and graduate students in software engineering, computer science, computer and network security, applied mathematics, library and information science, and computational science; and