



U.S. DEPARTMENT OF
ENERGY

Office of
Science

NGNS COV Report

Richard Carlson & Thomas Ndousse
NGNS Program Managers
ASCAC April 4-5, 2016

COV Charge

- 1. For both the DOE laboratory projects and the university projects, assess the efficacy and quality of the processed to:**
 - Solicit, review, recommend, and document proposal actions, and
 - Monitor active projects and programs.
- 2. Within the boundaries defined by DOE missions and available funding, comment on how the award process has affected:**
 - The breadth and depth of portfolio elements, and
 - The degree to which the program is anticipating and addressing emerging challenges from large-scale scientific facilities and collaborations in support of the DOE missions, and
 - The national and international standing of the program with regard to other computer science research programs that are also focused on high performance networking tools and middleware for science



COV Members

- **COV Chair, Wendy Huntoon**
President and CEO, KINBER
- **Vinton G. Cerf**
Vice President Google Inc
- **Martin Berzins**
Department of Computer Science, University of Utah
- **Kevin Thompson**
National Science Foundation
- **Jerry Jansen**
National Oceanic and Atmospheric Administration
- **Marla Meehl**
National Center for Atmospheric Research
- **Anne Richeson**
CenturyLink, Inc.



COV Logistics

- **One Day Meeting**
 - October 14, 2016
- **Held in DOE Germantown Headquarters**
- **All 7 members in attendance**
- **Review covers 2011 - 2014**
- **Briefings by NGNS Program managers**
 - 5 NGNS issued FOAs
 - 3 DOE/SC issues FOAs
 - 1 Renewal Project
- **Discussions by Committee members**



2011 Portfolio Summary

Folder	FOA Title	FOA Details
11-412	Renewals	PM: Thomas Ndousse Projects Funded: 1
11-523	2011: Terabit Networking for Extreme-Scale Science NGNS FOA	http://science.energy.gov/~media/grants/pdf/lab-announcements/2011/LAB_11-523.pdf http://science.energy.gov/~media/grants/pdf/foas/2011/SC_FOA_0000523.pdf PM: Thomas Ndousse and Richard Carlson Proposals Received: 23 Projects Funded: 7



2012 Portfolio Summary

Folder	FOA Title	FOA Details
12-600	2012: FY2012 Continuation of Solicitation for the Office of Science Financial Assistance program DOE/SC FOA	http://science.energy.gov/~media/grants/pdf/foas/2012/SC_FOA_0000600.pdf PM: Thomas Ndousse Projects Funded: 1
12-695	2012: Scientific Collaborations at Extreme-Scale NGNS FOA	http://science.energy.gov/~media/grants/pdf/lab-announcements/2012/LAB_12-695.pdf http://science.energy.gov/~media/grants/pdf/foas/2012/SC_FOA_0000695.pdf PMs: Richard Carlson and Thomas Ndousse Proposals received: 34 Projects Funded: 10



2013 Portfolio Summary

Folder	FOA Title	FOA Details
13-768	2013: FY2013 Continuation of Solicitation for the Office of Science Financial Assistance program DOE/SC FOA	http://science.energy.gov/~media/grants/pdf/foas/2013/SC_FOA_0000768.pdf PM: Richard Carlson Projects Funded: 1
13-883	2013: Big Data-Aware Terabits Networking NGNS FOA	http://science.energy.gov/~media/grants/pdf/lab-announcements/2013/LAB_13-883.pdf http://science.energy.gov/~media/grants/pdf/foas/2013/SC_FOA_0000883.pdf PM: Thomas Ndousse Proposals Received: 26 Projects Funded: 3



2014 Portfolio Summary

Folder	FOA Title	FOA Details
14-0001	2014: Extreme-Scale Application Software Development Productivity (Framework for Parallel Software Infrastructure) NGNS FOA	http://science.energy.gov/~media/grants/pdf/lab-announcements/2014/LAB_14-0001.pdf PM: Thomas Ndousse Proposals Received: 2 Projects Funded: 1
14-995	2014: FY2014 Continuation of Solicitation for the Office of Science Financial Assistance program DOE/SC FOA	http://science.energy.gov/~media/grants/pdf/foas/2014/SC_FOA_0000995.pdf PM: Richard Carlson Projects Funded: 1
14-1088	2014: Analytical Modeling for Extreme Scale Computing Environments NGNS FOA	http://science.energy.gov/~media/grants/pdf/lab-announcements/2014/LAB_14_1088.pdf http://science.energy.gov/~media/grants/pdf/foas/2014/SC_FOA_0001088.pdf PM: Richard Carlson Proposals Received: 20 Projects Funded: 4



Summary of Recommendations

- **Efficacy and Quality of the process to make awards**
 - 4 Recommendations
- **Efficacy and Quality of the process to monitor awards**
 - 4 Recommendations
- **Breadth and Depth of Portfolio**
 - 3 Recommendations
- **Anticipating and Addressing Emerging Challenges**
 - 1 Recommendation
- **National and International Standing**
 - 1 Recommendation



COV Recommendation

NGNS Program Response

Efficacy and quality of the processes used to solicit, review, recommend, and document application and proposal actions

The program should continue to broaden the breadth and diversity of workshop participants without diluting the focus of the workshop topics on the Office of Science mission. While hosting workshop meetings in the Washington, DC area can be cost effective from a program standpoint, it may discourage broader participation by community members. To the extent possible, one or more community workshops per year should be held outside the DC area

Agree – The overall quality of the NGNS program relies on input from a broad range of academic, industry, and laboratory researchers. The NGNS program will continue to evaluate meeting locations to encourage participation by the members of this community while maintaining control over the financial aspects of hosting a workshop.

The program office should host at least one workshop to understand better the issues associated with stimulating research in the area of network modeling in order to understand the performance of existing networks, to influence how future networks should be built, and to encourage cross-disciplinary research in this area.

Agree – The NGNS program held a workshop in February 2016 to begin examining the network protocol challenges that must be overcome to ensure that science communities can effectively use future network infrastructures. The modeling and simulation of these protocols, infrastructures, and scientific workflows will be an important part of the NGNS portfolio.



COV Recommendation

NGNS Program Response

Efficacy and quality of the processes used to solicit, review, recommend, and document application and proposal actions

The NGNS program office should complete the implementation of PAMS to manage and track elements of the proposal and funding process, including linking the portfolio brief for each FOA into the program. In addition, the program should provide access to PAMS for future COV reviews, which will make the program review process easier and clearer by linking together all the relevant information for a specific FOA as well as providing a general overview of the funding portfolio.

The NGNS should consider implementing a database of current and potential reviewers to make the review panel selection process more efficient and provide broader and more diverse panels.

Agree – The Portfolio Analysis and Management System (PAMS) has been developed and employed to support and document the complete research funding process for Office of Science research programs, including NGNS. The PAMS development team is planning to implement a COV module and the NGNS team will use this module once it is deployed.

Agree - The Portfolio Analysis and Management System (PAMS) includes a database of reviewers from across the Office of Science. Over time, as more reviewers are added to PAMS, this module will become a useful tool to help ASCR program manager identify a broader and more diverse pool of reviewers for NGNS.



COV Recommendation	NGNS Program Response
Efficacy and quality of the processes used to monitor active awards, projects, and programs	
<p>The program office should continue to integrate PAMS into the tracking and management of the funded project portfolio during the post-award period.</p>	<p>Agree - The NGNS program will continue to use PAMS to track and manage funded projects. Annual status reports, continuation reports, and project final reports will all be processed through PAMS.</p>
<p>The COV recommends that support, including the appropriate level of travel funding, be provided to the program officers so that they can perform project site visits. Such visits will not only allow program officers to more effectively manage their projects but to also interact with a broader set of project participants, including those that typically do not attend PI meetings or other community events.</p>	<p>Agree – The NGNS program managers will work with ASCR management to ensure that an appropriate level of travel funding is available for community outreach activities.</p>

COV Recommendation

NGNS Program Response

Efficacy and quality of the processes used to monitor active awards, projects, and programs

The COV recommends that the program officers be encouraged to continue to participate in community events, including but not limited to large events such as Super Computing. Program officers should be encouraged to participate in a broad set of community events where funded projects are presented or discussed as well as strategic meetings where future network requirements and technologies in the support of scientific applications are discussed.

Funding to allow program managers to participate in community events where funded projects are being presented or discussed.

Agree – The NGNS the program managers will actively monitor and engage with the research community to keep abreast of current research activities and explore future opportunities. The PMs will work with ASCR management to ensure that an appropriate level of travel funding is available for professional development activities.

Agree – The NGNS program managers will work with ASCR management to ensure that an appropriate level of travel funding is available.



Within the boundaries defined by DOE missions and available funding, comment on how the award process has affected the breadth and depth of portfolio elements

Cross agency collaboration should be encouraged, particularly in identifying overlapping high performance networking issues and technologies each agency is working to address. The COV recommends the initial tactical step where NGNS and the NSF go over their existing award portfolio in high performance networking infrastructure and research to understand the existing overlap in both projects and funded PI's and provide opportunities for leveraging the federal investment in these projects.

The COV recommends a tighter relationship between the NGNS and ESnet, where use of ESnet resources are specifically written into the FOA's as a target platform.

Identify gaps in where NGNS should be getting proposals from but they are not and broaden workshop participation as well as the target groups for the FOA announcements accordingly.

Agree – the NGNS program managers will work with their peers in other federal agencies to track and collaborate in multi-agency research programs. The NGNS program managers will leverage their participation in the Networking and Information Technology Research and Development (NITRD) program to maintain close contact with other federal agencies. The NGNS team is actively engaged in a multi-agency Modeling and Simulation program with NSF and DOD.

Agree – the NGNS program has a range of advanced development projects that would benefit from using the ESnet operated 100 Gbps network testbed. Future FOA's will specifically call out this testbed as appropriate.

Agree – the NGNS program managers will actively engage with the research community to advertise workshops and Funding Opportunity Announcements (FOAs).

COV Recommendation

NGNS Program Response

Within the boundaries defined by DOE missions and available funding, comment on how the award process has affected the degree to which the program is anticipating and addressing emerging challenges from high performance computing and DOE missions

Encourage strategic planning between NOAA, NSF, DOE, and other agencies working in this realm to leverage total dollars spent on these efforts efficiently and effectively.

Agree – the NGNS program managers will interact with their peers in other federal agencies through NITRD working groups and in multi-agency collaborations to define and implement a coordinated set of strategic plans.



COV Recommendation

NGNS Program Response

Within the boundaries defined by DOE missions and available funding, comment on how the award process has affected the national and international standing of the portfolio with regard to other computational science programs that are focused on harnessing high performance scientific computing and utilizing massive datasets to advance science

The COV recognized that many of the PI's participated in standards organizations or international projects as part of their own professional development. The NGNS should continue to encourage this participation, including through international collaborations when appropriate. In addition, the program office is encourage to track activities that underscore the program's national and international standing, possibly through the PAMS system or through the annual reporting process.

Agree – the NGNS program has a long history of supporting PI's working in international standards groups (IETF, IEEE, OGF). Support for these activities will continue and the program managers will explore methods to increase this level of international collaborative efforts.



Questions?



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