2020 Biennial Performance Report

Advancing the Next Generation of Technology in Texas

About the 2020 Biennial Performance Report

The Information Resources Management Act requires the Texas Department of Information Resources (DIR) to prepare and submit to the Governor and to the Legislature a biennial performance report on the use of information resources technologies by state government (Texas Government Code §2054.055). Note: For the purposes of this report, the term "technology" or information technology (IT) is used to indicate information and communications technologies.

DIR compiles this report using information from state agencies and institutions of higher education (IHE) that respond to the 2020 Information Resources Deployment Review (IRDR) required by Government Code, Section 2054.0965. All information included in this report is from the IRDR unless otherwise noted.

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Letter from the Executive Director

Dear Texas Leaders,

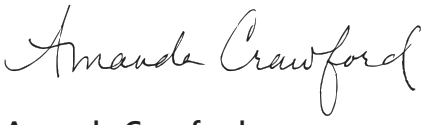
Technology continues to rapidly advance in the State of Texas, along with the evolving expectations and needs of the Texans we serve. Now more than ever, our state agencies are challenged to provide more mobile, digital, and convenient government services. Texans expect state agencies to be good stewards of their data and to provide secure and reliable services that are cost-effective, agile, and responsive to their needs. To meet these expectations, state agencies must continue to prioritize resources to help transform how Texas government serves Texans through technology.

The Texas Department of Information Resources (DIR) continues to partner with agency leaders to evaluate and prioritize the top technology needs of the state. This 2020 Biennial Performance Report (BPR) assesses agencies' progress toward the three strategic goals and 17 objectives set forth in the 2020-2024 State Strategic Plan for Information Resources Management and highlights agency accomplishments within these areas over the past biennium.

Texas agencies have demonstrated significant progress in the delivery of innovative and cost-effective technology solutions, many of which are highlighted in this report. Still, there are ongoing efforts to improve the cost-effectiveness and advancement of Texas government services through proper planning, investment, and resource management. To build on these efforts, this report also includes recommendations for legislative considerations that will enhance the ability of state agencies to advance the next generation of technology in Texas.

Through collaboration with agency technology leaders and with the support of the legislature, the State of Texas will continue to be a leader in delivering a secure, digital government through well-designed, innovative technology solutions to better serve Texans.

Sincerely,



Amanda Crawford
Executive Director, Texas Department of Information Resources
Chief Information Officer, State of Texas

Introduction

Texas government is advancing the next generation of technology to make it easier for Texans to access government information and services. For all its challenges, the 2020 COVID-19 pandemic provided an impetus for accelerating this digital transformation. State agencies and institutions of higher education (IHE) moved to remote work, expanded network infrastructure, deployed digital services, and rapidly responded to Texans' increased needs for information and continued government and education services. The State of Texas leads in delivering a secure, digital government and was well-positioned to respond to this unprecedented situation.

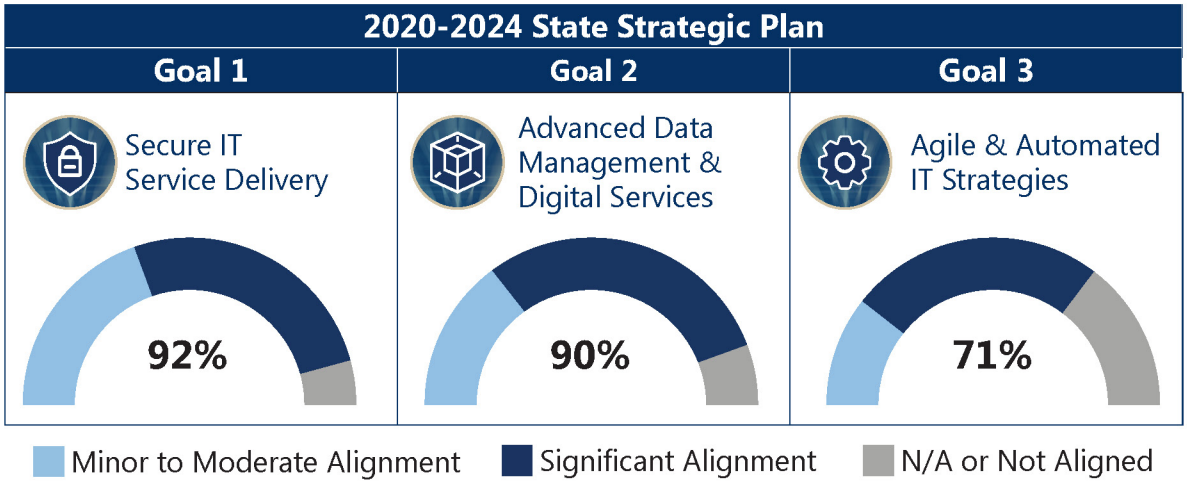
This report describes progress over fiscal years 2019 and 2020 toward three goals outlined in the 2020–2024 State Strategic Plan (SSP) for Information Resources Management. It highlights accomplishments, identifies concerns, and makes recommendations for improving the effectiveness and cost efficiency of the state's use of information resources. The BPR also includes supplemental reports on specific technology issues.

Recommendations Overview

1. Advance the state of security through expansion of coordinated incident response.
2. Enhance cybersecurity by aligning training and requirements for public sector entities.
3. Accelerate data management, data sharing, and data transparency.
4. Implement digital applications for state government payments and services.
5. Create programs for redeployment and development of state IT resources.
6. Create programs that invest in public sector IT with market-driven solutions.

Progress Snapshot

State agencies show alignment with fundamental areas of technology for security and data management, while alignment with emerging technologies is evolving.



2020-2024 State Strategic Plan
Goal 1: Secure IT Service Delivery

State agencies must provide secure information and services to both the Texans they serve and the workforce they support. Protecting sensitive and confidential data is a top priority.

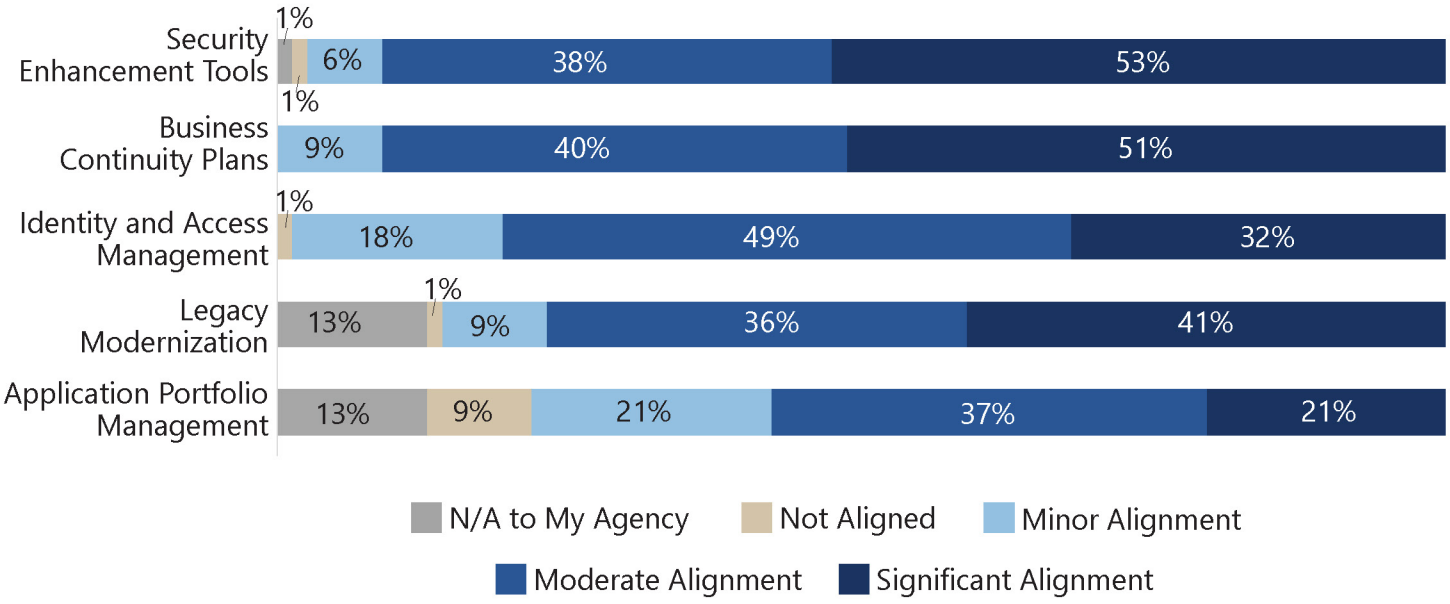
Objectives

1. Evaluate and deploy cost-effective security enhancement tools.
2. Routinely improve and test business continuity plans.
3. Consolidate and centralize identity and access management across applications.
4. Prioritize legacy modernization efforts.
5. Utilize an application portfolio management solution.

Desired Outcomes

1. Effective agency security programs that reduce risk and vulnerability of the agency's information systems.
2. Protect private and confidential information, minimize exposure to cyberattacks, and create a mature risk-based security program.
3. Address legacy system modernization to reduce risk of system compromise and data breaches.
4. Redirect IT savings to improve security, enhance monitoring of potential threats, and increase application efficiency.

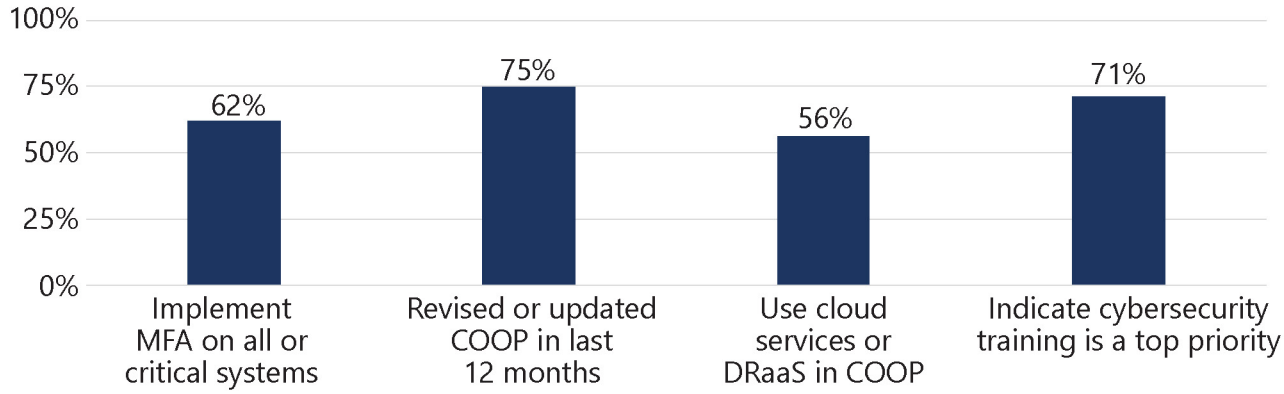
Agency Alignment with SSP Goals and Objectives



Source: 2020 IRDR – for more information see "About the 2020 Biennial Performance Report."; Note: May not equal 100% due to rounding.

Assessment

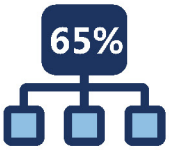
Through the ongoing deployment of effective tools like multifactor authentication (MFA), continuity of operations planning (COOP), and training, state agencies continue to increase their ability to prevent, detect, respond to, and recover from security incidents and cyberattacks.



Agencies understand that using tools for managing business application inventories, modernizing legacy systems, and keeping software current help combat cybersecurity concerns.

Evaluate and deploy cost-effective security enhancement tools

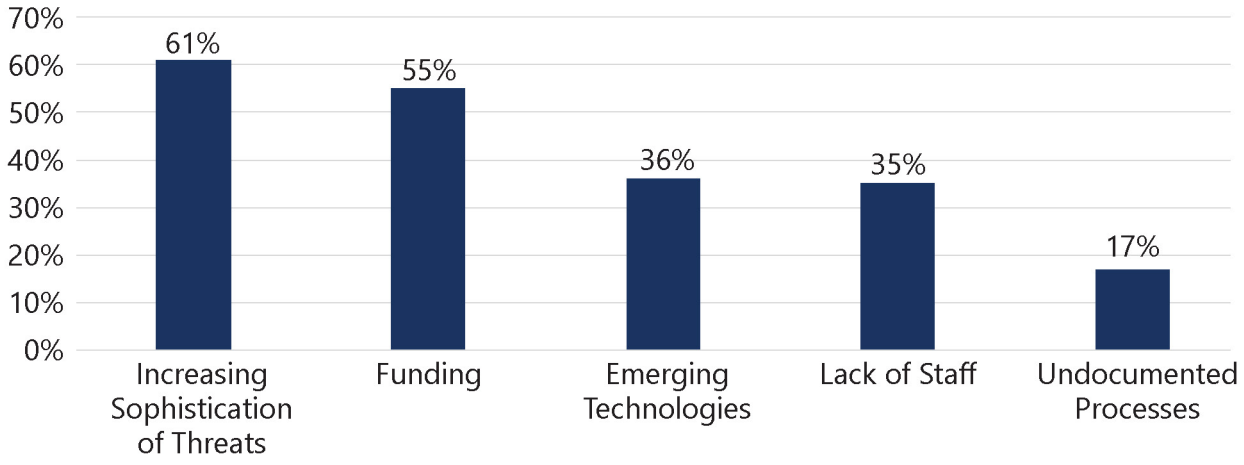
Have updated or have a plan to remediate unsupported software



Are planning to or already have implemented application portfolio management

Concerns

Understanding risk and barriers is key to improving the cybersecurity posture of state government. Agencies identified the increasing sophistication of threats as the top barrier to cybersecurity.



Recommendations

State agencies are increasingly taking a strategic approach to ensure reliable and secure access to information. The State of Texas must ensure there are sufficient resources, skills, and capacity at the enterprise — and agency — level to minimize cybersecurity exposure, reduce risk of system compromise, and facilitate the maturity of cybersecurity programs.

DIR recommends the following actions to maintain the momentum for cybersecurity improvements.

1 Advance the state of security through expansion of coordinated incident response by creating:

- The Texas Cybersecurity Incident Response Team (CIRT), a team of trained information security professionals that can provide critical services expediently to mitigate the damage during incident scenarios.
- Regional security operations centers (SOCs) located at universities or with other governmental entities in different geographic regions throughout Texas to assist with major cybersecurity incidents.
- A volunteer incident response team of vetted volunteers to assist with responding to cybersecurity events and create a framework for a shared talent pool to assist with responding to events statewide.

2 Enhance cybersecurity by aligning training and requirements for public sector entities:

- Expand state-provided security awareness training to ensure that all entities working on public resources have consistent, high-quality security training at low or no cost.
- A shared information security resources pilot program to determine whether small agencies and local governments could benefit from the expertise and cost-effectiveness of a resource sharing program.
- State, local government, and school district cybersecurity improvements including a standardized domain suffix requirement (for local governments ".gov" and school districts ".edu") and a single source for state, local government, and school districts to report cyberattacks with a minimum reporting time requirement.

Highlights of Agency Accomplishments

Texas government is making progress toward secure IT service delivery goals and objectives. The following highlights of agency accomplishments demonstrate how continuity planning, cloud migration, and successful deployment of security tools not only enhance cybersecurity, but also enable government to meet the needs of Texans.

State of Texas Government – COVID-19 Response – Continuity

The State of Texas was well-served by agency continuity plans that provide for minimal disruption to government operations and secure IT systems that Texans must rely on in a time of crisis.

The COVID-19 pandemic response for state government and the rapid transition to a remote workforce significantly increased the demand on infrastructure, hardware, and other mobile capabilities.

State agencies throughout Texas deployed thousands of laptops, set up websites, and developed applications to meet the needs of Texans and share valuable information. When key systems became overloaded due to unprecedented use or demand, agencies worked together to direct resources to quickly resolve the issue.

Agencies worked to upgrade networks, increase bandwidth, add redundancy, and, at times, reroute traffic to handle the large increase in demand.

Because Texas government was prepared, government operations were able to continue to provide Texans with timely information, contact-free services, and remote learning.

Texas General Land Office (GLO) – Cloud Services Enhance Continuity Efforts

GLO successfully migrated a mission-critical business application, which allows companies to report oil and gas production on state-owned land, from the agency's data center to a private cloud service to improve performance, resiliency, and business continuity.

Texas Department of Information Resources (DIR) – Multi-Factor Authentication (MFA) Program Rollout

DIR successfully implemented an MFA program for state agencies and institutions of higher education.

With a wide range of capabilities, MFA is an effective security tool that provides strong access controls using single digital identity for Texans, state employees, and higher education users.

In addition to reducing security risks and vulnerabilities, MFA ensures reliable and secure access to critical state agency and citizen information.

2020-2024 State Strategic Plan
Goal 2: Advanced Data Management & Digital Services

Data is one of the state's most valued strategic assets with the ability to inform agency business processes and decisions. Digital services provide opportunities for state agencies to improve and transform processes by augmenting traditional in-person operations or making services available online to better serve Texans.

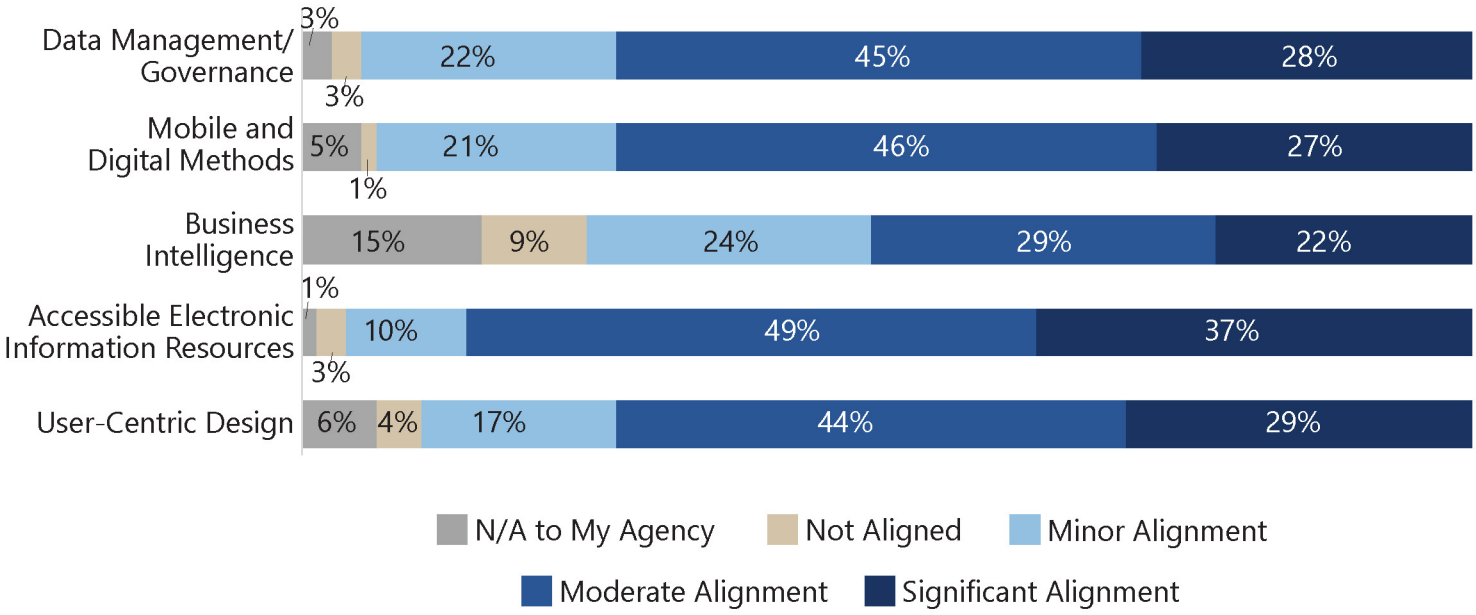
Objectives

1. Implement fundamental data management, governance, policies, and best practices.
2. Explore mobile and digital methods.
3. Spur change with data driven decisions supported by business intelligence.
4. Ensure procurement and deployment of digital services provides accessible electronic information resources.
5. Focus on customers' needs and preferences with user-centric design applications.

Desired Outcomes

1. Improve business decisions, reduce costs, and increase automated processes.
2. Improve customer service through informed decisions and increased data quality.
3. Ensure technology is accessible and not contingent on a user's single sense or ability.
4. Increase efficiency and improve business relationships through a robust digital ecosystem.
5. Increase opportunities for agency data sharing to address topics that impact the state.

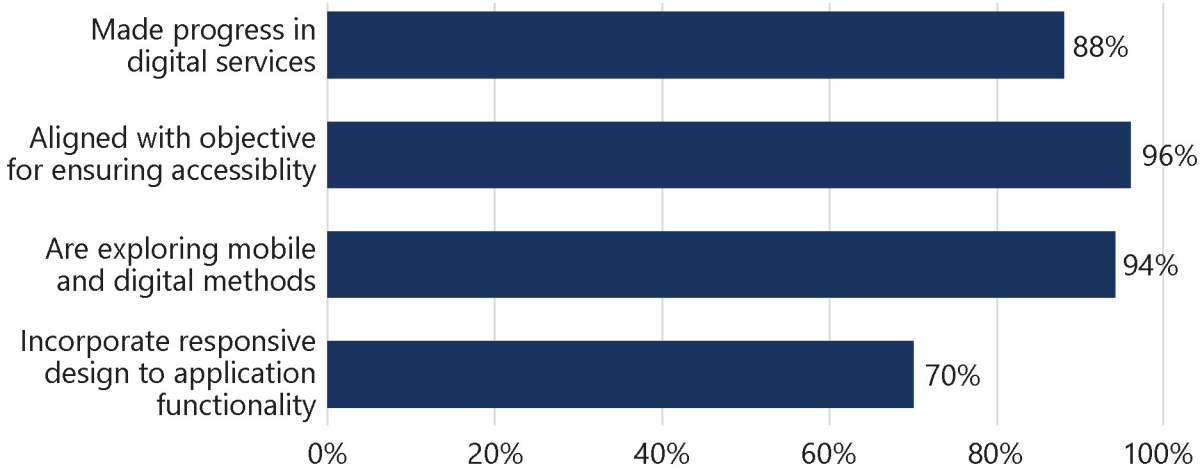
Agency Alignment with SSP Goals and Objectives



Source: 2020 IRDR; Note: May not equal 100% due to rounding.

Assessment

Strong data governance helps state agencies manage data that is within their organization. It helps employees understand how to use, share, manage, and dispose of it properly. Adopting business intelligence and analytics tools enables state agencies to make more informed decisions, increase productivity, and improve operational efficiencies. Several agencies are advancing data management and using digital services to improve the customer experience.



77%

Have or plan to implement a data governance structure

84%

Currently sharing data with another government entity

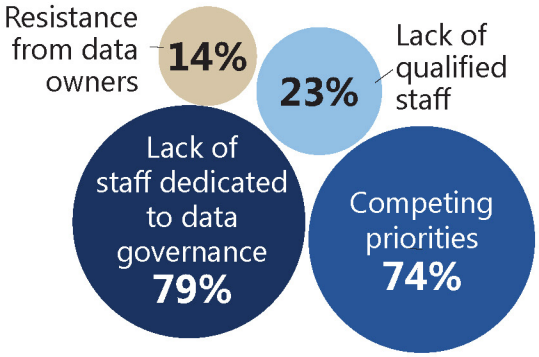
70%

Have or are planning a data management program that oversees the data life cycle

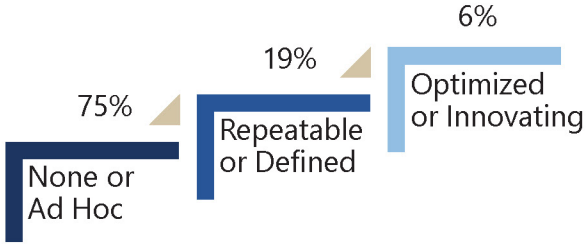
Concerns

While state agencies understand the value and importance of strong data governance, lack of dedicated personnel is a significant barrier. State agencies must increase use of mobile applications and digital methods to deliver immediate, seamless government services.

Top Barriers to Strong Data Governance



Status of Mobile Application Development



Recommendations

Several agencies are advancing data management and using digital services to improve the customer experience. In addition, state agencies are still in the early stages of planning or implementing mobile applications. The State of Texas must increase efficiencies for data management and digital services to better serve Texans.

DIR recommends the following actions to continue the advancement of data management practices and innovative digital services.

1 Accelerate data management, data sharing, and data transparency progress by requiring state agencies to:

- Publish all public, high value data sets to the Texas Open Data Portal.
- Use the Closed Data Portal for data sharing within and between state agencies.
- Perform an assessment of their agency's data program to determine gaps in data management.

2 Implement digital applications for state government payments and services by:

- Enabling private-sector peer to peer (P2P) payment solutions commonly used by the public to provide additional payment methods for government services.
- Enabling broader access to digital services, streamlined processes, and digitization by expanding use of digital signatures.
- Providing Texans with a secure, centralized, mobile-friendly portal for interacting with state government by requiring agencies to use the Texas by Texas (TxT) digital assistant mobile application.

Highlights of Agency Accomplishments

Texas government is making progress toward data management and digital services goals and objectives. The following highlights of agency accomplishments demonstrate how data analytics, improved data quality, data driven decisions, and digital services are helping state agencies to excel in providing innovative delivery of government services.

Texas Comptroller of Public Accounts (CPA) – Business Intelligence Solution

CPA implemented an analytics solution for producing the Biennial Revenue Estimate for the State of Texas.

This new solution replaced legacy technologies and automated manual steps.

Texas Department of Family and Protective Services (DFPS) – Integrated Reporting Application

DFPS improved performance assessments of residential childcare provider contractors by implementing the Performance Assessment Compliance Evaluation System (PACES).

The system has eliminated manual processes, reduced duplicative data entry, and increased data quality and integrity while offering process transparency through an integrated reporting mechanism.

The deployment of this application positions DFPS to monitor performance on specific desired results and outcomes by conducting ongoing and continual oversight of the contractor's performance using data.

Texas Health and Human Services Commission (HHSC) and Department of State Health Services – Case Management Solution and Online Interactive Dashboards

HHSC Information Technology, on behalf of the Department of State Health Services (DSHS), implemented Texas Health Trace, a data management and self-service system that allows for a coordinated statewide approach to the COVID-19 disease response, while taking into consideration the varied needs of the public and all levels of public health entity disease intervention.

Texas residents can use the platform to assess their current level of risk and determine if they are currently displaying the symptoms and co-factors which elevate their possibility of having COVID-19.

The Texas Health Trace platform ensures that Texans continue to have access to government services and receive important information, such as an interactive map of COVID-19 testing facilities, instructions for testing, and critical health and safety guidelines relating to the virus.

Additionally, HHSC IT and DSHS developed interactive online COVID-19 dashboards that include daily and cumulative cases, fatality data, estimated recoveries, statewide hospital data, and case demographics for confirmed cases.

The interactive dashboards provide visual and compelling information to meet the public's need for consistent, timely, and reliable information.

2020-2024 State Strategic Plan
Goal 3: Agile & Automated IT Strategies

State agencies strive to move toward a collaborative, agile, and automated state government. While response to the COVID-19 pandemic has accelerated progress, there are still areas for improvement. As agencies transition to the next generation of innovative solutions, they must be able to rely on the scalable services of cloud and the efficiencies of automation.

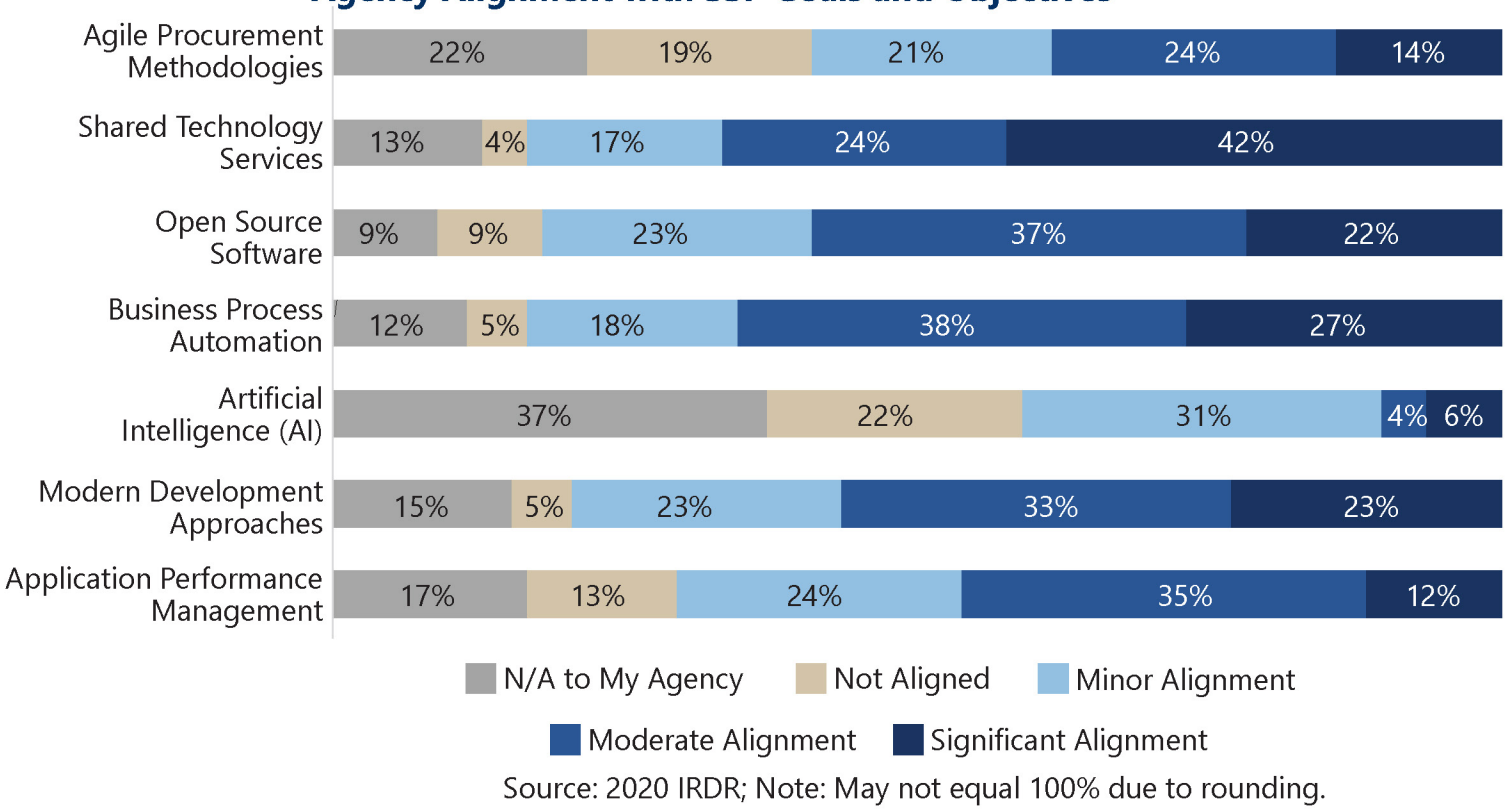
Objectives

1. Consider agile procurement methodologies.
2. Leverage shared technology services.
3. Utilize open source software applications.
4. Explore and prioritize business process automation.
5. Initiate testing of artificial intelligence (AI) solutions.
6. Adopt modern development approaches.
7. Utilize an application performance management solution.

Desired Outcomes

1. Increase readiness for advanced technologies such as machine learning, artificial intelligence, and robotic process automation.
2. Reduce risk, create sound procurement processes, and improve project management practices.
3. Proactively focus on using emerging technologies effectively.
4. Reduce deployment time and increase functionality at reduced cost.
5. Better usage of IT-as-a-service, enabling opportunities for innovation and new initiatives.

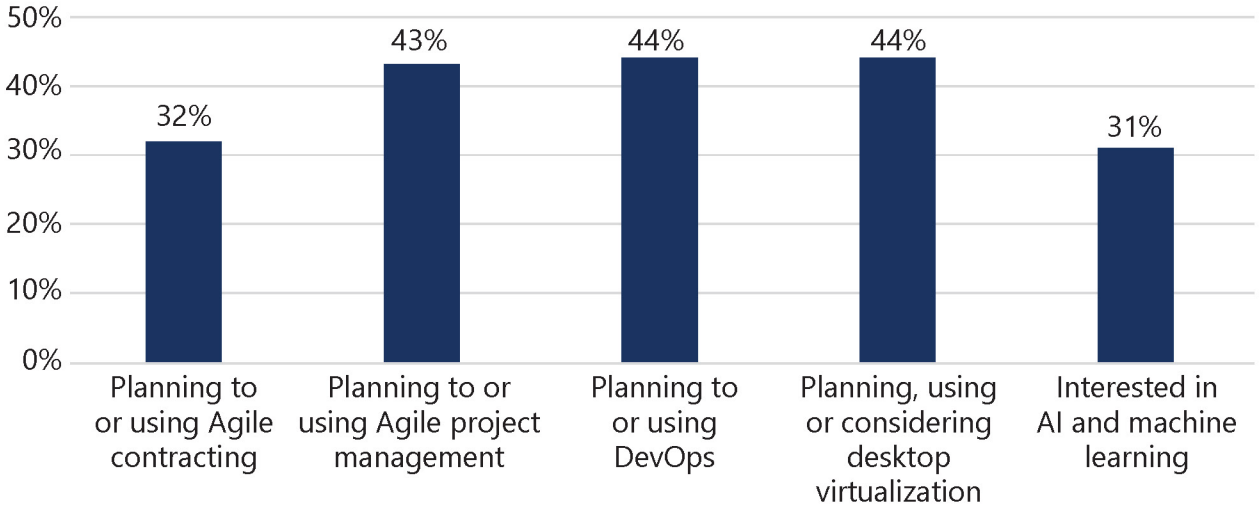
Agency Alignment with SSP Goals and Objectives



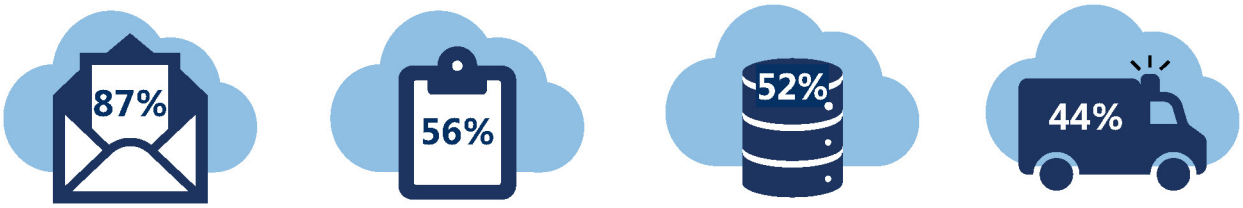
Source: 2020 IRDR; Note: May not equal 100% due to rounding.

Assessment

State agencies are in the early stages of embracing agile approaches and modern IT solutions. They are making strides in advancing cloud adoption, with 97% of state agencies reporting progress since 2018.

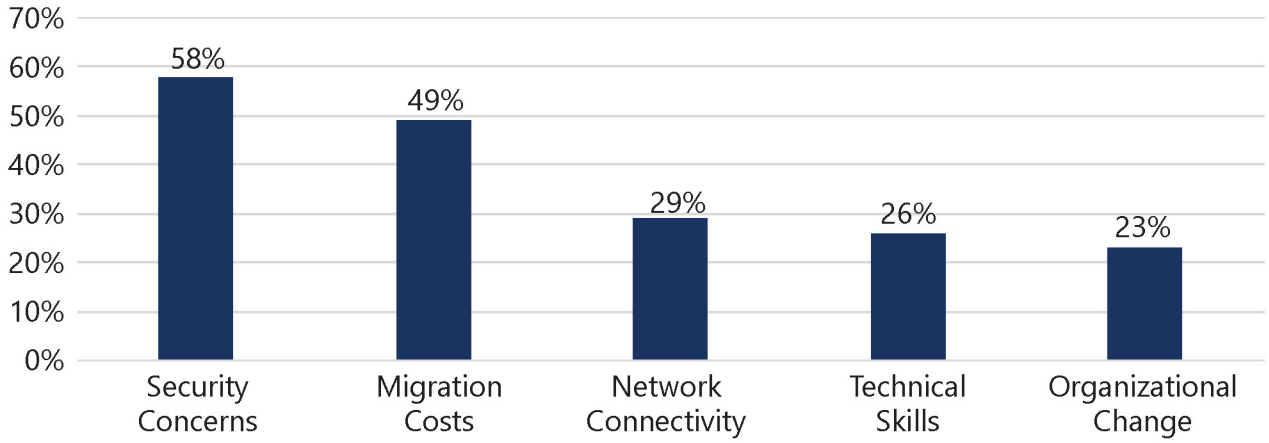


Top Areas for Leveraging Cloud Solutions



Concerns

Advancing the next generation of technology in Texas government requires managing risk. Agencies identify security concerns and migration costs as top barriers to cloud adoption.



Recommendations

State agencies can gain efficiencies and better serve Texans by implementing relevant, streamlined solutions. The State of Texas must develop partnerships and approaches that invest in public sector IT while facing the realities of budget constraints.

DIR recommends the following actions to help agencies implement agile and automated strategies.

1 Create programs for redeployment and development of state IT resources that include:

- Streamlined procedures for transferring state agency laptops to school districts and public charter schools in support of both in-person and remote learning.
- Establishing a centralized program for developing and retaining IT skills in state government.

2 Create programs that invest in public-sector IT with market-driven solutions by:

- Offering shared Texas IT services program to other state entities, thus enabling additional revenue and lowering the overall cost through greater volume discounts.
- Establishing a fund for modernizing legacy IT infrastructure.

Highlights of Agency Accomplishments

Texas government is making progress toward the goals and objectives for transitioning to the next generation of innovative solutions. The following highlights of agency accomplishments demonstrate how artificial intelligence, emerging technologies, open source software, and shared services are helping state agencies move toward a more collaborative, agile, and interoperable state government.

Texas Workforce Commission (TWC) – Cloud-Based Automated Chatbot

TWC worked in coordination with industry partners to implement "Larry," a cloud-based automated virtual assistant or chatbot that appears on the TWC website and is based on a conversational artificial intelligence capability that uses natural language processing to help the bot learn what the users need and help them find answers.

Within the first 6 months, "Larry" assisted more than 2.3 million TWC customers by answering more than 9.2 million questions.

Making use of an artificial intelligence solution, has helped divert over 460,000 calls from call centers, allowing TWC to meaningfully engage more Texans.

Texas A&M Transportation Institute (TTI) – Smart Intersection

The TTI research team designed, developed, and pilot-tested a Smart Intersection at Texas A&M University System's RELLIS Campus.

The system tracks buses as they approach an intersection and warns pedestrians and bicyclists that a bus is about to turn. The Smart Intersection technology is now also operating at the George Bush Drive and Penberthy Boulevard intersection on the Texas A&M University Campus.

By effectively using emerging technologies, TTI has enhanced safety by helping to reduce crashes involving pedestrians and bicyclists at signalized intersections.

University of Texas Permian Basin (UTPB) – Open Source Software Application

UTPB implemented an open source Information Technology Infrastructure Library (ITIL) based service management platform.

Utilizing the open source software application will help UTPB realize an annual savings of $31,800 in licensing fees.

Texas Department of Information Resources (DIR) – Mobile-First Digital Assistant

DIR established a mobile-first digital assistant ("Texas by Texas" or "TxT") to give Texans the ability to create a single user account and profile, access a personalized dashboard with stored payment information and their transaction history, and establish notification preferences for alerts and reminders.

By leveraging shared services, TxT enables agencies to integrate with the TxT digital assistant so that Texans can easily and securely take care of these services anytime, anywhere, and on any device without having to visit an agency office.

Conclusion

Technology is continuing to enhance how Texas government serves Texans. DIR will promote and monitor the goals in the 2020-2024 State Strategic Plan for Information Resources Management to help state agencies drive reliable, secure services and to advocate for modernization within their programs. Setting goals and monitoring progress is key in helping state IT leaders to prepare for and take full advantage of the inevitable change in technology.

The results of the review presented in this 2020 BPR demonstrate that Texas government has made tremendous strides in providing secure IT service delivery, protecting and managing data, moving toward digital services, and using agile and automated strategies.

Glossary of Terms

Agile. A method of project management used especially for software development, that is characterized by the division of tasks into short phases of work and frequent reassessment and adaptation of plans.

Agile Procurement. An iterative approach that leads to best value awards in shorter periods by developing the solicitation in a series of sprints to have vendor demonstrations and discussions throughout the procurement phase.

Alternative Workplace Arrangements (AWA). Work arrangements that combine non-traditional work practices, settings/locations, or technologies.

Application Performance Management (APM). The monitoring and management of performance and availability of software applications including ability to detect and diagnose complex application performance problems.

Application Portfolio Management (APM). A framework for managing enterprise IT software applications and software-based services. DIR has implemented Application Portfolio Management software as a service available to state agencies.

Artificial Intelligence (AD). The ability of a digital computer or computer-controlled robot to perform tasks commonly associated with intelligent beings.

Business Continuity Plan (BCP). A process resulting in a document that identifies an organization's exposure to internal and external threats and synthesizes hard and soft assets to provide effective prevention and recovery for the organization.

Business Application. Labels or names used by an organization to easily identify a group of functions provided by one or more systems to accomplish the specific business needs of the agency. A Business Application is typically a combination of integrated hardware and software (including data and applications), internally developed custom systems, commercial off the shelf (COTS) applications, and/or customized third-party system.

Business Intelligence (BI). Systems that combine data gathering, data storage, and knowledge management with analysis to evaluate complex corporate and competitive information for presentation to planners and decision makers, with the objective of improving the timeliness and the quality of the input to the decision process.

Business Process Automation (BPA). Technology-enabled automation of complex business processes that can streamline a business for simplicity, achieve digital transformation, increase service quality, improve service delivery or contain costs.

Chatbot. A form of Artificial Intelligence software that is used to conduct an on-line chat conversation via text or text-to-speech, in lieu of providing direct contact with a live human agent.

Closed Data Portal (CDP). A private data sharing environment intended to host private or sensitive data. Unlike the Open Data Portal (ODP), access to data in the CDP is by invitation only.

Cloud. On-demand availability of computer system resources, especially data storage and computing power, without direct active management by the user.

Continuity of Operations Plan vCoOP). Plans, procedures, training, and exercises that ensure a government organization can continue to perform its essential functions during the disruption of normal operations.

DevOps. (Development and Operations) is an enterprise software development phrase used to mean a type of agile relationship between development and IT operations. The goal of DevOps is to change and improve the relationship by advocating better communication and collaboration between these two business units.

Disaster Recovery as a Service (DRaaS). A cloud computing and backup services model that provides a total system backup to protect applications and data in the event of a system failure.

Digital Application. Any application software that can be used by a computer, mobile device, or tablet.

Digital Ecosystem. A distributed, adaptive, open socio-technical system with properties of self-organization, scalability, and sustainability inspired from natural ecosystems. Digital ecosystem models are informed by knowledge of natural ecosystems, especially for aspects related to competition and collaboration among diverse entities.

Digital Transformation. The adoption of digital technologies to create new or improve existing processes, services, and customer experiences.

Electronic and Information Resources (EIR) Accessibility. Providing electronic information and services through multiple ways so that communication is not contingent on a single sense or ability.

High-Value Dataset. Information that can be used to increase state agency accountability and responsiveness, improve public knowledge of the agency and its operations, further the core mission of the agency, create economic opportunity, or respond to need and demand as identified through public consultation. The term does not include information that is confidential or protected from disclosure under state or federal law.

Identity and Access Management (IAM). A broad administrative area that establishes a unique identity for individuals and associates their established identity with user rights and privileges. It is an enterprise business strategy that governs the definition, storage, use, and management of identities.

Incident Response. The mitigation of violations of security policies and recommended practices.

IT-as-a Service. An operational model where the information technology (IT) service provider delivers an IT service to a business. The consumer does not manage or control the underlying cloud infrastructure including network, servers, operating systems, storage, or even individual application capabilities, except for limited user-specific application configuration settings.

Learning Management System (LMS). Software that automates administration of learning activities and competencies as well as the logistics of delivering such activities. This may include all types of learning: instructor-led, computer-based training, web or video conferencing, etc.

Legacy Systems. A computer system or application program that is operated with obsolete or inefficient hardware or software technology.

Machine Learning (ML). Machine learning is the study of computer algorithms that improve automatically through experience. It is seen as a subset of artificial intelligence.

Multifactor Authentication (MFA). A security enhancement in which a technology user must provide two or more pieces of evidence to log into an account or access a system including factors such as a password, a device assigned to the user, or biometrics.

Open Data Portal (ODP). In Texas, the official central repository of publicly accessible electronic data for the State of Texas for data that can be freely used, re-used, and redistributed by anyone

Open Source Software. Software with its source code made available with a license in which the copyright holder provides the rights to study, change, and distribute the software to anyone and for any purpose.

Peer to Peer (P2P) Payment Solution. A system for transferring cash payments from one party to another using online technology.

Project Management. A system of procedures, practices, and technologies that provides the planning, organizing, staffing, directing, and controlling necessary to successfully manage a project.

Project Management Practices. Documented and repeatable activities through which a state agency applies knowledge, skills, tools, and techniques to satisfy project activity requirements. Includes practices such as project management methodologies, system development life cycle, program and portfolio management, and the use of automated tools to support the practices.

Remote Work. An alternative workplace arrangement in which employees do not commute or travel to a centralized place of work, such as an office building, warehouse, or store.

Responsive Design. A graphic user interface design approach that adjusts smoothly to various screen sizes such as a computer monitor screen or mobile device.

Robotic Process Automation (RPA). A digital enablement technology that predominantly leverages a combination of user interface and surface-level features to create scripts that automate routine, predicable data transcription work. In other words, it is a rules-based technology that uses software to automate repetitive tasks normally performed by humans to improve processes and gain efficiencies.

Security Operations Centers (SOC). A centralized function for an organization or enterprise employing people, process, and technology to continuously monitor, prevent, detect, analyze, and respond to cybersecurity incidents.

Shared Technology Services. Technology provided through a shared, collaborative governance model. Statewide shared services available through DIR's Shared Technology Services include data center, managed security, managed applications, and Texas.gov e-commerce portal.

Texas by Texas (TxT). A secure, centralized, mobile-first application to conduct business with multiple Texas government entities that provides users with the ability to create an account, verify their identity once, and establish a profile with their name, address, and payment information.

User-Centric Design. An iterative design process using a mixture of investigative and generative methods to understand users' needs.

Notes

Notes

Texas Department of Information Resources

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