

Accelerating Technology Projects in Environmental Agencies

Technology
Provider Obstacles
and Strategies to
Overcome Them

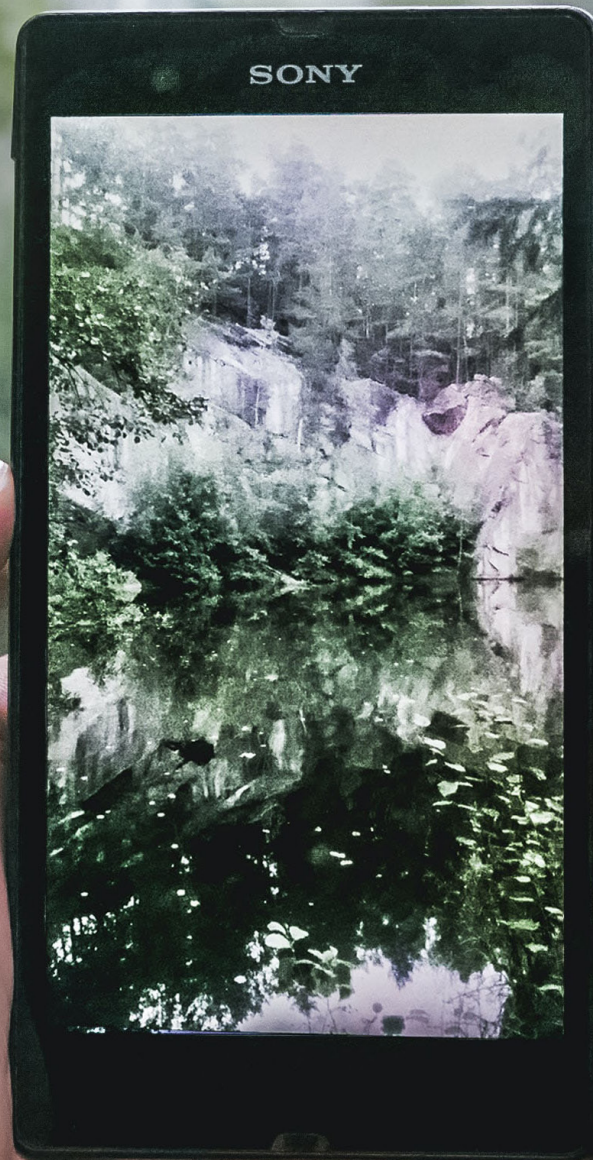


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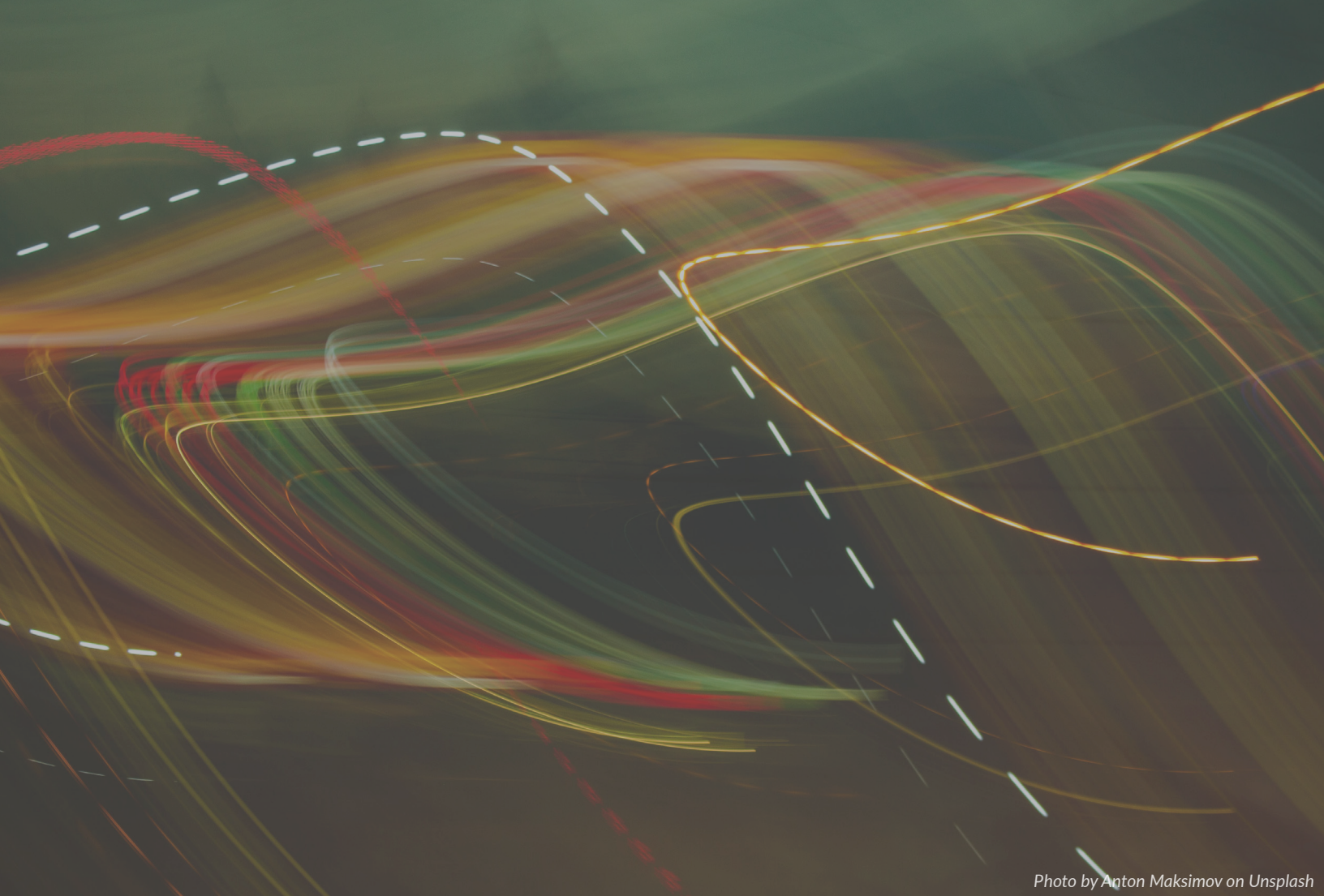


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The Environmental Policy Innovation Center builds policies that deliver spectacular improvement in the speed and scale of environmental progress. A nonprofit start-up, EPIC is committed to advancing the best approaches to achieving results quickly. EPIC focuses on clean water, environmental markets, and utilizing data and technology to reach conservation outcomes. Our technology work focuses on building the capacity, policies, and processes to help government agencies better leverage technology for environmental stewardship. EPIC is a fiscally sponsored project of Sand County Foundation.

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Executive Summary

Opportunities to accelerate the work of federal environmental agencies with technology abound. For example, remote monitoring could enable more targeted land management efforts and better citizen science tools could help introduce new streams of data into agency planning and prioritization. Although environmental agencies are investing billions in information technology every year, much of it currently goes to maintaining legacy systems and many programs have yet to seize the opportunity presented by embracing new technology.

The relationship between government agencies and the ecosystem of technology providers, both private and nonprofit, is at the heart of realizing this potential. However, too often policies and processes that were not designed for engaging with technology providers slow down projects, or prevent them from ever starting. Through our interviews with mostly smaller technology providers, we identified three findings that, if addressed, could meaningfully accelerate the pace of technology projects at environmental agencies:

- Inefficient ways for technology providers to understand environmental agencies' programmatic needs.
- High administrative costs that can overwhelm the potential benefits of working with environmental agencies.
- A patchwork of technology policies and practices that slows down or prevents projects.

We also identified seven actionable strategies for agencies to make their relationship with technology providers more productive and inclusive. These strategies could be implemented within a single agency or as collaborative efforts among several environmental agencies or bureaus. These strategies are:

- Conducting and sharing more proactive market research on the application of new and tested technologies to environmental programs and sharing that information to more efficiently match providers with opportunities.
- Creating consolidated digital points of entry for innovating and selling to federal environmental agencies.
- Bolster liaison capacity, particularly for small providers and those with no prior interaction with the office, bureau, or agency.
- Use documents to communicate, internally and externally, the desired outcomes from technology projects for specific programs.
- Make contracting and budgeting data more tailored and accessible.
- Create additional mechanisms for recognizing success and automatically sharing experience across organizational boundaries.
- Evaluate and experiment with different agreement types to identify the most effective and to ensure that there are a variety of contracts and grants.

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Introduction

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Technology has the potential to transform how we advance, monitor, improve, and communicate environmental outcomes, from lead pipe replacement to protecting biodiversity. For example, after integrating remote monitoring into their work, [non-profit land managers in California](#) were able to more comprehensively monitor their lands while seeing an average 28% reduction in costs and a 57% savings in personnel time that could be redeployed to other priorities. Although government agencies are investing billions in information technology, approximately [80% of federal IT spending is allocated for operation and maintenance, including many legacy software systems](#), and many programs within environmental agencies have not yet taken advantage of opportunities to use new technology to bolster their programs capacity.¹

At the heart of realizing this potential is the relationship between government agencies and the ecosystem of technology providers, both private and nonprofit, that can implement technology projects. Too often the policies and processes that should enable a productive partnership with these providers, end up slowing them down or preventing projects from being considered at all. It can take years to go through the acquisitions process from start to finish - a pace that is misaligned with the urgency of environmental problems and the pace of technological progress. Many past research efforts have addressed how the government could improve its approach to technology projects generally, but rarely have these efforts focused on the government agencies involved in managing natural resources and protecting the environment.² Our work is aimed at addressing that gap and ultimately making the relationship between environmental agencies and technology providers more productive and inclusive.

“We need to find easier ways for agency staff to try and pilot new technologies.”

For this report, we set out to discover issues that may be holding back efforts to expand the use of technology in environmental agencies from the point of view of technology providers, mainly smaller providers with under 100 employees.³ Many factors affect the success of individual technology projects, but in this report we focus on those issues that, if addressed, could speed up or scale up the use of new and established technologies to advance environmental progress. In practice, this means 1) finding ways to initiate more high-quality projects, 2) shortening the time it takes to complete existing projects, or 3) scaling up existing technology projects to meet needs in other offices, programs, or agencies.

¹ Examples of environmental agencies include the Departments of Interior and Agriculture, the Environmental Protection Agency, and the Army Corps of Engineers.

² For examples, see efforts by the [Partnership for Public Service](#), [George Mason University](#), the [American Council for Technology and Industry Advisory Council](#), the [General Services Administration](#) (GSA), and the [U.S. Digital Service](#).

³ We focused mainly on smaller providers in this report because they may face barriers over and above those that large providers face. However, many of the strategies identified would benefit all providers regardless of size.

Background

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Government agencies have two main options to work with technology providers: **grants**, if the technology project has a public purpose, and **contracts**, if the government is the primary user of the technology project.⁴ In practice, grants and contracts may be used together to implement technology projects, such as when a grant is issued to a non-profit who then subcontracts with a private company for a technology project. [Different rules govern each option](#), but in general, the process of working with a provider on a technology project can be broken down into three main phases, Pre-Award, Award, and Post-Award.

- In the **Pre-Award** phase agencies define the outcomes and/or requirements they are seeking to address with a technology project and consider options for structuring the technology project. For contracts, government agencies will conduct market research to understand the capabilities of technology providers. Agencies will then announce an opportunity to contract or receive a grant, including criteria for reviewing them, and then receive proposals or applications from technology providers. To respond to these opportunities, technology providers need to register with the government (at [SAM.gov](#) for contracts, and [Grants.gov](#) for grants).
- In the **Award** phase, government agencies review the proposals or applications related to the technology projects, ask for clarifications or more information as needed, evaluate them, and may then negotiate an agreement before awarding the grant or contract. Agencies often have a fair amount of flexibility to innovate around the specific terms of these agreements and practices for awarding them.⁵
- In the **Post-Award** phase, implementation of the technology project takes place in accordance with the requirements in the signed agreement. This may include sub-contracting work to other entities. The agreements also typically include reporting requirements for grants, and performance evaluations for contracts.

Beyond individual awards made by each agency, there are many government programs with specific purposes that may facilitate working with technology providers. For example, agencies have grants and contracts that are set aside for smaller businesses as defined by the [Small Business Administration](#). The General Services Administration (GSA) has also created several government-wide initiatives that aim to speed up or improve contracting for technology projects. For example, the [GSA Multiple Award Schedule](#) uses long-term governmentwide contracts to provide federal, state, and local government buyers access to commercial products, services and solutions at pre-negotiated prices. Other Governmentwide Acquisition Contracts, such as [Alliant 2](#), offer federal agencies access to technology, such as artificial intelligence, distributed ledger technology, and robotic process automation, through large pre-qualified contractors who may subcontract with smaller providers.



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⁴ Agencies may also use Cooperative Research and Development Agreements (CRADAs) if federal personnel or property, as opposed to funds, are substantially involved in furthering a technology project. Prize competitions are also alternatives to grants and contracts that may ask technology providers to undertake a technology project to be considered for an award.

⁵ For additional information about the options available to agencies on contracts, see the [Periodic Table of Acquisition Innovations](#).

How we conducted this work

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We conducted 18 interviews with environmental technology providers, both nonprofits and private companies, that offer information technology products and services related to federal environmental agencies. These technology providers were typically small (median staff of 28) and had developed software (and in some cases hardware) for applications such as landscape change monitoring, environmental permitting, tree inventory, real-time monitoring of water resources, and many more. We primarily sought to interview providers that had worked with or are seeking to work with the Department of Interior, Department of Agriculture, Environmental Protection Agency, and the Army Corps of Engineers. Typically, these providers worked directly with agencies to implement projects, however, we also interviewed some that provide products or services to other entities, such as state and local governments, in support of regulatory or permitting programs.

For these interviews, we used open-ended questions covering the following topics:

1. What products or services do you provide to or in support of government agencies?
2. In what ways have you worked with the government (e.g. grants, contracts, prize competitions)?
3. What has been particularly successful in your efforts to work with government agencies on technology projects and what enabled that success?
4. What obstacles have you encountered in working with government agencies on technology projects and what strategies could be used to overcome them?

Below we share the most salient findings from these interviews and highlight strategies that may help address them.⁶

⁶ Addressing other factors, such as risk-averse agency cultures, are also important for accelerating technology projects, but we focused on those that are most actionable and tied to agency policies and processes in the findings below.

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Through our interviews and research we identified three interrelated themes that limit technology providers' ability to begin, scale, or accelerate their work on technology projects with federal environmental agencies:

1. Inefficient ways for technology providers to understand environmental agencies' programmatic needs.
2. High administrative costs that can overwhelm the potential benefits of working with environmental agencies.
3. A patchwork of technology policies and practices slows down or prevents projects.

Each of these issues does not affect every project or agency the same way, but taken together they have a significant effect on the overall pace of change that is possible. Each of these themes is summarized in the following sections.

Inefficient ways for technology providers to understand environmental agencies' programmatic needs.

To tailor products and services to environmental agencies, technology providers have to understand the needs and priorities of those agencies, programs, and staff, and, in some cases, the end-user outside of government. However, many providers said that the typical process for doing so can take years, especially when working on new topics or with new agencies. By creating efficient channels for regularly sharing information, agencies could help match technology products and services to the programs they would benefit.

1. Who needs to be at the table? The windy road of identifying the end-user, technology lead and contracting support.

Understanding the needs and priorities of federal environmental programs and staff is crucial to creating useful IT products and services for them. However, finding that information can be a long winding process of internet searches, conferences and webinars. Many technology providers said that this process is time-intensive and may take years to find the right programs and potential users to focus on. The process can be disjointed when, for example, a technology provider encounters agency staff who would benefit from a product or service, but they ultimately have no idea who can act on that information within an agency. When the work has a public purpose, such as a public tool to visualize government data, agencies sometimes struggle to define who the end-users are outside government, making it even more complex for the provider. For many providers, there was a lack of public information on agency websites to help them understand what programs or offices might be in need of their services. Smaller providers cannot devote many staff hours to weeding through the maze of federal programs that they could serve. Reducing the time it takes technology providers to understand government needs would allow providers to focus more on product and help ensure that they can take agency and end-user needs into account at the earliest possible stage.

2. How useful is this? No clear process for getting and giving feedback.

Once an agency need has been identified, some technology providers said that opportunities for staff to try out and provide feedback on existing technology products is one of the best ways to ensure that they are

aligned with agency needs. However, it is not always straightforward to get that feedback for several reasons. Agency program staff may not know or have a clear policy about when it is appropriate to try a new tool, even when the product is available to try or use at no cost. Agencies are able to set up industry days but many providers had never heard of them or participated. Some that had participated noted that they would be more effective if programmatic staff participated rather than just acquisitions professionals. Iterative feedback is an important part of technology projects at every stage - ensuring that agency staff can provide early feedback, as appropriate, can help align technology providers' work with agency needs.

3. How can I scale up the benefits? Successful technology projects face many of the same hurdles as brand new ones.

Technology providers that had worked with federal agencies often said that getting the first contract made it easier to build relationships and understand the needs of that specific program. However, it rarely helped them understand the needs of other similar programs or offices, even within the same agency. For example, several technology providers that had initial success working with a district or field office on a technology project at a more local scale felt like they had to “start over” if they wanted to try to work with other districts or offices. The same applied to federal and state agencies that might benefit from similar technology projects or shared services. Sharing information and even facilitating procurement across internal and external organization boundaries is possible, but rare. For example, a technology provider described how one state agency gained access to a geospatial analysis tool by reimbursing a federal agency. According to technology providers, there are many missed opportunities to scale up useful datasets and tools across agencies and levels of government.

High administrative costs that can overwhelm the potential benefits of working with environmental agencies.

The direct costs of putting together a proposal and other costs, such as managing uncertain timelines, of working with federal environmental agencies too often outweigh the potential benefits according to some technology providers. Some providers told us that they have avoided working with a potential federal client because of this.

1. How much effort should I put into this? A difficult decision for providers that are thinly staffed.

The costs associated with developing proposals and negotiating agreements for technology projects is an important factor in whether companies pursue work with federal agencies. Many smaller providers we spoke to said that it can be prohibitively costly to draft and submit proposals, and some have not worked directly with federal agencies for that reason. Others told us that the costs of pursuing work are not aligned with the potential benefits. For example, as one technology provider said, the 80 hours of staff time required to draft the proposal can swamp the funding of a small contract by thousands of dollars. This issue is exacerbated when the Request for Proposal (RFP) or announcement contains vague language that requires a lot of clarification to translate into a proposal. Small providers in particular do not have the staff to do this and may need to hire a consultant to help with this process.

“It’s a roll-of-the-dice kind of game you play when you submit a proposal and it’s a transparency black hole.”

2. How long will this process take? Uncertainty about the timeline for beginning work makes it hard to staff up and plan.

Timely and updated information on the status of the procurement process helps technology providers plan and make the best use of their staff resources. However, some technology providers described issues such as

minimal communication on status of the process, extremely short timelines for renewing work, or unexplained delays in making decisions or getting approval to begin work. For example, one technology provider told us that, when the government's self imposed deadline for making a decision came and went, the agency asked them to extend the validity of the proposal they had submitted for an additional 90 days without warning. Another technology provider said that they faced delays in getting an agency cybersecurity approval only to later find out that the one person who could provide it had been on extended leave. In many cases, providers said that the process is not transparent and they get very little information after submitting their proposal.

"A government agency will start the renewal process for a multi-million dollar contract four months out, take most of that time for internal deliberation then give the contractor two weeks to complete the necessary paperwork. It's very one sided."

3. How do government budgets work? Budget cycles are hard to track and may not match the development cycles of tech.

Some providers found key budget information difficult to track and wanted greater flexibility in agency budgeting. For example, one technology provider said that they pay for another company to track information on government agency budgets to help their planning - adding to the cost of pursuing government work. Another said that too often agencies will be in a holding pattern waiting for a budget to pass and then are unable to get all their funds out the door within the fiscal year. Some small technology providers have relatively short time horizons that can be challenging to mesh with the longer budget, payment, and reimbursement cycles of agencies. For example, one technology provider said that their government contract only provided a first payment after 6 months worth of work, which did not match its sprint approach to technology development. The company continued to face delays in getting payments for work that had been completed throughout the project.

4. The "streamlined processes" can still take just as long.

Technology providers identified several types of agreements that in theory are designed to reduce the burden of pursuing government work. They do so by establishing a relationship with the government first and then allowing federal agencies to contract for their services as needed over longer time periods.⁷ Technology providers that we spoke to generally said that these types of contracts embody good ideas about how to work with technology providers, but they were not used frequently enough or did not have the desired outcomes in practice. For example, multiple technology providers said that amendments or renewals to these agreements took just as long as the original agreement. For others, the main benefit of going through the process and signing a standing agreement was that it helped build familiarity and trust within the government agency but did not save them time. One technology provider that participated in the GSA Multiple Award Schedule for years said that, despite offering their most competitive rates through the program, they had only done a very small amount of work through it, and once their registration expires, there is no expedited way to renew it. A greater focus on trimming down the time it takes to make amendments and process renewals could have many positive implications for starting, iterating, and scaling technology projects with environmental agencies.

"Using technology internally often means more standardization but agency leaders are reluctant to impose standardized practices on the rest of the agency."

⁷ For example, the GSA Multiple Award Schedule, Indefinite Delivery Indefinite Quantity (IDIQ) contracts and Master Service Agreements were all mentioned as agreements or programs that allow a provider to register or obtain an agreement that allows them to do further work.

5. One size does not fit all for technology providers.

To get the best out of a diverse group of technology providers, agencies need to think about how to structure their technology work to bring in all kinds of organizations. For some smaller providers, subcontracting seemed to be one of the only viable ways to work with federal agencies, even if it sometimes complicated the work by adding management layers in between the smaller provider and agency staff. On the one hand, some technology providers understood why, from an administrative cost perspective, the agencies might prefer to use bigger contracts rather than a lot of smaller ones, but others said that this can lead to a situation where there are only very large or very small contracts, making it particularly difficult for providers that are small but growing to continue to find contracts that fit their size and capabilities.⁸ Others expressed concerns that these larger contracts encouraged vendor lock-in, reducing opportunities for the agency to try something new.⁹ Ensuring that there are opportunities that fit different size organizations could help ensure that environmental agencies are missing opportunities to bring in useful technology.

“Budgeting for software in federal agencies is a mystery.”

A patchwork of technology policies and practices in environmental agencies slows down or prevents projects.

Technology providers noted that agencies can have highly variable and disconnected approaches to technology that providers have to navigate to complete their work. For those working on projects within agencies, it can be difficult to understand key details of agency work, such as data management and sharing and the extent to which they are standardized, until the work begins. For work in support of agencies, such as accelerating permitting applications, agencies are missing opportunities to engage with technology providers proactively to help align technology projects with their needs.

⁸ One provider also mentioned that nonprofits may lack opportunities to grow where agencies do not prioritize the collection of open data.

⁹ The concept of “[modular contracting](#)” was also mentioned as an approach with potential that has not been used extensively. Modular contracting is an acquisition strategy that breaks up large, complex projects into multiple, tightly-scoped procurements to implement technology systems in successive, interoperable increments.



Photo by Jason Buckeye on Unsplash

1. Where do I start? Varying starting points within agencies can dramatically change the work of technology providers.

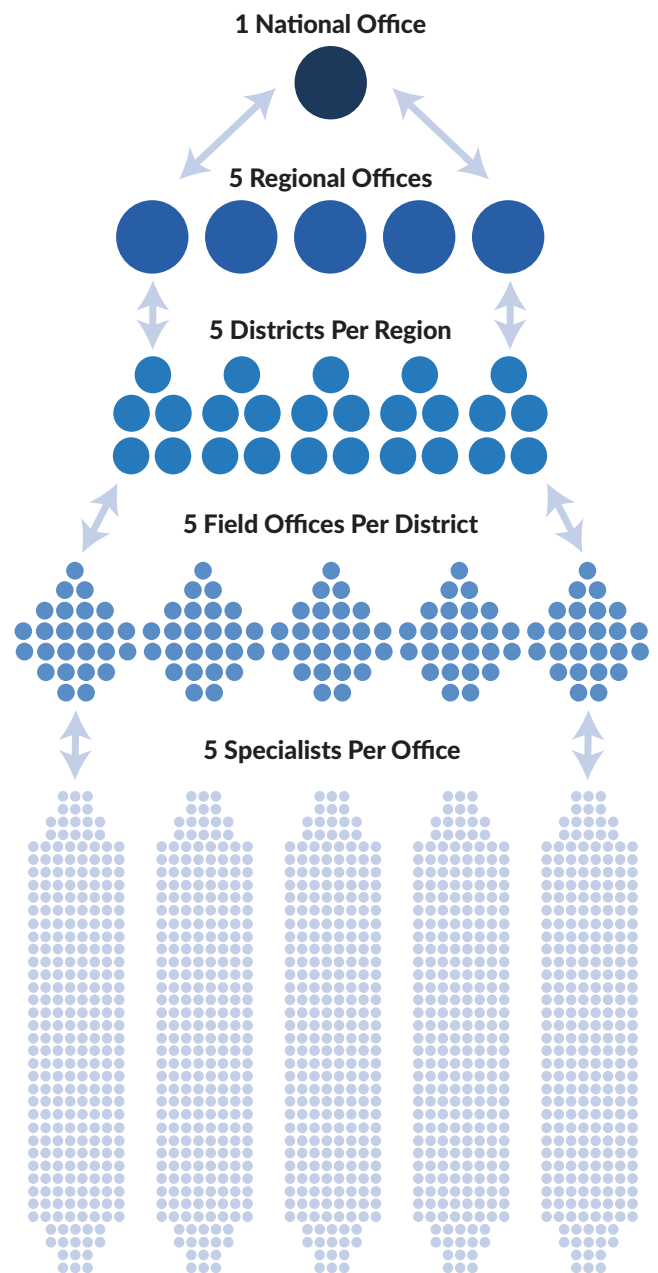
Technology projects are never done in isolation and where they start depends on the policies, procedures, people and systems that are already in place. Some technology providers described difficulties understanding that starting point prior to beginning the work. For one example, one provider said that they were hired to do GIS work for an agency but quickly realized that a lot of work with the underlying data would be necessary before even getting to the GIS work, and they now build that into their proposals. Another said that some agencies struggle to define the end-user for tools developed with grant funding. Even issues as mundane as where information is stored can have cascading implications for developing technologies. For another example, technology providers may spend a significant amount of time accessing information stored on individual computers rather than a network drive. Without a firm sense of the starting point, technology projects are less likely to meet the expectations of both the provider and the government agency.

2. Standardizing information and processes can help speed up technology projects.

Many environmental agencies have a structure that is oriented around field offices with some level of autonomy. There are logical reasons for this, but it also often results in each having their own approaches to data organization and storage. Unstandardized information formats across field offices require technology providers that want to aggregate information or automate processes to work with each and every field office separately to account for those differences. As one technology provider explained, the effects of this can be dramatic in a large organization with multiple levels. As shown in the diagram, information that is typically gathered and shared via spreadsheets and aggregated at each level using a different format or process can quickly become unmanageable for a technology provider (and agency staff). Standardizing some processes and practices can help speed up the deployment of new technology, but there is also a risk of becoming overly prescriptive. Environmental agencies need to find a balance to enable adoption of new technology.

3. Proactive approaches can help maximize the benefits of technology for environmental agencies.

Several technology providers thought that agencies were missing opportunities to issue guidance that would help technology projects better reflect the needs of federal agencies, especially in regulatory and permitting contexts. According to these providers, inaction by the agencies has led to patchwork approaches to technology that do not maximize the benefits to federal agencies. Technology providers identified the following examples, among others:



Unstandardized information formats can become unmanageable for technology providers.

- Companies that help populate permit applications for the Army Corps do not have guidance on the level of quality assurance the agency targets for data populating those permits and thus cannot build that into its software.
- Water utilities do not have a clear sense of how their regulators would view additional, more real-time, water quality data from new sensor technologies, and choose not to implement them for fear of it automatically putting them out of compliance before they have a chance to take action. The end result is that the regulator and the public have less information about the water systems.

We also heard about some proactive approaches to technology that providers felt were invaluable but were too often driven by one person who made it their mission. For example, one provider cited a federal agency report that described some “digital solutions” for the water sector and gave cover to utilities to investigate new approaches.¹⁰ More proactive vetting and guidance around technology and open avenues for feedback on regulations or policies that inhibit use of technology could help maximize its potential for agencies.

¹⁰ The Interstate Technology and Regulatory Council (ITRC) is another example. The ITRC is an EPA-funded state-led coalition working to reduce barriers to the use of innovative air, water, waste, and remediation environmental technologies and processes.



Strategies

Photo by Alexandre Debieve on Unsplash

We identified seven actionable strategies that could help accelerate the pace of technology modernization by making the relationship between technology providers and agencies more productive and inclusive. In many cases, these strategies could help address multiple themes as shown in the table below. It is also worth noting that some of these strategies could be combined into a single effort. For example, new technology-focused staff could serve as both liaisons and market researchers. The details of how to implement these strategies will differ based on the specific agency and there may also be opportunities to implement them across environmental agencies as a shared capacity or service.

Strategies	Helps understand needs	Lower administration costs	Proactive approach to technology
Conduct more proactive agency market research.	X		X
Consolidated digital entry points.	X	X	X
Implement better liaison structure and capacity.	X	X	X
Use documents to communicate the desired outcomes of technology projects internally and externally.	X		X
Make contracting and budgeting data more tailored and accessible.	X	X	
Create additional mechanisms for recognizing success and automatically sharing experience.	X		X
Evaluate and experiment with different agreement types.		X	X

1. Conduct more proactive agency market research and share that information.

One way for agencies to reduce the time it takes to match technology providers with agency program needs is to pull in more information on technologies proactively, analyze it, and share that information across the agency or to partners, such as regulated entities. Various agencies have implemented a version of this in specific contexts. For example, GSA operates a [Green Proving Ground](#) to support national goals of achieving net zero buildings and a [Pilot-to-Portfolio](#) program that helps vet and select innovative technology, develop specifications, and obtain IT approval for solutions that help federal building managers reduce the environmental impacts of their buildings. Other [studies of government IT acquisitions](#) have also recommended more robust and continuous market research. Similar programs could be implemented for technologies that would assist environmental agencies in carrying out their missions and could include an established process to provide demos to potential government users at no cost in exchange for feedback.

Example: A 'Tech Proving Ground' for wildlife, led by the U.S. Fish and Wildlife Service and modeled on the GSA approach, could assign staff to coordinate the evaluations of the real-world performance of technologies for wildlife management and synthesize the results to inform wildlife managers. This program could combine existing capacity within government agencies with a supplemental grant program to states or partners that emphasizes the deployment and scalability of select technologies.

2. Create consolidated digital points of entry for innovating and selling to federal environmental agencies.

Many technology providers were daunted by the fragmented information they would have to go through to find what programs exist at an agency and how to potentially engage with staff. Consolidating this information by agency or sector could enable a technology provider to submit information once rather than “starting over” with each office, program or agency. The most recent example of an agency effort to do this is the [Department of Veterans Affairs \(VA\) Pathfinder website](#), which provides one place for any provider regardless of whether they have a product under development or ready for purchase to provide information to the VA. The submissions are reviewed by a team who then contact the companies and share information internally. Currently, information about how to work with environmental agencies on technology projects is fragmented and often relies on each technology provider to identify and track opportunities. The VA approach reduces the burden on technology providers by centralizing information and relying on agency staff to match opportunities and providers.

Example: An “Environmental Innovation Portal” would allow businesses to submit information about their products and services once to a single centralized system that could be evaluated using shared capacity across those agencies and more efficiently match them with the resources or opportunities that are most appropriate. This would save time and could result in early identification of tools, like land or water monitoring capabilities, that would be useful to multiple programs at different agencies.

3. Bolster liaison capacity, particularly for small providers and those with no prior interaction with the office, bureau, or agency.

Many technology providers expressed frustration at not knowing who they could call to have their questions answered about agencies’ needs and procurement processes, especially when they did not already have contact with the agency. Others shared examples of existing liaison offices that had been helpful in working with the government. For example, one described a very [proactive and responsive set of liaisons](#) that took the time to go through a grant application with them in detail before they were even required to enter information into a government system. Some agencies, particularly those with large research and development budgets, have robust liaison functions for interacting with companies that are interested in licensing technologies developed in government labs and using them in the private sector. For example, DOD and VA hired [TechLink](#) to provide certified licensing professionals to accelerate and improve the process of identifying commercializable technologies that have been developed at their labs. A similar level of service for technology providers that want to help bring technology into the government could go a long way toward addressing the barriers outlined above.

Example: The Department of Interior could contract with an external liaison service, or create their own, to help technology providers discover programs, processes, grant and contract opportunities that are the most relevant, and provide early advice on how to best navigate associated processes.



Geospatial analysis Photo Credit: Azavea

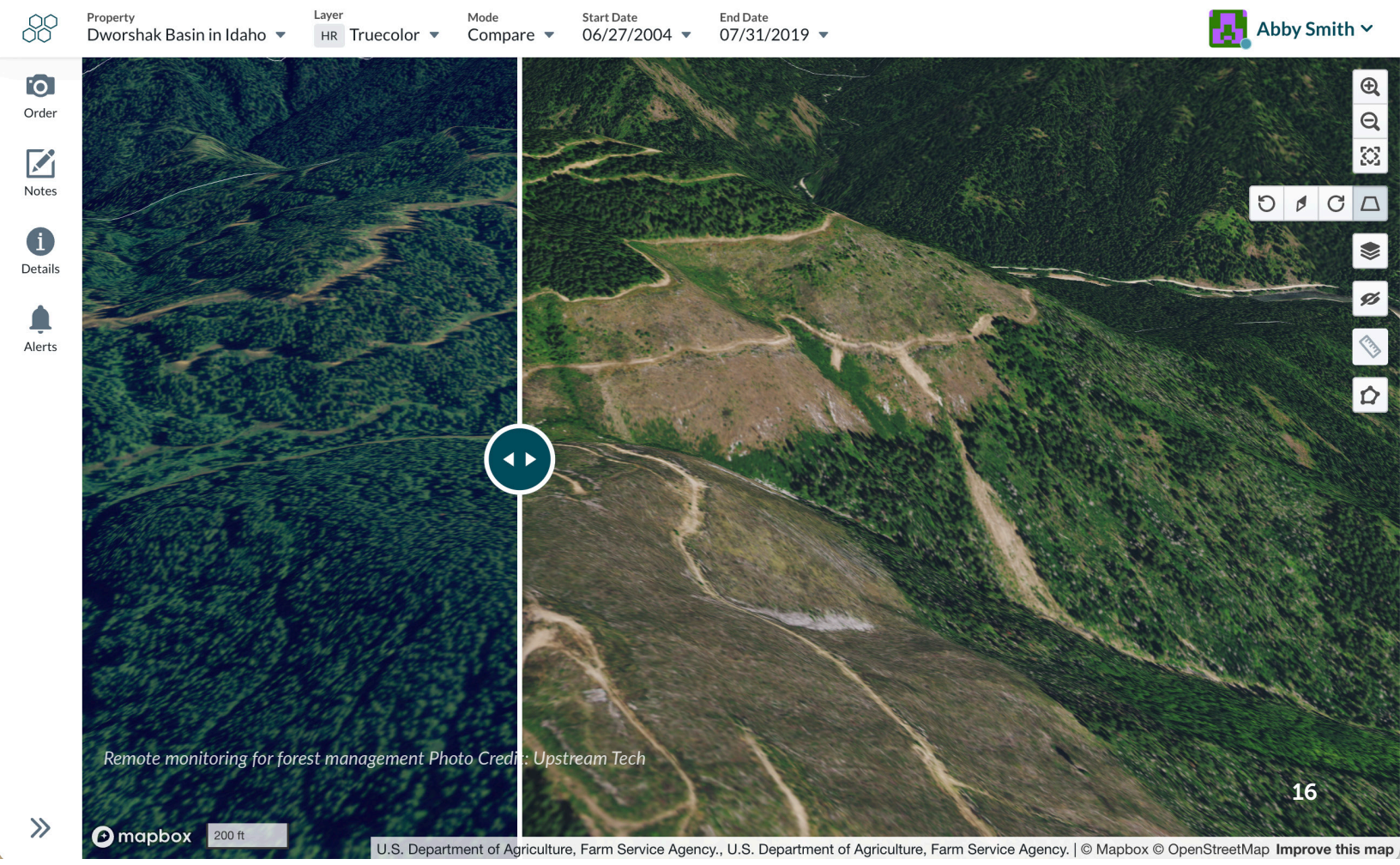
4. Use documents to communicate, internally and externally, the desired outcomes from technology projects for specific programs.

Many technology providers found the government’s approach to IT investments opaque. Others wished for a more standardized approach to technology that would accelerate adoption of promising technologies within agencies. One way to do that is to issue a detailed publicly accessible strategy that focuses on the outcomes that agencies are seeking from technology projects for specific programs. This can help send signals to technology providers about where there might be opportunity to innovate and help align expectations internally and externally before projects begin. Examples of strategies and plans at environmental agencies do exist but many are too general to inform technology providers that want to tackle a specific environmental challenge, such as permitting restoration activities or helping to deploy forest management resources more efficiently. For example, we identified these resources at environmental agencies:

- a. [USDA IT Strategic Plan FY22 to FY26](#)
- b. [U.S. Army Corps of Engineers Research & Development Strategy](#)
- c. [Department of Interior’s Geospatial Services Strategic Plan 2021-2025](#)

Improvements to these types of resources or the development of more detailed documents could help engage technology providers in solving environmental agencies’ most pressing issues.

Example: The USDA could develop an appendix to its IT strategic plan identifying the specific tech-enabled outcomes and processes (e.g. automated monitoring of tree planting success in national forests) that it sees as the most compelling or aspirational to give technology developers the signals they need to make useful products and services.



5. Make contracting and budgeting data more tailored and accessible.

Maximizing the accessibility of information could help overcome some of the capacity and planning hurdles that technology providers face when working with federal environmental agencies. For example, detailing how an agency budgets for IT modernization, tracking and sharing the length of the permissions process to set expectations, or making available resources more user friendly could help. Grants and contract opportunities are searchable through centralized websites, which is good for some, but for small focused environmental technology providers it may be a disincentive to have to weed through announcements from all agencies. A more focused outlet for this information could alleviate some of the burden. Environmental agencies forecast procurements on their websites (see for example [EPA's](#)), but even these resources use codes to categorize opportunities that many new technology providers may not be familiar with. Making resources that are more tailored or that require less knowledge of federal contracting could be a concrete way to encourage more technology providers to work with environmental agencies.

Example: A revamped EPA website forecasting future contracting opportunities could have a landing page that has an “information technology” or “innovation needed” option that allows technology providers to rapidly understand where EPA is likely to need support in delivering mission outcomes without having to also wade through solicitations for paving services and standard equipment replacements.

6. Create additional mechanisms for recognizing success and automatically sharing experience across organizational boundaries.

Some technology providers mentioned contributing to projects that received agency awards as a way to raise the profile of technology projects and help overcome risk aversion in government. Others mentioned reports, case studies, or guides to technologies that were shared across organizations as useful for building comfort and momentum around technology. However, many of these efforts were described as driven by a single person. Institutionalizing or automating information sharing on technology projects could help successful approaches spread faster.

Example: The Army Corps of Engineers could use a simple process and automated delivery system (e.g. email or a website) that notifies other staff in other similar programs every time a new technology project begins or ends with essential details on the outcomes and challenges to enable rapid organizational learning.

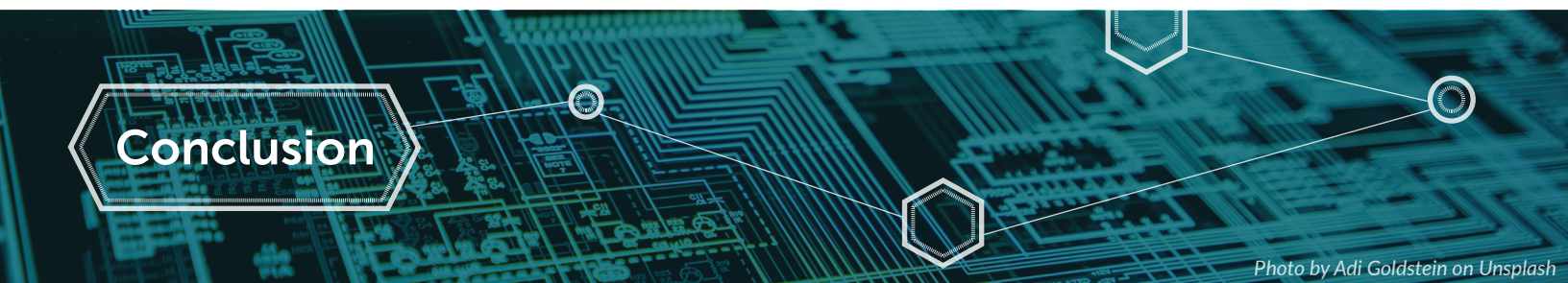


Photo by Raeng on Unsplash

7. Evaluate and experiment with different agreement types to identify the most effective and to ensure that there are a variety of contracts and grants.

Some technology providers expressed a desire for more diversity in the opportunities and agreements coming out of agencies. For example, some raised concerns about the size of contracts and grants, while others thought that concepts like modular contracting were not used to their full potential. Others suggested that agencies could diversify opportunities for nonprofits by focusing more on open data where appropriate. Some technology providers highlighted alternative clauses or approaches to working with agencies that could help navigate some of the hurdles they encounter. For example, we heard from multiple technology providers that they have tried to incorporate the process of discovering agency technology policies and practices into their agreements explicitly since this has often been an important part of their work. By not overemphasizing a single approach to implementing technology, agencies can engage more of the ecosystem of technology providers.

Example: The Bureau of Land Management could use two or more different agreement types to address the same technology problem in different locations, such as a contract in one and a grant in another, to learn about the advantages and disadvantages of each, with the goal of scaling up those that work best.



Environmental agencies have many opportunities to make better use of technology to further their goals. Too often though, these agencies are not able to seize those opportunities due to a combination of obstacles that prevent innovative technology providers from working with those agencies. Inefficient match-making, high administrative costs, and a patchwork of approaches to technology can slow down projects or prevent them from ever being considered. While these obstacles can affect all technology providers, smaller providers are often the least able to overcome them. We cannot afford to keep any technology capacity that could speed up environmental progress on the sidelines given the seriousness of the environmental challenges facing the nation. We believe that a more proactive approach to engaging with technology providers, incorporating some or all of the strategies above, could meaningfully accelerate agency work and yield benefits for the environment and public for generations to come.