



Modernizing the Monolith: Unlocking the Legacy Data Dilemma

February 21, 2018

Underwritten by:



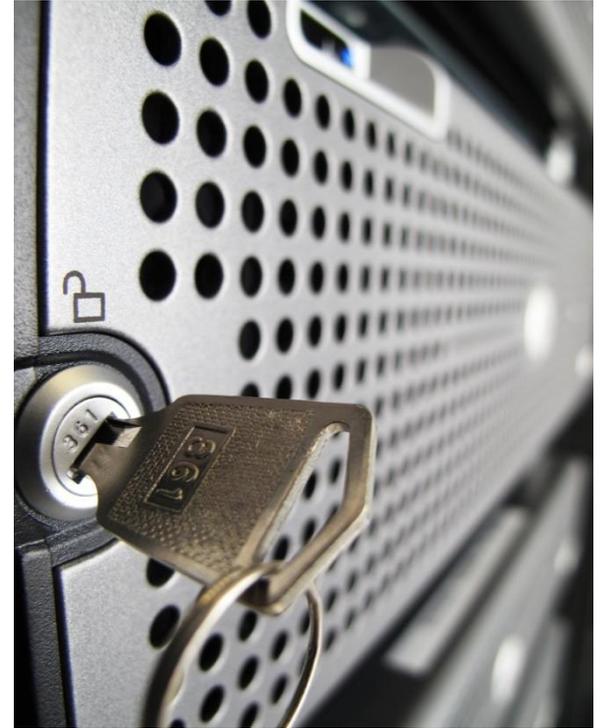
redhat.

Introduction

With the **Modernizing Government Technology Act** now signed into law, Federal CIOs and IT managers should finally have the momentum – and means – to break free of aging agency infrastructures.

But, where do agencies stand with modernization today? How is reliance on legacy technology shackling their progress? Are emerging technologies like Application Programming Interfaces (**APIs**) and **microservice architectures** making a difference? What else do agencies most need to move forward?

In the “Modernizing the Monolith” study, MeriTalk surveyed 275 Federal IT decision makers to understand why legacy systems are so persistent and entrenched, and where next-gen solutions are having the most impact. The study examines progress and challenges within three specific Federal mission areas (**healthcare**, **public safety**, and **financial services**), and outlines strategies for finally unlocking the legacy data dilemma.



Executive Summary

- Federal IT leaders who responded to the survey* are frustrated with the pace of change:
 - **73%** say their agency has a defined IT modernization roadmap, but just **24%** rate their IT modernization efforts to date as excellent
 - The majority (**73%**) say delaying modernization is more risky than moving forward
- Legacy lockup looms large:
 - After budget, Feds say the **biggest barrier** to modernization is the need to maintain legacy technologies
 - **72%** say that failure to integrate legacy systems will strangle IT modernization efforts and **73%** say unlocking data from legacy applications is critical to supporting the president's efforts around shared services and broader government reform
- Increased data sharing may help agencies break free:
 - Feds say improving data sharing is the **number one** opportunity to accelerate Federal IT modernization
 - **86%** say Application Programming Interfaces (APIs) are important to their agency's modernization plans, and **75%** say APIs are a logical starting point for agencies with large portfolios of legacy systems
 - Investment plans follow suit – Feds say their top tech investments over the next two years will be in **cloud, APIs, and open-source software**

*Throughout the report, all references to “Feds” or “Federal IT leaders” refer to the 275 survey respondents. Please see slide 18 for additional details on this group.

Feds Feel Legacy Tech Pain

- Nearly all Feds (**89%**) say reliance on legacy technology is hurting their agency, and most say that delaying modernization is more risky than moving forward

Where has your agency's reliance on legacy technology **hurt** you the most?*



Security (47%)



Costs (43%)



Productivity (36%)



Future readiness (31%)

73% say delaying modernization is **more risky** than moving forward

Take away: Time's Up

*Respondents asked to select all that apply

Plans In Place, But First Steps Not Easy

- Feds have a modernization roadmap, but the majority have not taken foundational steps



73% of Feds say their agency has a defined IT modernization roadmap, but



Just 24% give their IT modernization efforts to date an “A”

Public safety agencies are significantly more likely than agencies with financial and healthcare missions to give their efforts an “A”

Which modernization steps has your agency taken?*

- 48%** Completed an audit of IT systems/applications and have a clear understanding of what is in our environment
- 37%** Understand what can be moved to the cloud and what cannot
- 35%** Implemented at least one shared service
- 24%** Transitioned at least one legacy application to a microservice architecture

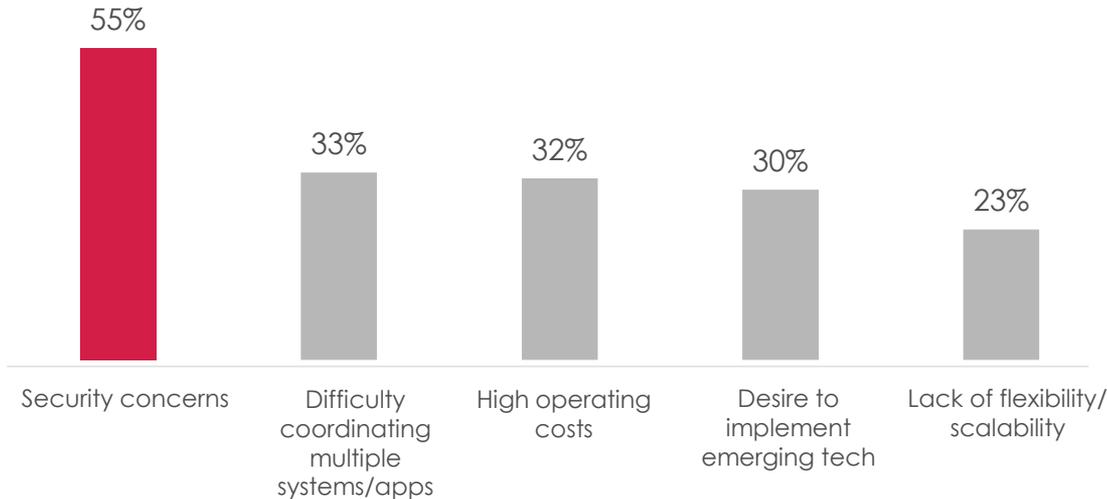
Take away: Progress is a Journey

*Respondents asked to select all that apply

Feds Want Security, Integration

- Security concerns – above all else – are driving Feds to modernize. But, few say FITARA scorecards or the Cybersecurity EO have had a positive impact on their efforts

What is driving your agency's modernization efforts?*



Mandate overload?

Fewer than one in five Federal IT leaders say key mandates are driving their modernization efforts:

FITARA Scorecards:
12%

Cybersecurity EO:
18%

Take away: Security First

*Respondents asked to select all that apply

But, Legacy Systems Mean Lock Down

- After budget, Feds say the biggest barrier to modernization is the need to maintain legacy technologies

After budget, what's the biggest barrier to modernization?

The need to maintain legacy technologies

(i.e., “we can't just turn off the lights”). Additionally:

- **72%** say that **failure to integrate** legacy systems will strangle IT modernization efforts
- **73%** say **unlocking data** from legacy applications is critical to supporting the president's efforts around shared services and broader government reform



Take away: Legacy is the Linchpin

Continued Culture Conundrum

- The majority of Feds say their agency *is* modernizing incrementally and yet, few feel encouraged to experiment

Just **20%** feel strongly encouraged to experiment and take risks



76% say their agency will modernize taking incremental updates, conducted frequently



Take away: Encourage Pilots, Projects, and Small Steps

Impact & Essentials

- Feds say IT modernization will increase security and efficiency, but to get there, they'll need improved data sharing

Top impacts of modernization:*

- 51%** Increased security 
- 51%** Increased efficiency 
- 47%** Improved data sharing 
- 41%** Improved quality of service 

To get there, Feds say they'll need:*

- #1** Improved data sharing 
- #2** Agency leadership to champion the effort 
- #2** A clear a vision for modernization 
- #4** Better access to the best technology available 

Take away: Collaborate to Overcome Modernization Challenges

*Respondents asked to select all that apply

API Opportunity

- Feds say APIs can improve connectivity between legacy technologies and modern systems

86% say Application Programming Interfaces (APIs) are important to their agency's modernization plans

75% say APIs are a logical starting point for agencies with large portfolios of legacy systems

Top ways an API-driven approach can benefit agencies:*

- #1:** Help maintain modernization momentum while minimizing risk
- #1:** Enable more efficient connectivity between legacy and modern systems
- #3:** Extend the life of legacy systems by hiding complexity and exposing functionality
- #3:** Minimize technical risks and disruptions
- #5:** Enable agile integration

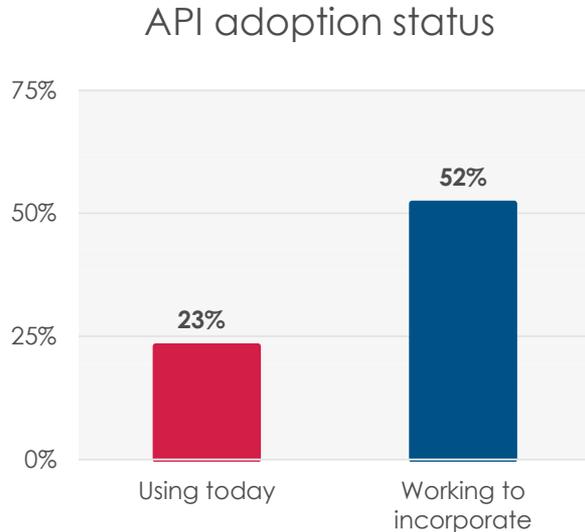
*C-level IT managers are significantly more likely than non-C-level IT managers to say APIs are very important to their agency – **57%** to **36%***

Take away: Integration is Key

*Respondents asked to select all that apply

Promising Progress

- While just 23% of Feds say they are using APIs today, 52% are working to incorporate them*



Additionally, **50%** say they have a formal integration strategy for:



*“Connecting different software applications, services, **APIs**, data, and devices”*

And **36%** are working on one



Take away: APIs are on the Rise

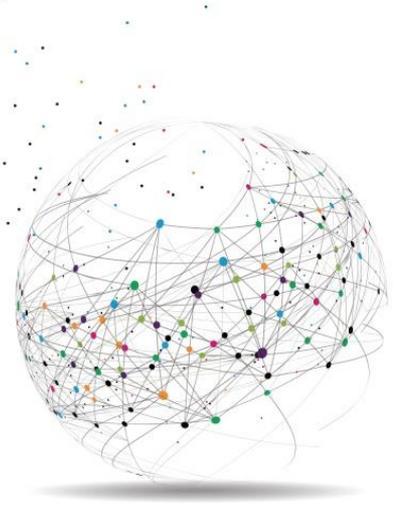
*“Working to incorporate” is defined by the percent of respondents that said they were either planning, piloting or implementing APIs

Mission Critical

- Feds see APIs as an opportunity to share data, streamline processes, and improve constituent services

What is the biggest opportunity for your agency to use data from APIs?

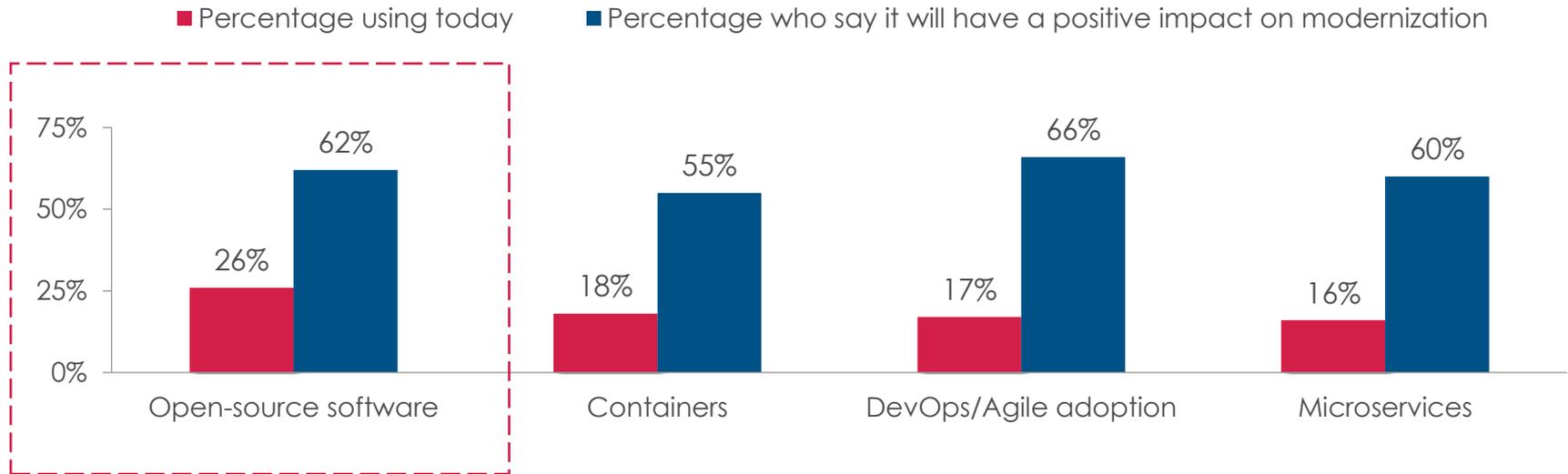
- “Faster sharing of demographics or economic data for **disaster stricken areas**”
- “Leveraging data from various **personnel and finance systems** to provide accurate reports to leadership with respect to cost and performance of various acquisition projects”
- “We provide **identity verification** to other agencies, so an API could possibly streamline that process”
- “Improving customer (taxpayer) **direct interfaces** without human interface”
- “Leveraging real-time data from **sensor networks**”
- “Potential to **integrate health data** into a unified system”



Take away: Real Impacts

The Path Forward

- While just 26% of Feds say they're using open-source software today, 62% expect it to have a positive impact on modernization. The majority also expect containers, DevOps, and microservices to help



Take away: Open Source Adoption is Key to Unlocking Modernization

Modernization Masters

- Feds who say their agency excels at IT modernization are significantly more likely than others to reward risk taking and implement next-gen technologies such as APIs and microservices

Feds who rate their agency's IT modernization efforts as "excellent" are significantly more likely than those who do not to:



Agree their agency rewards experimentation and risk-taking when it comes to IT modernization – 72% to 48%



Have a formal integration strategy for connecting different software applications, services, APIs, data, and devices – 81% to 40%

These **leaders** are also significantly more likely than their **peers** to be using:

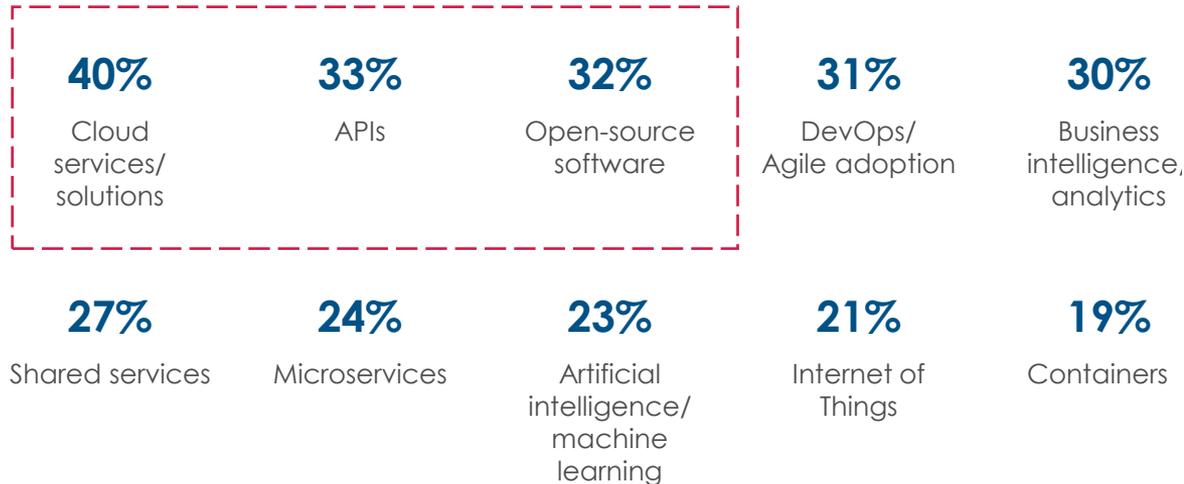
- ✓ APIs – **31%** to **20%**
- ✓ Microservices – **30%** to **11%**
- ✓ Containers – **30%** to **14%**

Take away: Leading Agencies Walk the Talk

Investment Outlook

- In the short term, Feds say their agencies will focus investments on cloud solutions, APIs, and open-source software

Which technologies will your agency invest in over the next two years?*



Take away: Cloud, Connectivity, and Transparency Open Doors

*Respondents asked to select all that apply

A Vision for the Future

- When asked what is the most important thing IT modernization would allow their agency to do, Feds said:



“Allow for more efficient and secure IT operations with integrated, modern systems”



“Standardize systems so that we can configure, update, patch, and share data as seamlessly and simultaneously as possible”



“Eliminate literally thousands of ‘exceptions’ created by a lack of data integration/sharing that must be handled manually today”



“Allow us to make our data more accessible to our program while making it safer at the same time”



“Free employees to concentrate on their core mission”



“Safely move to cloud-based environments. We need to get our systems secured properly with modern controls first”

Take away: All About Data Sharing and Security

Recommendations

Reward the rebels:

Few Feds say their agency rewards risk-taking and experimentation when it comes to IT modernization efforts. Encourage employees to come to management with ideas for acceleration and endorse those who make an impact. IT is looking for leadership to champion their efforts

Move beyond legacy lockup:

Decades of legacy technology can't be replaced overnight. Leverage connective technologies and environments like open source, APIs, and microservices to improve data sharing and integration between new and existing systems

Plan your escape – and destination:

Take an incremental approach to change and keep the plan dynamic as you work against your modernization roadmap.



Methodology & Demographics



MeriTalk, on behalf of Red Hat, conducted an online survey of 275 Federal IT managers familiar with their agency's IT modernization efforts, in January 2018. The report has a margin of error of $\pm 5.87\%$ at a 95% confidence level.

Respondent job titles

CIO/CTO/CISO/CDO	16%
Deputy CIO/CTO/CISO/CDO	12%
IT Director/Supervisor	21%
IT Program Manager	17%
Data Center Administrator/Manager	8%
Network Administrator/Manager	9%
Software Applications Administrator/Manager	6%
Other IT manager	11%

Agency mission

Federal agencies with healthcare missions	27%
Federal agencies with financial missions	27%
Federal agencies with public safety missions	27%
Other Federal agencies	19%

Expertise

100% of qualifying Federal IT managers are familiar with their agency's IT modernization efforts

Thank You



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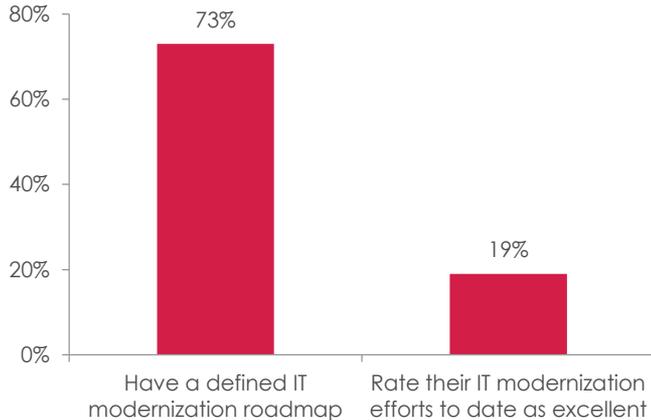
Appendix

- Federal healthcare agency snapshot 19-20
- Federal financial agency snapshot 21-22
- Federal public safety agency snapshot 23-24



Healthcare Agency Snapshot

IT modernization roadmap



71% say delaying modernization is more risky than moving forward



Barriers and opportunities

After budget, Federal IT managers from healthcare agencies say the biggest barrier to IT modernization is the need to **maintain legacy technologies**

The number one opportunity to accelerate Federal IT modernization? **Improved data sharing**

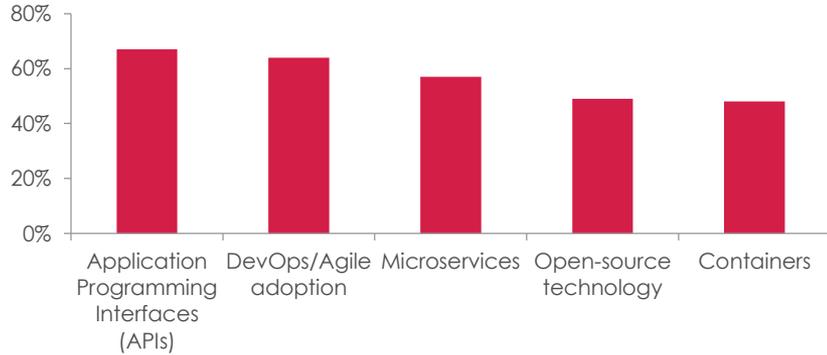
Legacy tech's impact on modernization

76%

say unlocking data from legacy applications is critical to supporting the President's efforts around shared services and broader government reform

Healthcare Agency Snapshot

Percentage of Feds who say the following will have a positive impact on modernization:*



Percentage planning to invest in:**

44%	41%	25%
Cloud	APIs	Open source

Additionally, **49%** say they have a formal integration strategy for “connecting different software applications, services, APIs, data, and devices,” and another **40%** are working on one

84% say APIs are important to their agency’s modernization plans,



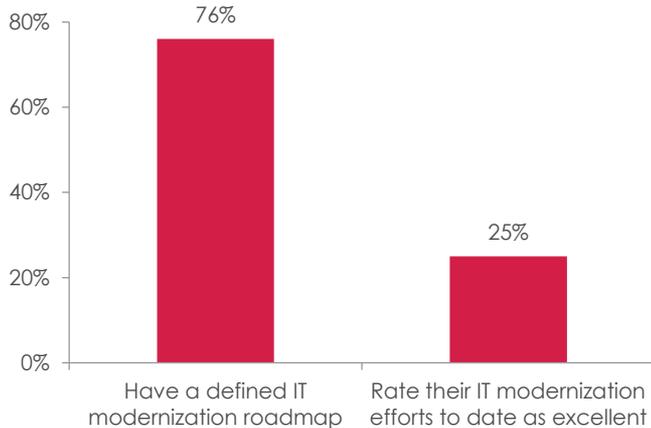
75% say APIs are a logical starting point for agencies with large portfolios of legacy systems

*Respondents asked to select all that apply

**Over the next two years

Financial Agency Snapshot

IT modernization roadmap



77% say delaying modernization is more risky than moving forward



Barriers and opportunities

Federal IT managers from financial agencies say the biggest barrier to IT modernization is the need to **maintain legacy technologies**

The number one opportunity to accelerate Federal IT modernization? **Improved data sharing**

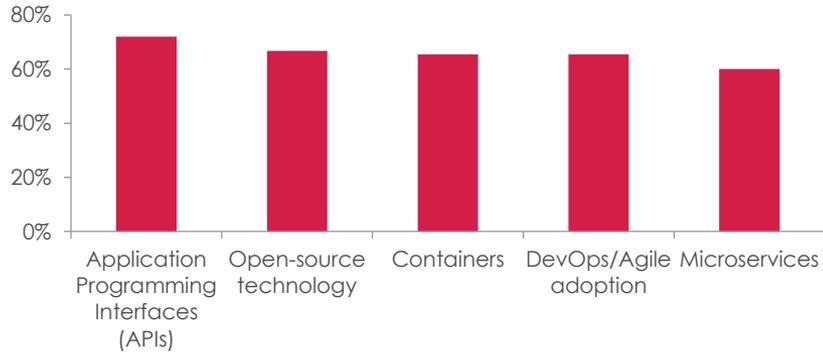
Legacy tech's impact on modernization

73%

say unlocking data from legacy applications is critical to supporting the President's efforts around shared services and broader government reform

Financial Agency Snapshot

Percentage of Feds who say the following will have a positive impact on modernization:*



Percentage planning to invest in:**

43%	35%	32%
Cloud	APIs	Open source

Additionally, **53%** say they have a formal integration strategy for “connecting different software applications, services, APIs, data, and devices,” and another **35%** are working on one

91% say APIs are important to their agency’s modernization plans,

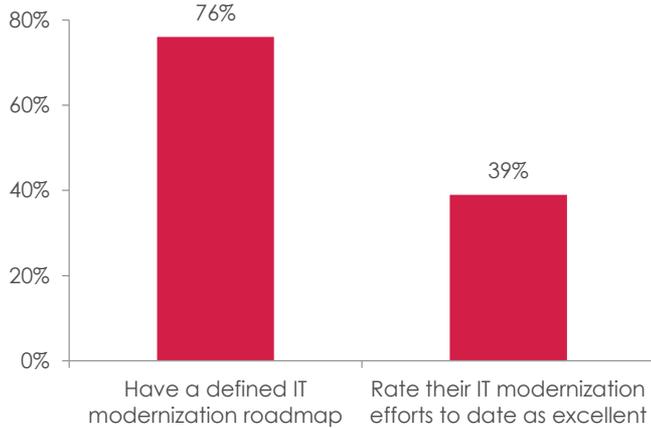


79% say APIs are a logical starting point for agencies with large portfolios of legacy systems

*Respondents asked to select all that apply
**Over the next two years

Public Safety Agency Snapshot

IT modernization roadmap



69% say delaying modernization is more risky than moving forward



Barriers and opportunities

Federal IT managers from public safety agencies say the biggest barrier to IT modernization is the need to **maintain legacy technologies**

The number one opportunity to accelerate Federal IT modernization? **A defined, agency-specific strategy or roadmap**

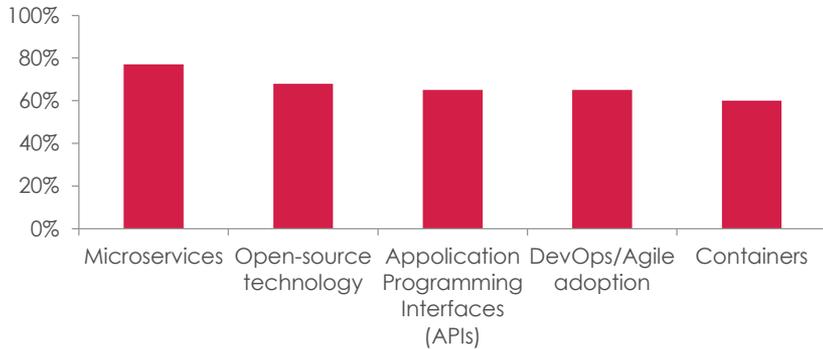
Legacy tech's impact on modernization

72%

say unlocking data from legacy applications is critical to supporting the President's efforts around shared services and broader government reform

Public Safety Agency Snapshot

Percentage of Feds who say the following will have a positive impact on modernization:*



Percentage planning to invest in:**

31%	29%	39%
Cloud	APIs	Open source

Additionally, **56%** say they have a formal integration strategy for “connecting different software applications, services, APIs, data, and devices,” and another **33%** are working on one

88% say APIs are important to their agency’s modernization plans,



73% say APIs are a logical starting point for agencies with large portfolios of legacy systems

*Respondents asked to select all that apply

**Over the next two years