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Think differently: Strategies for incremental modernization

Sharing industry experience, findings and perspectives

For many states, the COVID-19 pandemic illuminated the need to update and streamline their Medicaid and HHS systems — for both their workforce and their constituents. People's expectations for innovation and improving their experience with online applications adds to the pressure.

States are responding. A recent NASCIO survey found that among state chief information officers, investing in legacy modernization jumped from priority #5 in 2020 and 2021 to priority #2 in 2022.[1]
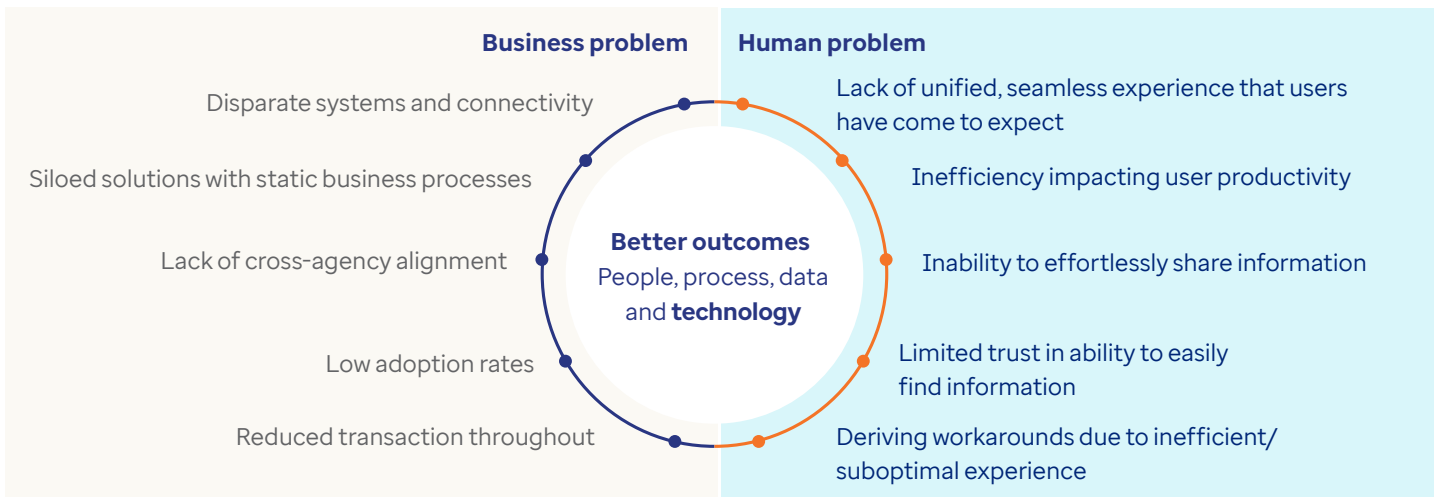
Understanding the problem and identifying the right paths to improvement are critical to any modernization effort. Jason Hetherington is HIX program director for the Massachusetts Executive Office of Health and Human Services. Howard Dryver is vice president for Optum Product Management. In this paper, they share their top recommendations for incremental modernization and highlight examples from the Commonwealth of Massachusetts.

Start by solving for the business and the human problem

Understanding an issue from both a business and human perspective leads to better outcomes — for people, process, data and technology.
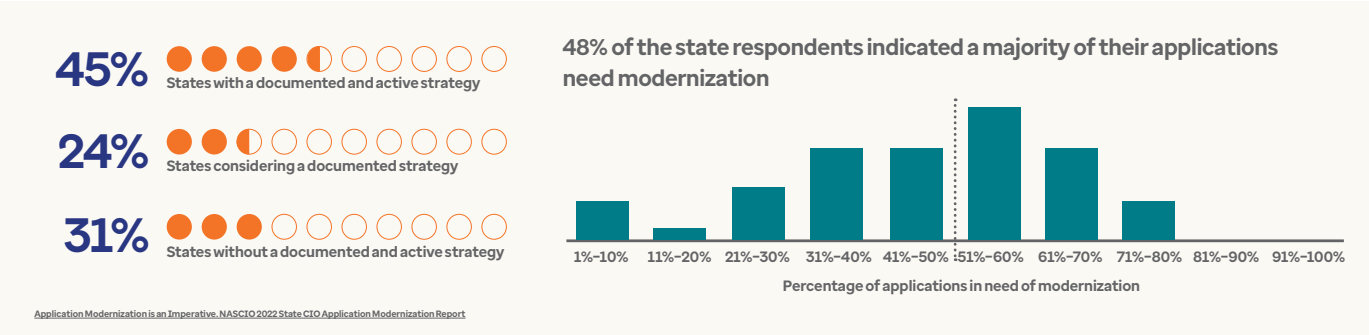
"Too often, we focus only on a business problem, like low adoption rates or siloed systems," says Howard Dryver. "Take time to consider the problem from both a business and a human perspective. Infuse empathy into the assessment in efforts to better understand how people are being affected. What are the experiences they're having? This helps you better understand the overall problems that exist so you can start initiating steps to solve them."

1. NASCIO. "The 2022 State CIO Survey".

Business problem | **Human problem**

Disparate systems and connectivity

Siloed solutions with static business processes

Lack of cross-agency alignment

Low adoption rates

Reduced transaction throughout

Better outcomes
People, process, data
and **technology**

Lack of unified, seamless experience that users have come to expect

Inefficiency impacting user productivity

Inability to effortlessly share information

Limited trust in ability to easily find information

Deriving workarounds due to inefficient/ suboptimal experience

The Massachusetts non-MAGI legacy Eligibility System requires users to complete a 38-page paper application that is keyed in by an employee. Users can't see their data, and the application is hard to use. Also, it's a siloed system so it doesn't share information with other systems. This presents both a business or system problem and a human problem. Shifting the focus to understanding the human problem along with the business problem helps take you to the next step toward finding a solution.

Respond to the modernization imperative

45% States with a documented and active strategy

24% States considering a documented strategy

31% States without a documented and active strategy

Application Modernization is an Imperative. NASCIO 2022 State CIO Application Modernization Report

48% of the state respondents indicated a majority of their applications need modernization

1%-10% 11%-20% 21%-30% 31%-40% 41%-50% 51%-60% 61%-70% 71%-80% 81%-90% 91%-100%

Percentage of applications in need of modernization

Research by NASCIO shows 45% of states have a documented and active modernization strategy.

"Even if a system was recently replaced, it's not a 'one-and-done' approach," says Howard. "Expectations have risen around the level of service states are able to deliver and the level of service constituents expect. They're leveraging the likes of Google and Amazon every day, and they expect the same experience with a state system. So, it should be an ongoing, constant evolution."

States can modernize their systems faster and with less risk by moving away from a "rip-and-replace" approach toward a "continuous-innovation" model.

"Witnessing the shift away from rip and replace has been gratifying," says Howard. "And that's because continuous innovation gives us the ability to improve faster, increasing the time to value and reducing the risk of implementations."

With a continuous innovation model, improvements are never truly complete. So how do you respond when a stakeholder asks: "When will this project be finished?" Jason and Howard suggest adjusting mindsets by changing the questions to: "What improvements are you delivering along the way? When and how will we see incremental progress?"

And remember: A solid modernization strategy is essential. In the chart above, 31% of states have no active strategy. "If you embark on this journey with an ad hoc approach, you'll get into trouble," Jason cautions.

Understanding the problem

There are many ways to evaluate how users are engaging with the system:
- Customer journey mapping
- Social analytics
- Digital experience
- Persona development

Infusing human-centered design on a continuous basis is often the goal. But infusing human-centered design holistically can be daunting.

On the other hand, a software intelligence monitoring platform and heuristic analysis are 2 approaches that can be applied quickly to an existing application. These approaches can help you assess the platform and interface to improve the experience.

Taking an outside-in approach can help states better understand how users are engaging with an application. Heuristic analysis on the Massachusetts Health Insurance Exchange (HIX) by UX experts revealed that users were not understanding a critical question about income on the enrollment application. Simple changes to wording and prompts resolved the issue, improving the user experience in minutes at little cost. And installing this solution took only a matter of days.

From an analytics perspective, there are new technologies that can be added to an existing application for intelligence monitoring. "They provide insights into user engagement and identify areas for potential improvement," says Howard.

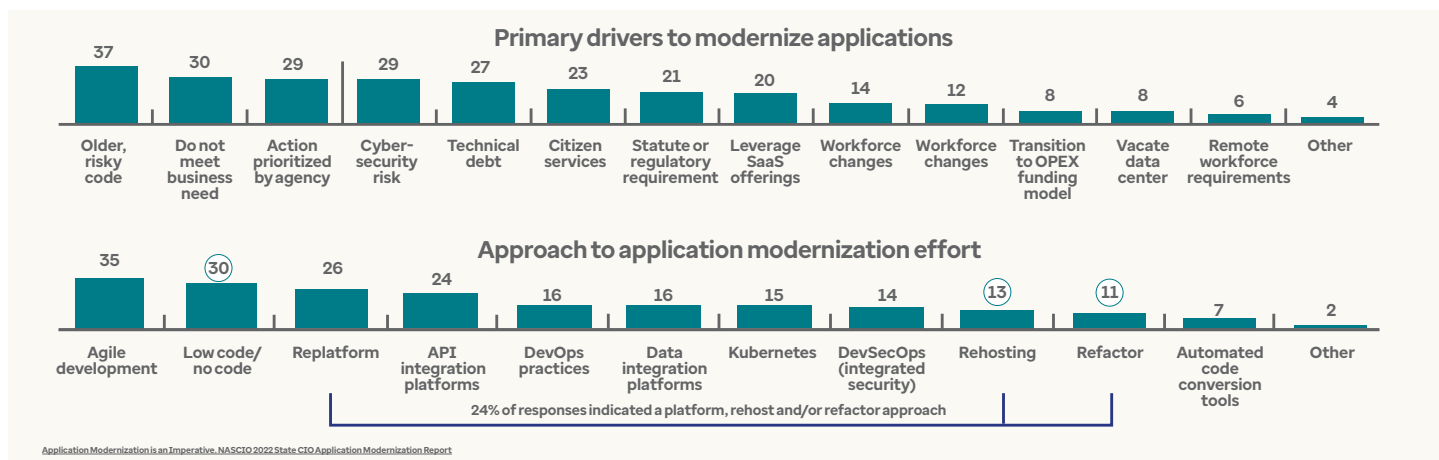**MA HIX vital business function monitoring |** Plan shopping - Individual

See plan details		Plan finder tool		Compare plans
Users who used this feature	Average uses per session	Users who used this feature	Average uses per session	Users who used this feature
64.3%	3.1	17.1%	1.8	18.6%
▼ 1.7% vs. prev. month	▼ 2.3%	▲ 0.2% vs. prev. month	▼ 2.1%	▼ 2.4% vs. prev. month

The Massachusetts HIX application leverages Dynatrace to automatically monitor how consumers are using the application and identify areas of potential improvement. Dashboards reflect user activity and reveal if consumers can successfully perform desired actions, such as purchasing a health plan. Agency leaders can see where consumers are dropping out of the shopping flow and monitor the impact of any changes intended to improve the user experience in real time. Best of all, this simple improvement took just days to install.

Choose a potential path to modernization

There are many approaches states are taking to modernize rather than "rip and replace." The graph below from NACSIO's 2022 CIO Survey shows several of the strategies that CIOs surveyed report their states are currently using. A state may leverage several of these strategies throughout its modernization journey. Some require more time and cost commitment than others.

Primary drivers to modernize applications

Older, risky code	Do not meet business need	Action prioritized by agency	Cyber-security risk	Technical debt	Citizen services	Statute or regulatory requirement	Leverage SaaS offerings	Workforce changes	Workforce changes	Transition to OPEX funding model	Vacate data center	Remote workforce requirements	Other
37	30	29	29	27	23	21	20	14	12	8	8	6	4

Approach to application modernization effort

Agile development	Low code/no code	Replatform	API integration platforms	DevOps practices	Data integration platforms	Kubernetes	DevSecOps (integrated security)	Rehosting	Refactor	Automated code conversion tools	Other
35	30	26	24	16	16	15	14	13	11	7	2

24% of responses indicated a platform, rehost and/or refactor approach

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Jason and Howard recommend several resources that are less intrusive. These resources allow states to increase productivity and adoption without disrupting the underlying technology:
- AI-powered assistance
- Digital adoption platform
- Business process management and mining
- Robotic process automation

"You don't have to go after the core application itself to implement these strategies. And that's what I like about these. You can add value without taking any of the risk of making the transition from one application to another," says Jason.

States can also innovate on top of their legacy technologies and systems to improve the experience of how consumers are engaging with those applications. An analytics engagement platform like the example shown below can streamline access to information and insights through a single, elegant front-end presentation layer, without fundamentally changing the underlying technology.
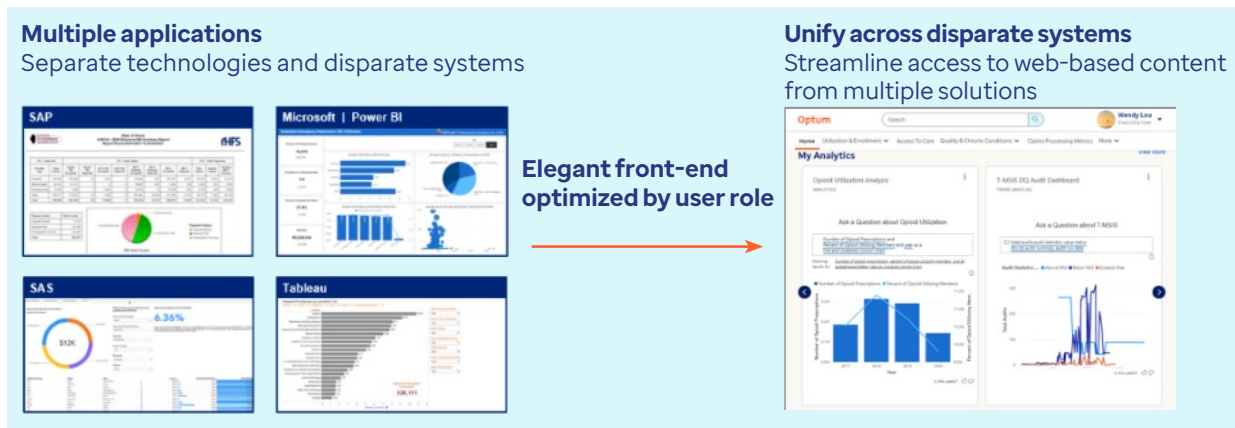

In the Commonwealth, the Mayflower Design System is helping to change the experience paradigm and provide consistency across different applications.
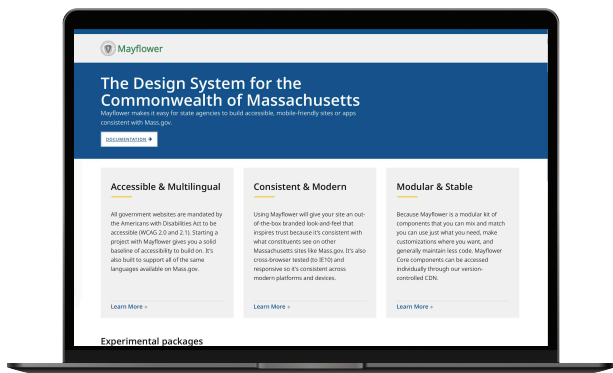
Mass.gov — the official website of the Commonwealth of Massachusetts — uses a set of design standards called the Mayflower Design System to provide a consistent look, feel and implementation across all Commonwealth applications. Built in the React framework, the design standards are easily accessible for new or existing applications.

"The nice thing about this is you don't really need to do much to your underlying application. Pretty much any modern web-based system can be migrated to the React framework, and we can then pull in all the design assets from Mayflower. So, it gives us a really quick and easy way to build a new application or improve an existing application," says Jason.

Efforts often focus on transforming user experience at the front end of an application. But states can also use information on the back end to drive transformational change. The Member Communication Portal shown below enables MassHealth and CCA beneficiaries to access their eligibility information by leveraging existing HIX application APIs. This lightweight solution pulls information from multiple systems and requires no disruption to existing systems to implement.
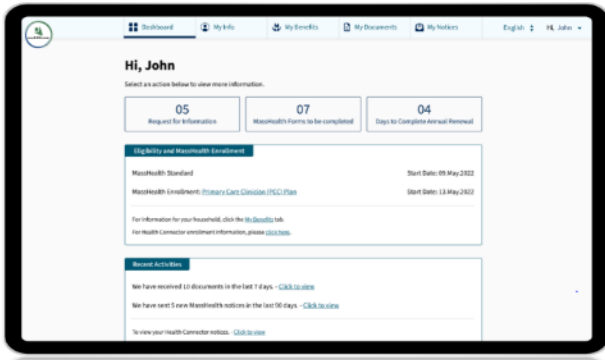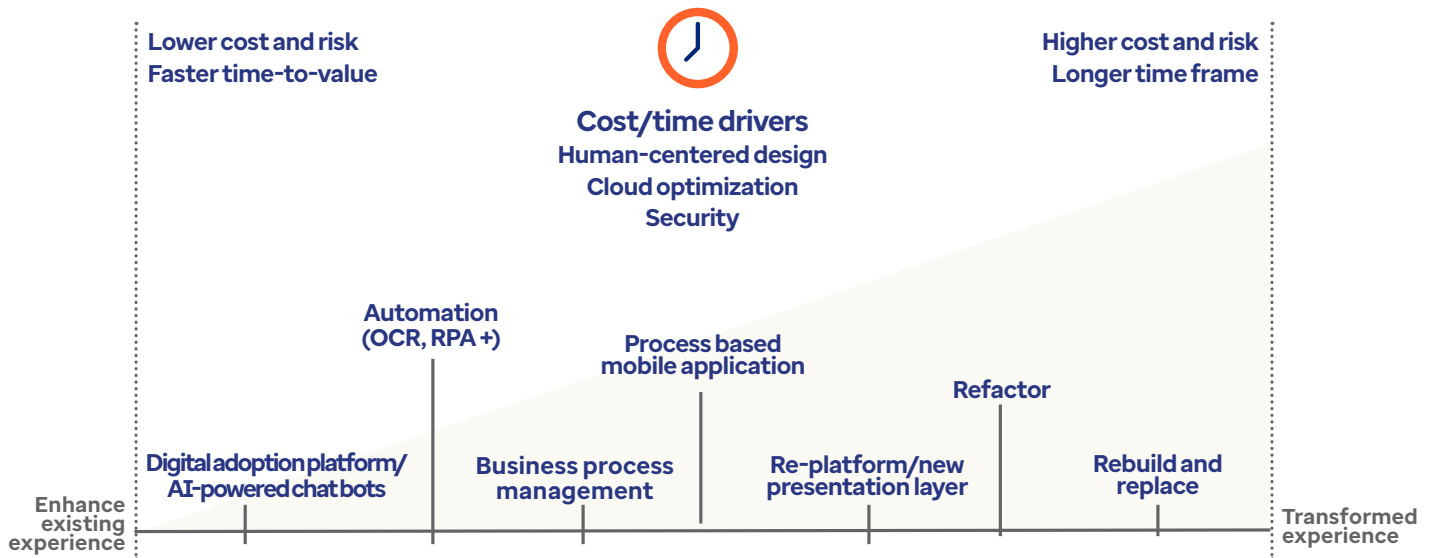
In time, visitors to Mass.gov will see all their eligibility information online. Using incremental modernization, eventually, up to 17 HHS eligibility applications will align with this landing page, integrating eligibility and enrollment activity in a single location.

The pathways to modernization — like the example shown below — have varying degrees of costs, risks and timelines. For faster time to value at less cost and with lower risk, you can begin with the strategies like those on the left and those previously discussed. By looking at modernization as a continuum, states can build on a step-by-step approach, incrementally transforming the user experience without the downtime or risk of a big-bang replacement.

Modernization opportunities: The paths to get there

Effort and timeline

Lower cost and risk
Faster time-to-value

Higher cost and risk
Longer time frame

Cost/time drivers
Human-centered design
Cloud optimization
Security

Automation
(OCR, RPA +)

Process based
mobile application

Refactor

Digital adoption platform/
AI-powered chat bots

Business process
management

Re-platform/new
presentation layer

Rebuild and
replace

Enhance
existing
experience

Transformed
experience

"There are small things you can do very quickly, in maybe 4, 6 or 8 weeks," says Howard. "And those small, quick wins will have a multiplier effect in terms of the transformation and benefits they provide that you can continue to build on."

Take action

Strategic planning and execution are key, and there are multiple paths a state can pursue. The following recommended actions from International Data Corporation provide a solid starting point.[2]

Understand the problem.
Know what the business and human problems are so you can take the right approach to modernization.

Conduct a modernization assessment.
Gather guided insight into the level of effort needed to modernize applications within the portfolio.

Consider upskilling existing professional resources.
Acquire relevant skills and partner with professional services firms as needed.

Assign prioritization for the modernization.
Identify specific digital assets as well as professional resources and skill sets to advance the modernization effort.

Identify modernization-related milestones.
Assess the progress of modernization initiatives to achieve digital goals.

Ready to learn more?

Check out Jason and Howard's session from this year's Healthcare IT Connect Annual Summit or contact an Optum representative at optum.com/stategovcontact.

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Howard Dryver, Vice President, Optum Product Management

References

1. NASCIO 2022 State CIO Survey: The People Imperative.

2. Dayaratna A. Legacy application modernization: Sorting through the options from an application development perspective. IDC. December 2022, document # US47088720.

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