IDA SCIENCE AND TECHNOLOGY POLICY INSTITUTE

Best Practices in Federal Facility Partnerships for Research and Development

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IDA Science and Technology Policy Institute (STPI)

November 10, 2016

Presentation to the Federal Facilities Council (FFC) Oversight Committee Meeting
Keck Center of the National Academies, Washington, D.C.

IDA Science & Technology Policy Institute (STPI)

- Chartered by Congress in 1991
- Mission: To provide rigorous objective advice and analysis to the White House Office of Science and Technology Policy (OSTP) and other Executive Branch agencies, offices, and councils, including the National Science Foundation, National Institutes of Health and Department of Defense
- Funding: Administered by the National Science Foundation
- Institute for Defense Analyses (IDA) has managed STPI since 2003

STPI Works With a Diverse Set of Federal Agencies

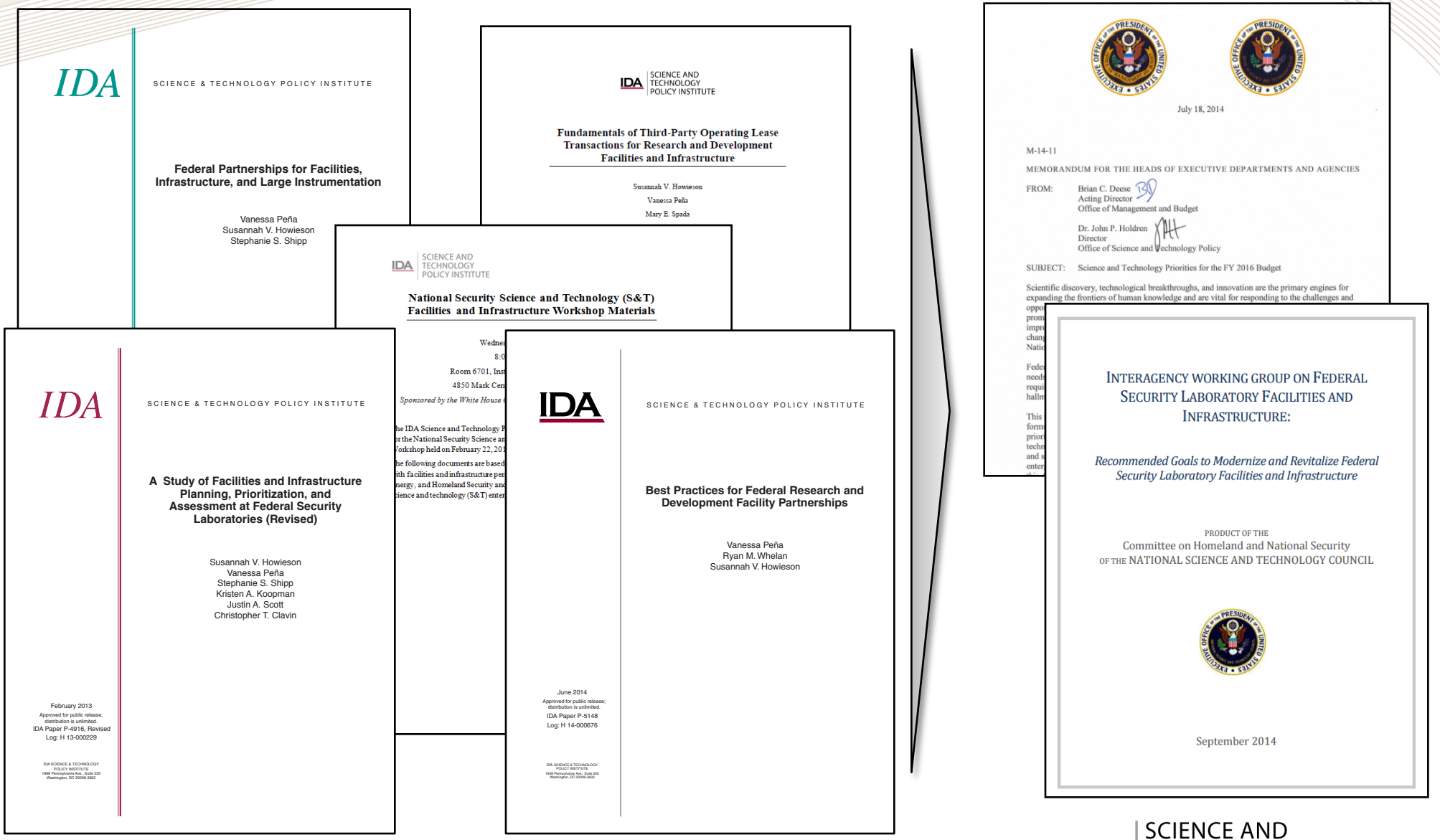
- STPI works with a number of Executive Branch Agencies that include:
  - National Science Foundation
  - National Science Board
  - National Institutes of Health
  - National Aeronautics and Space Administration
  - Department of Defense
  - Department of Energy
  - Federal Aviation Administration
  - National Institute of Standards and Technology
  - National Oceanic and Atmospheric Administration
  - Office of the Director of National Intelligence
  - U.S. Geological Survey
- This work helps inform STPI's analysis for work with OSTP and expands capabilities and knowledge

Overview

- Background
- Overview of Studies on Federal Research & Development (R&D) Facility Partnerships
- Conclusion and Further Opportunities for Coordination

BACKGROUND

STPI Federal R&D Facility Studies



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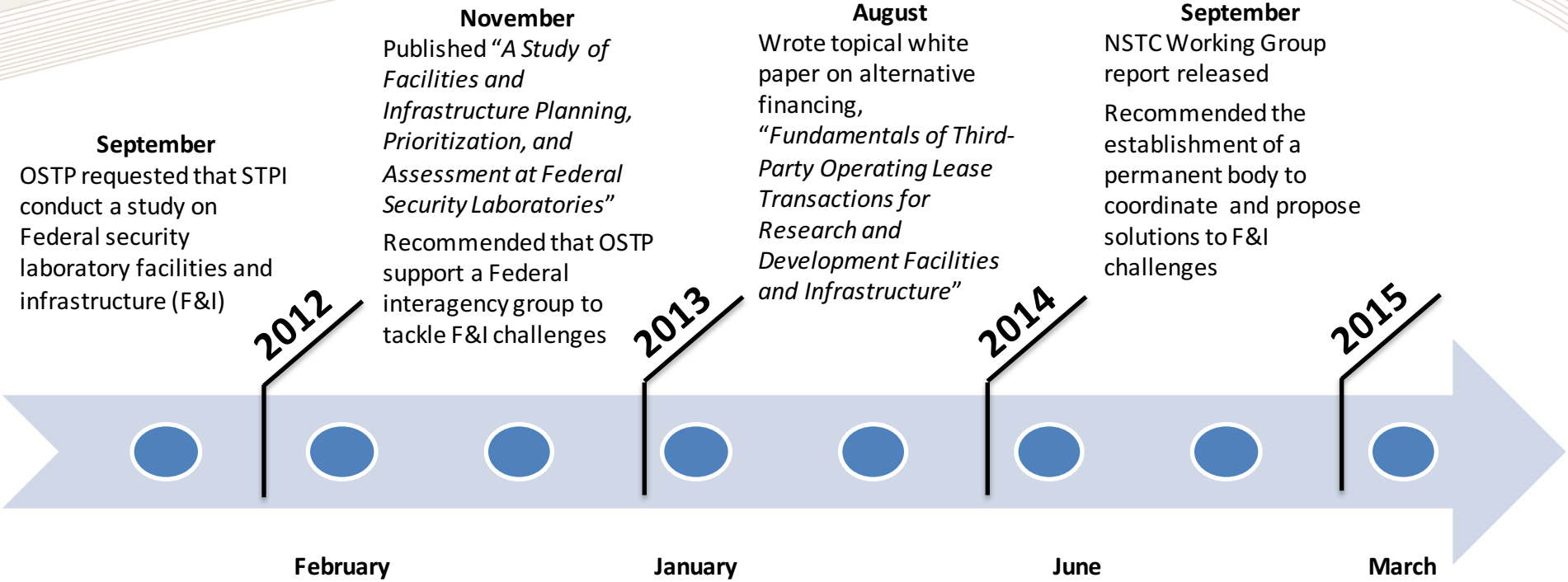
https://www.ida.org/en/STPI/ExploreSTPIResearch/STPIPublications.aspx

Timeline of STPI Support for Federal R&D Facilities Studies with OSTP



September
OSTP requested that STPI conduct a study on Federal security laboratory facilities and infrastructure (F&I)

February
Facilitated inaugural workshop on "National Security Science and Technology F&I" at IDA

November
Published "*A Study of Facilities and Infrastructure Planning, Prioritization, and Assessment at Federal Security Laboratories*"

Recommended that OSTP support a Federal interagency group to tackle F&I challenges

January
NSTC established the Interagency Working Group on Federal Security Laboratory F&I

June
Published "*Federal Partnerships for Facilities Infrastructure and Large Instrumentation*"

August
Wrote topical white paper on alternative financing, "*Fundamentals of Third-Party Operating Lease Transactions for Research and Development Facilities and Infrastructure*"

June
Published "*Best Practices for Federal Research and Development Facility Partnerships*"

July
Joint OSTP-OMB S&T Priorities Memo is published, encourages agencies to leverage resources through partnerships and consider best practices in STPI 2014 report

September
NSTC Working Group report released

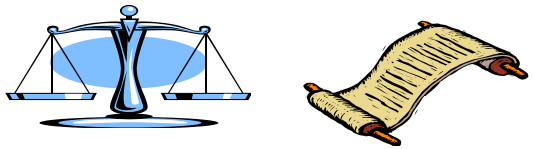
Recommended the establishment of a permanent body to coordinate and propose solutions to F&I challenges

March
NSTC Subcommittee established under CHNS

Importance of Facilities in National Policy

A STRATEGY FOR AMERICAN INNOVATION
Securing Our Economic Growth and Prosperity
http://www.whitehouse.gov/sites/default/files/uploads/InnovationStrategy.pdf

FACILITIES & INFRASTRUCTURE
Invest in 21st century facilities and technical infrastructure



ROLES & RESPONSIBILITIES
Streamline rules and regulations that stifle innovation and performance

PEOPLE / WORKFORCE
Improve our ability to recruit and retain the best and brightest scientists and engineers

- Policy development
- Pilot prototypes
- Action partners

A 21ST CENTURY SCIENCE, TECHNOLOGY AND INNOVATION STRATEGY FOR AMERICA'S NATIONAL SECURITY
https://sites/default/files/microsites/ostp/NSTC/national_security_s_and_t_strategy.pdf

OVERVIEW OF STUDIES ON FEDERAL R&D FACILITY PARTNERSHIPS

Rationale for Studying Federal Facility Partnerships for R&D

- Federal facility partnerships can leverage resources across one or more agencies to develop or maintain a facility and enhance research and the workforce supporting common agency missions
- STPI conducted two studies. Our first study found that[1]
  - Partnerships are not without complexities in coordination, planning, funding, management and communication
  - A critical gap in implementation was a lack of previous knowledge and understanding of lessons learned from past projects
- In our second study[2], we asked given the range of Federal agency partnership approaches across Government, could a shared collection of examples be reviewed to highlight effective practices for developing Federal facility partnerships for R&D?

1 *"Federal Partnerships for Facilities, Infrastructure, and Large Instrumentation,"* Vanessa Peña, Susannah V. Howieson, and Stephanie S. Shipp, IDA Document D-4937, June 2013. https://www.ida.org/~/media/Corporate/Files/Publications/STPIPubs/2014/ida-p-5148.ashx;
2 *"Best Practices for Federal Research and Development Facility Partnerships."* Vanessa Peña, Ryan M. Whelan, and Susannah V. Howieson, IDA Paper P-5148, June 2014. https://www.ida.org/~/media/Corporate/Files/Publications/STPIPubs/2014/ida-p-5148.ashx

Study Questions and Approach

- Study Questions
  - What are effective Federal partnerships and their drivers?
  - What are barriers and strategies to overcome these barriers?
  - What are policy suggestions to facilitate partnerships?
- Approach:
  - Conducted more than 40 interviews with representatives from 10 Federal agencies
  - Developed 5 case studies on partnerships
  - Reviewed program documentation and public literature

"Federal Partnerships for Facilities, Infrastructure, and Large Instrumentation," Vanessa Peña, Susannah V. Howieson, and Stephanie S. Shipp, IDA Document D-4937, June 2013. https://www.ida.org/~/media/Corporate/Files/Publications/STPIPubs/2014/ida-p-5148.ashx

Analysis of Best Practices

- At the request of OSTP and the Office of Management and Budget, STPI was asked to analyze best practices and develop a guidance document as a reference for Federal agencies
- Analysis derived from
  - Information from prior study on partnerships and case studies
  - Supplemented review with 4 additional Federal facility partnerships and interviews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Best Practices for Federal Research and Development Facility Partnerships

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June 2014
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Federal Facility Partnership Models

Model*	Description
Co-Funding an Entire Facility	Involves more than one agency funding construction or renovations of one facility
Co-Funding Large Instrumentation	Involves more than one agency funding the development of large instruments within one facility
Co-Funding Supportive Infrastructure or Utilities	Involve more than one agency supporting infrastructure or utilities necessary for the construction or renovations of one or more agency's facilities
Co-Location	Involves the co-location of more than one agency's facilities in one centralized campus
Cooperation and Integration of Management and Operations	Involves the integration of management, operations, and services for more than one agency's facilities under one agency's chain of command

* Models are not mutually exclusive

"Best Practices for Federal Research and Development Facility Partnerships." Vanessa Peña, Ryan M. Whelan, and Susannah V. Howieson, IDA Paper P-5148, June 2014. https://www.ida.org/~/media/Corporate/Files/Publications/STPIPubs/2014/ida-p-5148.ashx

Best Practices in Federal R&D Facility Partnerships

Theme	Practices
Coordination	• Practice 1: Identify a lead agency to simplify coordination and management • Practice 2: Consider early engagement with the Executive Office of the President, including OSTP or OMB, for assistance in convening facility project stakeholders
Planning Processes	• Practice 3: Outline roles for each partner based on their expertise and intellectual contribution • Practice 4: Agree upon a single facility life-cycle management process by either using one agency's process or a single, hybrid approach of the most stringent policies and processes across partners • Practice 5: Outline project dependencies and risks in each partner's budget
Funding Commitments	• Practice 6: Establish agency cost shares based on the scope of facility capabilities that align with the roles and responsibilities of and benefits to the partners • Practice 7: Streamline the transfer of funds to support facility planning, construction, management, and operations
Project Agreements	• Practice 8: Establish multiple levels of agreement to support various aspects of the partnership • Practice 9: Develop flexible policies and procedures to address changing needs and opportunities as the partnership expands
Governance and Communication	• Practice 10: Develop formal and informal mechanisms to communicate ideas, concerns, and feedback across local and agency executive leadership • Practice 11: Establish governance structures to work through unanticipated challenges
Culture and Trust	• Practice 12: Create relationships to effectively understand complementary program activities and needs as well as improve confidence in partner commitments.

"Best Practices for Federal Research and Development Facility Partnerships." Vanessa Peña, Ryan M. Whelan, and Susannah V. Howieson, IDA Paper P-5148, June 2014. https://www.ida.org/~/media/Corporate/Files/Publications/STPIPubs/2014/ida-p-5148.ashx

Example of Practice 6: Agencies Identify Core Capabilities to Define Funding Commitments

- To establish an agreement on cost-shares at Pacific Northwest National Laboratory's Physical Sciences Facility (PSF), the Department of Energy Office of Science, National Nuclear Security Administration, and Department of Homeland Security convened a workshop to identify the requirements for the facility
- Agencies defined core capabilities that the facility would include, e.g., research areas that were necessary and essential for performing each agency's work

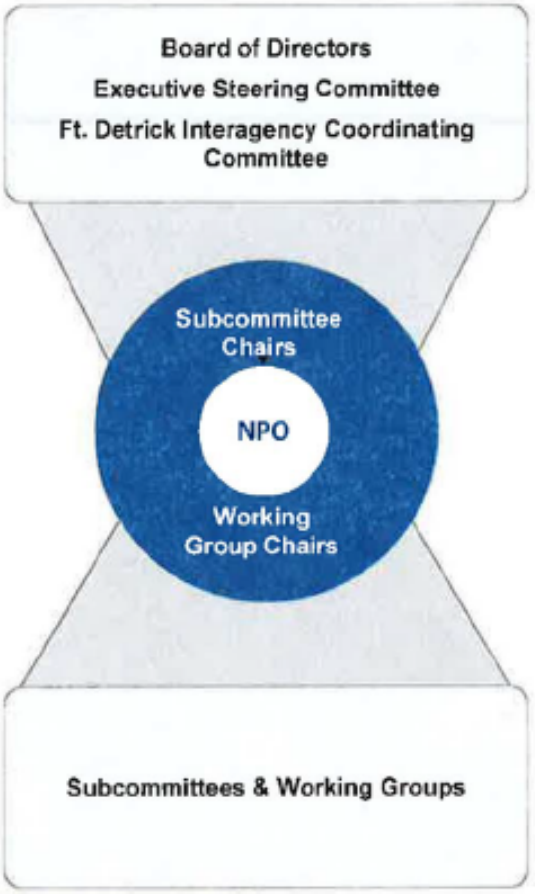
Source: http://energy.gov/sites/prod/files/maprod/documents/16-1555_Henderson.pdf

- Outcomes of process:
  - Used outline to determine the eventual scope of the facility
  - Agencies agreed upon the costs for providing each capability
  - Each agency's cost-share was determined based on the costs of the capabilities selected as being of interest to the respective agency
  - Process was a transparent method of assessing and agreeing upon cost-shares.

"Best Practices for Federal Research and Development Facility Partnerships." Vanessa Peña, Ryan M. Whelan, and Susannah V. Howieson, IDA Paper P-5148, June 2014. https://www.ida.org/~/media/Corporate/Files/Publications/STPIPubs/2014/ida-p-5148.ashx

Example of Practice 10: Multiple Agencies Coordinate Investments Through Governance Structures

- National Interagency Confederation for Biological Research and the National Interagency Biodefense Campus is a coalition of 8 agencies and sub-agencies*
- Agencies developed and coordinated research programs and capital investments in biodefense research and co-located research facilities at Army base, Fort Detrick, Maryland
- Strategic plan describes governance structure and rotating leadership to work through issues collaboratively
- Procedures developed to outline method for allocating costs for common infrastructure and unanticipated facility challenges



Source: Received from interviewees and cited in STPI (2014)

* National Cancer Institute (NCI), National Institute of Allergy and Infectious Diseases (NIAID), U.S. Army Medical Research and Materiel Command (USAMRMC), U.S. Department of Agriculture (USDA), U.S. Department of Homeland Security (DHS), Centers for Disease Control and Prevention (CDC), Naval Medical Research Center (NMRC), Food and Drug Administration (FDA)

Considerations for Developing Federal Facility Partnerships for R&D

- Can/should a single agency fund the project?
- Does the project have champions from all leadership levels and across the Executive Office of the President to support planning and implementation?
- Do the participating agencies have a fruitful history of working together?
- Are participating agencies willing to share, develop, and forego project management responsibilities depending on their expertise?
- Can participating agencies justify the complications inherent to multiple agencies funding a project?

"Best Practices for Federal Research and Development Facility Partnerships." Vanessa Peña, Ryan M. Whelan, and Susannah V. Howieson, IDA Paper P-5148, June 2014. https://www.ida.org/~/media/Corporate/Files/Publications/STPIPubs/2014/ida-p-5148.ashx

CONCLUSION

What Lessons Might Be Applicable To USArray?

- Important to identify and have mutual understanding of capabilities
- Discuss value proposition and importance of identified capabilities to each stakeholder
- Identify agreed-upon operation and maintenance cost structures for capabilities
- Use value proposition to identify costs and cost-shares
- Identify a main steward for the instrument
- Work at boundaries of the agency's missions to understand and articulate common priorities
- Develop flexible agreements and policies that outline roles and commitments, with buy-in from top leadership
- Establish innovative funding mechanisms, working with authorities of other partners that provide greatest flexibilities
- Create a collaborative, trusting working environment over the long-term, particularly important as leadership and organizational structures evolve

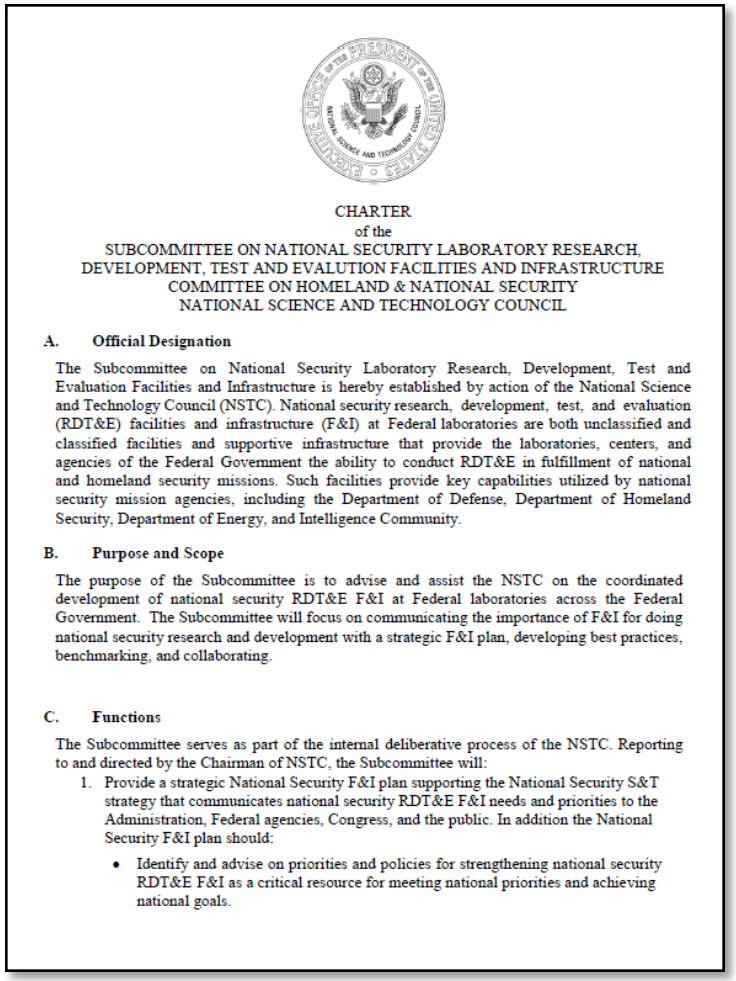
What Policy Suggestions Might Be Relevant?

Level of Implementation	Suggestions
Executive or Legislative	• Agencies establish an appropriation specific to the partnership within each agency's budget to help maintain long-term funding commitments or work with Congress to establish an appropriation for pooling joint-funds
Interagency Coordination	• Agencies improve communication with the executive branch and increase coordination among different OMB examiners assigned to each agency • OSTP increase visibility of partnerships, coordinating agency efforts to identify and develop joint projects, early in the planning stages of a partnership
Agency and Laboratory-Level Policies and Guidance	• Agencies ensure that the staff for each facility develops formal strategic plans and organized governance structures with input from each partner and other users • Agencies develop policies or guidance showcasing best practices or models for cost-sharing and joint-Federal funding mechanisms as well as describing how partnerships have resolved legislative or regulatory barriers

Policy suggestions are excerpts from *"Federal Partnerships for Facilities, Infrastructure, and Large Instrumentation,"* Vanessa Peña, Susannah V. Howieson, and Stephanie S. Shipp, IDA Document D-4937, June 2013. https://www.ida.org/~/media/Corporate/Files/Publications/STPIPubs/2014/ida-p-5148.ashx

Further Opportunities for Coordination Through the NSTC Subcommittee on Federal Security Laboratory Facilities

- Chartered March 2015
- Rotating chair from
  - Department of Defense
  - Department of Energy
  - Department of Homeland Security
  - Office of the Director of National Intelligence
- Recognizing large supportive infrastructure for national security R&D, members also include
  - National Science Foundation
  - National Institutes of Health
  - Department of Agriculture
  - National Aeronautics and Space Administration
  - General Services Administration



CHARTER
of the
SUBCOMMITTEE ON NATIONAL SECURITY LABORATORY RESEARCH, DEVELOPMENT, TEST AND EVALUTION FACILITIES AND INFRASTRUCTURE
COMMITTEE ON HOMELAND & NATIONAL SECURITY
NATIONAL SCIENCE AND TECHNOLOGY COUNCIL

A. Official Designation

The Subcommittee on National Security Laboratory Research, Development, Test and Evaluation Facilities and Infrastructure is hereby established by action of the National Science and Technology Council (NSTC). National security research, development, test, and evaluation (RDT&E) facilities and infrastructure (F&I) at Federal laboratories are both unclassified and classified facilities and supportive infrastructure that provide the laboratories, centers, and agencies of the Federal Government the ability to conduct RDT&E in fulfillment of national and homeland security missions. Such facilities provide key capabilities utilized by national security mission agencies, including the Department of Defense, Department of Homeland Security, Department of Energy, and Intelligence Community.

B. Purpose and Scope

The purpose of the Subcommittee is to advise and assist the NSTC on the coordinated development of national security RDT&E F&I at Federal laboratories across the Federal Government. The Subcommittee will focus on communicating the importance of F&I for doing national security research and development with a strategic F&I plan, developing best practices, benchmarking, and collaborating.

C. Functions

The Subcommittee serves as part of the internal deliberative process of the NSTC. Reporting to and directed by the Chairman of NSTC, the Subcommittee will:

1. Provide a strategic National Security F&I plan supporting the National Security S&T strategy that communicates national security RDT&E F&I needs and priorities to the Administration, Federal agencies, Congress, and the public. In addition the National Security F&I plan should:
   - Identify and advise on priorities and policies for strengthening national security RDT&E F&I as a critical resource for meeting national priorities and achieving national goals.

NSTC Subcommittee Functions

- Articulate priorities through strategic and implementation plans
- Facilitate coordination of Federal R&D facility investments
- Serve as a coordination point for data and definitional standards and partnerships
- Share practices and recommend policies to improve revitalization of the Federal R&D facility enterprise

Questions?

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https://www.ida.org/en/STPI/ExploreSTPIResearch/STPIPublications.aspx

BACKUP

Policy Suggestions to Facilitate Federal Partnerships for R&D (1)

Level of Implementation	Suggestions
Executive or Legislative	• Agencies establish an appropriation specific to the partnership within each agency's budget to help maintain long-term funding commitments (Federal capital budgeting) • Agencies work with Congress to establish an appropriation for the partnerships to pool joint-funds • Agencies work with Congress to receive committed funds for the partnership across multiple years in a single year up front • Executive orders or legislation that mandates partnerships include language on how the agencies should fund the partnership • An Executive order, Presidential Memorandum, or other Executive guidance to provide a framework for developing partnerships and help share the lessons learned from partnerships previously implemented

Available at: https://www.ida.org/~/media/Corporate/Files/Publications/STPIPubs/2014/ida-p-5148.ashx

Policy Suggestions to Facilitate Federal Partnerships for F&I (2)

Level of Implementation	Suggestions
Interagency Coordination	• Agencies to improve communication with the executive branch and increase coordination among different OMB examiners assigned to each agency • OSTP to increase visibility of F&I partnerships, coordinating agency efforts to identify and develop joint projects, and encourage dialogue and feedback early in the planning stages of a partnership proposal • Agencies to facilitate the identification of interagency opportunities by sharing the results of the capital planning and prioritization process with potential partners • Agencies to encourage participation and feedback from other agencies with similar capabilities and common research goals

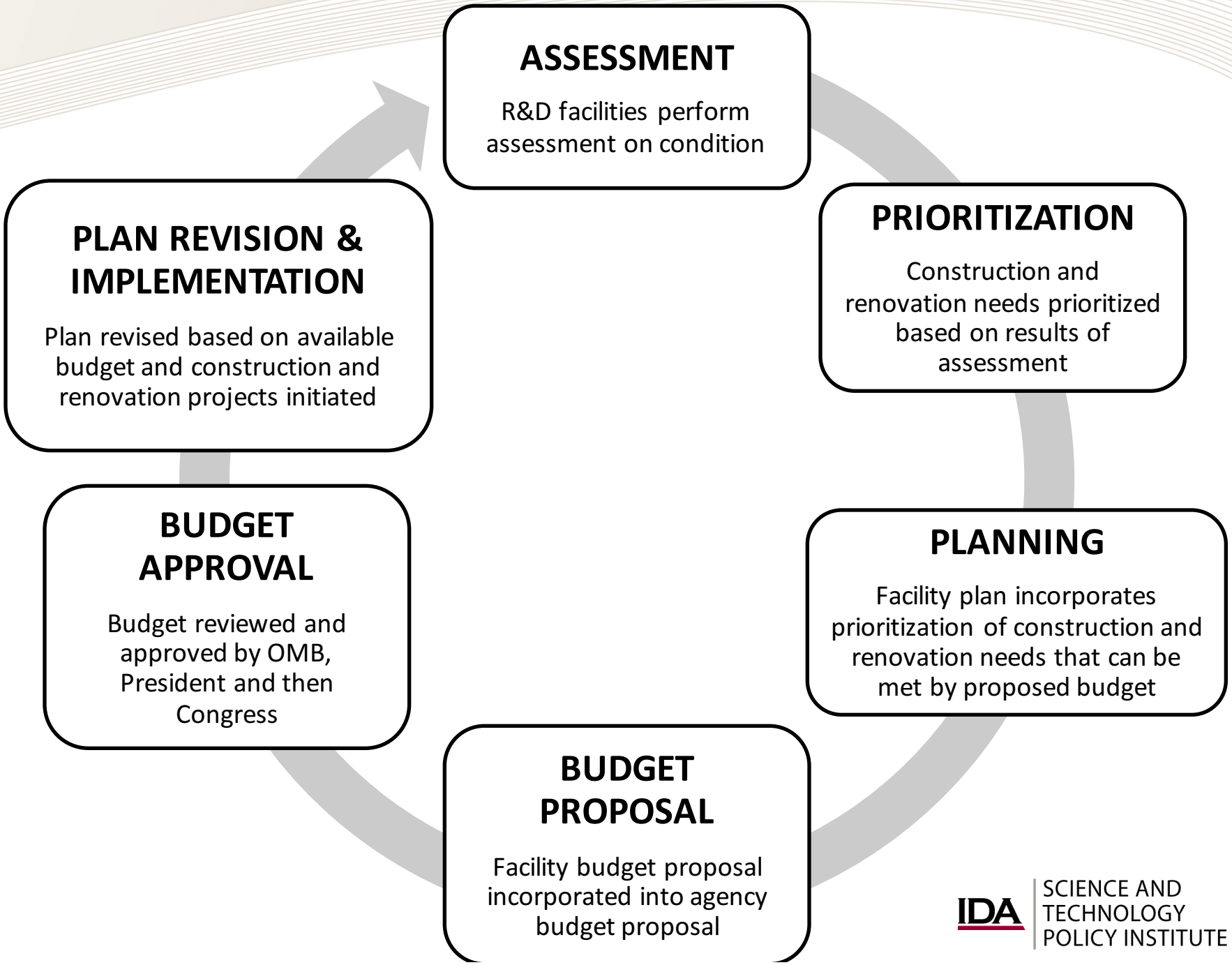
Available at: https://www.ida.org/~/media/Corporate/Files/Publications/STPIPubs/2014/ida-p-5148.ashx

Policy Suggestions to Facilitate Federal Partnerships for F&I (3)

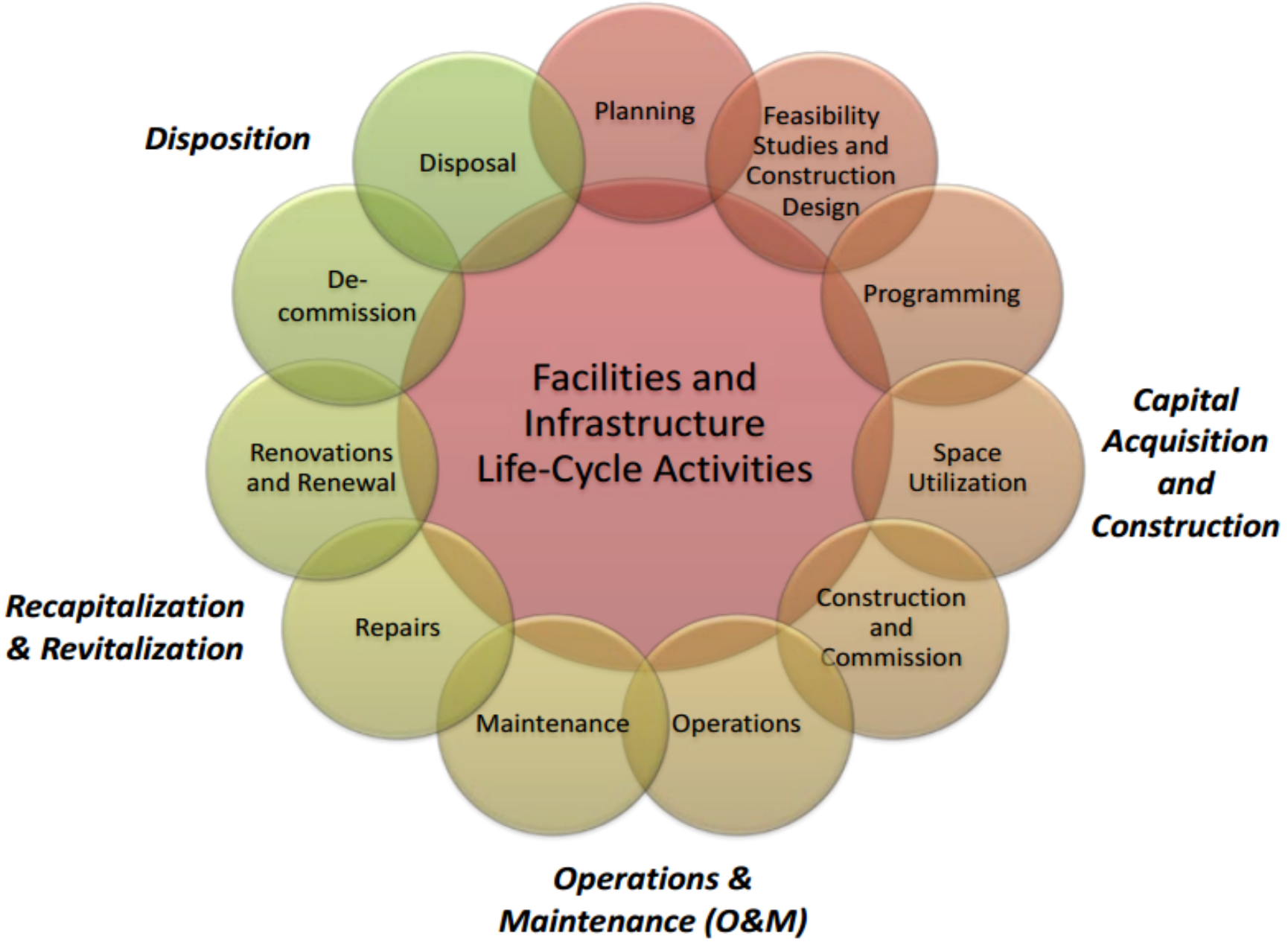
Level of Implementation	Suggestions
Agency and Laboratory-Level Policies and Guidance	• Agencies to develop a lessons-learned document that shows strategies in forming Federal F&I partnerships and guides partnerships through the life cycle of the F&I—from construction to maintenance to decommissioning • Agencies and facility staff to encourage partners to be flexible about how partnerships evolve, including the number and types of partners • Agencies to ensure that the staff for each facility develops formal strategic plans and organized governance structures with input from each partner and other F&I users • Agencies to develop policies or guidance showcasing best practices or models for cost-sharing and joint-Federal funding mechanisms as well as describing how partnerships have resolved legislative or regulatory barriers • Agencies to explore mechanisms and policies to facilitate the digital • exchange of information among agencies

Available at: https://www.ida.org/~/media/Corporate/Files/Publications/STPIPubs/2014/ida-p-5148.ashx

Overview of Federal Capital Budgeting Process

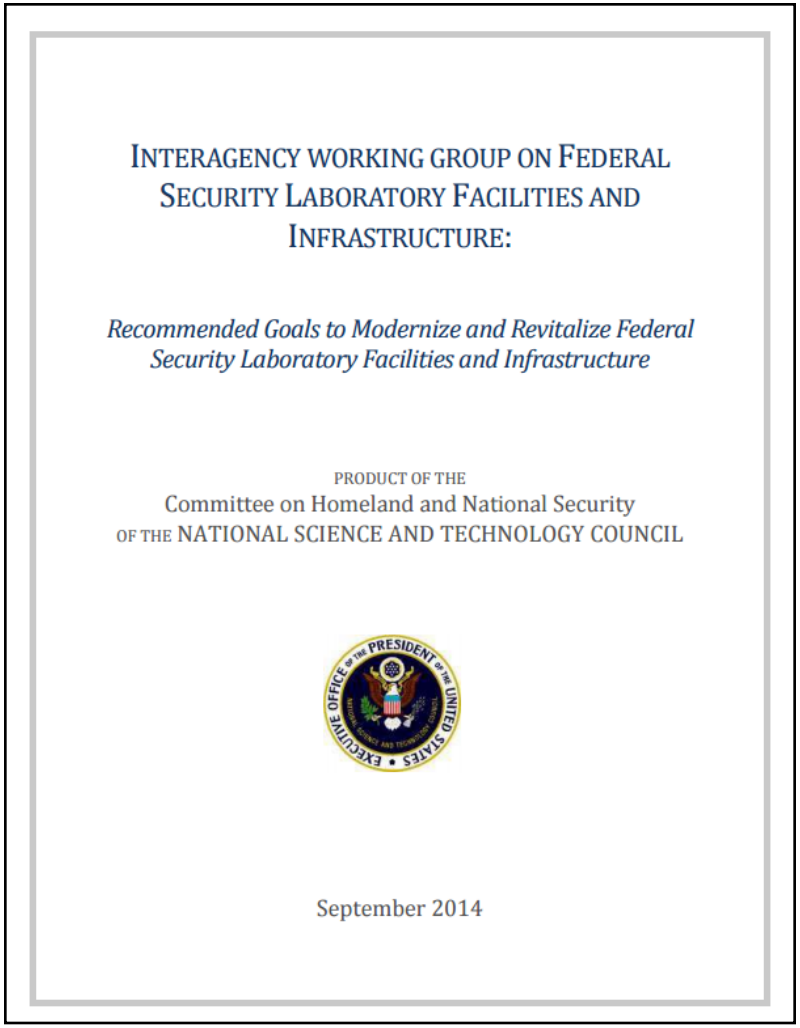


Facility Lifecycle Must Align with Budgeting Cycles



NSTC Working Group for Federal Security Laboratory Facilities

- Chartered Jan 2013 to Jan 2014
- How can Federal agencies improve coordination of capital projects?
- What are strategic priorities to guide Federal facility investments?
  - How can revisions to legislation and regulations facilitate improved facility planning and management?
  - How can Federal agencies better guide investments towards common goals and complementary missions?
  - What new financing models and mechanisms could be established?



INTERAGENCY WORKING GROUP ON FEDERAL SECURITY LABORATORY FACILITIES AND INFRASTRUCTURE:

Recommended Goals to Modernize and Revitalize Federal Security Laboratory Facilities and Infrastructure

PRODUCT OF THE
Committee on Homeland and National Security
OF THE NATIONAL SCIENCE AND TECHNOLOGY COUNCIL

September 2014

https://www.whitehouse.gov/sites/default/files/microsites/ostp/NSTC/nstc_-_federal_security_laboratory_facility_and_infrastructure_-_sept._2014.pdf

Six Strategic Goals (1)

- **GOAL 1: Establish an interagency group to enable and support coordination of national security R&D facilities.**

  The interagency group would help identify and share current capabilities across agencies and realize the improvements necessary to maximize the value of national security R&D facilities to the Federal Government and the Nation.

- **GOAL 2: Adopt and refine metrics, processes, and tools to accurately capture condition, mission impact, and effectiveness of national security R&D facilities.**

  Needed methods include developing and refining accurate quantitative measures that link the condition of national security R&D facilities to mission impact.

- **GOAL 3: Create an online catalog of national security R&D facilities to effectively communicate the value and opportunities for shared use associated with Federal resources and capabilities.**

  The catalog should be supported by developing an Executive-level directive to establish and continuously update information on available national security R&D facilities.

Six Strategic Goals (2)

- **GOAL 4: Articulate facility priorities in national security science and technology strategies to better connect technical priorities with the necessary R&D facilities.**

  Language inserted into Executive-level national security S&T strategies could specify and encourage ways for agencies to communicate capabilities, develop partnerships, pursue effective funding mechanisms, and improve messaging of national security R&D facility capabilities.

- **GOAL 5: Facilitate the development of best practices for national security R&D facilities partnerships among agencies based on lessons learned from past experiences across the Federal Government.**

  Coordination among agencies and laboratories is necessary to identify common mission needs that can serve as the basis for developing future partnerships.

- **GOAL 6: Address existing legislative and regulatory barriers to funding national security R&D facilities.**

  Solutions include clarifying regulations and policies on using interagency cooperative funding and recapitalization funds and expanding current private financing mechanisms for national security R&D facilities.