REI
SYSTEMS

Delivering
Mission
Impact

Successful Modernization for Federal Agencies Requires a Mindful Approach

Transformational solutions take a holistic view to meet the mission demands of today and tomorrow.

Andy Zeswitz, Chief Technology Officer

OCTOBER 2022

→ REIsystems.com

TABLE OF CONTENTS

How do you solve a problem like modernization?

For the entirety of the 21st century, federal agencies have fought with modernization. Starting in the early 2000s, federal leaders were tasked with improving the IT processes, infrastructure, and services of agencies to meet evolving missions and update its cyber posture to combat emerging threats.

However, the process for modernization two decades ago has led to bigger issues as agencies look at modernization today. When agencies were first mandated to modernize infrastructure, the focus was not on being prepared for the notion of constant, continuous modernization that exists today.

Instead, the focus was on large, point-in-time technology upgrades, using server-focused technology such as Oracle Forms and Adobe ColdFusion which were once popular. Now, there are now much more cost-effective ways of implementing technology projects, ranging from custom software to software-as-a-service (SaaS) to low-code software, which can help agencies meet their legislative mandates.

The federal government is keenly aware of the situation when it comes to modernization, as evident by a pair of executive orders issued in 2021.

In May 2021, President Biden signed the [Executive Order on Improving the Nation's Cybersecurity](#) that focused on revamping national cybersecurity. The executive order had three key focuses:

1. Adoption of modernized practices to strengthen security posture. The EO sets a new standard for security best practices by moving to a Zero Trust Architecture and increasing adoption of secure cloud services.
2. Improved security preparedness and responsiveness. The EO authorized the use of appropriate tools and security controls to allow early detection of cybersecurity vulnerabilities and incidents.
3. Enhanced software supply chain security. The EO established baseline requirements for government software, such as vendors complying with National Institute of Standards and Technology (NIST) guidelines and disclosing software vulnerability data publicly.

This EO was followed in December 2021 by the [Executive Order on Transforming Federal Customer Experience and Service Delivery to Rebuild Trust in Government](#) that focused on how technology can be used to improve services.

"We must use technology to modernize Government and implement services that are simple to use, accessible, equitable, protective, transparent, and responsive for all people of the United States," according to the EO.

The Office of Management and Budget (OMB) confirmed the importance of this EO by prioritizing customer experience. The guidance in OMB circular A-11, as of August 2022, has new language as of Aug. 15, that focuses on customer experience and service delivery.

It's a continuation of a trend that began with the arrival of the COVID-19 pandemic. Federal agencies have been required to provide more help and more services to people than ever before. Agencies must do so in an environment of remote work, heightened global tensions, and a rapidly changing technology landscape.

In short, what worked for agencies in the past will not work in the future. Instead, government needs to re-imagine what's possible.

DATA MODERNIZATION

The federal government accumulates data on a massive scale today and even more data will be collected in the future. This information can provide a wealth of insight into how agencies are operating, how they can become more efficient, and how they can better serve those needing services without compromising individual privacy.

The first key is making this data accessible. The advent of the Chief Data Officer in federal agencies has been an excellent step for agencies, as we look to move away from the restrictions of legislative-driven access to data and work to make it more transparent to help the entire agency. We're seeing this through the implementation of machine learning and data-driven models with artificial intelligence (AI) and machine learning (ML) algorithms that can unlock the full potential provided by this incredible volume of data.

CYBERSECURITY

The sophistication of cyber-attacks is increasing by the day, which means agencies need to remain one step ahead by taking nothing for granted.

One issue with the current cyber posture for too many federal agencies is that they are in sustainment mode on their systems, with a traditional "butts in seats" contractor that make sure the system is up and running. This "incremental improvement" model perpetuates IT systems that remain in place for many years without addressing modern user expectations or security concerns.

For agencies and applications that have migrated to the cloud, we now have a shared responsibility model, where the cloud service providers (CSPs) are responsible for security at their level, investing millions annually into providing that trust for agencies. It's no longer a data center being managed by a handful of government employees. Federal agencies are now operating in the same production environment as global corporations, which provides the advantage of the latest technology while opening new potential avenues for attacks.

LEGACY SYSTEM CODE

One significant challenge facing many federal agencies when it comes to modernization is their reliance on legacy systems. In 2021, the Government Accountability Office (GAO) released a study that found the vast majority of technology spending was used to operate and maintain legacy systems,

many of which had been in place for a decade or longer. The GAO report said that until agencies established complete plans "their modernizations would face an increased risk of cost overruns, schedule delays, and project failure."

As mentioned with the COVID-19 pandemic, federal agencies faced an intense need to quickly scale operations as the need for services skyrocketed. Without a cloud infrastructure in place, there is no ability for agencies to meet this mission to provide operation as government and population grows. The lack of cloud means it becomes slower and more onerous for agencies to innovate and deploy emerging capabilities like AI and ML.

THE RISK OF NOT MODERNIZING

Many across the federal government have pondered about not modernizing. Could the status quo remain in place and still be successful? The answer is "no."

If an agency doesn't modernize, mindfully and quickly, it opens itself up to a host of potential issues.

1. **Losing The Public's Trust:** We know that customers value companies that make their interactions smooth and easy, and they expect that from federal agencies too.

2. **Wasting Taxpayer Dollars:** The American taxpayer wants to be sure spending is being done in a wise, effective manner, and their government interactions will inform their opinions.

3. **Losing Vendor Support:** Agencies have run into issues where vendors no longer support a specific product, or they become locked into expensive, outdated technology.

4. **Outdated Technology:** Legacy systems are slow to deliver new capabilities if they can at all. Also, if an agency does not have the proper cloud-based infrastructure, it cannot rapidly take advantage of emerging technologies.

5. **Mandates Pressuring Agencies:** As we've seen with the two executive orders in 2021, all agencies will be mandated to modernize at some point.

The future requires a Mindful Modernization® approach to address the three biggest pressure points on today's agencies: data modernization, cybersecurity, and legacy system code.

A Mindful Modernization® Approach

What's needed today for modernization is not what's been done before. There needs to be a new aproach. What worked in 2012 will not work in 2022 and beyond. This new approach must be mindful of the current landscape and preparing for a future where modernization is not a "one and done" prospect. Modernization, to be successful, must occur on a consistent and ongoing basis.
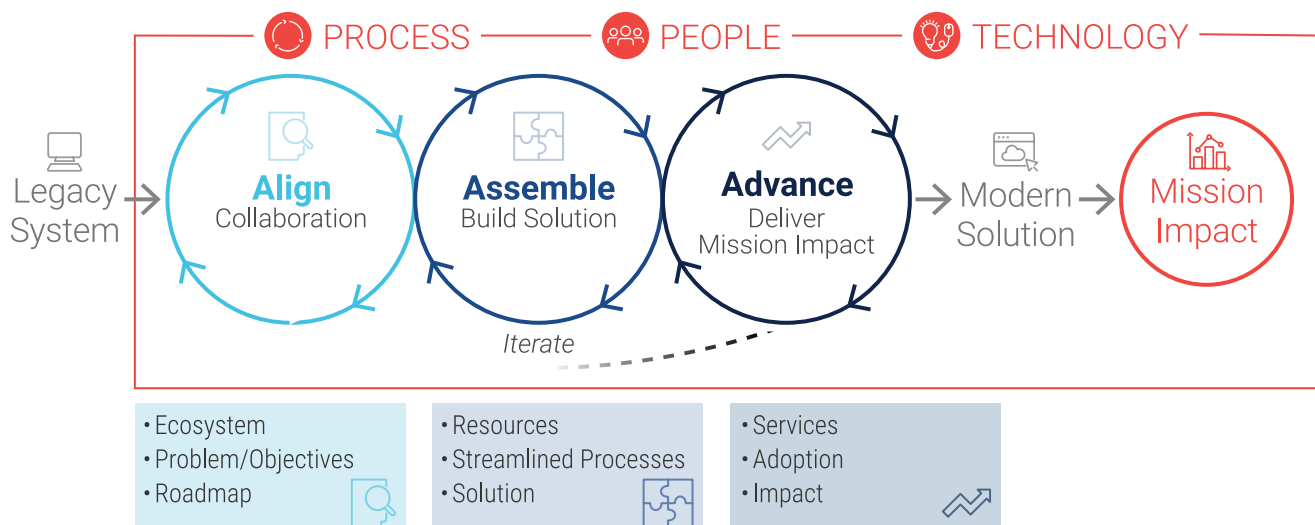
Too often, modernization projects are boiled down to specifics around technology. However, it's about far more than technology. It's about marrying our people and our processes with that technology to develop a well-rounded approach to modernization that evolves and improves on a daily basis.

REI has developed and repeatedly seen success using its award-winning Mindful Modernization® approach with this in mind. We look at our customer's challenges holistically while combining our business acumen, modern technologies, and best practice delivery approaches into a comprehensive solution. For agencies to be successful, agencies must first encourage a shift to a Digital Product mindset, which means building a culture for modernization. A culture shift requires everyone in an agency to understand the

Mindful Modernization® Benefits

→ Meet mission goals

→ Improve customer experience

→ Streamline business operation

→ Save costs

→ Bolster cyber posture

goals and potential behind a modernization project, so everyone is working in the same direction. That culture requires transparency and empowerment. Agency leaders must be transparent with plans and direction, while employees must be empowered to provide healthy and valuable feedback. One way to view this is through the lens of change management, which draws on theories from many disciplines, including psychology, behavioral science, and engineering. A central idea of change management theories is that no change ever happens in isolation. One way or another, change impacts an entire agency, all the people in it, and all of the people it serves.

REI's Mindful Modernization® is an iterative approach defined by three key steps: Align, Assemble, Advance.

Align
Collaboration

STEP 1: ALIGN

The most important step is the first step.

Before any successful modernization project can commence, there must be alignment across all the stakeholders for an agency undergoing modernization, beyond the agency's IT team. Modernization roadmaps developed by the Agency CIO, by the Mission Program Office, and by the Financial and Acquisition Teams need to be aligned, consistent, and achieve a common understanding. A modernization project should not start for the sake of modernization.

As an example, REI used its Mindful Modernization® approach to streamline the United States Patent and Trademark Office's (USPTO's) software that the agency uses to manage trademark applications, adjudication, and registration.

In this situation, the challenge was readily apparent: the USPTO's end-to-end processing consisted of more than one dozen fragmented legacy applications that functioned independently of each other without effective or efficient coordination. With nearly 90 percent of trademark applications processed electronically, the USPTO's reliance on those legacy applications created costly inefficiencies, slowed its work, and occasionally produced internal inconsistencies.

From the beginning of the project, USPTO's OCIO, its Trademark Product Line, and its finance and acquisition teams agreed that the agency needed a comprehensive end-to-end electronic workflow to boost efficiency, reduce costs, and simplify the user experience. In tandem, our Align step found the modernized, trademark processing solution should reside on USPTO's preferred AWS cloud infrastructure and should interface effectively with commercial intellectual property research tools. These decisions made at the onset of the modernization project directly led to the success the USPTO would eventually achieve.

Every agency will have a different challenge and a different technology and business context that will require a different approach. By aligning with the agency, REI can leverage its breadth of expertise to help the agency develop a strategic IT roadmap that makes sense for the particular agency to achieve its desired goals.

In the USPTO example, the broad goals were to improve efficiency and reduce costs – so REI worked with USPTO to develop specific Key Performance Indicators (KPIs) that could be measured to keep track of progress and ensure the modernization efforts were providing a benefit.

The purpose of the Align step is for REI and the agency to develop a roadmap framework that outlines the high-level objectives and goals, provides a backlog for ongoing iteration, and prioritizes the positive outcomes.

All of this is then well-communicated and agreed-upon, with dates and timing attached, defining what success looks like and what KPIs will serve as measures of success. Some of those measures will relate to technology implementation, cost, and efficiency, while others will relate to business objectives and outcomes such as quality, customer satisfaction, and effectiveness.

Assemble
Build Solution

STEP 2: ASSEMBLE

After baseline exploration is performed during the Align phase, it's time to Assemble. The second step in the Mindful Modernization® approach focuses on the people, process, and technology necessary to make a project successful.

This begins with people, and an understanding of what skills are needed to accomplish the current prioritized mission. As we build the modernization approach, we use the stakeholder map from the Align step to ensure that we maintain stakeholder engagement and an empowered partner from the agency to make critical choices.

As important as the people is the process. REI's Mindful Modernization® is different than other technology development processes, such as a "big bang" approach or a "waterfall" development. In the "big bang" approach, an organization goes instantly into a new system with no transition period, while "waterfall" development is based upon a sequential development process that flows through specific, distinct phases in order.

REI does it differently to set up a continuous modernization approach that is iterative in nature. We set up a delivery approach process with our government partner, ranging from DevSecOps and Agile Scrums to Customer Experience Design. This works to improve technology and business process in a clear, consistent manner – both now, and on continuous bases into the future. We also get to work right away ensuring we deliver valuable capabilities fast and deliver capabilities often.

The third leg of this tripod is technology – we establish and configure an architecture for the modernized solution in the cloud. We help the agency make decisions by addressing questions such as:

1. What services should the solution provide?
2. Are there existing agency investments that can be leveraged?
3. Where should the solution be hosted?
4. How can the solution best be built and tested?
5. What are the best ways to deploy the solution into production?
6. What key tools and technologies need to be considered for the modernization (e.g., cloud managed services, containers, microservices, and orchestration and automation)?

There are three pieces here – people, process, and technology – that must work in concert with each other, or the modernization efforts will fail.
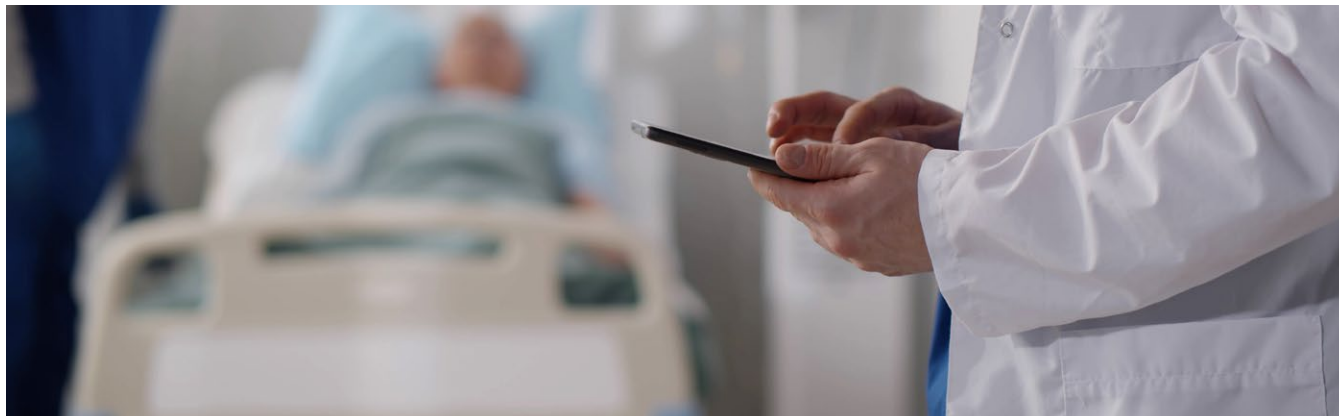
A good example of the Assemble phase comes from REI's work with the Health Resources and Services Administration (HRSA). In 2020, HRSA become the first agency in government to get funds for COVID testing and treatment to 14,000+ clinics serving 28 million patients to help battle COVID – just 12 days after the CARES Act was signed into law.

HRSA was able to succeed because REI had collaborated with the agency to carefully Assemble an IT solution that was flexible and modular in what types of processes it supported. HRSA would not have been able to act as quickly without a strong grants management capability, modern flexible microservices technology, and an agile partner in REI Systems.

The success of that Mindful Modernization® project was most evident in the Assemble phase, as REI utilized a wide range of emerging technologies and design approaches to develop the solution needed. After much discussion and planning with HRSA, REI used the following tools to ensure success:

→ **Micro-Services and Containers.** Micro-services break down large complicated systems into small, distinct components – like an application module, or a post-award reporting module.

→ **Batch Processing.** The Batch processing during data aggregation part of the awards process drastically reduced time from weeks to less than a day per funding opportunity.

→ **User-Centered Design.** Designing the solution with input from users, and feedback after they tried it, clinics and providers were able to give more attention to healthcare instead of grants and reporting.

→ **Behavior-Driven Development.** We gathered input and tracked behavior to improve the solution architecture – like introducing chatbots.

→ **DevSecOps, Automation, and CI/CD.** To move quickly with innovation, we try an experimental/ innovative solution, fix it if it doesn't work, and leverage what does work.

→ **Flexible Application Architecture.** While a typical grants process must go through the whole cycle of Application, Review and Awards, our HRSA solution was designed to bypass specific gates when authorized and make awards more quickly if needed.

→ **Strong Post-Award Management.** We helped the agency identify and Assemble new and more robust business processes to manage the risks it faced as its environment changed.

The Assemble step is not the end. It may have been two decades ago, but the notion of a modernization project being "finished" is outdated now. There is a constant need to measure the success of the project, and to continuously improve and deliver value to meet ever-changing business and citizen needs.

3 Lessons from Mindful Modernization®

1. Don't adopt every new technology – use data to make wise investments.
2. Too much control over data can mean it doesn't get used; and its value is wasted.
3. Complex systems must communicate to lay-person users

Advance
Deliver
Mission Impact

STEP 3: ADVANCE

It is imperative that every agency continuously monitor and track the impact of its modernization efforts. While specific data can change from project to project, the focus should broadly be on user satisfaction and system adoption, cost savings, operational performance, availability/uptime, and improvements in mission outcomes that are enabled by the modernized technology and business operations. Tracking this data in real-time provides instant analysis of the modernization efforts, which is crucial because the challenges facing agencies are always evolving.

The Advance step is how REI Systems works with our government partners to make sure the modernized solution is adopted and continues to make the desired impact. The Advance step also allows us to help identify potential shortcomings or issues that need to be addressed.

A perfect example of this notion is REI Systems' work with the Administration for Children and Families (ACF) to combat human trafficking. In recent years, ACF has faced a surge in requests from victims for benefit eligibility determinations. This surge in demand, combined with a cumbersome process model that required manual coordination across several federal agencies, led ACF to decide to modernize its IT—specifically the case management system it uses to manage information and services for victims of trafficking.

The joint REI-ACF team developed an innovative solution that increased data and analytic capabilities for reporting, research, and data integration with federal agencies across the government. REI Systems employed its Mindful Modernization® approach to efficiently leverage repeatable processes that helped manage ACF's modernization at the right pace. REI Systems employed the best tools, techniques, and technologies for success in the customer's context, and to control business disruption from the modernization effort.

The measurable impact went far beyond the technology processes. REI's support using Mindful Modernization® approach led to:

→ Reduced response time for victims of trafficking in gaining access to benefits by 50%

→ Improved efficiencies so ACF could serve more victims

→ Improved victim privacy and security of their information

→ Reduced cost of ownership/operation for the case management system (CMS)

→ Leveraged automation for business flows

→ Moved from manual and paper processes to a digital environment

→ Enhanced information sharing with collaborating agencies by migrating to the cloud

REI's use of Agile, DevSecOps, customer experience and continuous improvement CMMI processes as part of our Advance step allowed ACF to make regular adjustments that improved efficiency.

Conclusion

Mindful Modernization is different because it's more holistic, more iterative approach than previous approaches to agency modernization. It bundles together the full range of IT modernization best practices and tailors them to the context and challenges of an individual agency, its customers, its beneficiaries, and its stakeholders.

For too long, agency modernization projects have been following a similar pattern of start dates, end dates, and specific phases. Modernization projects are not only about checking the requirement boxes. REI is changing that paradigm through Mindful Modernization because there is no similar pattern that works for all federal agencies. As you've read in this white paper, the specific technologies used to help the USPTO manage an increase in trademark applications were different than what HRSA needed to keep pace with the onslaught of the COVID-19 pandemic.

However, what each project had in common was the Mindful Modernization approach from REI Systems. We have modernized IT applications for a wide range of agencies, and that breadth of experience gives us the necessary knowledge to develop a specific, unique, and successful modernization plan for any agency.

Every single solution REI System has delivered to its customers has launched successfully because of our tailored and detailed approach to solving our customers' complex challenges. We are dedicated and passionate about delivering superior customer services and advancing federal missions.

As your agency seeks to keep pace with innovation and unlocks the full potential of today's technology, REI Systems can be your partner of choice to make your modernization project a successful one. There has never been a better time to get started.

REI's track record of delivering successful solutions into production is 100% because of our tailored and comprehensive approach to solving our customers' complex challenges. Our Mindful Modernization approach takes the guesswork out of modernizing your technology and provides you with a clear roadmap to transformation. There is a reason REI clients stick with us for decades. We are a trusted partner that will be in lockstep with you to ensure success and mission impact, no matter what.

If you are looking for more information about our Mindful Modernization approach, get in touch at MindfulModernization@reisystems.com.

Andy Zeswitz | REI Systems, Chief Technology Officer

As CTO, Andy Zeswitz drives the overall vision and strategy for adopting new technologies and championing innovation and delivery for REI Systems. Read Andy Zeswitz's full executive profile here. Or connect with Andy on LinkedIn.

ABOUT REI SYSTEMS

REI Systems provides reliable, effective, and innovative technology solutions that advance federal, state, local, and nonprofit missions. Our technologists and consultants are passionate about solving complex challenges that impact millions of lives. We take a Mindful Modernization® approach in delivering our application modernization, grants management systems, government data analytics, and advisory services. Mindful Modernization is the REI Way of delivering mission impact by aligning our government customers' strategic objectives to measurable outcomes through people, processes, and technology. For more information, visit REIsystems.com.