TRANSFORM HAWAIʻI GOVERNMENT

The State of Business Services Modernization

State of Hawaiʻi

February 21, 2023
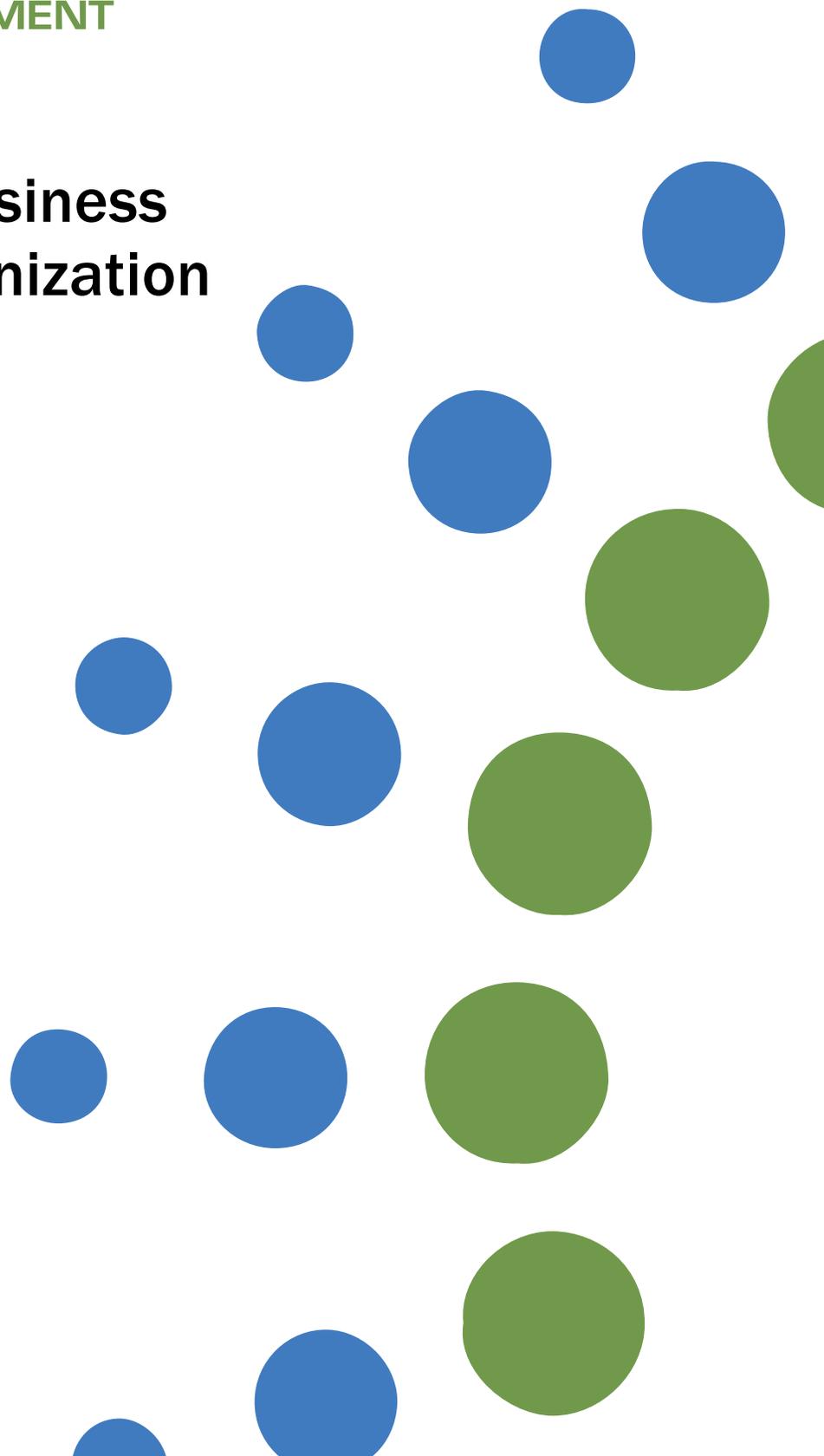
Aloha!

THG (Transform Hawai'i Government) has had the privilege to work alongside Hawai'i's state government leaders for more than a decade, serving as a partner to accelerate government transformation to better serve Hawai'i businesses, nonprofit organizations, and residents across the socioeconomic spectrum. Our mutual goal has been to ensure everyone thrives and is proud to call Hawai'i their home.

THG's Unique Role

THG has a unique role in Hawai'i's government modernization ecosystem. We are intensely aware we are a nonprofit organization outside of state government, and yet THG has been welcomed as an extension of the family, a trusted advisor and partner of state government. We have listened carefully to the perspectives and concerns of those on the frontlines of government modernization and have served as advocates, providing resources for systemic change to help to usher in backbone IT infrastructure.

A Guiding Document

We are pleased to present this comprehensive assessment of the State of Hawai'i's government modernization efforts in a spirit of humility and lōkahi — of working together as one team — as a guiding document for Governor Josh Green, Lieutenant Governor Sylvia Luke, legislators, state agency leaders and IT leaders. This document provides what we believe are very clear and tangible steps that the State can take to be successful in modernization, now and into the future.

A Comprehensive Assessment

I would like to recognize the Anthology Research team for its expertise and support in interviewing 95 state leaders representing 20 different state agencies from late August to mid-December 2022. By its nature, government modernization is a moving target. Yet, there is a consensus that Hawai'i is making progress and that, based on this collective snapshot assessment, Hawai'i is at the halfway point in its government modernization efforts.

The Anthology team's thorough assessment was critical to this report. They synthesized more than 1,600 pages of interview transcripts into key findings and recommendations to ensure this report is practical and actionable. The findings validated many of the challenges we have heard before, but we also learned there are new concerns. All of them warrant our attention. The challenges are great, and THG stands ready to do its part to help the state with its transformation efforts.

Opportunity for Leadership

As with all major initiatives, change must start at the top. There is a desire for strong leadership to define and enable government modernization. We believe this presents a great opportunity for the Governor's administration to move modernization further forward in our state. We recognize this will require bold, new ways of thinking and we will be treading on new territory, but it is a journey we must continue. We cannot let failure, real or imagined, hold us back or keep us from continually striving to make progress. I am confident that we will continue to make progress in the months and years ahead.

Mahalo for your ongoing support.

Christine Maii Sakuda
Executive Director

Table of Contents

Executive Summary

OVERALL PROGRESS

Government modernization in Hawai'i is at the midway point.

The general consensus is that the State is at about the midway point in its business services modernization efforts in the current era.

LEADERSHIP

A unifying definition of "modernization" is needed.

State workers have varying perspectives on what modernization means and how government should be updating its systems and processes. In absence of a clear and robust plan for modernization, departments are initiating their own projects, which is exacerbating challenges to integration.

Champions of change are critical to maintain the positive momentum.

Strong leadership in state government is critical to the ongoing progress of government modernization. Leaders must define, enable and ensure the adoption of modernization efforts to reduce barriers to modernization.

RECOMMENDATIONS

Articulate unifying State of Hawai'i vision for modernization that guides strategy.
- ACTION: Governor's office leads a public-private process to create a singular vision for the State.

Develop and communicate a consistent definition of modernization.
- ACTION: Governor tasks Information Technology Steering Committee (ITSC) to develop a definition of modernization for the State.

CULTURE OF INNOVATION

Modernization should be continuous and responsive.

In order to meet the needs of government workers and the constituents they serve, the philosophy around modernization needs to change from one-time expenditures to ongoing investments in software, technology and process improvements.

Standardization can enhance collaboration across departments.

To their credit, many departments are taking the initiative to pursue their own modernization initiatives, but they are using different solutions and vendors. This reinforces silos within state government and hinders the ability to share information across different systems. There is a desire for increased standardization to ensure compatibility of systems within and between departments.

RECOMMENDATIONS

Change government modernization funding philosophy.
- ACTION: Educate funding decision makers on the importance of recurring investments in people, process, technology aspects of modernization.
- ACTION: As part of the budgeting process, ensure that modernization initiatives align with the Governor's vision and the State's new technology investment funding philosophy.

Create a culture that supports innovation.
- ACTION: Conduct public-private stakeholder discussions to drive action steps, e.g., innovation labs, training, innovation incentives.
- ACTION: Provide resources and training needed to cultivate bold leaders and staff empowerment.

ENABLING FACTORS

Sharing ideas and information between and within departments can enable "organic" modernization.

Leaders and employees within State government are yearning for the ability to learn from other teams. Some modernization of workflows and adoption of new processes is enabled by simply learning about how and why other departments do what they do.

Investing in change management activities is essential.

Government modernization is much more than upgrading hardware and software. It involves transforming processes and the way we think about them to deliver better outcomes and to have a stronger, lasting impact in the community.

Communication is critical to maintain progress in modernization.

As with any important initiative, communication is necessary to keep everyone engaged. A lack of consistent communication may send a message that the initiative is not important, or may result in some thinking they are not critical to the change process.

RECOMMENDATIONS

Upgrade priority of change management programs.

- ACTION: Educate state leadership on the dependency that successful IT modernization projects have on a good change management program.
- ACTION: Develop standard change management program guidelines for the State.
- ACTION: Ensure the State invests in change management programs at the onset of all modernization projects.

Increase internal communications and information sharing.

- ACTION: Government provides regular progress updates on modernization projects to all stakeholders.
- ACTION: Create on-going forums for modernization project leaders to convene stakeholders across departments for information-sharing.
- ACTION: Identify modernization project champions and celebrate them for their efforts.

HUMAN RESOURCES

State employees are generally open to modernization, but there are pockets of resistance.

State government employees at all levels are striving to do their best to serve their customers — the people of Hawai'i - but they also are intensely aware there are constraints to service.

Institutional knowledge streamlines planning, implementation and adoption, but it is disappearing.

Building human resource capacity for modernization is imperative. Workers who have background on current processes are essential for requirements gathering; experienced staff can streamline implementation and adoption.

There is an urgent need to address the systemic challenges to hiring.

Leadership within every department is struggling with staffing at multiple levels, driven by a tight labor market and exacerbated by State requirements, compensation levels and what is perceived to be a lack of capacity within DHRD to move quickly.

RECOMMENDATIONS
Focus resources on staffing up and supporting the Department of Human Resource Development (DHRD).

- ACTION: Develop statewide guidelines to help departments prioritize their IT staffing needs based on current and future enterprise modernization initiatives.
- ACTION: Understand the workflow, statutes, policies and challenges of the state's current hiring practices for IT professionals.
- ACTION: Identify resources needed to streamline hiring process (including job descriptions).

PRIORITIZING MODERNIZATION

A strong case can be made for prioritizing business services modernization within the State of Hawai'i.

Every individual interviewed for this research could name multiple reasons why modernization should be a priority, focusing primarily on the benefits that can be achieved as systems are improved, but also acknowledging the significant threats of delaying action.

Methodology

Transform Hawai'i Government (THG) contracted Anthology Research to conduct research among internal stakeholders across State of Hawai'i government to gather information that provides a comprehensive view of IT modernization across State government and within State departments. This initiative contributes to THG's leading focus of clarifying obstacles that may impede progress and aid in identifying solutions to ensure the State moves information technology (IT) modernization projects forward for the benefit of all.

This report includes the results of the Modernization of State of Hawai'i Government Business Services Study, which was comprised of two components: secondary research and qualitative primary research in the form of in-depth executive interviews and small group discussions.

Executive Research Interviews & Small Group Discussions

To gather a comprehensive array of in-depth insights on the progression of the State of Hawai'i's IT modernization efforts, Anthology conducted qualitative research in the form of in-depth one-on-one and small group interviews with 95 State of Hawai'i stakeholders. Interviewees included former Governor David Ige; State Chief Information Officer Doug Murdock; State department directors, deputy directors and a variety of government employees across ETS, State Judiciary, State Procurement Office and departments as detailed below.

- Department of Accounting & General Services (DAGS); Department of Agriculture (HDOA)
- Department of Attorney General (AG)
- Department of Budget & Finance (B&F)
- Department of Business, Economic Development & Tourism (DBEDT)
- Department of Commerce & Consumer Affairs (DCCA)
- Department of Defense (DOD)
- Department of Education (DOE)
- Department of Hawaiian Home Lands (DHHL)
- Department of Health (DOH)
- Department of Human Resources Development (DHRD)
- Department of Human Services (DHS)
- Department of Labor & Industrial Relations (DLIR)
- Department of Land & Natural Resources (DLNR)
- Department of Public Safety (DPS)
- Department of Taxation (DOTAX)
- Department of Transportation (DOT)
- Office of Enterprise Technology Services (ETS)
- State Judiciary
- State Procurement Office

The discussions were held August 30, 2022 to December 16, 2022, by Anthology Research either in person or virtually using videoconferencing software. With permission, discussions were recorded for transcription and documentation purposes only. The discussions were moderated by David Pettinger, senior partner, and Amy Kelly, director of market research. When possible, Transform Hawai'i Government Executive Director Christine Sakuda was present for the discussions. To enable candid conversations about the current state of modernization, participants were promised anonymity in reporting; to protect participant confidentiality, portions of some quotes have been redacted to prevent unintentionally identifying the office or identity of the individual.

The discussion outline used in these research interviews was developed by Anthology Research, with input from THG. Contained in the appendix of this report is a copy of the discussion outline.

Qualitative research offers its sponsor the type of dynamic feedback necessary to make decisions required in today's ever-changing business environment. The client needs to keep in mind there are strengths and weaknesses inherent in this form of research because of the relatively small sample sizes used in this methodology. One of the great strengths is the ability to discuss in depth the issue

being explored. This technique ensures that the full range of opinions, emotions and reasoning surrounding a topic are brought out. However, while the results are excellent at providing trending and directional information, they are not necessarily statistically projectable to the general population.

Acknowledgements

THG and Anthology Research would like to thank the 95 individuals who participated in this research for their time and valuable feedback throughout this study. You took the time to candidly share your thoughts with us. You gave us a sense of where we are collectively as a state with government modernization. You opened our eyes to more clearly see the challenges that hold us back and the opportunities that lie ahead. And you shared about projects on the horizon that are critical for our state's backbone IT infrastructure. We are indebted to you for your support.

Perceived Progress – State of Hawaiʻi

The general consensus is that the State is at about the midway point in its business services modernization efforts in the current era.

When each research participant was asked to gauge how far they believe the State of Hawaiʻi as a whole has come in business services modernization, responses ranged from a low of 30% to a high of 70%. The graph below shows the average perceived progress for the State of Hawaiʻi as a whole by representatives interviewed from each department.

Important note: The graph below shows responses by department to perceived progress of the State of Hawaiʻi; these numbers only include those interviewed for this research and should not be considered projectable to the population of employees within each department.

State of Hawaiʻi Perceived Progress by Department
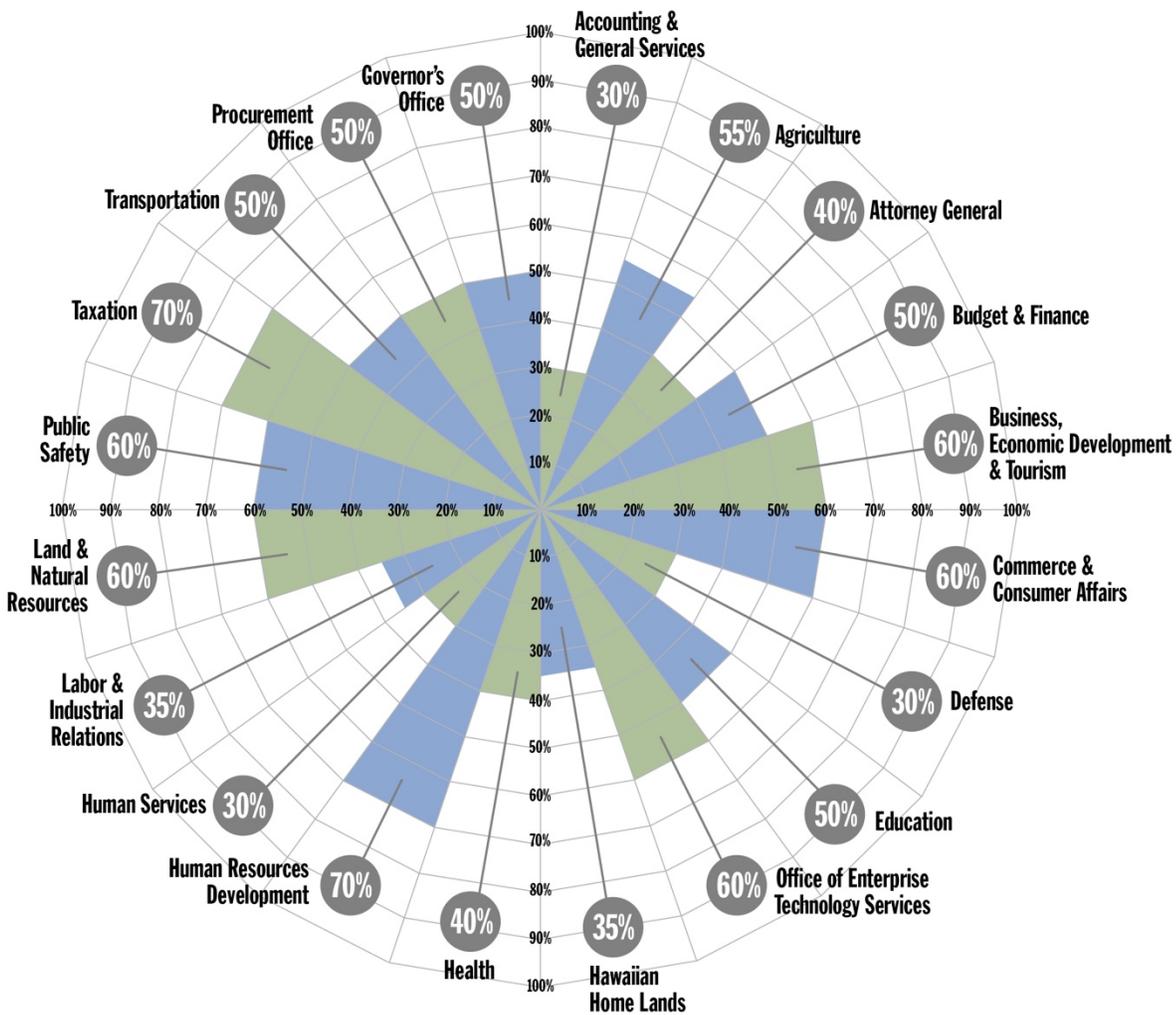
"So we've automated processes, as best as we could upfront, little here and there. But we haven't modernized the system. So we haven't gotten off the adequate mainframe system. We haven't integrated our front end that we automated with the back end to modernize the system. So we haven't really taken on huge modernization projects and implement that to make a big difference."

"I feel like you will never get to 100% because there's always going to be a new or better process."

The COVID-19 pandemic was the catalyst for modernization of the unemployment system and other advances in the State's communication technologies.

"I go back to the pandemic, again, it exposed a lot of vulnerabilities, especially our legacy systems and what we couldn't do."

"[The pandemic] accelerated some of these modernization efforts that otherwise would have taken a little longer to get worked on."

Time and Attendance, Payroll, e-sign / paperless initiatives, expanded use of cloud systems, and migration to Microsoft Office 365 are cited as examples of progress.

"I think it's because almost every agency that you interact with or that I've been interacting with, there is sort of a digital component to it...So that's really far away from where we were back in 2010, when we added hard copies and numerous copies of hard copies and filing."

"I think e-sign has been a big one in terms of reducing the use of paper, it's created a lot of efficiencies, but it's also created some operational concerns. That I think, collectively, we're all still kind of trying to work out."

"I don't think we give ourselves enough credit. If you look back you 8, 12 years a lot has been done for the internal modernization of the system and putting in new systems like payroll... So I think there's going to be a catalytic effect where the momentum is going to push."

Enterprise Financial System modernization is considered the most critical effort currently in progress.

"I would say, the Financial Management System touches everything. That's a huge project, I just think, and it will be a challenge."

"I think, FAMIS will have big effects. But it probably won't be realized until the other parts of government get cleaned up and fixed. Or we learn how to communicate with the new system, because I don't really have any insight as what the new system is. I'm too far removed from that."

"I talked to a friend of mine from high school, as an MBA and has worked a lot in private industry. She's like, what's your Financial Management System? I was like - well, I don't know, we have this thing called FAMIS. And she's like - no, that's not a Financial Management System."

"The remarkable thing, when you have a system that is 40-years old, there are 1000 workarounds, right?...So every agency has two or three or a dozen workarounds to make up for the deficiencies in the core system. And yeah, and that will be the biggest complication, is that they all – every agency – probably has a dozen workarounds of this old core financial management system can't do it. So, they'll start with a spreadsheet, and they'll workaround whatever, and figure out how to feed the data into this monstrosity. I do think that that would be the last major core system, that will need to be changed out, and there are so many other processes that will be touched by that, that will need to get changed and upgraded."

Many employees are frustrated with the time it currently takes to get tasks done and are excited by the potential that modernization efforts can bring.

"Just by the process of modernizing some things, I think we've changed the mindset and culture of the people. So that they know that government can modernize and that modernization or change can be good."

The use of paper in current processes is a tangible reminder that more needs to be done.

"Everything is hard copies, we have a sea of papers everywhere. Modernization for me is to automate those systems. When I think of modernization, it is to get the cloud support."

> *"I was appalled when I first came in as the deputy, how almost everything was paper driven."*

Other processes and departments that are regularly mentioned as opportunities for modernization include the State Procurement Office, Attorney General's Office and Department of Human Resource Development.

"I think every department does contracting. So figuring out how to streamline that, and 100% digitize that, as much as possible would be a significant improvement."

"I want to make a plug for working with the AGs office because they need to be modernized in the biggest way. And in order for us to get a lot of complicated MOU's or contracts done, they need expertise, and they don't necessarily have that the IT back bone. I mean, they're great at contracts, but these kinds of technical issues. They need help, they definitely need help. They're very paper pencil type. So, they need a lot of support for us to become 21st century, in the 21st century."

KEY FINDING

A unifying vision for "modernization" is needed.

State workers have varying perspectives on what modernization means and how government should be updating its systems and processes. In absence of a clear and robust plan for modernization, departments are initiating their own projects, which is exacerbating challenges to integration.

There is no single definition of "modernization." The varying interpretations of modernization contribute to a lack of a singular vision for where the State is headed.

"Well, from a systems point of view, I think bringing a lot of our system, software systems up to date, modernize it, because we have too many different systems that don't talk to each other."

"Being able to pivot, within a day, a month, a year to make change on what we need."

"21st century. Organizational change management, business process redesign, breaking down silos. Ease of access."

"Consumer expectations or even your personal experiences are not those experiences that we deliver through our systems. We need to sort of come into alignment to the way that people are used to interacting with companies or services or products"

"So to me, modernization is kind of like … this symbiotic relationship between the business side and the IT side."

The perceived level of effort required for government modernization varies.

"But we do have a ways to go, we still have some governance issues that we need to formalize and work with other agencies about data governance."

"We don't do a good job of [modernization] at all, I think we start projects, we try and obtain funds in a very, no real systematic way… We are not given the tools to be able to be successful in any of our modernization projects. Not just financially but human resources as well."

Individual definitions depend to an extent on exposure to and level of involvement in enterprise projects.

"I think [our department is] at 75% of what the private sector already has….and the last 25% is probably not achievable….because of the compliance aspect. I think we took our manual processes, and we automated them very, very slowly, and very painfully. But slowly we've automated our manual processes."

A singular vision and strategy for modernization is needed to guide enterprise-wide efforts, as well as direct department initiatives.

"Every department is its own department, has its own rules, has its own funding sources, has its own regulations that it must comply with. Especially if there are federal matching funds, and all of that sort of things. Where things need to happen, like, you're only going to worry about your house, your own house, right? There's no clear overall, overarching strategy defined by the state, like we must be able to do X by X day, leveraging, blah, blah, blah. There's no clear strategies like that, that are defined, or even solutions identified that the departments should be working towards implementing, right? Basically, how do you start to get those pieces aligned without some higher strategy or some higher sort of overarching principles or goals."

"If the state's not on the same sheet of music, the other departments are going to hold you back from getting to where you need to be."

"There's no leadership to say - okay, this is the process, there's five departments that does the same thing. How about the five departments work together with this leader, to get to the end state? I think we need that type of top driven guidance to get us to where we need to go."

"But you have to put your foot down at some point and say - I am going to bite this bullet, and we are going to make a change at this point. At this inflection point, we're going to change the way government operates, boom. And that's how we're going to move forward. But then it takes that overarching strategy, that overarching principles, guiding principles, or NorthStar, all of that stuff."

The lack of shared understanding of existing business processes within departments and between departments serves as a significant barrier to modernizing.

"We do modernizations in our own little vacuum here for what we're doing within the department. But, end to end across multiple departments, especially when you're looking at something like procurement that has to go through multiple department... But those things [in other departments], haven't been updated from systemic perspective to match. So, you can move sort of chess pieces here and there, but they're stuck and blocked. Because as a whole, things haven't been addressed."

RECOMMENDATION

Articulate unifying State of Hawaiʻi vision for modernization that guides strategy.

The current state administration, under Gov. Josh Green, can create a unifying vision for government modernization. Employees are looking to the Governor first and foremost to offer his vision for a modernized State government. There is confusion about department-specific modernization initiatives and how, if at all, they fit into the state's modernization strategy. Modernization must be communicated as a priority for those at all levels of state government and that clearly shows the benefits for state employees and those whom they serve. This will help to bring everyone on to the same page, with the same standards and goals to effectively move forward together.

RECOMMENDATION

Develop and communicate a consistent definition of modernization.

Most understand the need for government modernization and recognize the benefits that modernization offers: increased efficiency, time savings and improved decision making through access to timely data.

- Modernization of the State of Hawaiʻi will benefit every employee and resident through more efficient services, better access to timely information, and increased transparency between and within departments.

Champions of change are critical to maintain positive momentum.

Strong leadership in state government is critical to the ongoing progress of government modernization. Leaders must define, enable and ensure the adoption of modernization efforts to reduce barriers to modernization.

Leadership at the highest levels is considered a key to bringing employees along in the process.

"When I think of modernizing government, that's a heavy lift, that has to be promoted from the top and supported financially, fiscally, and being able to sustain that support."

"The most important resource I had was I had my leadership's backing and support. They're the sponsors, the administrator, like they keep on telling them - hey, you guys are the champions of these project. These are your projects, they're not mine."

"I think government knows what it needs to get better at and what it needs to modernize and what these systems have to get going. We just have to kind of stay committed, I think leadership is important to stay committed to getting these things modernized and up to speed and getting these projects done."

Successful modernization efforts need a "champion" that is empowered to make decisions and force change.

"I feel like Hawaiʻi, a lot of the government operations, they need that kind of ultimatum, otherwise, people aren't going to change. It's just the leadership, in a lot of departments are just stuck in their ways."

"But it's difficult because people in government don't want to change. They're comfortable doing the things they want to do. There's kind of, someone's got to force it."

"Change is extremely difficult. But what's more difficult is leading change. That's the hardest part. So I think as we move for, it needs to be a holistic program, as we try to tie everything in, right?"

Leadership is required to create "safe spaces" for innovation to take place and reduce the stigma around project failures.

> *People are very nervous, because there's more publicity on the projects that fail, then the ones that work. It was about I'm not gonna fire anybody, because they take it on and they're not successful. I'll take the fall, if it doesn't happen, and we can all celebrate when we implement, right? I mean, I think that that the creating that environment so that people are not fearful, and that they can embrace the opportunities and the challenges."*

"There needs to be a commitment from Governor Green, that this is important, and he's going to source it appropriately. He's going to support them when things don't work, because it's clear that there will be things that will not work the first time, and people need to feel like they're not going to get crucified, if they're involved with that. They need to be supportive because at the end of the day, making this system change is really fundamental to modernization. I confident that our people can be successful. Yeah, they just need to be supported."

"A lot of people have ideas about technology and let's do this technology. But, no one yet has been able to crack how to bring the people together in a team and collaborative environment that's safe, non-threatening, and that they all feel that they can build in. So I think it's creating a safe space yeah for that conversation to take place."

A number of leaders expressed a desire to "pull the plug" on failed projects.

"I think one of the important things about modernization is that you have to give a departments and divisions, the ability to cut something loose if it's not working. I know that we invest a lot of time and energy into these projects, thinking that we're gonna get a product, that'll mean or needs, and sometimes they do not. And people get frustrated in having to do work so inefficiently and backwards, because we're stuck with something that isn't working. So part of the modernization is to give departments the flexibility to cut something loose and start all over again, when it's not working. [...] I have just heard of other departments and other divisions, who have built a system that is not working for them. And I don't know if it's a vendor thing, or I don't know how they went about creating the process, whether it was collaborative or not. But I have heard of other departments and other divisions having a product that was meant to modernize and help them do their work more efficiently, and it's not the case."

"Yeah, I think, at some point, a decision has to be made where, okay, let's cut our losses. We use that, but it's no longer relevant. It's not getting us to progress. So we need to start over again. So I mean, there's a hesitancy to do that. Because everybody wants to be fiscally responsible public funds. And you hear so much comment. I mean, I heard it. When I worked on a procurement for a database that replaced some a system that was around for 30 plus years. I mean, I heard the speech about the state has lost so much money, millions and millions and millions of dollars due to technology that didn't work. And we don't want to be a guinea pig, or we don't want to be another score to a situation."

RECOMMENDATION

Create a culture that supports innovation.

Cultivating and fostering a culture that celebrates innovation requires acceptance that not all projects and initiatives will be successful. Employees may be afraid to be perceived as failing, so many are reluctant to engage in modernization discussions or projects. A culture that encourages bold leadership within departments is key to changing this. Overcoming individual reluctance to adopt new processes or participate in modernization efforts will require strong leaders to provide vision, motivation and support for employees. Cultivating and fostering a culture that celebrates innovation requires acceptance that not all projects and initiatives will be successful.

KEY FINDING

Modernization should be continuous and responsive.

In order to meet the needs of government workers and the constituents they serve, the philosophy around modernization needs to change from one-time expenditures to ongoing investments in software, technology and process improvements.

Many admit that modernization by its definition needs to be continuous in order to meet the evolving needs of government and residents.

> *"In my point of view, I don't think there's ever a starting and ending point in modernization. I truly believe that we have to continue to look at our systems and stay up to date, and continue to provide the services internally, as well as externally to our partners."*

> *"When I've gone before the legislature, and as many of you know, we've gone and some legislators are like, do you just need new computers? It's like - no, we need a new mainframe. We need a new reporting system, we need - it's not computers, we're not talking about wireless mice or, you know, a Zoom membership."*

Nearly all interviewees who are close to information technology modernization consider cloud-based solutions to be necessary in order to not only modernize, but also continue to stay current into the future. However, this represents a shift in thinking, from IT investments as one-time capital expenditures, to recurring funding being needed to pay for software-as-a-service subscriptions.

> *"But I think we are entrenched in our legacy, which is, we pay once and then that's it, and not recognize repair and maintenance costs. Just sustain costs and recognition on how fast the technology in the world is changing. The customer expectations are changing, I think with mobile, pretty much any cloud-based solution that you have has to be more mobile native, or has to be multi-platform enabled."*

> *So, our commitment to move everything to the cloud, and start to look at IT, and system modernization more as services, cloud based services. I think, really frees us to really look at all those systems. I really think that it'll make a huge difference in my organization going forward."*

> *"The idea that anytime you're buying software as a service, and you ask for customizations on that software on that service, it costs money. So that initial money is not a huge deal. But every time the software updates, or upgrades, and you need to change those customizations, it requires the state to add additional resources to pay for those customizations."*

RECOMMENDATION

Change government modernization funding philosophy.

The State of Hawai'i must change its thinking about technology investments as one-time capital improvements in favor of a services-based, operational budget model. Appropriations for ongoing funding to enable systems to be updated and continue to evolve over time, or else Hawai'i will continually be behind.

- Before: Technology investments often require capital expenditures. One-time, large investments in technology are difficult to budget for, and refreshes to keep technology modern are sporadic, leading to pockets of obsolescence

- Now: Technology marketplace, led by Cloud service providers, are adopting a service-based approach. Expenditures are based on services as they are consumed (e.g., monthly costs). Providers are expected to modernize technologies as part of the cost of services.

Standardization can enhance collaboration across departments.

To their credit, many departments are taking the initiative to pursue their own modernization initiatives, but they are using different solutions and vendors. This reinforces silos within state government and potentially hinders the ability to share information across different systems. There is a desire for increased standardization to ensure compatibility of systems within and between departments.

Departments have developed their own processes to overcome deficiencies of legacy systems. These "workarounds" have resulted in numerous inconsistent and, in some cases, conflicting policies and procedures.

> *"You know, the whole problem is there isn't a backbone system, ehawaii.gov is all I'm aware of and that's just one platform. You know, one entity trying to link all the information on agencies together. As far as I know, each of our departments we do on our own."*

Lack of technology standards is a barrier to implementation and adoption. It is difficult for departments to work together without having shared understanding.

> *"There are forms that ASO and DAGS still requires wet signatures on even though Adobe esign has been around for years. There isn't a workflow or ticketing system or if there is, it's not transparent enough that I know about it, that lets us track where procurements go. Where they get stuck on and for example, I'm not allowed to talk to ASO or the State Procurement Office."*

> *"Yes, (we use esign) for many things, but then it's still a little bit of a mystery to me which things have to come out of esign into hardcopy. The best I can deduce it, it has to do with the preference of the person whose signature you want."*

Something as simple as a contact database to enable State employees to know who to contact for specific modernization projects would be well received.

> *"We have what we call a roadmap that ETS uses. But I want that accessible to everyone in the state. Well, the government can go on and I can look and see descriptions of that project and go - hey, they're going to do this part. I want to contact them. It's not just looking at what the roadmap has on it, but who the contact is for that.*

Most departments have their own nomenclature to describe their services, information and processes. Basic differences in the terminology used by implementation teams and users contributes to misunderstanding and frustration on both sides.

> "So sometimes, we're all moving towards the same goal. Yeah, we have philosophical differences, but sometimes we're not communicating on the same plane. But we really to want to proceed in a similar fashion. It's just that there's that challenge of clear communication."

> "I've certainly tried in the past to try and start a discussion across departments. So that we can work off a single identifier for an individual. But it does take quite a bit of collaboration, and systems that speak to each other. Coming to a mutual understanding about what we would use as our common identifier."

As departments implement their own modernization initiatives, they are using different solutions and vendors. There is desire for increased standardization to ensure compatibility of systems between departments and reduce redundancy.

> "I think having a consistent source of knowledge and understanding, will one make it easier because we were all sort of like the blind leading, the blind with the contractor trying to teach us all. I think there needs to be a firmer hand, and at some point, the staff just got to suck it up. And I mean, if I were in the chairperson's role, it probably would just be a, this is not an invitation. This is not a question. We're moving."

> "I don't know why we develop a system for each department. It makes no sense to me. To me, this financial management system, like a cell phone, I can build a cell phone with all these different features in it. Then I can create apps that provide you the function that you need for your department. For me, our requirements, because we have federal funds and like, are a lot more complicated than many other departments. So the apps that I can use are probably far that exceed those that others may need. But that'd be okay, right? So when you take the phone from me and copy it and put it into your program, you turn on that you need, you turn off the ones that you don't need. I mean, it should be pretty simple like that. I don't know why we all put money into building our own systems, it makes no sense to me at all."

KEY FINDING

Sharing ideas and information between and within departments can enable "organic" modernization.

Leaders and employees within State government are yearning for the ability to learn from other teams. Some modernization of workflows and adoption of new processes is enabled by simply learning about how and why other departments do what they do.

Collaboration and information sharing are critical.

"I think that there's a lot of room for data governance and data sharing within the state. It's kind of a big problem. Because it's very, very bureaucratic. [We need] legislative support for making that happen … Especially convincing the Attorney General's office that everything shouldn't be not shareable. By preference, they should be shareable by preference…But it's not easy, because it requires something called deidentification of data in many cases…But for a lot of kind of a data driven decision making, you don't necessarily need to know - the people. If you would be able to just cross reference data, and you know that it's the same person, but you don't know who it is, it could be tremendously useful for kind of evidence based policy formulation."

"It comes down to people and the procedures right and then agreeing upon those procedures and working together. So you know we've been siloed you know with all the departments administratively."

Many changes in process or adoption of modernized processes can occur simply by sharing experiences and information between work teams.

"If we could just de-silo enough to see which agencies in the state have a good system; and then use that as a precedent to improve other state systems that I think that would do a lot of good."

"I think knowing all the departments that exist, and I guess maybe what's like their two or three top programs or their high demand programs. I think, knowing that and kind of having that known amongst like a core group, I think that's really important. Because when something does come about that maybe could be like a collaboration or partnership, I think that can really spark something that could be really good, and really beneficial for the community."

"Some of that (breaking down silos) has happened through cross pollination with pandemic response. I've been able to, for instance, hire people on contract that are retirees from other parts of the state. They've brought with them knowledge of how other parts of the state work. They'll be like - oh, you know, well, Department of Taxation, or Department of Transportation does it this way. So, you could consider that and it'll be news to me. They'll say, well, great, let's take that up the chain, and sometimes we can make progress that."

Inter-departmental relationships are individually driven. A structure – formal or informal – for working across departments may help to identify shared opportunities for improvement of workflows, systems integrations.

"I think one of the solutions in my mind is like the peer-to-peer kind of support and conversation too right rather than just a top down so that they can have that, those kinds of discussions or talk to one of their peers you know. I think that has been helpful."

"I don't feel educated enough on what everyone else [in the State] is doing, which might be part of the problem, to know where the state's at. I know what my piece is. I think that speaks to the fact that apart from - say, the deputies all communicating with one another to try and pass information, and bundle resources and get things done. We don't necessarily have systems that integrate across other departments. So I don't know, and I'm sure that's probably part of the problem and or the solution."

"So it takes knowing who to reach out to sometimes. And that's the process of accumulating those contacts and putting them into a meaningful framework that you can then utilize …So transforming government isn't always just a matter of putting better apps in place. It's also a matter of creating opportunities to learn from each other. And to learn about each other, and the programs that we put forward."

KEY FINDING

Investing in change management activities is essential.

Government modernization is much more than upgrading hardware and software. It involves transforming processes and the way we think about them to deliver better outcomes and to have a stronger, lasting impact in the community.

Engaging stakeholders at all phases of the process is critical.

"I think socialization is really important. The first time we talked about cloud migration, all of my health info system staff were like, no, no, we're not going to do it....We spent the time we invested the energy to go and talk to all of our old time staff, explained what this was, explained how it wasn't going to threaten their jobs...By the time we went for cloud migration, our staff were on board, and that really helped."

"...compliance is always best through understanding, through understanding and education. So, we try to build that into everything we do. The reason why I say it's not a lesson learned is it's just something in HR, you have to know, is we can't twist people's arms, the best way is we get them, we reach out we share information, and we hopefully get them to buy in."

Engagement of eventual users of a new system is important but perceived as severely lacking.

"We invested a lot of human resources in bringing the right people to the table to solve the problem. So, it was the perfect confluence of like having enough federal dollars, that we could hire the experts that we needed. To come in and advise us on the issues, to really do the full analysis that was needed and tell us what the solution was. Also, just bringing all of the program managers together and making sure they were really listening at the table to what the consultants had to say, so we could make the correct decisions and move that project forward."

"You have to get people on the program side to understand enough about the technological options they have to make an informed decision. Then you need to get the tech guys to understand enough about the program needs. So they don't sign us up for something we didn't need or that we can't use in the end. I feel like some projects have failed in the past just from the maybe lack of will or energy to get all those people together."

Clear, consistent communication is a recognized key to success in effective change management.

"I think you have to have the resources to be able to do organizational change management, and really to listen to people and to bring your staff along for the ride not to have them questioning. Even we don't have internal communication resources, external communication resources. You deal with what you have and you get very clever."

Training and ongoing support are critical to drive adoption and ensure new employees can learn the system.

> *"They introduced Office 365, to us, maybe six years ago, seven years ago…But they didn't provide much training in terms of how to use all the gadgets and apps that come with Office 365. We pay for a lot of this suite, but we probably use like the brain in your head, you got to quarter the brain operating. So, it's like, we do have a lot of resources, but people aren't trained to use them."*

> *"Alright, so after this long drawn-out design process, there needs to be a much more intensive training process on how to do all of this stuff…What happens is you have these great trainees, and even if they're memorialized in some type of online video. My own experience is not everyone is going to take that as seriously…It's like high school, you got some kids who are going to do the work upfront and learn it upfront. Then you got the other kids who are trying to cram and figure it out the hour before the test. That's effectively what's happening."*

> *"You can't just leave people hanging. Right now effectively, what's happening is for anyone who's having problems with any of the systems they call a helpdesk, and they leave a message."*

Hawaiʻi Government Employees Association (HGEA) can play an important role in encouraging modernization efforts.

> *"I think there's an educational component that could come from some someplace like HGEA to help employees understand…about how modernization actually just shifts rather than deprives and or adds to your workload. In all modernization will actually make your job easier, and I think if we had the confidence of the employees coming from the union in particular to say modernization is not a violation of your union contract."*

RECOMMENDATION
Upgrade priority of change management programs.

- Bringing users into the process as early as possible not only helps to ensure that requirements are thoroughly gathered, but also creates a feeling of ownership in the outcome

- Many employees mention insufficient investment in change management as a critical barrier to the success of modernization initiatives in their department

KEY FINDING

Communication is critical to maintain progress in modernization.

As with any important initiative, communication is necessary to keep everyone engaged. A lack of consistent communication may send a message that the initiative is not important, or may result in some thinking they are not critical to the change process.

Increased communication about statewide modernization initiatives is needed – At best, awareness and understanding of current initiatives is inconsistent. For example, many interviewees had heard of the Enterprise Financial System modernization, but were not aware of any specifics, including how it would impact their department.

> [Regarding FMS] *"You know, I've heard reference to plans. But the people I've talked to don't know when they're going to be implemented or if they're going to be implemented, they've just heard talk about them. I haven't been informed of any concrete changes that are going to happen."*

Confusion exists about which organization / department is responsible for certain modernization initiatives. For example, some do not know who is leading the Enterprise Financial System modernization.

> *"I think what you described is a historical accident [misunderstanding of ownership of FMS as being considered part of ETS]. Because if ETS had not been tied to DAGS, everything would be in DAGS. But because ETS has some administrative connection with DAGS. The relationship it's a little muddled as far as who does what? The project lead without question is the state comptroller. So he signs off on all the FMS activities he gets, he provides Brian Frey with direction and answers about questions related to FMS, execution and so on and so forth, more so than the CIO. So I think, at least from my perspective, and from the legislative perspective, FMS is a comptroller's project."*

Independent Verification and Validation (IV&V) and other efforts to accurately assess and communicate the status of modernization projects and identify challenges as early as possible are seen as critical to success.

> *"Read the fine print and just have regular meetings to monitor the project. I think at the Director and Deputy level, sometimes people assume we're too busy, or we are too busy. But this is important, and we need to get truthful, candid information about how the project is going. Without sugarcoating it, and so that, if necessary, we can take corrective action. Or I can reach out to my contacts or trying to get some fixes done before it's too late."*

RECOMMENDATION

Increase internal communications and information sharing.

- Many of those interviewed had limited or no knowledge of key modernization initiatives taking place in the state, such as the Enterprise Financial System.
- There is a strong desire to better understand process changes and to receive updates within other departments to apply learnings elsewhere.
- As employees better understand what is happening elsewhere in State government, they become more open to improvements in their own workplace.

State employees are generally open to modernization, but there are pockets of resistance.

State government employees at all levels are striving to do their best to serve their customers — the people of Hawaiʻi - but they also are intensely aware there are constraints to service.

The high volume of existing day-to-day work means that it can be challenging to be available for employees to step back and thoughtfully evaluate workflow.

> *"People are swamped with their day to day work. There's always more work than anyone could possibly get done, and because we're always asked to get by with do more with less. So, trying to ask people to in addition to what else they know is on their plate to try to have that kind of brainstorming session is difficult."*

Certain colleagues can be a barrier to modernization. These colleagues can be brought along in the process, but they need stronger encouragement than others.

> *"Whenever there's a people element to it, you can't just run the government like a machine."*

> *"I know, consensus is something that we always try to work on. But some people are very set in their ways. They're fearful of change, and I can understand that."*

> *"[Moderator: But, overall, what do staff need to kind of change their minds mindset in terms of getting them on this journey, and to support them throughout this transformation?] I think they need a mandate, like it needs to come from the top. I think that's the only way you're gonna get some people to change. And then of course, trainings, got to go with that too, because there's just some people that just struggle with technology."*

Some simply want existing workflows to be digitized to reduce the learning curve needed for a new process.

> *"I think we have things covered on the front end, I mean, we'll just have to see how the implementation goes. Hopefully, the training process is going to be robust, or our staff. We have people who've been doing this work a certain way for 25-30 years. And frankly, a risk that some people might be like, you know, what? I don't want to learn a new system, I'm eligible to retire now seems like their time is any, and they might walk out the door. So that's one of the repercussions, I guess, of transitioning like this. But I think for us, it does make it more enticing for younger generations to come work for us. Where we have technology at their fingertips, and they're not getting paper cuts all the time from processing all the paper that comes in through the front door. But I don't think this one's that difficult of a cell because yeah, it's just the workflow is just very inefficient. I think a new anyone who comes in will see that right away. Then, of course, our administrator, who has expertise in this area would be willing, they would have that frontline experience and credibility to tell them why this is important."*

> *"[Other areas of need] Contracting processes, modernizing, being able to e-sign things and just do more electronically and electronic tracking of workflows."*

Some are still fearful of losing their job due to modernization, despite nearly all departments reporting staff shortages.

"Mike Tyson says it best, right? 'Everybody has a plan: until they get punched in the face.' So, it's kind of like that we can all work towards making a plan. But the real mustard is when you can deliver and execute it. And that's where, we'll all fall short, because again, there's a shortage of resources, talent, knowledge, expertise, skill."

So to me, the biggest thing that we got to address with the union workers first, going to make your life better. It's going to make it easier for you to get stuff done. Going to make it easier for you to get information to be connected to everybody else. Second, nobody's going to get fired.

Institutional knowledge streamlines planning, implementation and adoption, but it is disappearing.

Building human resource capacity for modernization is imperative. Workers who have background on current processes are essential for requirements gathering; experienced staff can streamline implementation and adoption.

The drain of institutional knowledge extends to the case level, within departments that are still relying on paper-based processes for handling constituent / client cases.

> *"So that's another challenge there too, is when we have employees who leave; the employees that were existing employees have to assume that work, they have to go through boxes and boxes of files, try to get a good understanding of the case. They can't just log into a system as of today to figure out what's going on with this particular claim. I think people get really nervous when we do have staffing changes, because that just means they got to pick up more, and they got to basically start from scratch."*

As workers leave, there are fewer individuals who retain the information to be able to operate legacy systems. Many departments are reluctantly relying on vendors to maintain systems that should be done in house.

> *"We rely on contracting for services with the university or we have to hire consultants to do it. We have positions that we have identified to have that skill set in their job description. But it's been a challenge for us to actually hire somebody to be part of the staff. Because the government doesn't pay competitively in this world."*

The decrease in institutional knowledge within departments exacerbates challenges with requirements for modernization efforts. With retirement and departure of key staff, there are fewer and fewer workers within departments who have a thorough understanding of current workflows and systems.

> *"But yeah, the knowledge sometimes within some of these Legacy systems, as we carried on and staff have retired, it's not there and I think as you were trying to pull out some of these things, and like, how should it work? How does it work? The answers aren't there anymore. So, how are you trying to rebuild a car when you don't know how it was built? Right? You don't know the details. You can take a whole new car and try to figure it out."*

> *"We have an aging workforce here at the State, we have a lot of old technologies that they have tribal knowledge on, we don't have necessarily the budget, depending if you're general funded or special funded, to bring in replacement technologies."*

There is an urgent need to address the systemic challenges to hiring.

Leadership within every department is struggling with staffing at multiple levels, driven by a tight labor market and exacerbated by State requirements, compensation levels and what is perceived to be a lack of capacity within DHRD to move quickly.

Hiring is a significant challenge. Lack of staff overall, particularly in key areas such as project management and IT, is a significant challenge to not only modernization efforts, but also to daily work.

> *"One of the wrinkles is the state trying to consolidate everything through ETS is that the legislature appropriated the money to them, and they in turn are supposed to be as the kind of the go between the department and the vendor. They have to figure out a way to send them money over to us through the JV, that Journal Voucher process. So I think they're having this issue with other departments as well, too, because previously, the money would just come directly to us, and we would pay the vendors but now all the money was appropriated to ETS. They have to work with the departments, and I think they probably don't have the staff right now to manage."*

Existing HR processes are seen as a barrier to hiring for positions that are critical for modernization, resulting in, at best, months-long waits for positions to be filled.

> *"So it takes a long time to get an employee here. It's a struggle. But I think if we were to put a little bit more emphasis on, how can we save time, in our processes, I think we can be a little bit more efficient."*

> *"Right now, it can take up to six months for somebody to hear whether or not they're selected for a position, they're long gone by then. I mean, that's what's happening with A-plus, like, you know, they can find a higher paying position at Target, they need to change the pay scale, so that people are being paid a living wage and able to live in Hawai'i, and provide childcare."*

> *"We're having an onboarding of an employee that's going to start January 1. And they can't take training because they don't have a State email address. They're going to need to have procurement training and everything that if they could do it within these next three weeks, would really make them above the curve and be ready to hit the ground running. But instead, we've talked with DHRD, we've talked with our own HR people, we've talked with the SPO itself. And they're like - no, sorry. Until that person has a State email address, they can't do anything."*

Compensation levels, particularly for IT positions, are a key barrier to hiring as they are below market rates.

> *"I think we got hit kind of hard by I don't know if you'd call it great resignation. But the shortages that came over the last few years, we had a lot of people hit that kind of 10 year-ish mark, and one that's kind of their benchmark for benefits to this that offers from outside agencies within the state. Some from ETS, some outside of the state, but mostly within the state, except to be exempt positions were way higher*

than we can offer. Attracting, keeping talent is extremely hard, given the rigidity of the salary structures that we have."

"I kind of reverted back to just getting people fresh out of college with no experience and having to train because, you know, that's one the easiest to afford....What really it means is that we have a bigger reliance on our vendor support."

"A lot of it is because of unions and pay. Those are the two issues to me that the state has to somehow overcome in the future. You got to increase the pay rates so you can attract. I don't want to - is between all of us, right? Talent. How do you attract talent, if you can't offer the pay? How are you going to compare against Amazon? How are you going to compare against Microsoft, Google? Or how can you even compare against the feds? They get paid a lot more I can tell you this."

Civil service job descriptions need updating, but many departments have given up on trying to implement these changes out of frustration.

"I wanted to post my job as software developers, but I have to post this system programmers because I can't get that through DHRD to update the job description, they have to create a new category. They don't want to so it puts as system programmer; but people today are looking for software developer positions, programmer positions, but that's how it falls."

Instituting a high school internship program was mentioned as one idea to help build a pipeline of potential employees for the State.

"If you think about the state as an employer of high school students, most people have high school degrees, and you want our people with high school degrees to come and work for the state and they get benefits. How do we encourage people and I think a paid internship thing would be like one little tiny thing to start, where we could just put people through different experiences, and at least they would have a wider range of ideas as they're going through school and, mentorships and all kinds of stuff like that. But we, and the state, we don't have that at all."

RECOMMENDATION
Focus resources on staffing up and supporting Department of Human Resource Development (DHRD).

The biggest barriers to modernization lie in the human capital needed to design, implement, and drive adoption of modernized processes and systems. Short staffing within DHRD is cited as a reason for many of the delays.

- Nearly every department is short staffed and barely (if at all) able to keep up with the daily work required to serve their customers. They therefore do not have the bandwidth to participate in requirements gathering, system design or change management.

- Revising job descriptions to meet modern needs is seen as an additional barrier to hiring and placing the right staff in the right role.

A strong case can be made for prioritizing business services modernization within the State of Hawaiʻi.

Every individual interviewed for this research could name multiple reasons why modernization should be a priority, focusing primarily on the benefits that can be achieved as systems are improved, but also acknowledging the significant threats of delaying action.

Modernizing systems that employees use to be efficient and effective signals investments in the human capital of the State.

"Yeah, certainly, you know, for me, [modernization] really was a focus on making sure that the employees had the tools they needed to be efficient and effective. I always felt like the state was behind the curve in a lot of different areas. Traditionally, a lot of these systems are very expensive systems, and there's a tendency not to make it a priority and employees have to live with antiquated systems forever and ever and ever."

Many State employees and leaders interviewed believe access to timely and accurate data will directly impact the State ability's to achieve its broader social, environmental and economic goals.

"If you want the best outcomes for supportive housing and getting homelessness issue, resolved, it's cross sector. If we can just map out the intersections, I mean, you can see how you can come to a really comprehensive solution with everybody at the table not just doing the work and doing assessments and some of the assessments and getting people in. But just data governance and data sharing and being able to adequately respond to the need, that's something that modernization can help with. If we don't want to continue having a siloed approach, then we need to do that."

"I think at a systems level modernization is important because one we're so huge, and if we want to be able to make life easier for everyone, which gives time to others take care of other issues... At the school level modernization is important because we want to provide students with the best opportunity to be able to leverage resources to optimize student learning. Learning safety, interconnected, access to information not only for kids, but for their families. It's important if we want a vibrant and thriving community. We've have to be able to leverage the types of technologies so that you can make life easier and more efficient for them."

"Well, I think modernization is needed. Because there's so much expectations put on the department. It's not only computer modernization, but given facilities. I think it's a whole package that's needed. People talk about recidivism, reentry, all of these things. But for us to measure success, we need the tools not only the facility wise, but program computer wise to measure success. If not we'll be doing the same things over and over without actually knowing what we're doing right, what we're doing wrong in areas that we could improve. So if keeping the public safe by reducing recidivism, I think, we need to have measurable outcomes. That's the only way we can do it is by having, good computer systems in place to help us with that."

"It's very simple answer would be without it, we couldn't achieve the food security and food sustainability. Which is our central goal. We just cannot. If we were to rely

on agriculture to operate status quo or even close the status quo, we will never be able to increase our ability to feed ourselves here on this island without modernization. There's always been an underlying criticism that we don't have enough, and we don't have reliable data and information to make really sound decisions about where agriculture needs to go. Because without that information, it's a lot of guesswork and kind of intuition. And so, I think it is a critical piece of the puzzle that we need to be able to gather as an analyze and provide that data for public use."

"I don't even understand why I would have to convince anybody that efficiency is the best thing. That modernization the best thing. Or that real time data for that governor, from any department that he chooses, would be the best thing. So, to me, I would just say that anytime you meet with anyone, you should be able to pull up the data you need on yourself. And there's no way you can do that, unless all other departments are modernized to ensure that all their data are reliable. Or their processes are aligned. If that happened, you, real time, five minutes before an interview or something. Shouldn't be able to get any information that you need on any initiative have from any department that you run. I mean, to me, that's power. That understanding that you have data at your fingertips to make decisions to move things forward quickly. That's absolute power."

"Well, [modernization] is the only way I think that we can better serve the public. That will improve increase, improve productivity. I don't know, that is, in fact, the only way of improving productivity through modernization and taking a look at work processes. Seeing what can be changed, to better accommodate. More automation, maybe more consolidation of the information, so that we can provide better and more real time information. So better decisions can be made, if all of that is not a priority, then I'm not sure what to say. That would be unfortunate. That would be my advice, anyway."

Considerably reducing the time spent on manual processes is consider by some as a transformative impact of modernizations.

"All our fiscal functions are all manual. I think just that in itself, I mean, we can't wait to press a button and out a report and not having to spend months on end reconciling for financial statements. But outside of that, and just like, bigger picture, definitely workflow. So that we can communicate with other departments just in that seamless way and not have to wait for two or three months for the governor's office to sign."

Being able to meet the needs of the general public through the channels with which they are comfortable is also seen as a reason modernization should be a priority.

"I think that there is undoubtedly a gap between our current IT and where we need to be. I don't think anybody can deny that. So, we need to provide the level of service that our customers expect. If you look at other states websites, you see what is accomplished in other states. I don't think we can be complacent. We have to try and meet the needs of our customers. That means younger customers, customers who are used to working off their phone and off their computer. Customers who are not used to having to read a lot and a lot of texts online to get to where they need to be. Then the hardware, the actual system needs to be not so duct tape-ish and more, cloud. So I don't think it'll be any shock to whoever the governor is that there's a gap that needs to get fixed."

"I would say our main focus is to service the community in the best way possible. If we do not have this application to continue to move us forward. Our services to the community will be greatly affected, and I think that's our job. To provide the best services we possibly can to the people of Hawaiʻi. That's why we're here. That's why we're public service."

Cyber security is a significant threat to all entities and the State of Hawaiʻi is considered by many internal stakeholders as a large target for criminals.

"One [reason to prioritize modernization], is the huge security concerns that come up and to pivot and maintain our security as we continually see these changes, fraud attacks and other things. But yeah, having the software and systems there to be able to adjust to that is huge."

"From a security perspective, we're very much in an arms race and computers are not going to go away. But they are going to become old and more vulnerable. So it's not optional. For one, if you don't do it, you will pay multiples of whatever savings you might think you're having."