



May 2023

# GOVERNMENT PERFORMANCE MANAGEMENT

## Leading Practices to Enhance Interagency Collaboration and Address Crosscutting Challenges

# GAO Highlights

Highlights of [GAO-23-105520](#), a report to congressional committees

## Why GAO Did This Study

Many of the meaningful results that the federal government seeks to achieve require the coordinated efforts of more than one federal agency. GAO's leading practices for collaboration can help address crosscutting challenges, such as infectious diseases, climate change, cybersecurity, and other areas identified in GAO's High-Risk List and those involving fragmentation, overlap, and duplication.

This report is part of a series of reports related to a provision in the GPRA Modernization Act of 2010. This report validates and updates GAO's 2012 leading interagency collaboration practices. It also provides illustrative examples from prior GAO work.

To validate and update these practices, GAO reviewed relevant prior reports and conducted reviews of scholarly and peer-reviewed literature related to collaboration. GAO also gathered the views of senior agency officials experienced in leading interagency collaborative efforts, subject matter specialists, Office of Management and Budget staff, and General Services Administration officials responsible for federal performance and collaboration issues. To identify examples of collaboration challenges and success, we conducted a content analysis of prior GAO work from fiscal years 2018 through 2022.

View [GAO-23-105520](#). For more information, contact Dawn G. Locke at (202) 512-6806 or [locked@gao.gov](mailto:locked@gao.gov).

May 2023

# GOVERNMENT PERFORMANCE MANAGEMENT

## Leading Practices to Enhance Interagency Collaboration and Address Crosscutting Challenges

### What GAO Found

Interagency collaboration involves collaboration or coordination between two or more federal entities, or within components of the same entity. Collaboration can be broadly defined as any joint activity that is intended to produce more public value than could be produced when the entities act alone.

GAO's eight leading practices for interagency collaboration (below) include key considerations for collaborating entities to use when implementing them. This report also includes examples illustrating how the leading practices apply to a number of different collaboration challenges and successes in areas such as foreign aid, cybersecurity, and the federal response to the COVID-19 pandemic. Implementing these practices is critical to achieving important interagency outcomes, such as addressing long-standing challenges facing the federal government.

### GAO's Leading Interagency Collaboration Practices and Selected Key Considerations

Collaboration Practices	Selected Key Considerations
 <b>Define Common Outcomes</b>	<ul style="list-style-type: none"> <li>Have the crosscutting challenges or opportunities been identified?</li> <li>Have the short- and long-term outcomes been clearly defined?</li> </ul>
 <b>Ensure Accountability</b>	<ul style="list-style-type: none"> <li>What are the ways to monitor, assess, and communicate progress toward the short- and long-term outcomes?</li> <li>Have the means to recognize and reward accomplishments related to collaboration been established?</li> </ul>
 <b>Bridge Organizational Cultures</b>	<ul style="list-style-type: none"> <li>Have strategies to build trust among participants been developed?</li> <li>Have participating agencies agreed on common terminology and definitions?</li> </ul>
 <b>Identify and Sustain Leadership</b>	<ul style="list-style-type: none"> <li>Has a lead agency or individual been identified?</li> <li>How will leadership be sustained over the long term?</li> </ul>
 <b>Clarify Roles and Responsibilities</b>	<ul style="list-style-type: none"> <li>Have the roles and responsibilities of the participants been clarified?</li> <li>Has a process for making decisions been agreed upon?</li> </ul>
 <b>Include Relevant Participants</b>	<ul style="list-style-type: none"> <li>Have all relevant participants been included?</li> <li>Do participants represent diverse perspectives and expertise?</li> </ul>
 <b>Leverage Resources and Information</b>	<ul style="list-style-type: none"> <li>How will the collaboration be resourced through staffing and funding?</li> <li>Are methods, tools, or technologies to share relevant data and information being used?</li> </ul>
 <b>Develop and Update Written Guidance and Agreements</b>	<ul style="list-style-type: none"> <li>If appropriate, have agreements regarding the collaboration been documented?</li> <li>Have ways to continually update or monitor written agreements been developed?</li> </ul>

Source: GAO. Vector icons, GAO. | GAO-23-105520

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## Abbreviations

GPRA	Government Performance and Results Act of 1993
GPRAMA	GPRA Modernization Act of 2010
GSA	General Services Administration
OMB	Office of Management and Budget

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May 24, 2023

### Congressional Committees

Many of the meaningful results that the federal government seeks to achieve—such as those related to infectious diseases, climate change, and cybersecurity—require the coordinated efforts of more than one federal agency. For example, we have reported that areas on our High-Risk List and those with opportunities to reduce fragmentation, overlap, and duplication often require better collaboration among federal agencies.<sup>1</sup>

This report validates and updates our 2012 leading interagency collaboration practices and provides illustrative examples from our prior work.<sup>2</sup> The performance planning and reporting framework originally put into place by the Government Performance and Results Act of 1993 (GPRA) and enhanced by the GPRA Modernization Act of 2010 (GPRAMA) provides important tools that can help decision makers better collaborate to address crosscutting challenges facing the federal government.<sup>3</sup> GPRAMA includes a provision for us to periodically evaluate its implementation.<sup>4</sup> We have further supported implementation of GPRAMA by reporting on leading management practices—such as interagency collaboration practices—that agencies should employ as they implement the act.

Due to the increase in agencies' reliance on virtual modes of collaboration during the COVID-19 pandemic, appendix I provides factors identified for

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<sup>1</sup>GAO, *High-Risk Series: Efforts Made to Achieve Progress Need to Be Maintained and Expanded to Fully Address All Areas*, [GAO-23-106674](#) (Washington, D.C.: Apr. 20, 2023); *2022 Annual Report: Additional Opportunities to Reduce Fragmentation, Overlap, and Duplication and Achieve Billions of Dollars in Financial Benefits*, [GAO-22-105301](#) (Washington, D.C.: May 11, 2022); and *High-Risk Series: Key Practices to Successfully Address High-Risk Areas and Remove Them from the List*, [GAO-22-105184](#) (Washington, D.C.: Mar. 03, 2022).

<sup>2</sup>GAO, *Managing for Results: Key Considerations for Implementing Interagency Collaborative Mechanisms*, [GAO-12-1022](#) (Washington, D.C.: Sept. 26, 2012). For more information related to our prior work on interagency collaboration practices see the list of our related products at the end of this report.

<sup>3</sup>Pub. L. No. 103-62, 107 Stat. 285 (1993); Pub. L. No. 111-352, 124 Stat. 3566 (2011).

<sup>4</sup>Pub. L. No. 111-352, § 15(b)(2), 124 Stat. at 3883–3884.

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virtual collaboration.<sup>5</sup> Appendix II provides selected related academic literature on virtual collaboration.

To examine whether and how our previously published collaboration practices have changed over time, and to develop and validate leading interagency collaboration practices, we reviewed scholarly and peer-reviewed literature related to interagency collaboration published from January 2017 through November 2022. Based on selected articles, we identified nine subject matter specialists and contacted them for structured interviews in both group and individual formats.

We also interviewed six recipients of the 2021 Presidential Distinguished Rank Award. The award recipients were members of the Senior Executive Service when they received the award. We refer to them as expert practitioners. We selected these individuals because they had substantive experience in leading interagency collaborative efforts in federal agencies. During these interviews, we gathered these participants' views on their experiences leading or participating in interagency collaborative efforts. We asked them to validate and update the leading collaboration practices identified in our 2012 report.<sup>6</sup>

After we validated and updated the practices, we shared an initial list of leading interagency collaboration practices with these individuals for their technical comments and views. We then incorporated their comments as appropriate. See appendix III for the list of individuals we interviewed. We also obtained the views of staff from the Office of Management and Budget and officials from the General Services Administration who lead federal efforts on agencies' performance management involving interagency collaboration.

To identify examples illustrating how leading interagency collaboration practices have been applied, we selected relevant reports using our publications database from fiscal years 2018 through 2022. We based our

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<sup>5</sup>For the purposes of this report, we use the term "virtual collaboration" to refer to collaboration in both remote and hybrid work environments. According to the Office of Personnel Management, remote work refers to work performed at an alternative worksite and which may be outside the local commuting area of the agency worksite. Hybrid work refers to a work environment which features a combination of onsite and remote work. Office of Personnel Management, *2021 Guide to Telework and Remote Work in the Federal Government* (Washington, D.C.: November 2021).

<sup>6</sup>In our 2012 report, we referred to these practices as key features and considerations for implementing collaborative mechanisms.

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search on whether the report objectives, findings, or recommendations discussed interagency collaboration or applied our previous leading practices for collaboration. From our sample of 224 reports, we selected 58 reports for content analysis using NVivo software. Reports were coded by an analyst and independently reviewed and verified by a second analyst. Analysts discussed any disagreements and reached a final consensus on all content codes. We resolved disagreements by mutually assessing our evidence with a third analyst to reach consensus. The examples identified through this analysis are presented throughout the report as “Examining the Practice.” These examples help illustrate both findings of negative effects when practices were not implemented, as well as positive effects when they were implemented.

We conducted this performance audit from November 2021 to May 2023 in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

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## Background

Interagency collaboration involves collaboration between two or more federal entities. Collaboration can be broadly defined as any joint activity that is intended to produce more public value than could be produced when the organizations act alone. The term “collaboration” broadly refers to interagency activities that others have defined as “cooperation,” “coordination,” “integration,” or “networking.”<sup>7</sup> There are no commonly accepted definitions for these terms. For the purposes of this work, we are not drawing distinctions between them.

We have previously reported on key practices to enhance interagency collaboration.<sup>8</sup> For example, in 2006, we identified key practices agencies could use to enhance and sustain interagency collaboration.<sup>9</sup> We built upon these practices in 2012, and described a number of collaborative

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<sup>7</sup>GAO, *Results-Oriented Government: Practices That Can Help Enhance and Sustain Collaboration among Federal Agencies*, [GAO-06-15](#) (Washington, D.C.: Oct. 21, 2005).

<sup>8</sup>GAO, *Managing for Results: Implementation Approaches Used to Enhance Collaboration in Interagency Groups*, [GAO-14-220](#) (Washington, D.C.: Feb. 14, 2014), [GAO-12-1022](#), and [GAO-06-15](#).

<sup>9</sup>[GAO-06-15](#).

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mechanisms that agencies used to structure and organize interagency work, such as interagency groups or joint programs.<sup>10</sup> Appendix IV provides selected mechanisms that the federal government uses to facilitate interagency collaboration.

Most recently, in 2014, we reported on implementation approaches used to enhance collaboration in select interagency groups. These groups addressed issues of homelessness, re-entry of former inmates into society, rental-housing policy, and the education of military dependent students.<sup>11</sup>

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## How to Use These Practices

This report validates and updates our leading practices for interagency collaboration and key considerations for implementing them (see figure 1). These practices can provide valuable insight and guidance to improve collaboration between agencies, or within components of the same agency.

While we found that our collaboration practices, last updated in 2012, remain valid, we also modified or expanded some of the key considerations, given changing circumstances and lessons learned.<sup>12</sup> The most significant difference is that we separated the 2012 practice related to “outcomes and accountability” into two separate practices— “define common outcomes” and “ensure accountability.” In addition, we updated some of our key considerations to emphasize areas important for collaboration, such as trust building, diversity of perspectives, and information sharing.

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<sup>10</sup>[GAO-12-1022](#). Experts have defined a collaborative mechanism as any arrangement or application that can facilitate collaboration between agencies.

<sup>11</sup>[GAO-14-220](#).

<sup>12</sup>[GAO-12-1022](#).

# Leading Interagency Collaboration Practices and Key Considerations

**Figure 1: Leading Interagency Collaboration Practices and Key Considerations**

Leading Collaboration Practices	Key Considerations
 <b>Define Common Outcomes</b>	<ul style="list-style-type: none"> <li>• Have the crosscutting challenges or opportunities been identified?</li> <li>• Have short- and long-term outcomes been clearly defined?</li> <li>• Have the outcomes been reassessed and updated, as needed?</li> </ul>
 <b>Ensure Accountability</b>	<ul style="list-style-type: none"> <li>• What are the ways to monitor, assess, and communicate progress toward the short- and long-term outcomes?</li> <li>• Have collaboration-related competencies or performance standards been established against which individual performance can be evaluated?</li> <li>• Have the means to recognize and reward accomplishments related to collaboration been established?</li> </ul>
 <b>Bridge Organizational Cultures</b>	<ul style="list-style-type: none"> <li>• Have strategies to build trust among participants been developed?</li> <li>• Have participating agencies established compatible policies, procedures, and other means to operate across agency boundaries?</li> <li>• Have participating agencies agreed on common terminology and definitions?</li> </ul>
 <b>Identify and Sustain Leadership</b>	<ul style="list-style-type: none"> <li>• Has a lead agency or individual been identified?</li> <li>• If leadership will be shared between one or more agencies, have roles and responsibilities been clearly identified and agreed upon?</li> <li>• How will leadership be sustained over the long term?</li> </ul>
 <b>Clarify Roles and Responsibilities</b>	<ul style="list-style-type: none"> <li>• Have the roles and responsibilities of the participants been clarified?</li> <li>• Has a process for making decisions been agreed upon?</li> </ul>
 <b>Include Relevant Participants</b>	<ul style="list-style-type: none"> <li>• Have all relevant participants been included?</li> <li>• Do the participants have the appropriate knowledge, skills, and abilities to contribute?</li> <li>• Do participants represent diverse perspectives and expertise?</li> </ul>
 <b>Leverage Resources and Information</b>	<ul style="list-style-type: none"> <li>• How will the collaboration be resourced through staffing?</li> <li>• How will the collaboration be resourced through funding? If interagency funding is needed, is it permitted?</li> <li>• Are methods, tools, or technologies to share relevant data and information being used?</li> </ul>
 <b>Develop and Update Written Guidance and Agreements</b>	<ul style="list-style-type: none"> <li>• If appropriate, have agreements regarding the collaboration been documented?               <ul style="list-style-type: none"> <li>– A written document can incorporate agreements reached for any or all of the practices.</li> </ul> </li> <li>• Have ways to continually update or monitor written agreements been developed?</li> </ul>

Source: GAO. Vector icons, GAO. | GAO-23-105520

The following section describes each leading collaboration practice and the corresponding key considerations, along with a related federal agency's example to illustrate such practices. While we have defined and

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organized the practices individually, they are interrelated and reinforce each other, and are not sequenced in any particular order.

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## Define Common Outcomes



Source: GAO. |  
GAO-23-105520

### Key Considerations:

- Have the crosscutting challenges or opportunities been identified?
- Have the short- and long-term outcomes been clearly defined?
- Have the outcomes been reassessed and updated, as needed?

Source: GAO. | GAO-23-105520

Collaborative efforts between organizations benefit from defining common goals and outcomes. We have previously reported that participants entering into collaborative efforts may have differing goals.<sup>13</sup> As we have also previously reported, a shared purpose can provide people with a reason to participate in the collaborative process.<sup>14</sup> To coordinate efforts effectively, several of the expert practitioners and subject matter specialists we interviewed emphasized that participants in a collaboration should develop a mutual understanding of the crosscutting challenge or opportunity to create buy-in from all parties, including internal and external stakeholders. They should then work together to define shared outcomes and goals that are agreed upon by participants. For example, one subject matter specialist we interviewed stated that defining common outcomes can bring clarity to the specific resources and skills needed to address a shared goal.

Our prior work and the expert practitioners and subject matter specialists we interviewed emphasized the importance of developing both short- and long-term goals. In the short term, subject matter specialists suggested that collaborative mechanisms should pursue “early wins.” We noted in 2014 that early wins was a way to build momentum and develop positive relationships between group participants.<sup>15</sup> One subject matter specialist with whom we spoke stated that it may be helpful for collaborative efforts to start with “small wins” and continue to grow the effort over time. According to our prior work and this subject matter specialist, small

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<sup>13</sup>[GAO-12-1022](#) and [GAO-14-220](#).

<sup>14</sup>[GAO-12-1022](#).

<sup>15</sup>[GAO-14-220](#).

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successes can lead to desired outcomes and contribute toward longer-term goals.<sup>16</sup>

We have found in our prior work that collaborative groups may need to be refreshed over time as their focus changes, or cease operating if they cannot agree on an outcome or their outcome is met.<sup>17</sup> Similarly, two specialists we interviewed noted that over the long term, collaborating agencies may also need to periodically re-evaluate their common outcomes to adapt to changing circumstances or adjust their approach. Another subject matter specialist further noted that it is also important to consider the different levels of outcomes that collaborating entities want to achieve (e.g., short- versus medium-to-long-term outcomes).

**Examining the Practice: Define Common Outcomes**

Several federal agencies and interagency groups support research and promote adoption of alternatives to radioactive materials in medical and industrial applications. However, we found that no strategy to ensure a cohesive federal approach exists to guide federal efforts and reduce risk from radiological weapons.

We found that the federal government had not articulated clear goals for the development of alternative technologies or measures to provide a clear picture of progress. As a result, federal agencies responsible for alternatives to radioactive materials did not have a defined, common outcome—such as agreed-upon goals and measures. Without such goals and measures, agencies ran the risk of working at cross purposes. The lack of coordination left the federal government vulnerable to fiscal exposure associated with addressing large-scale socioeconomic damage that could be caused by the mishandling of radioactive materials or their release through a dirty bomb.

Source: GAO, *Alternatives To Radioactive Materials: A National Strategy to Support Alternative Technologies May Reduce Risks of a Dirty Bomb*, [GAO-22-104113](#) (Washington, D.C.: Oct. 21, 2021). | [GAO-23-105520](#)

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## Ensure Accountability



Source: GAO. | [GAO-23-105520](#)

**Key Considerations:**

- What are the ways to monitor, assess, and communicate progress toward the short- and long-term outcomes?
- Have collaboration-related competencies or performance standards been established against which individual performance can be evaluated?
- Have the means to recognize and reward accomplishments related to collaboration been established?

Source: GAO. | [GAO-23-105520](#)

When collaborating entities ensure accountability at both the agency and individual levels, they are better able to encourage participation, assess progress, and make necessary changes. At the agency level, we have

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<sup>16</sup>[GAO-14-220](#).

<sup>17</sup>[GAO-14-220](#).

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previously reported that having a way to track and monitor progress toward outcomes is a key consideration in assessing a collaborative mechanism.<sup>18</sup> We have also reported that, if agencies do not use performance information and other types of evidence to assess progress toward outcomes, they may be at risk of failing to achieve their outcomes.<sup>19</sup> We have previously reported that agencies should reinforce accountability for collaborative efforts by using strategic and annual performance plans and reports to establish complementary goals and strategies and use performance reports to account for results.<sup>20</sup>

We have also reported that agencies should reinforce accountability for collaborative efforts through performance management systems by identifying competencies and setting performance expectations for collaboration.<sup>21</sup> In an interagency context, our prior work found that some agencies developed common data sources that can be used to track individual performance within an interagency group.<sup>22</sup> Additionally, one subject matter specialist noted that evaluating both organizational and individual performance as part of a collaborative effort can attract participants and remove perceived disincentives to working across jurisdictional boundaries.

Agencies can also ensure accountability by establishing collaboration-related competencies for leaders. Our past work identified five competencies that leaders of interagency groups exhibited.<sup>23</sup> Specifically, these leaders: (1) worked well with people; (2) communicated openly with a range of stakeholders; (3) built and maintained relationships; (4) understood other viewpoints; and (5) set a vision for the group. These competencies are broadly consistent with the Office of Personnel Management's Executive Core Qualifications that hold executives

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<sup>18</sup>[GAO-12-1022](#) and [GAO-06-15](#).

<sup>19</sup>GAO, *Evidence-Based Policymaking: Survey Results Suggest Increased Use of Performance Information Across the Federal Government*, [GAO-22-103910](#) (Washington, D.C.: Nov. 3, 2021); *Evidence-Based Policymaking: Survey Data Identify Opportunities to Strengthen Capacity across Federal Agencies*, [GAO-21-536](#) (Washington, D.C.: July 27, 2021); and [GAO-14-220](#).

<sup>20</sup>[GAO-06-15](#).

<sup>21</sup>[GAO-06-15](#) and [GAO-12-1022](#).

<sup>22</sup>[GAO-14-220](#).

<sup>23</sup>[GAO-14-220](#).

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accountable for, among other things, building coalitions and networks within and outside an organization to gain cooperation and achieve common outcomes.<sup>24</sup>

Several of the subject matter specialists we interviewed also identified additional competencies that may be relevant for leaders of interagency collaborative efforts. These included being able to manage and govern interagency efforts, recognizing and balancing competing pressures that participants face, and leveraging the expertise of those involved.

**Examining the Practice: Ensure Accountability**

To address the threat of zoonotic diseases—those that can be transmitted between animals and humans—the Departments of Homeland Security and Agriculture have taken steps to transfer ownership of the National Bio and Agro-Defense Facility.

Consistent with the leading collaboration practice of ensuring accountability, we found that the Department of Agriculture had included the successful transfer and operation of the facility in performance standards for its leaders and other staff involved with the effort, according to officials. Further, the Department of Agriculture started developing an implementation plan in the form of an integrated master schedule. This plan connected all scheduled work in a logically linked sequence of activities to monitor progress on all the activities for the facility transfer. We found that these efforts aligned with our leading practices and ensured that the transfer was effectively implemented, and was on track to achieve its intended results.

Source: GAO, *National Bio and Agro-defense Facility: DHS and USDA Are Working to Transfer Ownership and Prepare for Operations, but Critical Steps Remain*, GAO-20-331 (Washington, D.C.: July 10, 2020). | GAO-23-105520

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## Bridge Organizational Cultures



Source: GAO. | GAO-23-105520

**Key Considerations:**

- Have strategies to build trust among participants been developed?
- Have participating agencies established compatible policies, procedures, and other means to operate across agency boundaries?
- Have participating agencies agreed on common terminology and definitions?

Source: GAO. | GAO-23-105520

When two or more agencies come together to work toward common outcomes, they often face challenges deriving from differences in their cultures, missions, and perspectives. We have previously reported that addressing differences between diverse organizational cultures can create the mutual trust among collaborating participants that is critical to enhancing and sustaining the collaborative effort.<sup>25</sup> Additionally, several of the expert practitioners and subject matter specialists we interviewed

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<sup>24</sup>For more information on OPM's Executive Core Qualifications see: <https://www.opm.gov/policy-data-oversight/senior-executive-service/executive-core-qualifications/>.

<sup>25</sup>GAO-12-1022.

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told us that finding common ground and identifying shared interests help to create buy-in and reinforce mutual goals and expectations. As participants engage in trust-building activities, they often become better equipped to effectively work together, identify new opportunities, and find innovative solutions to shared problems. Several of the expert practitioners and subject matter specialists we interviewed also emphasized the importance of making efforts to understand the cultures of other organizations.

Once agencies have come together to form a collaborative team, it is beneficial for them to develop compatible standards, policies, and procedures so that they can coordinate effectively.<sup>26</sup> We have also previously reported that these policies and procedures include creating common terminology and definitions so that participants can operate across agency boundaries.<sup>27</sup>

**Examining the Practice: Bridge Organizational Cultures**

The Department of Energy's Office of Environmental Management identifies research and development needs for nuclear waste cleanup. The office uses formal and informal mechanisms such as working groups and informal information sharing to coordinate research and development across its 16 cleanup sites.

In 2021, we recommended that the office could better operate across organizational boundaries by developing a common definition of research and development. Having common definitions can help bridge different organizational cultures. The lack of a common definition meant that sites interpreted the term differently. As a result, the office did not have assurance that it was collecting consistent information to systematically document research and development efforts. The Department of Energy agreed with our recommendation. As of February 2023, the Office of Environmental Management had not implemented this recommendation.

Source: GAO, *Nuclear Waste Cleanup: DOE Needs to Better Coordinate and Prioritize Its Research and Development Efforts*, GAO-22-104490 (Washington, D.C.: Oct. 28, 2021). | GAO-23-105520

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<sup>26</sup>GAO-06-15.

<sup>27</sup>GAO-06-15, GAO-12-1022 and GAO-14-220.

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## Identify and Sustain Leadership



Source: GAO. |  
GAO-23-105520

### Key Considerations:

- Has a lead agency or individual been identified?
- If leadership will be shared between one or more agencies, have roles and responsibilities been clearly identified and agreed upon?
- How will leadership be sustained over the long term?

Source: GAO. | GAO-23-105520

Strong and sustained leadership provides the authority, support, and decision-making capabilities that allow interagency efforts to function and to facilitate oversight and accountability. We have reported that leadership models range from identifying one agency or person to lead, to assigning shared leadership over a collaborative effort.<sup>28</sup> Designating a single leader can be beneficial because it centralizes accountability and speeds decision-making. Alternatively, by sharing leadership, agencies can create buy-in and convey support for the collaborative effort.<sup>29</sup>

Moreover, we have previously stated that the influence of leadership can be strengthened by a direct relationship with the President, Congress, and other high-level officials.<sup>30</sup> We have also reported that when a leader is associated with the President, Members of Congress, or other high-level officials, they were better able to influence individuals and organizations within the federal government to collaborate with one another.<sup>31</sup> One subject matter specialist we spoke with also emphasized that individuals not in senior leadership roles can act as champions to drive progress on specific tasks or goals that do not require higher-level decision-making and authority.

Sustaining leadership is also important to maintain interagency efforts over time, provide continuity, and avoid unnecessary delays in implementation. Given the importance of leadership to any collaborative effort, transitions and inconsistent leadership can weaken the effectiveness of any collaborative mechanism.<sup>32</sup> Our prior work found that high-level leaders publicly reporting progress and periodically refreshing an interagency group's focus are other ways to help ensure that decisions

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<sup>28</sup>[GAO-12-1022](#).

<sup>29</sup>[GAO-12-1022](#).

<sup>30</sup>[GAO-12-1022](#).

<sup>31</sup>[GAO-12-1022](#).

<sup>32</sup>[GAO-14-220](#).

and commitments can be made, and that collaboration can be sustained.<sup>33</sup>

**Examining the Practice: Identify and Sustain Leadership**

Vaccination is critical for reducing infection rates and the severity of disease and mortality due to COVID-19. We have previously noted that coordination is vital to the successful distribution of COVID-19 vaccines. Distribution of vaccines requires federal leadership and coordination among federal agencies and key partners, including commercial entities, jurisdictions, and providers to distribute and administer vaccines across the country. We reported that while the federal government had distributed and begun administering COVID-19 vaccines, continued federal planning, leadership, and coordination remained important as initial vaccine rollout had not matched expectations.

More clearly identifying federal leaders across the government can improve coordination and communication between agencies, particularly for complex crosscutting issues such as vaccine distribution. Specifically, we noted that, given that multiple federal agencies support vaccine distribution, coordination and leadership were necessary to ensure timely, clear, and consistent communication to state and local health officials, stakeholders, and the public about vaccine availability, efficacy, and safety.

In 2021, we reiterated a 2020 recommendation that the Secretary of Health and Human Services, with support from the Secretary of Defense, establish a time frame for documenting and sharing a national plan for distributing and administering COVID-19 vaccines, and that the time frame outline an approach for how efforts would be coordinated across federal agencies and nonfederal entities. We closed this recommendation in April 2022 because the time frame for its implementation had passed, due to widespread distribution and administration of COVID-19 vaccines.

Source: GAO, *COVID-19: Critical Vaccine Distribution, Supply Chain, Program Integrity, and Other Challenges Require Focused Federal Attention*, [GAO-21-265](#) (Washington, D.C.: Jan. 28, 2021). | [GAO-23-105520](#)

**Clarify Roles and Responsibilities**



Source: GAO. | [GAO-23-105520](#)

**Key Considerations:**

- Have the roles and responsibilities of the participants been clarified?
- Has a process for making decisions been agreed upon?

Source: GAO. | [GAO-23-105520](#)

Collaborating agencies should work together to define and agree on their respective roles and responsibilities, including how the collaborative effort will be led. In doing so, agencies can clarify who will do what, organize their joint and individual efforts, and facilitate decision-making. Clarity over roles and responsibilities can be achieved when agencies work together to identify and leverage their strengths, resources, and authorities, as well as by agreeing to steps for decision-making.<sup>34</sup> Defined and agreed upon roles and responsibilities can often help to overcome barriers when working across agency boundaries. Clarity about roles and

<sup>33</sup>[GAO-14-220](#) and [GAO-12-1022](#).

<sup>34</sup>[GAO-12-1022](#) and [GAO-14-220](#).

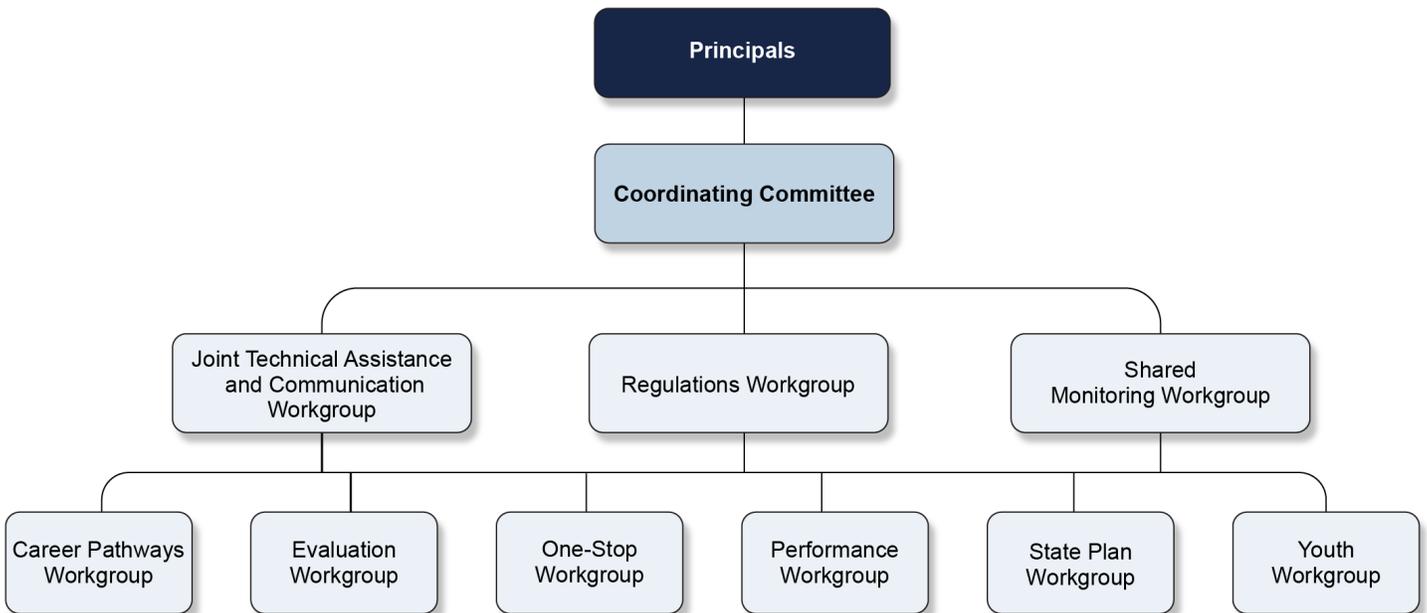
responsibilities can also be provided through laws, policies, memorandums of understanding, or other guidance or requirements.

**Examining the Practice: Clarify Roles and Responsibilities**

The Workforce Innovation and Opportunity Act, enacted in 2014, requires the Departments of Labor, Education, and Health and Human Services to collaborate on an ongoing basis to implement the law.<sup>35</sup> Participating federal agencies clarified roles and responsibilities by developing a collaboration structure initially headed by politically appointed leaders, or Principals, from each of the three agencies who provided guidance and oversight to the entire group (see figure 2). At the next level below the Principals, a coordinating committee made up of career-level leaders from each agency acted as a liaison between nine interagency workgroups and the Principals. The committee also developed and monitored timelines for accomplishing outcomes. The nine workgroups performed a wide range of duties that helped to implement the act's requirements of issuing regulations, developing a common performance system, and implementing and overseeing planning.

Source: GAO, *Workforce Innovation and Opportunity Act: Federal Agencies' Collaboration Generally Reflected Leading Practices, but Could Be Enhanced*, GAO-18-171 (Washington, D.C.: Feb. 08, 2018). | GAO-23-105520

**Figure 2: Collaboration Structure Created by the Departments of Labor, Education, and Health and Human Services to Implement the Workforce Innovation and Opportunity Act**



Source: GAO analysis of information from Department of Labor, Department of Education, and Department of Health and Human Services officials. | GAO-23-105520

<sup>35</sup>Pub. L. No. 113-128, 128 Stat. 1425 (2014).

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## Include Relevant Participants



Source: GAO. |  
GAO-23-105520

### Key Considerations:

- Have all relevant participants been included?
- Do the participants have the appropriate knowledge, skills, and abilities to contribute?
- Do participants represent diverse perspectives and expertise?

Source: GAO. | GAO-23-105520

Inclusion of relevant participants requires participating agencies to ensure that they have invited not only the relevant organizations but also any individuals who may have a stake in the collaborative effort.<sup>36</sup> Because crosscutting challenges and opportunities require coordination between multiple agencies, in many cases, no single organization or individual has the authority, resources, or skills necessary to address them. We have previously reported that while some groups have benefited from starting with a smaller group of participants, we have also found that if collaborative efforts do not consider the input of all relevant stakeholders, important opportunities for achieving outcomes may be missed.<sup>37</sup>

We have also previously reported that it is helpful when the participants have full knowledge of the relevant resources and capabilities of their agency.<sup>38</sup> Agencies should also have the ability to commit staff, including individuals with the authority to make decisions on behalf of the agency; regularly participate in interagency activities; and contribute any other knowledge, skills, and abilities to the outcomes of the collaborative effort.<sup>39</sup> One subject matter specialist expressed the need to explore differences and interdependencies among participants because it can help individuals and organizations learn from one another. Another expert practitioner told us that the inclusion of relevant participants was an underestimated consideration when thinking about collaboration, in part, because having a diverse group of perspectives allows the group to consider an issue from all sides. This is also important when solving complex problems.

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<sup>36</sup>[GAO-12-1022](#).

<sup>37</sup>[GAO-14-220](#) and [GAO-12-1022](#).

<sup>38</sup>[GAO-12-1022](#).

<sup>39</sup>[GAO-12-1022](#).

### Examining the Practice: Include Relevant Participants

The Department of State leads U.S. government international efforts to advance the full range of U.S. interests in cyberspace, including by coordinating with other federal agencies. In June 2019, the Department of State notified Congress of its intent to establish a new Bureau of Cyberspace Security and Emerging Technologies. However, we reported in September 2020 that—according to officials from six agencies that work with the Department of State on cyber diplomacy issues—the department did not involve them in the development of its plan and that they were unaware of the plan. Further, the Department of State has not initiated a process to include all relevant participants by involving other federal agencies in the development of its plans.

Because multiple agencies contributed to cyber diplomacy efforts and are engaged in similar activities, we found the Department of State increased the potential for negative effects from fragmentation, overlap, and duplication of effort. We recommended that the Department of State ensure that it involves federal agencies that contribute to cyber diplomacy to obtain their respective views and identify any risks as it implements its plan to establish the new Bureau. The Department of State implemented this recommendation when it established the Bureau of Cyberspace and Digital Policy—the successor to the Bureau of Cyberspace Security and Emerging Technologies—in April 2022 by consulting with senior officials from relevant agencies to obtain their views and identify risks.

Source: GAO, *Cyber Diplomacy: State Has Not Involved Relevant Federal Agencies in the Development of Its Plan to Establish the Cyberspace Security and Emerging Technologies Bureau*, [GAO-20-607R](#) (Washington, D.C.: Sep. 22, 2020). | GAO-23-105520

## Leverage Resources and Information



Source: GAO. | GAO-23-105520

### Key Considerations:

- How will the collaboration be resourced through staffing?
- How will the collaboration be resourced through funding? If interagency funding is needed, is it permitted?
- Are methods, tools, or technologies to share relevant data and information being used?

Source: GAO. | GAO-23-105520

To successfully address crosscutting challenges or opportunities, collaborating agencies must successfully leverage staffing, funding, and technological resources. While these resources can sometimes be limited, collaborating agencies should look for opportunities to address needs by assessing the resources and capacities that each agency can contribute to the collaborative effort.<sup>40</sup> Collaborating agencies are then better able to leverage each other's resources, thus gaining additional benefits that would be unavailable if they were working separately.<sup>41</sup> We have also suggested in prior work that participants create an inventory of relevant resources, which can be used to help the group better

<sup>40</sup>[GAO-14-220](#).

<sup>41</sup>[GAO-12-1022](#).

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understand and identify the full range of resources devoted to the crosscutting challenge or opportunity.<sup>42</sup>

Several of the subject matter specialists we interviewed said that agencies should especially consider how they are using technological resources. Agencies should also ensure that they have negotiated data- and information-sharing arrangements that can be leveraged to help establish goals and monitor progress, among other shared activities.

We also heard from several subject matter specialists and have previously reported that collaborative efforts can use pilot tests to learn and develop buy-in. By committing a limited amount of resources in a smaller-scale approach to the crosscutting challenge or opportunity—such as through a pilot—groups can identify unanticipated consequences, implementation challenges, or gather information on program effectiveness.<sup>43</sup>

**Examining the Practice: Leverage Resources and Information**

The number of food-insecure people has increased since 2014, and an estimated 768 million people were undernourished in 2020, according to the United Nations. The Global Food Security Act of 2016 required the President to coordinate the development and implementation of a whole-of-government global food security strategy.<sup>44</sup> The agencies responsible for implementing the U.S. Government Global Food Security Strategy—led by the U.S. Agency for International Development—have established mechanisms for coordinating assistance at the global and country levels.

We reported in 2022 that the agencies had not established a mechanism to ensure all relevant agencies can readily access information about each other's current and planned spending resources. As a result, they had limited ability to leverage each other's planned assistance and promote a whole-of-government approach. We recommended that the U.S. Agency for International Development work with interagency participants to establish a mechanism, such as a shared database, to ensure that each agency has ready access to information about the other agencies' current and planned global food security assistance. The agency concurred with our recommendation. As of February 2023, the U.S. Agency for International Development stated that it did not plan to create a new database to capture budget information. However, it said it will explore the possibility of creating a new interagency working group focused on budgeting to strengthen sharing of current and planned funding information.

Source: GAO, *Global Food Security: Coordination of U.S. Assistance Can Be Improved*, [GAO-22-104612](#) (Washington, D.C.: June 01, 2022). | [GAO-23-105520](#)

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<sup>42</sup>[GAO-06-15](#), [GAO-12-1022](#).

<sup>43</sup>[GAO-14-220](#).

<sup>44</sup>Pub. L. No. 114–195, 130 Stat. 676 (2016).

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## Develop and Update Written Guidance and Agreements



Source: GAO. |  
GAO-23-105520

### Key Considerations:

- If appropriate, have agreements regarding the collaboration been documented?
  - A written document can incorporate agreements reached for any or all of the practices.
- Have ways to continually update or monitor written agreements been developed?

Source: GAO. | GAO-23-105520

We have previously reported that articulating agreements in formal documents can strengthen participants' commitment to work collaboratively and enhance accountability for results.<sup>45</sup> We have also reported that these agreements are most effective when they are regularly updated and monitored.<sup>46</sup> Written guidance and agreements can also be used to document and monitor the application of interagency collaboration practices and key considerations for implementation related to any collaborative effort.

Some of the expert practitioners and subject matter specialists we spoke with emphasized that written guidance and agreements can be used to articulate a framework outlining how a collaborative effort operates and how decisions will be made. Not all collaborative arrangements need formal written guidance or agreements. However, such documentation can provide consistency in the long term, especially when there are changes in leadership. Some expert practitioners and subject matter specialists we interviewed also told us that written guidance and agreements can be used to establish the “rules of the road” for the collaboration, promote information sharing, and help to ensure participants agree.

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<sup>45</sup>[GAO-12-1022](#).

<sup>46</sup>[GAO-12-1022](#).

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**Examining the Practice: Develop and Update Written Guidance and Agreements**

The Departments of State and Commerce coordinate on economic and commercial diplomacy efforts to support the work of U.S. businesses to enter or expand in foreign markets through various programs. State and Commerce signed a memorandum of understanding in 2021 to formalize and facilitate their collaboration. We reported in 2022 that the memorandum met our criteria by documenting decisions regarding leadership, resources, and roles, and by establishing a method for updating it.

However, we found that cables documenting how State and Commerce work together to support a specific program—the joint Deal Team Initiative, which coordinates agency programs that support overseas opportunities for U.S. companies—did not fully address this practice. Specifically, their cables (a mechanism for interagency communication) broadly describe roles and responsibilities regarding how State and Commerce will collaborate, but do not establish a method for monitoring and updating these cables. This puts the guidance at risk of becoming outdated. As a result, we recommended that the agencies establish a method for monitoring and updating their cables for the Deal Team Initiative. The agencies agreed with our related recommendation. In June 2022, we stated that we would provide updated information once we confirm the actions the agencies have taken in response.

Source: GAO, Economic and Commercial Diplomacy: State and Commerce Could Build on Efforts to Improve Coordination and Effectiveness, [GAO-22-105860](#) (Washington, D.C.: June 09, 2022). | GAO-23-105520

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**Agency Comments**

We provided a draft of this report to OMB and GSA for their review and comment. OMB and GSA stated they had no comments on the report.

We are sending copies of this report to the appropriate congressional committees, the Director of OMB, the Administrator of GSA, and other interested parties. In addition, the report is available at no charge on the GAO website at <https://www.gao.gov>.

If you or your staffs have any questions about this report, please contact me at (202) 512-6806 or [locked@gao.gov](mailto:locked@gao.gov). Contact points for our Offices of Congressional Relations and Public Affairs may be found on the last page of this report. GAO staff members who made key contributions to this report are listed in appendix IV.



Dawn G. Locke  
Director, Strategic Issues

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*List of Committees*

The Honorable Gary C. Peters  
Chairman  
The Honorable Rand Paul, M.D.  
Ranking Member  
Committee on Homeland Security and Governmental Affairs  
United States Senate

The Honorable Richard Blumenthal  
Chairman  
The Honorable Ron Johnson  
Ranking Member  
Permanent Subcommittee on Investigations  
Committee on Homeland Security and Governmental Affairs  
United States Senate

The Honorable Kyrsten Sinema  
Chair  
The Honorable James Lankford  
Ranking Member  
Subcommittee on Government Operations and Border Management  
Committee on Homeland Security and Governmental Affairs  
United States Senate

The Honorable James Comer  
Chairman  
The Honorable Jamie Raskin  
Ranking Member  
Committee on Oversight and Accountability  
House of Representatives

The Honorable Nancy Mace  
Chairwoman  
The Honorable Gerald E. Connolly  
Ranking Member  
Subcommittee on Cybersecurity, Information Technology, and  
Government Innovation  
Committee on Oversight and Accountability  
House of Representatives

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The Honorable Pete Sessions  
Chairman  
The Honorable Kweisi Mfume  
Ranking Member  
Subcommittee on Government Operations and the Federal Workforce  
Committee on Oversight and Accountability  
House of Representatives

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# Appendix I: Factors Identified For Virtual Collaboration

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Virtual collaboration was not a significant element of our previous work on collaboration practices, but has become more commonplace due to the COVID-19 pandemic and the expansion of remote work across the government.<sup>1</sup> To identify factors that agencies might consider when they collaborate virtually, we searched peer-reviewed literature and interviewed expert practitioners, subject matter specialists, and agency officials.<sup>2</sup> Our review of literature focused on the private and nonprofit sector—as shown in appendix II—as we found comparatively little research on virtual collaboration in the federal government. Based on this information, we identified the following factors that agencies might consider when collaborating virtually:

- **Trust and Communication.** Some expert practitioners and subject matter specialists we interviewed stated that building trust in a virtual environment required more frequent interaction and a greater investment of time. We also identified building trust among participants as a key issue to consider when implementing the leading collaboration practice of bridging organizational cultures. Our prior work has also found that holding in-person meetings during the early stages of a collaboration can build relationships and trust.<sup>3</sup>

One expert practitioner stated that building trust virtually required taking a different approach. Specifically, defining the outcomes,

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<sup>1</sup>For the purposes of this report, we use the term “virtual collaboration” to refer to collaboration in both remote and hybrid work environments. According to the Office of Personnel Management, remote work refers to work performed at an alternative worksite and which may be outside the local commuting area of the agency worksite. Hybrid work refers to a work environment which features a combination of onsite and remote work (Office of Personnel Management, *2021 Guide to Telework and Remote Work in the Federal Government* (Washington, D.C.: November 2021)). Also see GAO, *Federal Employees Teleworked More During COVID-19, But What Does the Future of Work Look Like?* WatchBlog (Washington, D.C.: Feb. 10, 2022); and *COVID-19: Federal Telework Increased During the Pandemic, but More Reliable Data Are Needed to Support Oversight*, [GAO-22-104282](#) (Washington, D.C.: Feb. 8, 2022).

<sup>2</sup>Additionally, we reviewed the annual Federal Employee Viewpoint Survey to assess the extent to which questions address virtual interagency collaboration. While the survey does include items related to telework, the items generally do not focus on interagency collaboration specifically, which is the scope of this review. We determined that there was one item in the 2022 Federal Employee Viewpoint Survey relevant to our analysis of virtual collaboration: “Managers promote communication among different work units (for example, about projects, goals, needed resources).” The percentage of positive responses to that item rose from 56 percent in 2018 to 60 percent in 2020, and declined again to 58 percent in 2022. For more information, see Office of Personnel Management, *2022 Office of Personnel Management Federal Employee Viewpoint Survey Results: Governmentwide Management Report* (Washington, D.C.: 2022).

<sup>3</sup>[GAO-14-220](#).

deliverables, and expectations among participants was more important than the venue in which the collaboration took place. This expert practitioner noted that using the virtual environment effectively can provide more opportunities to maintain contact than waiting for an in-person meeting.

- **Inclusion and Diversity.** Office of Management and Budget staff, General Services Administration officials, expert practitioners, and subject matter specialists we interviewed stated that virtual meetings can expand the diversity of participants and increase inclusion and participation from stakeholders. The collaboration practices in this report also note that ensuring participants represent diverse perspectives and expertise is an important consideration for including all relevant participants in collaborative efforts. Additionally, one expert practitioner noted that greater diversity combined with broader participation could improve problem solving.
- **Engagement.** Expert practitioners and subject matter specialists stated that virtual meetings may often comprise a more inclusive and diverse group of participants. However, as one practitioner noted, extra care must be taken to ensure that all participants have the opportunity to share their views in larger virtual settings. Two expert practitioners told us this was particularly relevant for meetings in which in-person and virtual participation is mixed. These types of meetings present challenges in balancing participation and inclusion between in-person and virtual interactions. A few expert practitioners and subject matter specialists suggested gathering input or reaching agreement individually with participants in advance of a meeting. We were also told that using virtual sessions, combined with follow-up to expand on and confirm decisions, can effectively ensure participant engagement.
- **Efficiency.** Expert practitioners and subject matter specialists stated that virtual collaboration provides benefits due to reduced costs and increased efficiencies associated with virtual interagency interactions. These benefits can include minimized travel costs and smaller time commitments to attend interagency meetings.

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# Appendix II: Selected Academic Literature on Virtual Collaboration

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To help identify factors for interagency collaboration in a virtual environment, this appendix provides selected academic literature on virtual collaboration. Many of these studies address research conducted on organizations in the private or nonprofit sector. We did not find similar research in the federal sector. However, we believe that the factors raised in this literature can be helpful for federal agencies to consider when collaborating in a virtual work environment.

To determine what is known about collaborating virtually, we conducted a literature search for studies that analyzed relationships between virtual, remote, and hybrid work, and collaboration.<sup>1</sup> To identify existing studies from peer-reviewed journals, we conducted searches using the databases Scopus, ProQuest, EBSCO, and ProQuest Dialog. From these sources, we identified 70 studies that appeared in peer-reviewed journals, working papers, and conference papers between 2017 and 2022. We performed this search in August 2022. We then reviewed the 70 studies and selected the following 11 articles because we determined they fit within the scope of our researchable objective to identify factors for interagency collaboration in a virtual environment.

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## Selected Academic Literature

Batarseh, Fadi S., John M. Usher, Joshua J. Daspit. "Collaboration Capability in Virtual Teams: Examining the Influence on Diversity and Innovation." *International Journal of Innovation Management*, vol. 21, no. 4 (2017).

Summary: Described the effect of collaboration capability—the capability to manage and build relationships based on trust, communication, and commitment—on diversity and innovation for virtual teams. Found that collaboration capability affects the relationship between innovation and diversity in knowledge and skills for virtual teams, but has less influence on the relationship between innovation and differences in values and beliefs.

Baughman, Sarah. "Promising Practices for Leading Virtual Teams." *Journal of Extension*, vol. 57, no. 5 (2019).

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<sup>1</sup>For the purposes of this report, we use the term "virtual collaboration" to refer to collaboration in both remote and hybrid work environments. According to the Office of Personnel Management, remote work refers to work performed at an alternative worksite and which may be outside the local commuting area of the agency worksite. Hybrid work refers to a work environment which features a combination of onsite and remote work (Office of Personnel Management, *2021 Guide to Telework and Remote Work in the Federal Government* (Washington, D.C.: November 2021)).

Summary: Identified seven practices for leading virtual teams: (1) understand that relationship building is challenging but essential to success; (2) be responsive electronically; (3) share leadership; (4) hire technologically competent people; (5) meet in person; (6) use all the tools at your disposal; and (7) be willing to fail.

Brucks, Melanie S., and Jonathan Levav. "Virtual Communication Curbs Creative Idea Generation." *Nature*, vol. 605 (2022): 108-112.

Summary: Examined the effect of remote work on collaborative idea generation. Determined that virtual interaction limited idea generation due to differences in the physical nature of videoconferencing and in-person interactions.

Cutler, Ross, Yasaman Hosseinkashi, Jamie Pool, Senja Filipi, Robert Aichner, Yuan Tu, and Johannes Gehrke. "Meeting Effectiveness and Inclusiveness in Remote Collaboration." *Proceedings of the ACM on Human-Computer Interaction*, vol. 5 (2021).

Summary: Examined meeting effectiveness and inclusiveness for videoconference meetings. Found that factors such as sending both a premeeting communication and a postmeeting summary—including a meeting agenda, attendee location, remote-only meeting, audio/video quality and reliability, video usage, and meeting size—affect feelings of inclusiveness, effectiveness, and participation.

Eisenberg, Julia, and Aparna Krishnan. "Addressing Virtual Work Challenges: Learning From the Field." *Organization Management Journal*, vol. 15, issue 2 (2018): 78-94.

Summary: Discussed challenges associated with virtual collaboration based on a review of academic literature. Identified five categories of virtual team challenges: (1) trust and relationships, (2) communication and knowledge sharing, (3) perceptions and decision-making, (4) leadership, and (5) diversity.

Hu, Xinlan Emily, Rebecca Hinds, Melissa A. Valentine, and Michael S. Bernstein. "A 'Distance Matters' Paradox: Facilitating Intra-Team Collaboration Can Harm Inter-Team Collaboration." *Proceedings of the ACM on Human-Computer Interaction*, vol. 6 (2022): 1-36.

Summary: Examined collaboration in a remote organization using a framework for describing conditions that present challenges for

collaboration within groups. Found that challenges to inter-team collaboration were similar to those of intra-team collaboration, but differed in how centralized versus customized technology affected collaboration differently between teams and within teams.

Kilcullen, Molly, Jennifer Feitosa, and Eduardo Salas. "Insights From the Virtual Team Science: Rapid Deployment During COVID-19." *Human Factors*, vol. 64, issue 8 (2022): 1429-1440.

Summary: Synthesized literature on best practices, lessons learned, and strategies for virtual teams. Developed tips for virtual teams transitioning rapidly to remote work at the organization, team, and individual levels into six themes: (1) norm setting, (2) performance monitoring, (3) leadership, (4) supportive mechanisms, (5) communication, and (6) flexibility.

Meluso, John, Susan Johnson, and James Bagrow. "Flexible Environments for Hybrid Collaboration: Redesigning Virtual Work Through the Four Orders of Design." *Design Issues*, vol. 38, issue 1 (2022): 55-69.

Summary: Examined virtual collaboration using design thinking. The study found that designing work systems as flexible collaborative environments would increase the likelihood of producing more equitable outcomes for organizations' stakeholders.

Raghuram, Sumita, N. Sharon Hill, Jennifer L. Gibbs, and Likoebe M. Maruping. "Virtual Work: Bridging Research Clusters." *Academy of Management Annals*, vol. 13, no.1 (2019), 308-341.

Summary: Examined the segmentation of virtual work scholarship into distinct clusters of research. Found that studies on virtual work were divided into three major clusters: (1) telecommuting, (2) virtual teams, and (3) computer-mediated work, and proposes approaches to bridging these clusters.

Singh, Harshika, Gaetano Cascini, Christopher McComb. "Virtual and Face-to-Face Team Collaboration Comparison through an Agent-Based Simulation." *Journal of Mechanical Design*, 144, 7 (2022).

Summary: Examined virtual collaboration in the engineering design process and simulates how design outcomes differ regarding face-to-face in comparison with virtual collaboration. The authors found that the effect of the mode of collaboration differed based on differences in level of

influence among team members. Additionally, found that virtual collaboration results in lower ability to identify solutions and variety than face-to-face collaboration.

Yang, Longqi, David Holtz, Sonia Jaffe, Siddharth Suri, Shilpi Sinha, Jeffrey Weston, Connor Joyce, Neha Shah, Kevin Sherman, Brent Hecht, and Jaime Teevanet. "The effects of remote work on collaboration among information workers." *Nature Human Behaviour*, vol. 6 (2022): 43-54.

Summary: Examined effects of remote work on collaboration and communication across an entire firm. Found that firm-wide remote work caused networks of workers to become more siloed and decreased synchronous communication. This may make it harder for employees to acquire and share new information across networks.

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# Appendix III: Expert Practitioners and Subject Matter Specialists Interviewed

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## Presidential Distinguished Rank Award Recipients

### **Ko Barrett**

Senior Advisor for Climate, National Oceanic and Atmospheric Administration, U.S. Department of Commerce

### **Gary L. Cantrell**

Specialist Leader - Deloitte  
(Former Deputy Inspector General for Investigations, Office of Inspector General, U.S. Department of Health and Human Services)

### **J. Emilio Esteban**

Under Secretary for Food Safety, Office of Food Safety, U.S. Department of Agriculture  
(Former Chief Scientist, Food Safety and Inspection Service, U.S. Department of Agriculture)

### **Eric Froman**

Assistant General Counsel for Banking and Finance, U.S. Department of Treasury

### **Steven Mark Kappes**

Associate Administrator, National Programs, Agricultural Research Service, U.S. Department of Agriculture

### **Gary Rasicot**

Acting Assistant Secretary, Countering Weapons of Mass Destruction Office, Department of Homeland Security  
(Former Deputy Commandant for Mission Support – Deputy for Personnel Readiness, U.S. Coast Guard)

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## Subject Matter Specialists

### **Dr. Andrea Bonomi Savignon, Ph.D.**

Senior Lecturer in Public Management, University of Rome Tor Vergata

### **Dr. Lorenzo Costumato, Ph.D.**

Research Fellow in Public Management, University of Rome Tor Vergata

**Dr. J. Ramon Gil-Garcia, Ph.D.**

Professor of Public Administration and Policy, Rockefeller College of Public Affairs and Policy & Director of the Center for Technology in Government, University at Albany, State University of New York

**Dr. Qian Hu, Ph.D.**

Associate Professor and Director for the Master of Emergency and Crisis Management Program, School of Public Administration, University of Central Florida

**Dr. Alex Osei-Kojo, Ph.D.**

Assistant Professor, Department of Political Science, University of Tennessee Knoxville

**Rachel Sachs, J.D. and MPH**

Professor of Law, School of Law, Washington University in St. Louis

**Dr. Stephanie Solansky, Ph.D.**

Associate Professor of Management, McCoy College of Business, Texas State University

**Pamela Sydelko**

President of Fat Node Consulting; PhD Candidate, University of Hull, United Kingdom

**Dr. Kevin Ward, Ph.D.**

Associate Professor, Institute of Public Service, Seattle University

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# Appendix IV: Interagency Collaborative Mechanisms

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Federal agencies have used a variety of mechanisms to implement interagency collaborative efforts, such as the President appointing a coordinator, agencies co-locating within one facility, or establishing interagency task forces.<sup>1</sup> Figure 3 identifies selected mechanisms that the federal government uses to facilitate interagency collaboration.

Experts have defined an interagency mechanism as any arrangement or application that can facilitate collaboration between agencies. While some collaborative mechanisms are mandated by law or directed by executive guidance, effective collaboration can also occur outside of legislative or executive directives through informal means, such as in interagency task teams or communities of practice. Although these mechanisms differ in complexity and scope, they all benefit from applying the leading interagency collaboration practices when implementing these mechanisms.

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<sup>1</sup>GAO, *Managing for Results: Key Considerations for Implementing Interagency Collaborative Mechanisms*, [GAO-12-1022](#) (Washington, D.C.: Sept. 26, 2012).

**Figure 3: Mechanisms for Interagency Collaboration and Definitions**

<p><b>Presidential Assistants and Advisors:</b></p> <p>A presidential appointee who is solely focused on an issue of great magnitude, or policy collaboration in the Executive Office of the President.</p> <p><b>Collaboration Structures within the Executive Office of the President:</b></p> <p>Permanent or temporary groups that are sometimes referred to as task forces, councils, commissions, committees, or working groups.</p> <p><b>National Strategies and Initiatives:</b></p> <p>A document or initiative that is national in scope and provides a broad framework for addressing issues that cut across federal agencies and often across other levels of government and sectors.</p> <p><b>Interagency Groups:</b></p> <ul style="list-style-type: none"> <li>a. Interagency Group Led by Agency and Department Heads: These groups are sometimes referred to as task forces, working groups, councils, and committees.</li> <li>b. Interagency Group Led by Component and Program-Level Staff: These groups are sometimes referred to as task forces, working groups, councils, and committees.</li> </ul> <p><b>Designation of Leadership:</b></p> <ul style="list-style-type: none"> <li>a. Lead Agencies: Designation of one agency or department to be accountable for an initiative, particularly if it requires the efforts of several different agencies exercising different statutory authorities.</li> <li>b. Shared Leadership: Designation of, or agreement by, more than one agency or department to be accountable for an initiative.</li> </ul> <p><b>Geographic-Based Offices/Co-location:</b></p> <p>One office maintaining responsibility for collaborating with federal agencies or departments that are located in the same geographic region. Also, in some cases, the location of more than one program office from different federal agencies into a facility with the intention of personnel from the agencies collaborating with one another.</p>	<p><b>Positions and Details:</b></p> <ul style="list-style-type: none"> <li>a. Interagency Collaborator Positions: The designation of an individual within one federal agency or department to collaborate within or between agencies or departments.</li> <li>b. Liaison Positions: An employee of one organization assigned to work primarily or exclusively with another agency.</li> <li>c. Personnel Details: Specialists or professionals designated to perform certain tasks for other agencies while remaining employed by their respective home agencies.</li> </ul> <p><b>Specially Created Interagency Offices:</b></p> <p>An office with its own authority and resources with responsibility to cover a policy area that crosses a number of separate agencies or departments.</p> <p><b>Interagency Agreements and Memorandum of Understanding:</b></p> <p>A written agreement between more than one federal agency or department.</p> <p><b>Joint Program Efforts:</b></p> <ul style="list-style-type: none"> <li>a. Joint Budgeting and Funding: A set of resources that are administered by more than one federal agency.</li> <li>b. Joint Exercising and Training: Exercising or training that involves participants from more than one federal agency.</li> <li>c. Joint Development of Policies, Procedures, and Programs: More than one federal agency developing a policy, procedure, or program.</li> </ul> <p><b>Conferences and Communities of Practice:</b></p> <p>A meeting that brings together representatives of different agencies or departments for the discussion of common problems, the exchange of information, or the development of agreements on issues of mutual interest.</p> <p><b>Collaboration Technologies:</b></p> <p>Tools that facilitate collaboration, such as shared databases and web portals.</p>
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Source: GAO. GAO-12-1022 | GAO-23-105520

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# Appendix V: GAO Contact and Staff Acknowledgments

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## GAO Contact

Dawn G. Locke, (202) 512-6806, [LockeD@gao.gov](mailto:LockeD@gao.gov)

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## Staff Acknowledgments

In addition to the contact named above, Sarah E. Veale (Assistant Director), Peter Beck (Analyst-in-Charge), Michael Bechetti, Alissa Czyz, Amalia Konstas, Andrew Lobel, Connor Mason, Steven Putansu, and Andrew J. Stephens made key contributions to this report.

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# Related GAO Products

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GAO, *Leading Practices in Collaboration Across Governments, Nonprofits, and the Private Sector* ([web content](#))

GAO, *Managing for Results: Implementation Approaches Used to Enhance Collaboration in Interagency Groups*, [GAO-14-220](#) (Washington, D.C.: Feb. 14, 2014)

GAO, *Managing for Results: Key Considerations for Implementing Interagency Collaborative Mechanisms*, [GAO-12-1022](#) (Washington, D.C.: Sept. 26, 2012)

GAO, *Results-Oriented Government: Practices That Can Help Enhance and Sustain Collaboration among Federal Agencies*, [GAO-06-15](#) (Washington, D.C.: Oct. 21, 2005)

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