



Interagency S&T Leadership

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About the Author

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Mr. Blackburn's most recent prior appointment was in White House Office of Science and Technology Policy (2004-2011), where he served as the Assistant Director for Identity Management and Homeland Security. While at OSTP, Mr. Blackburn influenced the conceptualization and implementation of national policies and federal systems during a period of transformation unprecedented in the nation's history. He has unparalleled experience leading interagency teams of senior federal officials and appointees in the development and successful implementation of whole-of-government S&T strategies within the homeland security and identity management enterprises.

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“The United States is in the midst of a profound reorganization of how research is done, where it is done, who does it, and how its results find their way to the marketplace. This confluence of circumstances threatens the Nation’s world-leading position in innovation and technology and the benefits it brings.”

—President’s Council of Advisors on Science and Technology
Transformation and Opportunity: The Future of the U.S. Research Enterprise

1.0 Introduction

Our Nation’s past science and technology investments have provided the foundation for the capabilities we currently enjoy. The benefits from prior advancements are evident in virtually every aspect of our modern life¹: the food that we eat, the healthcare we receive, how we learn, our digital economy, our entertainment, and especially in our national security. Studies have shown that more than half of the nation’s productivity growth in the 20th Century is attributable to technical advances.

For the past 75 years the United States has been the preeminent provider of technical innovation and capabilities, but other nations, both individually and certainly collectively, are steadily chipping away at our lead. In 1945, the U.S. share of the worldwide Gross Domestic Product was approximately 50%; now, it is below 25%. More recently, the U.S. share of the world’s R&D investments shrank from 34% in 2009 to a forecasted 26.4% in 2016². These declines are not because of a measurable drop in U.S. innovation investments or yields (indeed, the percentage of U.S. investments in S&T compared to the GDP has noticeably risen over the past 50 years³), but rather from the rest of the world catching up. As the U.S. has less than 5% of the world’s population, we won’t be able to overcome these trends through brute force (i.e., the U.S. will not be able to simply outspend the rest of the world’s population). Instead, we will have to become more strategic so that U.S. investments yield higher impacts.

In 2015, the U.S. invested \$496B in research and development, with approximately 25% of this total being federally-funded. The federal investment in science and technology is not determined by an individually-developed strategy. Rather, it is a collection of investment decisions at multiple levels throughout the Executive and Legislative Branches, which result in appropriations to S&T entities within numerous federal agencies. Each of these decisions are influenced by a variety of factors and almost always result in appropriations that neither allow an individual agency to meet all of its S&T needs, nor for the government as a whole to meet its overall strategic needs. Even worse, the stove-piped nature of the budget process can lead to agencies funding similar activities without their knowledge and with little incentive for agencies and their program managers to consider external entities

¹ PCAST/Nov 2012. Transformation and Opportunity: The future of the U.S. Research Enterprise

² R&D Magazine. http://whitepapers.rdmag.com/20151224_rd_2016_gff/

³ NSF: National Patterns of R&D Resources: 2011-2012 Data Update

in their planning. Recent budget constraints are shifting this thinking however, as agency leadership is under increasing pressure to justify their spending.

One of the steps in a defensible S&T process for a federal agency is understanding which of their prioritized needs are being addressed by external entities and can be leveraged, such as partnership opportunities for joint projects. In a best-case scenario, another agency is already funding the technological development that the agency needs and the PM can simply cherry-pick external work for their own needs. Unfortunately, that scenario doesn't happen very often! But there are often closely-aligned S&T activities that can be leveraged in some way, or opportunities to collaborate that will yield more advancement than is possible from separate projects.

This paper examines the concept of interagency collaboration as a recommended approach for federal S&T program managers to take, as well as the leadership concepts required for success in such an environment. The paper is organized into two major sections: (a) foundational material on the federal budget development process, leadership principles, and interagency structures; and (b) practical guidance with concepts and helpful hints on leading interagency activities in general, and in the specific case of formal coordination through the National Science and Technology Council. Together, these two sections will provide federal program managers and policymakers with the insights necessary for the U.S. to maximize the returns on the 25% that it controls of the U.S.' annual innovation investments.

2.0 Interagency S&T Leadership: Building Blocks

This section provides foundational material on the federal budget development process, leadership principles, and interagency coordination approaches. This knowledge serves as a foundation for the practical guidance within section 3.

2.1 The Federal Budget Process

Development of the federal S&T budget is an immensely complex process that spans multiple years and two Branches of the federal government. A working understanding of the primary steps and influences is absolutely required for any federal leader to strategically plan and direct their internal activities, as well as their external interactions. This section first provides a summary of the process at an extremely high level and then steps through the process from the perspectives of a federal S&T manager, as both perspectives are needed.

2.1.1 The Federal Budget Process – Macro Viewpoint

The federal government's S&T budget development is linear:

- The administration determines priority S&T subjects, and priority issues within each of those subjects;
- Agencies formulate their budget requests based on insights from their staff, their customers, and their stakeholders;
- The Executive Office of the President reviews agency budget requests, adjusting as necessary, creates the President's Budget, and submits it to Congress
- Both chambers of Congress review the President's Budget, hold numerous hearings, and negotiate with the President to determine the final budget, which is signed into law.
- Agencies make adjustments to their spending plans, as their enacted budgets usually have modifications from their initial requests as well as the President's Budget, and begin to execute the budget.

Each of these steps are further described in succeeding subsections. The entire process takes a total of three years to implement, which naturally means that at any given point in a calendar year the federal government is working on three different budgets concurrently. For example, in early 2016: the federal government is (a) executing the FY16 budget; (b) putting the finishing touches on the administration's FY17 budget request to Congress; and (c) determining priorities and approaches for the FY18 budget.

Figure 1 depicts the federal fiscal year, with key milestones for each of the three budgets being worked.

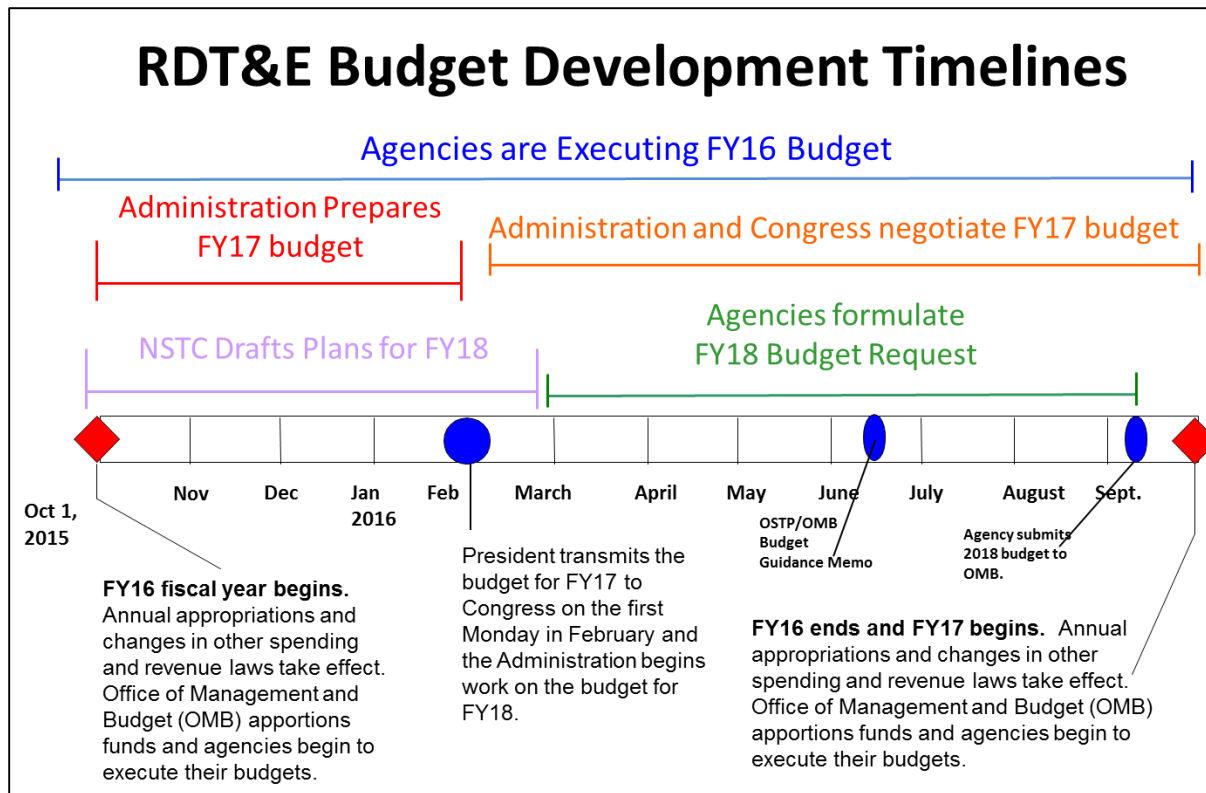


Figure 1- Yearly Federal Budget Planning

2.1.1.2 Administration's Selection of High-Level S&T Priorities

President Clinton established the National Science and Technology Council (NSTC) via Executive Order on November 23, 1993 to coordinate science and technology policy across the federal government.

The NSTC is managed by the Office of Science and Technology Policy (OSTP), which is a part of the Executive Office of the President (EOP). This Cabinet-level Council is the principal means within the executive branch to coordinate science and technology policy across the diverse entities that make up the Federal research and development enterprise. Chaired by the President, the membership of the NSTC is made up of the Vice President, the Director of the Office of Science and Technology Policy, Cabinet Secretaries and Agency Heads with significant science and technology responsibilities, and other White House officials.

A primary objective of the NSTC is the establishment of clear national goals for Federal science and technology investments in a broad array of areas spanning virtually all the mission areas of the executive branch. The Council prepares research and development strategies that are coordinated across Federal agencies to form investment packages aimed at accomplishing multiple national goals.

Within the NSTC, policies and priorities are typically determined at the Committee level, whose membership is the highest-level S&T executive within each federal department. The NSTC has historically had four subordinate Committees, with a fifth (STEM Education) being added in the Obama administration:

- Committee on Environment, Natural Resources, and Sustainability
- Committee on Homeland and National Security
- Committee on Science
- Committee on Technology

Each of these Committees reviews presidential direction and their own agencies' needs to determine which S&T topics should be priorities for interagency coordination. They will then formally charter subordinate entities, typically a Subcommittee, for each topic. Subcommittees consist of a mixture of federal subject matter experts (SMEs) and policy officials, and are tasked with (a) determining subject-specific priorities, (b) developing an interagency RDT&E plan to overcome those priorities, and then (c) ensuring agency budgets and interagency collaboration is in-place to meet the plan. Additional details about the NSTC can be found in section 3.2.

In late spring, OSTP and the Office of Management and Budget (OMB) issues its RDT&E Budget Guidance Memorandum⁴, which provides a short list of topics that agencies need to emphasize in their budget requests. These items can be viewed as even higher-level priorities than those that were determined by the NSTC, and are typically a mixture of what the NSTC feels is most critical and the president's personal priorities.

2.1.1.3 Agency Budget Requests

Agencies perform the vast majority of their budget planning well before funding is appropriated and made available to S&T program managers. While each agency's approach and timeline are different, this work will typically begin in the first quarter of a calendar year and concludes with the agency submitting its budget request in September to the Office of Management and Budget (OMB) for the fiscal year that starts 12 months later. For example, in September of 2016 agencies will submit their budget requests for fiscal year 2018 (which will begin on 1 October 2017).

A companion document, *Research, Development, Test, and Evaluation: A Defensible Process for Federal Agencies*⁵, provides insight into factors that influence an agency's S&T planning and provides tips on how to make the planning process (and its results) defensible. Successful S&T programs within federal agencies will be those that are closely aligned with national-level policies and agency priorities, have solid technical and project management plans, and leverage external activities as much as possible.

⁴ These memoranda are available from <http://www.whitehouse.gov/administration/eop/ostp/rdbudgets>

⁵ http://www.mitre.org/sites/default/files/pdf/13_0030.pdf.

Agencies are expected to prioritize NSTC activities within their S&T budget requests, and to meet their responsibilities within NSTC-developed implementation plans. Agencies will explain their request for subjects identified within the annual RDT&E Budget Guidance Memorandum in more detail than others.

2.1.1.4 Development of the President's Budget Request

Even though agencies spend considerable time developing their budget request, it is nonetheless a starting point for discussion. Numerous adjustments will be made to each agency's request as it is melded into the President's Budget Request, which is what will be submitted to Congress for consideration. OMB leads this multi-month process, with other elements of the Executive Office of the President participating as appropriate. OSTP is responsible for comparing agency S&T plans and budgets to the NSTC-developed roadmaps and the Budget Guidance Memorandum to ensure alignment and that adequate resources are included. Multiple iterations of budget plans are developed, as OMB works to adjust budgets to fit under target dollar amounts while ensuring alignment with whole of government plans and individual agency priorities.

Toward the end of the process, OMB will provide agencies a nearly final version of their budget for their review. Agencies will have a couple of days to review the budget and prepare appeals back to OMB if they feel the budget needs to be adjusted. OMB will then finalize the budget and work with agencies to develop budget books and supporting documentation so that the President can transmit his budget request to Congress on the first Monday of February.

2.1.1.5 Congressional Appropriations

After receiving the President's Budget Request, Congress initiates actions on their budget authorization and appropriations processes. The basics of this process⁶ can be found in any civics textbook and are therefore not discussed here. Throughout this process, agency heads are required to testify before a number of Committees on both the House and Senate side, as well as answer a number of Questions for the Record (QFR) about their budget requests. The EOP and Congress negotiate extensively throughout this process.

2.1.1.6 Budget Execution

Once Congress has passed a budget and it is signed into law by the President, appropriated funds begin to trickle down through agencies until they are available for individual S&T program manager action. As appropriated funds are typically different from what the President requested, and certainly different from what the agencies originally requested,

⁶ Congress hasn't followed their historical norms or rules in recent years, and have adopted various methods to get budgets out the door.

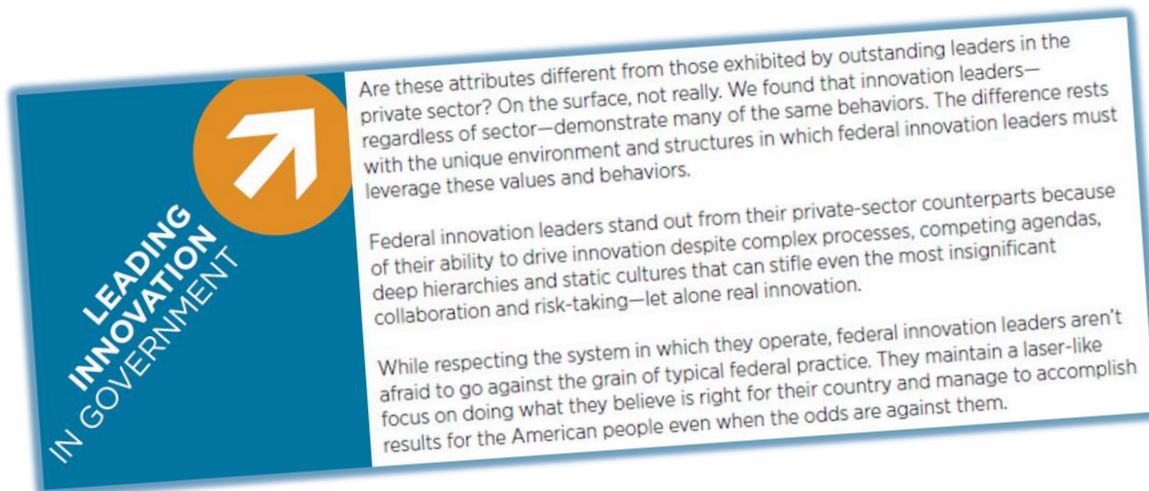
budget planning and adjustments occur throughout this trickle down process as well. These procedures vary for each Department and individual agency.

2.2 Leadership Theories

Successful interagency activities not only require strong leadership, but leadership that can be vastly different than what is normally required for successful RDT&E projects within a single agency. This section provides a quick overview of two applicable leadership theories, showing important similarities between the two even though they started from differing viewpoints.

2.2.1 Attributes of Federal Innovation Leaders

The Partnership for Public Service and the Hay Group studied the practices of a dozen of the nation's highest-performing public servants in order to learn what these leaders have in common that allowed them to both build climates of innovation and also deliver amazing results where others have stalled. They identified nine attributes that appeared consistently across all 12 interviewees, which they felt to be compelling given the rigor of their selection process and the depth of insight they achieved with each participant, and discussed each in their paper *Leading Innovation in Government*.⁷



The study's authors state that no one should be expected to be an expert in all nine attributes, but that all federal leaders should strive to advance their capabilities in each. Their research has shown that developing (or enhancing) even one of these attributes can have a significant impact on an individual's leadership abilities and enhance the potential for increased innovation in government. The nine attributes identified are:

⁷ http://www.haygroup.com/downloads/us/leading_innovation_in_government_-_a_study_with_the_partnership_for_public_service_and_hay_group.pdf

- *Patriotic Steward* – Possesses a moral compass informed by commitment to country that motivates and shapes one’s work; sees oneself as a steward of taxpayer’s money.
- *Self-aware Learner* – Possesses self-awareness that drives confidence in one’s ability to get things done and is constantly learning and growing; seeks feedback and learning opportunities.
- *Visionary* – Recognizes the opportunity to make things better and formulates a new or different path forward; at every step, gathers information, input and insights from others.
- *Navigator* – Understands, navigates and uses knowledge of the system to overcome roadblocks and accomplish objectives.
- *Relationship Builder* – Persuades others to support and/or contribute to an idea or initiative; may involve overcoming objections by using personal credibility and prior positive relationships.
- *Collaborator* – Values and develops connections with stakeholders across or outside of the organization to better achieve an objective, leveraging the specialties of each for the greater good.
- *Team Leader* – Fosters innovation by creating conditions that enable the team to openly contribute to and achieve objectives.
- *Teacher/Mentor* – Creates and invests in growth opportunities for others, encourages them to stretch beyond their current experience and provides long-term developmental support.
- *Team Builder* – Intentionally composes teams with the optimal skills, abilities and experiences to achieve desired outcomes.

Each attribute is further described by four “levels” that are successively more advanced than their predecessors. While not necessarily a roadmap to follow, progressing through the levels will enable a team and its leader to advance to higher-impact innovation activities.

2.2.2 The Concept of “Meta-Leadership”

In 2006, the National Preparedness Leadership Initiative⁸ identified a leadership framework for managing the actions of multiple organizations to achieve greater success, entitled *Meta-Leadership*. “Thinking and operating beyond their immediate scope of authority, meta-leaders provide guidance, direction, and momentum across organizational lines that develop into a shared course of action and a commonality of purpose among people and agencies that are doing what may appear to be very different work.”⁹ The

⁸ <http://npli.sph.harvard.edu/>

⁹ Leonard J. Marcus, Barry C. Dorn, and Joseph M. Henderson (2006). *Meta-Leadership and National Emergency Preparedness: A Model to Build Government Connectivity*. *Biosecurity and Bioterrorism: Biodefense Strategy, Practice, and Science*, Volume 4, Number 2, 128. <http://npli.sph.harvard.edu/wp-content/uploads/sites/8/2013/04/metaleadership.biosecurity.july06.pdf>

Federal Executive Institute¹⁰ uses this concept while training the next generation of senior-level federal servants.

“Meta-Leadership compels those who practice it to go beyond their job descriptions, since achieving unprecedented and groundbreaking cross-organizational collaboration is itself beyond the experience, mission, and task of any single organization or agency alone.”

There are five dimensions to the practice of meta-leadership:

1. *The Person of the Meta-Leader*: Leaders need to understand themselves: their strengths and weaknesses, their experiences, and their other assets. They need to have the desire for the initiative to be successful and the stick-to-itiveness to ensure that it will be.
2. *The Situation*: Leaders must be aware of what is known (and unknown) about the current circumstances, have a feeling of potential future paths and/or obstacles (and anticipate results of actions), and understand how to effectively recruit support. Just as the situation itself will be fluid over time, so too must the leader.
3. *Leading Your Silo*: Leaders have subordinates within their agency that they have authority and influence over, and rely upon as their foundation. They must earn the respect of their subordinates so that they will support the leader, both internally and external to their home agency. To be effective, they usually must grasp the concept that they are leaders of leaders.
4. *Leading Up*: Everyone reports to another individual(s) that has the ability to support, influence, or kill their initiatives. “Managing the boss” is always both difficult and important, but especially so in multi-agency activities. Extra layers of difficulties are presented when the boss is a political appointee that is working on a different timeline than career employees and may show more loyalty to his political stakeholders than the agency’s mission.
5. *Leading Across*: Each agency will have a unique view of the situation and their agency’s proper role in subsequent activities. The Meta-leader must lead them to see a common picture and generate a consensus approach that leverages individual agency’s silos of capabilities (while overcoming turf wars) in order to enable necessary collaboration. As leaders have no authority to direct this activity, they must use other methods of influence that may be available.

Meta-Leadership requires that leaders successfully execute each of these dimensions simultaneously. Failing in any single dimension can cause interagency activities to fail.

¹⁰ <https://leadership.opm.gov/index.aspx>

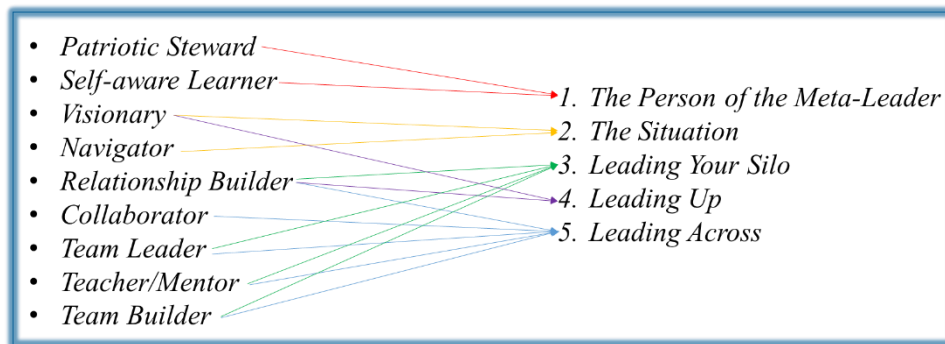
2.2.3 Merging Leadership Attributes and Dimensions

The two models discussed above studied leadership from different angles, but lead to some very similar conclusions. The executive summary of the “Leading Innovation in Government” paper, could just as well have served as an executive summary of the Meta-Leadership paper:

The leaders best equipped to steer our nation embody a set of attributes:

- They are resilient. They aren't seriously impeded by structural, procedural, cultural or political barriers. And when they do encounter resistance, they don't give up.
- They are visionary, self-aware and constantly broadening their perspective.
- They understand and know how to navigate through and around their organization's structure, culture and politics. They also understand and respect the roles, boundaries and agendas of other governmental organizations.
- They purposefully leverage networks and relationships, and use complex influencing skills to collaborate across organizational boundaries.
- They build strong, diverse teams through their leadership, creating a sense of purpose, fostering a climate that facilitates innovation and developing others as an essential part of their job.

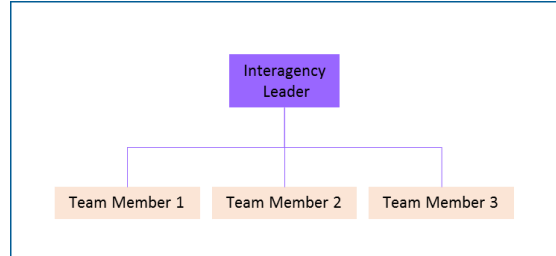
Indeed, a mapping of the federal innovation leader attributes to the meta-leadership dimensions is much more organized than one would initially anticipate:



The commonalities of important ideals discussed in the two papers, which approached the problem from different perspectives, further underscores their criticality in interagency leadership and serve as the basis for the practical guidance in section 3.

2.3 Interagency S&T Structures

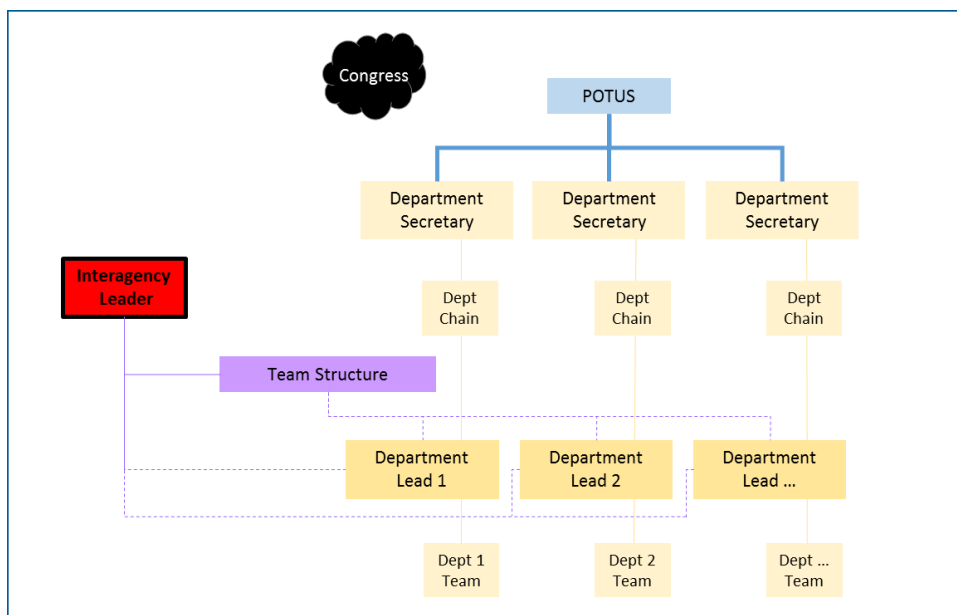
At first thought, the structure of an interagency team is quite simple: a well-meaning individual leading a group of wholly-dedicated team members to accomplish more collectively than they could hope of doing on their own. If only it were really this simple! Successful teams require a much broader perspective of the group's structure, influences, and dynamics, and require some degree of leadership from every influential participant.



The remainder of this section provides a view into a more realistic interagency structure from two important perspectives: the interagency leader, and a senior-level participant.

2.3.1 Interagency S&T Leadership: Interagency Leader Perspective

Interagency leaders must realize that the members of their team may be representing their home departments or agencies (D/A), to some unknown level of formality, and that they aren't the totality of their D/A. They actually have a host of subordinates, peers, and superiors that influence their actions on the team. The interagency leader's view of the team thus looks more like the below graphic:



From this viewpoint there are several items for the interagency leader to recognize. The most important is to acknowledge that the interagency leader sits outside the federal government's normal structure and processes. This individual is asking team members to think and act in a manner that is unnatural to their "home team", if not contrary to it. Each member of the team works in a federal agency that tasks him, reviews and oversees his work, is responsible for his pay allocations and any future promotions. He has likely worked for this agency for quite some time, which has generated a sense of loyalty to help the agency's mission succeed. His agency also has its own culture, which provides both opportunities and obstacles for him as he tries to balance the needs of his agency with those of the interagency. Interagency leaders must recognize all of the above and strive to find ways for the team member to succeed within his own agency. It's not enough to simply convince this individual to support an interagency path, the interagency leader must help this individual convince his agency's management that the interagency path is the best approach for *them*. Both must be aware of, and strategically plan around, the goals and personal interests and/or biases of the team member's supervisory chain. How does this interagency activity meet his supervisor's goals and how does it help the supervisor meet his boss's goals? How can the interagency best setup its plans so that team members can successfully champion their portion against competing S&T topics within the agency?



Team members will likely sit at different levels within their individual agencies. For some it may be sufficient to simply show that they're advancing technology in a smart and cost-effective manner. Others may require that doing so helps the agency meet the President's (or Congress') priority items.

Some interagency teams may have an individual that is assigned, either by the Interagency Leader or D/As themselves, to coordinate that D/A's participation in the interagency team. In these situations, this "Department Lead" functions like a sub-team lead and has all of the responsibilities discussed in the previous paragraph when managing subordinate team members. In some ways, this can be a more complex task than the overall team lead because of the budget development process. Members of this departmental "sub-team" will come from different parts of the Department Lead's own agency and/or from sister agencies that report to the same departmental Secretary. At some level in either case, these team members become adversaries for the same pieces of the Department's financial pie. The interagency leader must be aware of this conflict, and the fact that the Department Lead is a participant as well, and ensure that the Department Lead is actually functioning as a Department-wide facilitator rather than leveraging the position to enhance his agency's chances of success. The Interagency Lead must also be aware of this potential conflict



Why would an interagency leader want to create a Department Lead position? Without one, he may find himself managing intra-Departmental coordination personally!

within himself as well, and ensure that this doesn't cause concern from other team members.

Many interagency teams have an internal structure to them in order to accomplish the team's objectives. These sub-groups often function to meet a small handful of specific functions that support the team's overall needs, and consist of a subset of representatives from the team's membership. The interagency leader must ensure that these groups are properly staffed and that their activities are progressing so that their work is integrated into the overall team's activities at the proper time. The interagency leader must also select a leader for each sub-group, which is a task that has issues beyond the normal qualifiers for leadership selection (such as knowledge, leadership capability, trusted by members, etc.). The interagency leader must ensure that the collection of leads from all of the team's sub-groups are representative of the overall interagency team. Expect issues if a team has multiple group leads from one agency, and no group leads from multiple agencies.

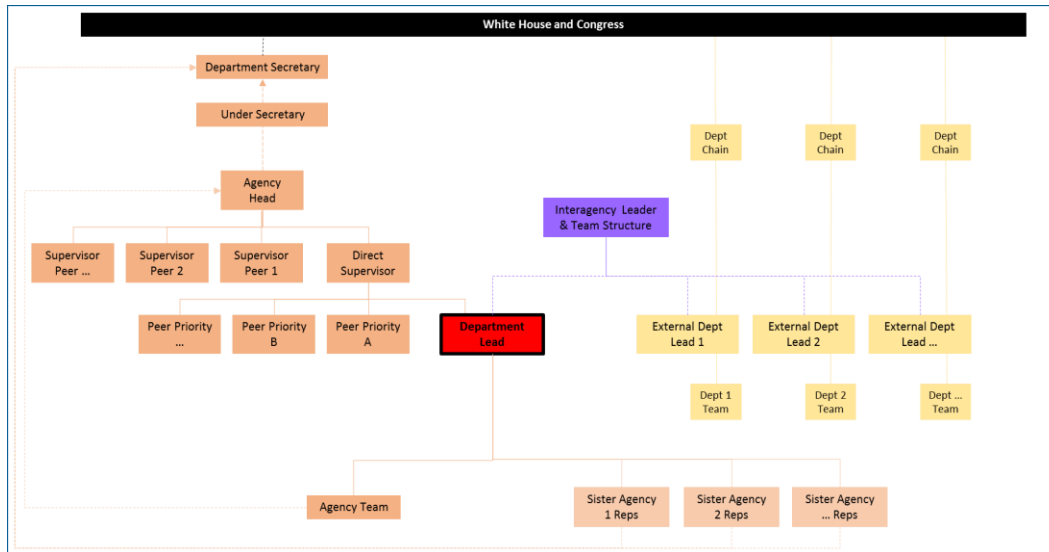


There are multiple models for an interagency group structure that can be successful. The interagency leader will have to select the arrangement that best meets the interagency team's overall needs. In general, I recommend a structure that distributes as much responsibility to sub-groups as possible. This not only enables your team's subject matter experts to have appropriate input into the decision-making progress, but also creates a sense within multiple team members of "owning" the team's success as their own – which is a critical leadership tool. In this model, the overall interagency team (of most-senior members) can meet less often and focus on strategic direction and oversight of the sub-groups.

Finally, the interagency leader must also do what his title suggests: lead across disparate Departments. Federal departments are separated for a reason, as they focus on different functions of the federal government. While they may have common S&T needs, their viewpoints on those needs will often be very different. Reasons for these differences include: the initial driver for those needs, the priority level for those needs (compared to other Departmental needs), views on the best approaches to meet the needs, justifications and processes internally used to select activities to meet those needs, different "colors" of funding and varying contracting options, and wildly disparate stakeholder pressures. These issues will present themselves in every aspect of the team's work, and can easily derail the team's progress if they are not properly foreshadowed and solutions identified prior to them becoming major problems. The interagency leader must continuously work with Department Leads to understand the culture, opportunities, and issues of all the D/As within the team, and promote a culture where the interagency team develops solutions that meet everyone's needs while adhering to, and supporting, individual Department's processes, cultures, and timelines.

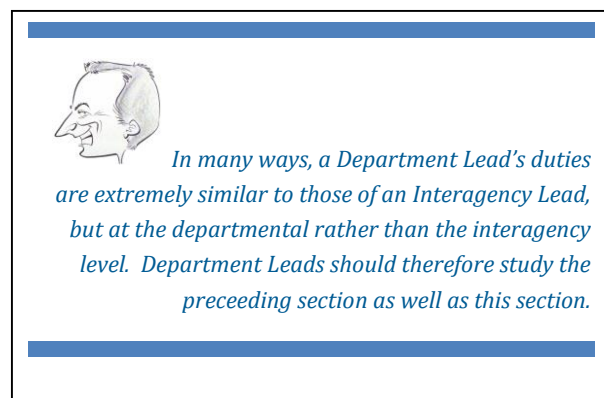
2.3.2 Interagency S&T Leadership: Senior-Level Participant Perspective

The view of an interagency team from a Department Lead's perspective is provided below. While it has some similar elements to those described in the prior section, they are often viewed differently than an interagency leader.



The Department Lead's first area of focus is on the interagency leader and the team structure. A successful interagency leader will view the Department Leads as a critical partner in the team's management. This places a lot of pressure on the Department Lead, but also provides ample opportunities to shape the team's work. As such, the Department Lead will be constantly collaborating with the interagency leader, as well as leads from within the team's structure. Department Leads must ensure that these individuals understand their Department's viewpoints, opportunities, and limitations, as well as the items within their culture that can have an impact on the team's activities (such as items to focus on to get the support of the Department's senior appointees or things to avoid because it sets them off).

The Interagency Leader expects the Department Lead to coordinate all team members from his federal Department so as to ensure all affected agencies (and assets) are properly represented throughout the team's structure. The Department lead will thus be required to oversee the work of individuals, and foster consensus-building, from his own agency as well as sister agencies of his home Department. This latter aspect can be quite complicated as sister agencies often



compete for resources at the Department level, and team members from other agencies will be naturally hesitant to view the Department Lead as a trusted partner.

Department Leads have a major complication in interagency activities because their primary responsibility is to their home agency and department, rather than the interagency team. While their intentions may be to fully support interagency goals, the reality of working in the federal government will keep the majority of their focus on their home agency. That's not necessarily a bad thing for the interagency, as long as the Department Lead keeps the interagency lead informed and they work together to integrate agency and interagency needs. Within his home agency, the Department Lead will be one of several subject-specific technologists that are all competing for the same resources (and this collection of technologists competes with other collections at the next higher level within the agency hierarchy, and so forth). The work of the interagency team, when presented to agency hierarchy properly, can be a major advantage for the Department Lead in these internal agency competitions.¹¹ The Department Lead will have additional support from senior levels of his agency when the interagency group is a NSTC Subcommittee, as the Subcommittee's leadership will be in contact with his Department's representative on the Subcommittee's parent Committee to help ensure the agency is properly supporting the interagency's plans. This connection usually occurs a few levels above the Department Lead within the Department/Agency hierarchy, and creates incentives on the intermediate levels to prioritize this topic over others within the agency's budget battles. The Department Lead must constantly "lead up" to ensure all levels view the interagency activity, and its influences on their budget process, as positives rather than negatives.

Within the interagency team, the Department Lead will be one of several individuals with similar duties. Discussions and collaborations with these peers are often the most beneficial and enjoyable interactions that a Department Lead will have in their careers. These peers have similar struggles, different approaches and lessons-learned to apply, and aren't really resource competitors in any way.

2.4 Interagency S&T Collaboration

The vast majority of federal S&T efforts occur within organizational silos. DoD has their own process for identifying priorities and managing related innovation, which is different than those used by DHS, Commerce, HHS, and others. They not only act independently from one another but their oversight bodies in the White House and Congress also review their activities in isolation. Except in high priority cases coordinated by the National Science and Technology Council, there is no structural process in place to encourage similar S&T activities to share lessons-learned across domains.

This paper uses the following White House nomenclature:

Collaboration: A willing participation that leads to the development, acceptance, and implementation of shared goals and objectives amongst multiple partners.

Coordination: A process or instrument used in directing the planning and carrying out of activities (including collaboration)

¹¹ Blackburn, *Research, Development, Test, and Evaluation: A Defensible Process for Federal Agencies*. Page 11 (Step 4)

While this stovepiped approach is understandable for most federal activities, it runs contrary to typical scientific evolution where current discoveries serve as the foundation for future research. For example, it is generally known that today's ubiquitous GPS was originally created by the DoD. Early attempts failed because the individual satellites could not keep accurate time, a problem solved by switching to NIST-developed atomic clocks. Today's internet similarly originated within the DoD as an internal network. It truly began to take off once NSF used the concepts to connect five university-based supercomputer centers, which quickly grew to nearly a hundred within a year. Finally, the technology behind the TSA's screening devices at airports originated from a DoD-Treasury partnership to develop a means to screen incoming shipping containers for smuggled drugs.

The majority of the S&T spectrum is either application-agnostic or would benefit from cross-domain (i.e., cross-agency) collaboration. This is easily understood for basic and applied research, but applies to advanced development and standards more often than most realize. For example, a decade ago multiple federal agencies were independently developing fingerprint sensor requirements for their operational systems. They shifted gears and developed a single specification that met everyone needs, which resulted in industry providing devices with greater functionality at less cost. Today, ISR capabilities are being developed that can benefit a wide range of activities, such as intelligence, climate change analysis, crop maximization, and rural planning.

There is almost always a benefit for S&T professionals to share information and investigate avenues of collaboration. Indeed, as security-driven budget enhancements over the past decade decline, doing so is becoming more and more expected to successfully defend individual S&T program plans. Executives want to ensure that their managers are aware of related external activities so that they are leveraging it rather than duplicating it. Doing so enables the agency to reduce costs and/or maximize the benefits of their investments. There are numerous collaboration approaches available to consider, however. The proper approach to choose relies on many factors, and will likely evolve over time.

2.4.1 Interagency S&T Collaboration Approaches

This section outlines common methods of interagency S&T collaboration from simplest to most complex, organized into six groups for further analysis. While reviewing the approaches and groups, remember that:

- Interagency collaboration is an art that varies under numerous external constraints. This is an attempt to describe it pseudo-scientifically.
- Progression doesn't always follow the specific path depicted (towards or away from further complexity).
- Moving to more complex collaboration approaches is much easier in the lower-level groups than the latter ones, where progression takes major work and multiple years.
- Goals, participants and methods in the interagency team will evolve over time
- It is by no means necessary, or even advised, to force groups into the most complex approaches depicted. Benefits are certainly greatest within these activities, but they

also require significant time and energy. Measureable benefits can be identified at even the lowest levels of complexity. Finding the optimal complexity level is a balancing act, which will continuously evolve.

Group 0 -- Singular Agency Focus

- a. Only one agency focuses on the specific S&T issue.
- b. Multiple agencies focus on the S&T issue, but mistakenly believe they are the only one.
- c. Multiple agencies focus on the S&T issue and are vaguely aware that others do as well, but have no interest in information sharing or collaboration.

Group 1 -- Interagency Enlightenment

- a. Two or more agencies exchange information and ideas irregularly.
- b. Two agencies decide to work on small projects in a bilateral fashion.
- c. One or two agencies realizes the need for, and benefit of, including other agencies in their developmental plans.
- d. Multiple agencies exchange info and ideas regularly.

Group 2 -- Interagency Cooperation

- a. One-time workshop (over one or more days) that results in S&T needs and potential approaches to address them, and a better understanding of external players – effect is transient.
- b. Multiple agencies start co-funding small, single-year projects sporadically with some management visibility – purposeful transience.
- c. Multiple agencies co-fund small projects fairly regularly with some management visibility.
- d. Multiple agencies (techies and/or management) recognize that a more difficult problem exists, and determine how they can jointly address it.
- e. Multiple agencies separately fund projects that are loosely tied together with periodic interagency meetings to discuss individually and in aggregate.
- f. Multiple agencies co-fund medium sized, multi-year projects fairly regularly with regular management visibility.

Group 3 -- Fertilization of Collaboration

- a. Agencies (management) determine that more formal coordination and higher visibility is necessary to meet needs; or media/Congress is fanning interest and the group wants to seize it as an opportunity to advance S&T.
- b. Multiple agencies routinely perform S&T as separate activities while being members of a joint body that does not have the charter to press for genuine collaboration.
- c. Management of multiple agencies recognize critical gaps exist that cannot realistically be met by their agencies alone.
- d. Multiple agencies informally identify and prioritize gaps in interagency S&T so that plans to address them can be developed.

Group 4 -- Interagency Collaboration

- a. Multiple agencies routinely perform RDT&E as joint activities.
- b. Formal agreements to collaboratively address S&T are developed.

- c. The interagency group performs a formal analysis of critical gaps.
- d. Multiple agencies identify best practices for overcoming gaps and work to address them collectively.

Group 5 – Formal Interagency Collaboration

- a. An administration-wide strategy for prioritizing and overcoming the critical gaps is produced, and occasionally published.
- b. The S&T strategy becomes a focus for OMB during budget preparation.
- c. Multiple agencies perform yearly analysis of critical gaps and identify best practices for overcoming gaps so that agency management and OMB can agree on interagency programs, plans and budgets for current and future budget cycles.
- d. Formal, staffed, office is created to help foster interagency planning, budgets and activities.
- e. OMB performs a cross-cut analysis of agency budgets to ensure precise alignment with the strategy.



Group 5 generally requires White House support by chartering the interagency group within the National Science and Technology Council.

With this baseline, we can now further analyze the components, benefits, and potential pitfalls typically found within each group.

Components

	Requirements	Budget Flexibility	Communications	Receptivity to Emerging Visions
1. IA Enlightenment	Two scientists willing and able to talk with peers in other agencies.	Joint funding for a small project.	1. Sharing of lessons learned and research results. 2. Joint project planning, implementation and management.	
2. IA Cooperation	1. Technology viewed as operationally relevant in near term. 2. Prior interagency cooperation successes.	Joint funding for multiple and/or multi-year small projects.	1. Sharing of lessons learned and research results. 2. Joint multi-year project planning, implementation and management.	Management and scientists willing to consider other agency needs/plans when developing projects.
3. Fertilization of Collaboration	1. Prior scientific and programmatic successes that are understandable to agency management. 2. Management support for enhance collaborative activities.	Joint funding for one or more multi-year projects.	1. Openness on operational needs and programmatic plans. 2. Management and scientist discussions on interagency plans, and agreement on what is appropriate for their agency.	Management and scientists willing to incorporate other agency needs/plans into programs.
4. IA Collaboration	1. Measurable, defensible, prior successes that caught agency senior management's attention. 3. Scientists' desire and willingness to devote time and resources to collaborative planning.	Agency management insight and support.	Complete openness at interagency level on operational needs, S&T programs, and future plans.	Agency willingness to support a larger vision.
5. Formal IA Collaboration	1. Agency and administration (OSTP and OMB) support for pursuing collaboration. 2. High profile prior successes. 3. S&T topic is of sufficiently high value to be of interest to political appointees at the Department and EOP levels. 4. Unanimous consent by agency management and administration to plan joint budgets.	1. OSTP and OMB support 2. Final budgets and activities determined at the EOP level.	1. Ability to develop plans that are formally vetted and adopted USG-wide. 2. Communications needs so broad that a formal coordination office may need to be developed and staffed.	Overall vision typically prepared externally (EOP, or Congress), with input from the coordination group.

Potential Benefits

	Operational Enhancements ¹²	Technology Advancement ¹³	Information Exchange ¹⁴
1. IA Enlightenment		<ol style="list-style-type: none"> 1. Avoidance of duplication of effort. 2. Joint projects that would not have been fiscally possible by one agency. 	<ol style="list-style-type: none"> 1. Technical discussions 2. Greater understanding of other agencies' operational needs. 3. Enhanced scientific rigor due to enhanced understanding by agency scientists.
2. IA Cooperation	Begin to see results from collaborative activities having positive impacts on operational plans/systems	<ol style="list-style-type: none"> 1. Avoidance of duplication of effort. 2. Informal list of S&T topics gets federal agencies thinking in similar manner. 3. Understanding of who is doing what. 4. Joint projects that would not have been fiscally possible by one agency, and/or enables more to be done for less money (and faster) than by individual agencies. 	<ol style="list-style-type: none"> 1. Technical discussions. 2. External assistance in finding/developing technical solutions. 3. Enhanced scientific rigor, as projects determined by scientific experts from multiple agencies.
3. Fertilization of Collaboration	Impact of RDT&E activities on operational programs becomes more salient.	<ol style="list-style-type: none"> 1. Jointly-funded interagency projects that would not have been possible by a single agency (due to funding, scope, etc.) 2. Interagency collaboration reinforces the need to agency management, which can be leveraged to obtain additional funds. 3. Upper management visibility of RDT&E activities. 	Informal assessment of research gaps, and discussion on how to overcome them.
4. IA Collaboration	Technical activities viewed as necessary to meet Department/Agency missions.	<ol style="list-style-type: none"> 1. Formal identification and publication of RDT&E gaps, which can entice external groups to focus on them. 2. Higher visibility by agency and OMB, which can be leveraged for substantial additional funding. 	Visibility of work enables access to world's leading scientists.
5. Formal IA Collaboration	Technical activities viewed as necessary to meet Administration's goals.	Formal development of research agenda enables difficult technology gaps to realistically be addressed and generally overcome if scientifically feasible.	Ready access to world's leading scientists.

¹² Direct assistance to an operational program that provides immediate assistance, is easily measureable, and readily acknowledged.

¹³ Accelerated development of technologies so that USG understanding of a technology, and/or the technology's potential for operational transition, is enhanced.

¹⁴ Bringing individuals of like minds and technical focus together to discuss technology produces valuable, but usually unmeasurable, scientific and programmatic benefit.

Potential Pitfalls

	Visibility	Standard Operating Procedures	Bureaucratic Hurdles
1. IA Enlightenment			Difficulties inherent in first-time joint projects, such as: establishing MOUs, transfer of funds across agencies, and agreeing on COTR and project management roles.
2. IA Cooperation	<ol style="list-style-type: none"> 1. Scientists need to justify the time spend on cooperative activities to line management. 2. Infighting and posturing for position in interagency activities may begin. 	<ol style="list-style-type: none"> 1. Agency scientists are often new at joint decision-making and program implementation. 2. Obstacles with agency management and contracts specialists in funding joint projects must be overcome by scientists, who typically have only a rudimentary understanding of either group's concerns. 	<ol style="list-style-type: none"> 1. MOUs and interagency funding transfers. 2. Future FY budget planning comes into play for the first time.
3. Fertilization of Collaboration	<ol style="list-style-type: none"> 1. Impact of RDT&E activities on operation programs becomes more salient. 2. Expectations for coordination benefits becomes greater, and more easily measurable, yet more difficult to achieve. 	Scientists start to feel disgruntled as they no longer have complete control of the group – management and policy levels start impacting activities much more.	Enhanced visibility leads to greater management oversight procedures, which can complicate the ability to work at the interagency level.
4. IA Collaboration	Activities come under scrutiny of agency and administration leadership.	<ol style="list-style-type: none"> 1. Significant addition of “red tape” in group’s decision-making process 2. Interest level and participation by scientists diminishes significantly as they no longer control the group and their activities are predominantly reduced to providing recommendations and acting on the decisions of the group. 	Very difficult to overcome the obstacle inherent with the agency silo, year-by-year, budget planning process to meet multi-FY interagency plans.
5. Formal IA Collaboration	<ol style="list-style-type: none"> 1. Extremely high visibility in the administration, Congress, and press. 2. External influences can easily overcome scientific, needs-based planning. 	Coordination activities make pure scientists uncomfortable. They will often retreat to the background if left unfed.	<ol style="list-style-type: none"> 1. The individuals required to get things done also juggle many other balls at once. Obtaining and keeping their attention requires concentrated effort. 2. Activities typically span multiple administrations.

3.0 Interagency S&T Leadership – Practical Guidance

3.1 General Interagency Leadership

Establishing and leading an interagency team is one of the most complex and rewarding tasks that a federal employee will undertake in their career. It will always be interesting, but will vacillate between being aggravating and pleasing numerous times throughout the group's existence. Successful leaders learn to understand when it is best to stick to a plan versus when to adjust, when to drive participants hard versus when to be more laid back, and when it's best to directly lead versus when it's better to let participants lead. This section provides high-level guidance to help these interagency leaders succeed.

Leadership of an interagency group is an interesting combination of typical program planning, strategic thinking, and personality management. The fundamental guiding principle is this: for an interagency group to succeed, its membership must take ownership of the group's success as their own. These groups rarely succeed when everyone is forced to acquiesce to an end result completely driven by the interagency leader, no matter how politically connected and influential that leader is. Rather, the members must view the group's success as so intertwined with their own that they are willing to substantially invest time and energy into the group to ensure its success.

Consider the tale of two interagency groups encountered during the author's tenure in the EOP, whose starting points are described in the following table.



One of the interagency groups I led while at OSTP was chartered with a six-month working window. I had done extensive preparatory research before initiating the group so I had a really good idea what direction the team needed to take. I also realized that no one else had really thought of the big picture as much as I had, so I didn't force action. Rather, we spent the first two months letting everyone else get up to speed, discuss ideas, and reach consensus. Their approach was 90% similar to what I envisioned, but it was now their approach. That two-month investment allowed them to take ownership of the group's direction and success, and made subsequent steps a breeze.

	Topic A	Topic B
Statutes	Law mandating the creation of the program, and its goals.	Limited, and sometimes contradictory
Policies	EOP directives mandating agency participation.	None in existence, and no willingness to consider.
Budget Alignment	OMB priority	No OMB interest
Agency Willingness	Political buy-in, analysts eager.	Low, distrustful of other agencies
Technical Feasibility	Sufficiently Mature	Not currently possible

Topic A was setup with a silver platter for whole-of-government success as it was *starting* with many of benefits associated with Group 5 (Formal Interagency Coordination) discussed in section 2.4.1. It also had a leader who kicked-off the group’s first meeting by stating something along the lines of: “Congress and the White House have mandated that we do this, I’m in charge, and here are your marching orders.” This group didn’t accomplish anything for a couple of years except regular bickering until new leadership was assigned. Conversely, Topic B was setup with nothing except vague EOP and interagency interest. It ended up having a long and beneficial tenure coordinating federal activities for its topic area. Once this group was disbanded as a formal group, its membership decided to continue meeting on its own to share information and partner on important activities – and has continued to do so for several years.

One of the best ways to ensure members take ownership of the group’s success is for the interagency leader to get out of the way. The more forceful and directive the leader acts, the less ownership members will assume; the more that members feel they are the ones deciding the direction of the group, the more ownership they assume. Interagency Leaders that have the most success often assume a servant mindset rather than a dictatorial one. “Unlike leadership approaches with a top-down hierarchical style, servant leadership instead emphasizes collaboration, trust, empathy, and the ethical use of power. At heart, the individual is a servant first, making the conscious decision to lead in order to better serve others, not to increase their own power. The objective is to enhance the growth of individuals in the organization and increase teamwork and personal involvement.”¹⁵

3.1.1 Pre-Planning

The most critical aspect of an interagency leader’s success is the studying and planning that they do before announcing the team and managing its first meeting. Everyone understands

¹⁵ http://en.wikipedia.org/wiki/Servant_leadership. Viewed on April 10, 2015.

the general importance of first impressions, and this is critical here as well. But it is only one of many factors for success.

The Person of the Meta-Leader

Interagency leadership starts with the interagency leader. It is vitally important for this individual to first understand their own personalities, their strengths and weaknesses in the subject area, and their personal goals and how they support (or are a detriment) to the team's goals. The two federal innovation leader attributes associated with this dimension are "patriotic steward" and "self-aware learner." The former requires the interagency leader to be committed to what is best for the country (instead of themselves and/or their home agency). The latter requires constant learning about the subject at hand and how others are using it, as well as a willingness to seek feedback. Some personalities are naturally better at these tasks than others. Interagency leaders should first take some time to understand the importance of these two elements to the success of their group and perform some introspection on their natural inclinations on each. This self-assessment will lead to an understanding of potential issues to be aware of throughout the interagency team's lifecycle.



To better understand your personality and how others view you, I recommend analyzing a variety of personality tests such as Myers-Briggs Type Indicators or the DiSC Model (or others). Keep in mind that different assessment models may work better than others for you. The MBTI works much better for me, but I also know of others where the DiSC model is clearly superior.

The Situation

"Before Meta-Leaders can begin to devise and enact solutions, they must understand the situation in which they find themselves."¹⁶ Question number one is understanding the impetus of creating the interagency S&T group: was it directed from on high, is there a groundswell of support for doing so, or is it a personal belief that it should be done? The answer drives most everything else: selecting attendees, developing goals, establishing group structure and meeting rhythms, how the group's work will be approved, and external strategic communications.

The two federal innovation leader attributes associated with this dimension are "Visionary" and "Navigator." The former requires the interagency leader to understand the current state and lead to a consensus on a different path forward. The latter knows the systems that they and other team members operate within, and more importantly: how to overcome them. The *Leading Innovations in Government* paper outlined four levels for each which are quite informative, and are copied below.

¹⁶ FEI's Meta-Leader (unpublished) primer, p 9.

Visionary

FIRST LEVEL

Understands current state In order to clarify vision

Frames tasks within a larger context; draws connections to other stakeholders and the American public.

SECOND LEVEL

Refines the vision

Envisions how the current situation could be improved for the common good.

THIRD LEVEL

Evaluates the vision

Conducts an analysis of the resources required to achieve a goal and the potential impact of its successful completion.

FOURTH LEVEL

Envisions and defines the path forward

Strategically charts out a plan for achieving an overarching goal; identifies resources, anticipates obstacles, engages others and exhibits enthusiasm in the face of challenges.

Navigator

FIRST LEVEL

Understands the system

Understands the rules; accomplishes simple to moderately complex goals within current standard operating systems.

SECOND LEVEL

Works around the system

Takes initiative within existing system, and knows when it is appropriate to disregard standard operating procedures.

THIRD LEVEL

Overcomes limitations of the system

Pushes the limits when necessary to work around systemic barriers.

FOURTH LEVEL

Redefines or changes the system

Changes or reforms unofficial practices or interpretations of the rules to allow greater latitude and to achieve innovative results; changes are likely to last.

Figure 2- Attribute Levels Stated Within the "Leading Innovation in Government" Paper

The interagency S&T leader's first decision comes in determining the group's participants. Many factors are involved here:

- Who HAS to be involved, politically? If this is a group established from on-high, then there will be a number of individuals from various agencies and the White House that will need a seat at the table to meet policy requirements. Even if the group is self-developed, future political considerations should be considered when developing the participant list.
- Who has to be involved, representatively? Agencies with interests in the subject matter should obviously be involved, but in many cases their participation may need to be tempered as well. An interagency group that has 50% of their participants from one agency will be too imbalanced to function properly.
- Who has to be involved, technically? The interagency group needs to ensure that all (of the needed) sub-elements of the group's subject are represented. Expertise in S&T main focus areas also need to be represented: R&D, testing and evaluation, standards development and adoption, implementation, strategic communications, and user communities.

- How many participants are needed, or are there recommended participation limits to accomplish the goal's tasks? In most cases, groups have a sweet spot of having enough participants to accomplish its tasks without being so large that there are members that don't really need to do much. There are a few cases where groups may decide to be completely open, as they feel that doing so will help others gain insight through observation and/or experience.

3.1.2 Group Management

The interagency leader's next task is developing *conceptual* goals for the group. It is not wise to dictate the goals of an interagency group. Rather, these must be developed via consensus if the group is to succeed. Recall the previously-provided fundamental guiding principle: for an interagency group to succeed, its membership must take ownership of the group's success as their own. The first step in developing that sense of ownership occurs in this stage. That said, the interagency leader should have a list of goals in their back pockets prior to the first meeting. Doing so serves two purposes:

- Sometimes groups are shy at first and may have trouble drafting goals while looking at a blank sheet of paper. It's often easier for many to comment on text in front of them rather than drafting from scratch.
- To ensure that the group-developed goals includes everything that the interagency leader initially felt was required.

The leader's initial conceptual goals should normally be kept in their back pocket and used only when necessary, because prematurely sharing them could be viewed by other members as the leader being pushy. It will also likely stifle other participants' thoughts on other completely beneficial goals as they'll be focused on tweaking the initial text rather than thinking themselves.

Once the group reaches consensus on its goals, the interagency leader must guide the group into determining its functional structure and meeting rhythms that will be used to meet their goals. This should also be done via group consensus, but the interagency leader can be a bit more assertive during this stage. The interagency leader can draft these and present for the team's review and modification. Once this consensus is reached, the interagency leader and the team can begin to place individuals into the established roles.



The group-developed goals should be in writing and approved via general concurrence. This is sufficient for most interagency S&T groups. Seeking formal "approvals" of group goals will necessitate higher-level reviews than may really be necessary, and will likely involve lawyers from multiple federal agencies. Both are good ways to kill progress before it starts. Only shoot for formal concurrence when doing so is necessary or the anticipated benefits outweigh the hindrances the formality creates.



I strongly recommend developing a group structure where leadership responsibilities are distributed to a number of team participants. Individually-dominated interagency teams rarely last or succeed. Recall again the previously-provided fundamental guiding principle: for an interagency group to succeed, its membership must take ownership of the group's success as their own. Having individuals charged with leading an aspect of the group's work, particularly in an area of personal interest, is by far the best way for them to build this sense of ownership. This approach also means there is less that the interagency leader has to perform themselves!

I've also found that it is important to let these sub-leaders actually lead. If all the work is performed within the team's overall meetings, these sub-group leaders may be coordinating conversation but everyone will still look to the interagency leader for guidance. That, of course, has a negative contribution on building a sense of ownership. I generally preferred to have the sub-leaders hold their own meetings with an interested subset of the team's participants between the big-team meetings. They would then brief progress and issues at the big-team meetings, which could then be more high-level and strategic in nature. Other typical benefits to this approach are faster advancement on goals and the ability to involve more individuals in the team's work without having a massive gaggle at team meetings.

Leading Across

This is the dimension that most readily comes to mind when thinking about leading an interagency team: managing individual federal silos, and the personalities representing them, to achieve common objectives.

To be successful, interagency leaders must grasp that their true hammer is their *influence* rather than their *authority*. Even in the rare cases when the President establishes an interagency group and tasks someone to lead it, the other members of the team still report to their agencies and not to the interagency lead. They have supervisors that are expecting them to represent their agency and its interests, not to be a conduit for interagency demands. The interagency leader must convince these individuals that the interagency-developed path is the best approach for their agencies as well, and should use their influence over the group's meetings and deliberations to reach this goal.

The federal bureaucracy is a monolithic beast, which no single directive or individual can overcome. Each agency has its own statutory authority, work culture, reporting chain, and groups of oversight within the White House and Congress. No interagency team, or its leader, will be able to break down those silos. An interagency team can create connections and entice collaboration between the silos, however. That's the true impetus for creating interagency teams, but it's surprising how often that is forgotten.

The interagency leader should expect conflict and resistance within the team. Federal agencies exist to serve specific roles, and thus look at an issue or technology through that lens. Looking through another lens is often considered a nuisance at first, but can often

lead to a higher order of understanding. From an interagency perspective this is beneficial, but can create issues for team members that must now manage a conflict between what is best for their agency and what is best for the interagency. Conflict also occurs between team members from other agencies. In S&T-focused interagency groups, this conflict usually falls in the category of a difference of opinion on the best interagency approach to take and can typically be overcome through discussion.¹⁷ These conflicts, plus the normal federal bureaucracy, inevitably lead to a resistance towards change. Interagency leaders must be constantly mindful of this issue, encourage team members to lead the way, and find some way to reward those that do.



Never underestimate how difficult it is to convince someone to do anything outside the norm.

There are five federal innovation leader attributes associated with this dimension, as discussed below.

Relationship Builder. Obtaining consensus to work collaboratively, and on how to work collaboratively, requires each party to trust the others to be truthful and to meet their promises. Having a prior trusted relationship, or developing a new one, is therefore an important precursor. Interagency leads will need to devote energy into understanding what drives each key individual, and then use that insight to build necessary relationships with (and across) each. All four levels for the Relationship Builder attribute identified in the *Leading Innovations in Government* paper are applicable here, and are quoted below:

1. *Builds a foundation of trust* – builds rapport and trust by getting to know the person and the relevant issues; demonstrates own credibility and trustworthiness.
2. *Tailors the response to address stakeholder needs* – invests in understanding stakeholder concerns and formulates an approach that specifically addresses them.
3. *Uses customized indirect influence* – engages third parties and outside information; where prudent, leverages related, but not obvious, connections.
4. *Develops complex influencing strategies* – synthesizes deep observations, multiple interests and cultural variants; builds alliances and coalitions to move innovation forward.

Collaborator. Once trusted relationships are achieved, team members will be more receptive to the leader's (and their peers') thoughts on how to work collaboratively within the team. Initial activities should strive to build a sense of collaboration by leveraging one party's insights and resources to address another's issues, and vice versa. Doing so not only reinforces early-stage trust relationships, but more importantly begins to build a foundation of mutually-beneficial collaboration. This history of successes will enable the team to tackle more substantive obstacles in the future, as well as eventually present a

¹⁷ This type of conflict is often a major issue in operationally-focused interagency groups, however. In these cases, there are real battles to ensure one's "turf" isn't compromised.

united front with third parties. All four levels for the Collaborator attribute identified in the *Leading Innovations in Government* paper are applicable here, and are quoted below:

1. *Values collaboration and relationships* – trusts, respects and holds a positive attitude towards colleagues and stakeholders.
2. *Models collaborative behavior* – willingly and openly shares information and responds generously to requests.
3. *Partners internally* – works within team and related interagency groups to accomplish objectives.
4. *Partners externally* – works integrally with people across government and across sectors to align missions and accomplish a shared strategic goal.

Team Leader. Recall the two projects first described in the opening of section 3.1, where the dictatorial leader failed and had to be replaced, and the servant-leader's group had many years of fruitful collaboration. That example is the essence of this attribute: the "team" has to be more important than the "leader." The focus must be on enabling the team members to contribute and to lead the productive aspects of the team's function. The interagency leader must focus on ensuring a proper environment, working to fill capability gaps, and setting big-picture goals. All four levels for the Team Leader attribute identified in the *Leading Innovations in Government* paper are applicable here, and are quoted below:

1. *Communicates team purpose* – provides meaningful direction for the team; aligns tasks and goals to the broader mission.
2. *Solicits team needs and ideas* – continuously evaluates the available skills, personalities and resources relative to what is required to achieve the mission.
3. *Proactively supports the team* – fills any skill or resource gaps so that the team is able to perform optimally and achieve its goals.
4. *Fosters an innovative team environment* – uses multiple leadership styles and techniques to facilitate collaboration and improve team performance; keeps performance objectives aligned with mission objectives.

Teacher/Mentor. With team members doing most of the daily team-leading activities, the interagency leader's focus is on helping to ensure these individuals' success. A good chunk of that work will be focused on mentoring. Many of these individuals will be technical experts that know how to get things done within their agency. Their interagency experience will likely be lacking, however. They won't know the various options that are available to them, nor individuals from prior efforts to contact to obtain lessons-learned. The interagency leader will need to help them understand all of this, and offer guidance on how to analyze options and reach consensus. They must be careful to not temporarily "take over" though. While doing so would likely get the task completed in a shorter amount of time, it comes at a cost as that individual's ability and willingness to lead in the future will be diminished. Two of the four levels¹⁸ for the Teacher/Mentor attribute in the *Leading Innovations in Government* paper are applicable here, and are quoted below:

¹⁸ The remaining two are more focused on leadership within an agency rather than in an interagency setting.

2. *Gives advice and guidance* – provides constructive feedback and guidance to others on how to successfully accomplish immediate tasks.
4. *Builds deep and long-lasting mentoring relationships* – fosters openness and trust; advocates and sponsors individuals and teams over a long-term period of time.

Team Builder. Interagency teams must have individuals with the skills and abilities required to meet the team's goals. Newly-created teams often have critical gaps that must be overcome by identifying additional individuals (or in some cases, agencies) and convincing them to join the team. These gaps can be identified, and filled, by the interagency lead and/or the team members. Three of the four levels¹⁹ for the Teacher/Mentor attribute in the *Leading Innovations in Government* paper are applicable here, and are quoted below:

1. *Works with existing team* – makes the best use of existing team and available resources.
2. *Secures additional team resources* – identifies gaps within the existing team and secures additional temporary resources to fill critical gaps.
3. *Strengthens team capability* – uses strategic guiding principles to build a team with diverse skills and personalities that is able to accomplish immediate or mid-term objectives.

3.1.3 *Managing Your Home Flank*

Unless they are a White House appointee, an individual's interagency leadership hat is a task rather than a position. That means they have at least one other hat that is firmly managed by their home agency – and which controls their near-term salary and long-term career prospects! They must wear both hats simultaneously, while ensuring that each doesn't improperly impact the other.

Leading Your Silo

“Meta-Leaders are seldom independent actors within a situation. Typically they have an organizational base that brought them into the situation in the first place. Within that organizational base, they typically have followers over whom they execute both authority and influence.”²⁰ These followers, who are often subordinates within the interagency leader's home agency, expect adherence to agency goals and plans, and for their supervisor to win internal-agency battles for resources and prestige. They also expect their supervisor to properly represent their work, and wish to be included in external activities whenever possible. Interagency leaders must balance these wishes with the need to be viewed as unbiased within the interagency team. Doing so is neither trivial nor exceedingly difficult,

¹⁹ The fourth level focuses on long-term talent needs for an organization.

²⁰ FEI's Meta-Leader (unpublished) primer, p 12.

but requires some advance strategic planning, complete honesty, and trustworthy relationships.

As is often the case, communication is of utmost importance. Interagency leaders (and even interagency team members) must share with their silo what is happening within the interagency context, how the follower's work is driving (or is impacted by) interagency activities, and how important it is for the home agency that the interagency effort succeeds. The interagency leader's ability to properly function under either hat will suffer unless all three of these elements are successful.

Four of the federal innovation leader attributes within the *Leading Innovations in Government* paper also apply to this dimension:

- Relationship Builder – the interagency leader must persuade his home organization to support the interagency initiative. The interagency's technical and/or operational activities usually align with the home agency's activities (otherwise they wouldn't be invited to participate, much less lead), so the major focus is on ensuring that the home agency team trusts their representative. Providing insight, seeking home team guidance, and looking for opportunities to showcase home agency activities or personnel in interagency activities are all good ways to build the necessary trust with the home team.
- Team Leader – the interagency leader must not neglect their "home duties" while taking on their interagency role. Subordinates within their agency are still primarily focused on the agency mission, and expect their supervisor to support and lead them in that work. Interagency leaders should use their time away as an opportunity to distribute some of their leadership duties to others so that they may also grow.
- Teacher/Mentor – The necessary step of divesting some of their typical in-house duties to others creates a need to mentor these individuals so that they can be successful in their new role. The interagency opportunity also provides a wealth of new insights from other agencies as well as new experiences at viewing issues from a broader context than is the norm for federal agencies. Interagency leaders should share this information with their subordinates so that they are also enlightened by interagency activities.
- Team Builder – Just as the time away from a home agency necessitates distribution of prior leadership roles, it also presents an opportunity to review the team's composition. The combination of losing the interagency leader's time and having team members in different roles usually leads to seeing areas where the home team is thin from a capability or numbers perspective. This jolt shakes up the status quo, and important items that somehow always seemed to get done may suddenly be neglected.

Leading Up

Everyone has a boss and other stakeholders, and those individuals have many of the same expectations as the interagency leader's home agency subordinates (previously discussed). These individuals are also more focused on the short-term financial bottom line and long-term outlook for their agency than their lower-level subordinates. Interagency leaders must be cognizant of these concerns, and also recognize that their interagency activities are opportunities to be leveraged in this regard.

Interagency leaders that are viewed most favorably by their home agency supervisors are also great subordinates. They've not only adjusted the home team's management and teaming to ensure their continued success, but are now working to leverage interagency activities to bring even more positive benefits to the agency. They're also providing insights that will enable their supervisors to craft more beneficial strategies for the agency's future.

Two of the federal innovation leader attributes within the *Leading Innovations in Government* paper also apply to this dimension:

- Relationship Builder – the interagency leader must have the absolute trust of his supervisors and other stakeholders. They need to be assured that normal agency activities will continue without issue, and also trust that the interagency leader will properly represent and advocate for their agency in interagency deliberations. These can be different skill-sets, and the interagency leader must continuously build trust on both with their superiors. They obviously must also show that they are capable of wearing both of their hats at once. The best way to do this is to usually show that you can't do everything, as available time to do so doesn't exist. Recognizing this fact, sharing it with superiors, and presenting a plan to overcome the issue will significantly help build the relationship and trust of home agency superiors.
- Visionary – interagency leaders must look for ways that interagency activities will have positive impacts on their home agency's supervisors, and then presenting this information so that supervisors also see it. This often entails presenting information to home agency supervisors in a vastly different manner than would be done to the interagency team. The interagency leader will know they are succeeding on this front when they see their home agency supervisors adjusting their strategies based on inputs from the interagency activity, and are championing the criticality of the interagency activity to their supervisors.

3.2 Leading an NSTC Activity

A special case of interagency S&T leadership occurs when the team is a formal body of the National Science and Technology Council. While each of the principles and recommended practices of 3.1 also apply when leading these groups, additional leadership activities are also required. This section provides a high-level overview of the NSTC, and recommendations on how to succeed in this specialized environment.

3.2.1 NSTC Introduction

The National Science and Technology Council (NSTC) was established via Executive Order 12881 during the Clinton administration. The order assigns the following functions to the NSTC:

- To coordinate the science and technology (S&T) policy-making process;
- To ensure that S&T policy decisions and programs are consistent with the President's stated goals;
- To help integrate the President's S&T policy agenda across the Federal Government;
- To ensure that S&T are considered in the development and implementation of Federal policies and programs; and
- To further international cooperation in S&T.

Executive Order 12881 states that all executive departments and agencies shall coordinate S&T policy through the NSTC, and share information on their research and development (R&D) plans, programs and budget requests with the Council.

3.2.1.1 NSTC Structure

The NSTC is a cabinet-level council of advisors to the President on issues related to S&T. By order, the President chairs the NSTC and membership consists of the Vice President, Cabinet Secretaries, agency heads with significant S&T responsibilities, and other officials from the Executive Office of the President; the Office of Science and Technology Policy (OSTP) serves as the NSTC secretariat. In practice, this level of NSTC activity has not actually taken place within any of the presidential administrations since the NSTC's creation. Instead, the preeminent policy-setting activities under the NSTC umbrella has occurred at the *Committee* level, with OSTP providing leadership and representing NSTC decisions or recommendations to the President.

NSTC Committees are long-standing bodies²¹ of the NSTC that oversee federal S&T policy, and associated interagency activities, of issues with high national priority and ongoing interest. Committees are typically co-chaired by a Senate-confirmed OSTP official and one

²¹ Four committees have been in place essentially since the NSTC's creation: Committee on Science; Committee on Environment, Natural Resources, and Sustainability; Committee on Technology; and Committee on Homeland and National Security. The Obama administration added a fifth: the Committee on Science, Technology, Engineering, and Math Education.

or two Senate-confirmed political appointees from federal departments (usually at the Under Secretary level). Committee members are representatives of federal agencies at the Assistant Secretary level, appointed by their respective agency leadership in consultation with the OSTP Director. Committees rarely perform substantive work on individual issues themselves, with exceptions being exceptionally important or exceedingly broad issues. Instead, they determine which issues should be addressed, and then create subordinate bodies to study and develop recommendations for Committee-level decisions. Committees are the lowest-level NSTC body that are permitted to approve whole-of-government S&T policies.

NSTC Subcommittees are long-standing bodies that oversee federal S&T policy and associated interagency activities on a topic of interest to its parent Committee. Subcommittees are typically co-chaired by an OSTP official and one or two career employees from federal departments. Members are representatives of federal agencies at a level within those agencies appropriate with the goals of the Subcommittee, plus representatives from OMB and other impacted EOP entities. Subcommittees perform the majority of the NSTC's work, as they study issues, draft policies (for Committee-level approval) and lead interagency activities to implement approved policies and strategies.

NSTC Interagency Working Groups (IWGs) are interagency bodies chartered by Committees or Subcommittees to address a specific issue over a medium duration (usually 12 months or less). Example IWG activities include studying an issue to develop a report, or to coordinate federal activities on a specific and time-limited nature. IWGs are typically co-chaired by an OSTP official and one or two career employees from federal departments. Members are representatives of federal agencies at a level within those agencies appropriate with the goals of the IWG, plus representatives from OMB and other impacted EOP entities

NSTC Task Forces and Fast-Track Action Committees (FTACs) are interagency bodies chartered by Committees, Subcommittees, or IWGs to address a specific issue over a short duration (usually <6 months for Task Forces and <120 days for FTACs). Task Forces generally have EOP representatives, with FTACs less likely to do so. Neither has the authority to formally charter subordinate NSTC bodies.

3.2.2 Subcommittee Activities

The majority of the NSTC's work occurs at the Subcommittee level, and is therefore the level that most impacted interagency leaders will find themselves. Non-OSTP Subcommittee co-chairs will find themselves fulfilling dual roles: leading the Subcommittee and representing their Department. They must take care to properly balance these roles to succeed.

While all of the leadership strategies discussed in 3.1 still apply, there are also some unique aspects to NSTC groups that are discussed below.

Understand the Situation. A Subcommittee is different than a typical interagency S&T team as it was formally chartered by its parent NSTC Committee – a group of Under Secretary-level federal officials from across the interagency. Each has their own view of the issue and personal expectations for the Subcommittee, and collectively has stated (via the Subcommittee’s charter) what they expect the Subcommittee to accomplish. The Subcommittee itself will consist of individuals assigned by the Committee members to represent them, but they will also have their own ideas on what needs to be accomplished. The Subcommittee will also have at least one representative from OMB, as future federal budgets will need to be aligned with the Subcommittee’s approved plans. This is of course a great opportunity for the Subcommittee, but also a source of great concern for Subcommittee members and the agencies they represent!

Understand the Issue. NSTC Committees charter Subcommittees to focus on a specific technology area. They do so because the technology is either (a) a priority for the President or (b) critically important for multiple federal agencies. Agencies often view a technology in wildly different ways, depending on how they are using it. So the first step has to be a level-setting exercise so that all members of the Subcommittee understand the technology and how each of their peers views it. Committees will occasionally mandate an inventory of current investments related to the technology, which can be accomplished during this initial step with assistance from the Subcommittee’s OMB representative.



Unless an early inventory of current investments is mandated, I recommend not doing it at this early stage. Subcommittee members not familiar with the NSTC are going to be scared to show that information to their peers (and OMB). You’d be better served to wait until later in the process (after they’re invested in the Subcommittee’s success) to gather this information.

Define Success. The Subcommittee has a charter that includes a list of high-level items that it must meet, but this is usually not sufficiently developed to truly drive advancement on the issue from a whole of government perspective. The group itself, with its higher level of expertise on the subject, must jointly define how it will define “success.” The big danger here is the typical EOP appointee’s push to publish some sort of document while in office. Most of these individuals will only be in their job for a year or two, and therefore tend to desire to have some formal White House policy that they can point back to in future years to show their impact. (Unfortunately, some may destroy the possibility of bigger and longer-term interagency successes on the issue in pursuit of pushing out a policy on their watch.) Successful Subcommittees view these documents as a step towards their goal rather than the goal itself. True success can be better defined as a collective agreement between the agencies and the White House on a future goal and the approach that will need to be taken in order to meet that goal – and most importantly, a willingness to work together through that multi-year process.

Develop a Future Strategy. Subcommittees don't exist to simply follow a technology, but rather to drive its advancement in a way that is beneficial for federal agencies. So after completing current level-setting investigations and defining success, it is time to shift towards developing a consensus vision for what exactly the desired end state looks like. To succeed, the vision must meet (1) the assigned goals of the Subcommittee's charter, (2) the Subcommittee's definition of success, and (3) the needs of the individual agencies most impacted by the technology. Failure to meet any of these elements will undoubtedly cause the strategy to fail. Once a general consensus is reached, the strategy needs to be put to writing and then approved by the Subcommittee's parent Committee. Whenever possible the NSTC should publicly publish the strategy, as doing so provides a foundation for public-private conversations and encourages the private sector to devote resources towards achieving the government's desired end state.



Each Subcommittee member should be in regular contact with their Department's representative at the Committee level, gaining their trust and support while the strategy is being developed. Doing so helps make the document better, strengthens the relationship between those two individuals, and makes eventual Committee-level clearance much easier..

Develop and Manage a Work Plan. Once the Strategy is approved, the real impact of the NSTC can begin as the Subcommittee's focus will shift from developing the strategy to managing its implementation. The Subcommittee will need to identify and prioritize steps that the interagency (and in some cases the private sector) will need to take to meet the strategy, compare those to existing plans, perform a gap analysis, and then prioritize the gaps – all the while tracking and supporting relevant activities throughout the technology's community. This information should be documented (but not published) as it will help agencies, the Subcommittee, and OMB properly align and justify necessary resources.

Budget Support. One of the great advantages of the NSTC is the direct support of OMB. Note that this does NOT mean that money will suddenly fall from the sky. Each agency's budget development will still occur through normal means, with the exception that OMB Examiners²² will work to ensure that their assigned agencies have requested sufficient resources to support their parts of the NSTC's plans. Each year the Directors of OMB and OSTP issue a Budget Guidance Memorandum to agency heads highlighting their expectations for agency budget requests. Critical elements of the Subcommittee's plans will be included in this memorandum, with more specific details in the Subcommittee's documentation. OMB will also perform a "cross cut analysis" on one or two of the NSTC's highest priority activities each year, which studies alignment at the interagency level, and in great depth.

²² OMB is organized much like the federal government, with an examiner identified for each agency. Examiners from impacted agencies will work with the Subcommittee's OSTP representative to compare their assigned agency's budget request with the Subcommittee's plans. It is incumbent on the OSTP representative to push on all impacted OMB Examiners to take this step. Having a single Examiner miss this assessment can lead to an agency not having the resources it needs to support the interagency's plans.

External Communication. NSTC Subcommittees also often act as the administration’s assigned or de facto “voice” to the private sector on their assigned technology. Subcommittees should use this as a strategic opportunity, and coordinate their outreach and partnership activities accordingly. Published strategies should serve as the foundation for these efforts.

Celebrate Successes. Subcommittee success and impacts need to be documented and celebrated. In doing so, it is important to focus on the processes used and infrastructure built rather than simply the resultant outcome. Subcommittee successes can be referenced in public conferences or Congressional testimony, or by simply bringing refreshments to a future Subcommittee meeting. Short letters to Subcommittee members on White House stationary is always a good option to thank individuals, as is more formal notes from OSTP leadership to the management of Subcommittee members.

3.2.3 Subcommittee Considerations During Administration Transitions

Subcommittees are designed to span several years, and with Presidential elections occurring every four years it’s realistic to assume that a Subcommittee may exist during an administration change. Indeed, Committees will often set a Subcommittee’s expiration date for a few months after an inauguration date. This not only enables the Subcommittee to continue working while their parent Committees are in flux, but also somewhat forces the next administration to spend time considering the issue rather than simply ignoring it when it’s not already on their own list of priorities. If the interagency leader has done their job, Subcommittee members will want the Subcommittee to continue in the next administration as they see its benefits. Incoming appointees may have entirely different priorities, however. This section provides tips on managing Subcommittees during this unique timeframe.

Prepare stories. In advance of the election, the Subcommittee should develop a portfolio of success stories highlighting their accomplishments and the impacts they’ve made, as well as issues and critical gaps that still need to be overcome. These could be a collection of internal one-pagers, a published document,²³ or both. The Subcommittee should then review the candidates’ platforms and key goals, searching for areas of alignment and developing recommendations for Subcommittee activities that will support the next administration’s plans. Shortly after the election, the transition teams will begin interviewing OSTP staff where this information can be provided. Immediately following the inauguration, political appointees will begin populating the EOP and federal agencies, where all Subcommittee members can begin to make similar arguments. Transition teams and new appointees have several of their own ideas, and not enough time to study other issues themselves. To get their attention and have any chance of impact, the Subcommittee

²³ One such example can be found at <http://www.biometrics.gov/Documents/Biometrics%20in%20Government%20Post%209-11.pdf>.

and its membership must have well-conceived recommendations and supporting evidence ready to go.

Celebrate Accomplishments Prior to Inauguration. There is no telling what will actually happen immediately following the inauguration. Subcommittees could very easily be terminated immediately, and OSTP staffers removed from their positions without warning. All groups deserve a proper send-off, and high-profile NSTC Subcommittees especially so. The Subcommittee should have an “end of the administration” event to reflect on their accomplishments and to have outgoing political appointees thank members for their contributions to the administration. Personal notes on White House stationary should be sent to major Subcommittee members highlighting accomplishments, as well as to Committee-level members that have been the most supportive. Co-chairs need to tidy up the Subcommittee’s historical record and ensure it is properly included in the outgoing administration’s formal records.

Be Flexible with the New Administration. For the Subcommittee to continue and have any success in a new administration, the new political appointees must adopt it as their own. The Subcommittee must therefore be willing to adjust its priorities and collaboration activities to align with the new administration’s desires. Show a willingness to be flexible, and find some early successes for the new administration to highlight.



Incoming administrations will want to show that they’re making big impacts in a short amount of time. Helping them with this goal makes them understand that the Subcommittee is interested in supporting the administration. It also makes it a little bit harder for them to terminate the Subcommittee in the short-term!

Disband Gracefully. If the new administration wants to terminate the Subcommittee, be aware of the need to support the decision properly. Subcommittee leaders can request the new administration to reconsider once, but would be unwise to fight the decision any further. Remember that the true goal isn’t to have a Subcommittee, but to have that technology issue succeed well into the future. Souring new political appointees on the technology and its advocates in the agencies will have a long-lasting detrimental effect. Similarly, co-chairs should not show negativity regarding the decision to Subcommittee members. In the end, it’s their administration and they can pick NSTC topics however they want. Co-chairs can simply state this as a fact and immediately shift gears towards encouraging the team to continue meeting on their own, as they can still make significant gains by working collaboratively – even if they are no longer under the NSTC’s umbrella.