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Information Technology Strategic Plan

2023 – 2025



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Executive summary

The purpose of the Oregon Department of Environmental Quality Information Technology Strategic Plan is to document DEQ's IT goals, illustrate how they are in alignment with the agency's business strategy, and document the plan to achieve them. The DEQ IT Strategic Plan guides prioritization of IT investment decisions and ensures IT initiatives align with the agency's overall mission and objectives. This document includes the DEQ IT vision, mission, guiding principles, strategic goals, success metrics, strategic drivers and description of the current IT landscape.



DEQ's mission is to be a leader in restoring, maintaining and enhancing the quality of Oregon's air, land and water. DEQ does not have an agency-wide strategic plan yet, however, when it exists in July 2024, this IT Strategic Plan will be updated to ensure alignment in early 2025. All aspects of the IT Strategic Plan will be updated including, but not limited to, the IT Vision and the IT Mission statement. In lieu of an agency-wide strategic plan, the COBIT 2019 Toolkit was utilized to identify the agency's top enterprise goals. For each enterprise goal, the COBIT 2019 framework provided IT alignment goals for consideration that could ensure the IT organization's work directly supports agency priorities.

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IT Vision

The DEQ IT vision is to set the standard for excellence among state agencies.

By adopting this vision statement, DEQ is asserting that it aims to achieve the highest level of quality, performance, and innovation in its IT services, solutions, and practices. By setting the standard for excellence, DEQ seeks to not only meet but surpass the expectations of its interested parties, delivering exceptional value and continuously improving its offerings.

In pursuing this vision, DEQ's IT organization commits to staying at the forefront of technology advancements, investing in its workforce, promoting equity through tools and technologies, fostering a culture of innovation and collaboration, and implementing best practices in IT management and governance. This vision serves as a guiding principle for DEQ's IT strategic planning, decision-making, and resource allocation, driving its efforts to be recognized as a leader within the state and a model for others to follow. DEQ is further driven to be a resource to other agencies, including sharing examples, templates, advice, and lessons learned.

IT Mission Statement

The DEQ IT mission is to deliver a secure and reliable foundation of user-friendly IT services, provide robust and fiscally responsible governance, and develop innovative IT solutions that create lasting value for the agency, its staff, and all of Oregon's inhabitants.

Guiding Principles

The guiding principles for DEQ's IT organization are:

- We are dedicated to the principles of diversity, equity, inclusion, and belonging (DEIB). We are committed to incorporating DEIB considerations throughout our work, including but not limited to strategic planning, project governance, technology deployment, change management, training, support, and data management.
- We are a service-oriented IT organization that puts people – our customers and our staff – first.
- We celebrate and value diversity, promoting a professional environment that is open and welcoming to all.
- We engage with staff and managers throughout the agency to develop business-aligned plans and to evaluate the effectiveness of technology initiatives to meet agency needs.

- We recognize the value of data and DEQ’s crucial role in environmental data stewardship, and implement comprehensive measures to ensure data security, integrity, and accessibility.
- We develop and continually improve standards and procedures that (1) ensure quality and consistency; (2) reduce complexity; and (3) operationalize lessons learned.
- We are collaborative problem-solvers, assuming positive intent, practicing active listening, staying objective and being open to changing our minds.

Strategic Goals

As described in the Executive Summary, in lieu of an agency-wide strategic plan the COBIT 2019 Toolkit was utilized to identify the agency's top enterprise goals. For each enterprise goal, the COBIT 2019 framework provided IT alignment goals for consideration that could ensure the IT organization's work directly supports agency priorities. After careful analysis, the IT alignment goals that are the most relevant to DEQ's unique environment were selected. For additional details around this process, please see Appendix 8: IT Strategic Planning Process.

DEQ’s strategic enterprise goals, IT alignment goals, and metrics are outlined below.

I and T Alignment Goals	Agency’s Goals
Delivery of I and T services in line with business requirements	Portfolio of valuable products and services
Managed I and T-related risk	Managed business risk
I and T compliance and support for business compliance with external laws and regulations	Compliance with external laws and regulations
Security of information, processing infrastructure and applications, and privacy	Business service continuity and availability.
Realized benefits from I and T-enabled investments and services portfolio.	Managed digital transformation programs.

Delivery of I and T services in line with business requirements

Initiatives

- Roll-out a unified requirement documentation system.
- Implementing a robust IT Service Management framework to effectively deliver IT services and manage service level agreements.

- Create a culture of continuous improvement by improving the satisfaction of the quality of I and T service % over time.

Metric Goal

- Percent of users satisfied with the quality of I and T service delivery increases over time.
- The percent of met service level agreements increases over time.

Manage I and T-related risk

Initiatives

- Partner with Cyber Security Services to continually improve its policies, procedures, and controls to mitigate IT risks, such as data breaches, system outages, and cybersecurity threats.
- Engage in routine risk assessments and audits, in collaboration with Cyber Security Services and the Secretary of State, to identify, assess, and prioritize potential risks and vulnerabilities, enhancing the agency's security and compliance posture.
- Create a culture of continuous improvement by the risk assessment scores improving over time.

Metric Goal

- Risks identified during regular I and T risk assessments decrease over time.

Ensure I and T compliance with external laws and regulations

Initiatives

- Update the I and T initiative process to include an evaluation to confirm compliance with external laws and regulations.
- Create a culture of continuous improvement by recording the number of I and T related noncompliance issues reported or causing public embarrassment and taking action to prevent the issue in the future.

Metric Goal

- Have zero un-remediated I and T-related noncompliance issues reported.

Ensuring security of information, processing infrastructure and applications

Initiatives

- Remediate prioritized security gaps identified within the 2023 CSS assessment.
- Work closely with Cyber Security Services to implement a robust information security program. A multi-layered approach to security is crucial, encompassing network, application, and endpoint security measures.
- Performing regular vulnerability assessments, penetration tests, and security audits will be conducted to identify and address potential weaknesses.
- Create and maintain a robust incident response plan that helps to quickly detect, respond to, and recover from security incidents.
- Maintain privacy best practices, such as data minimization and encryption to ensure the privacy of personal and sensitive information.

Metric Goals

- Achieve a 90% resolution rate for all identified vulnerabilities within 30 days of detection. Speed in addressing vulnerabilities is crucial to maintaining the integrity of our software. This metric will ensure that our team prioritizes and acts swiftly upon the findings of our security assessments.
- The number of confidentiality, integrity, or availability incidents causing financial loss, business disruption is zero.
- Achieve equivalent implementation percentages of at least 40% across the following four categories by the end of 2024: Procedures Complete, CIS Controls 1-6 efficacy, CIS Controls 1-6 automated, and CIS Controls 1-6 reported. DEQ is targeting a compliance level of 40% because the agency values security and intends to make it difficult for attackers to compromise systems and gain unauthorized access to sensitive data. This contributes to the protection of the agency's information assets and ensures the continuity of essential services.
- Decrease average security incident response time by 5% over the next fiscal year. A quicker response time is vital in limiting potential damage during a security incident. The team will be equipped with tools and protocols to act swiftly during such events.

I and T-enabled investments and services portfolio

Initiatives

- DAITM (DEQ Agency-wide Information Technology Management) committee will work continually to improve the agency's IT governance framework.
- Ensure IT investments align with the agency's objectives and deliver value. The portfolio management process (DAITM scoring matrix) will guide the agency as it effectively prioritizes, selects, and monitors IT investments to ensure optimal allocation of resources.
- Establish and track Key Performance Indicators (KPIs) will enable DEQ to measure the performance and benefits realization of IT investments and services.
- Conducting regular post-implementation reviews and lessons learned sessions will help identify opportunities for improvement and optimize the return on IT investments.

Metric Goals

- 100% of I and T-enabled investments for which claimed benefits in the business case are met.
- Complete the transition into Your DEQ Online (YDO), a cloud platform, of 100% of the agency's in-scope permitting, licensing, and certification programs in 2024. This will reduce maintenance and infrastructure costs, increase scalability, and improve the agency's efficiency and quality of service to all of Oregon's inhabitants.
- Achieve a consistent 80% or above KPI target attainment rate across all software development projects. By aiming for a high KPI attainment rate, we set a standard of excellence for our team. This target will motivate the software development team to consistently deliver high-quality outputs that realize the anticipated benefits.
- Achieve a 20% increase in project lessons learned for projects that go through DEQ's IT project governance framework. By actively applying insights from past projects, we aim to continually refine our processes and methodologies. This metric ensures that the team integrates lessons learned into their workflow, leading to more successful and efficient project executions.
- Achieve a 90% alignment rate between new IT initiatives and the agency's strategic objectives within a year. By ensuring that the majority of new projects directly support our goals, we optimize resource utilization. This metric serves as a benchmark, driving the team to always align their efforts with the agency's mission.

IT Infrastructure Roadmap

This IT Infrastructure Roadmap outlines anticipated IT infrastructure-related projects over the next 3 years, starting in Jan. 2022. The roadmap helps DEQ plan and budget for needed technology investment while providing transparency within and across teams. The roadmap also helps inform DAITM's, DEQ's primary IT governing body, decision-making and prioritization by identifying work that may complement or conflict with project proposals under consideration.

Start Date	End Date	Roadmap Item	Primary Goal	Type
2019-05	2024-09	Your DEQ Online	Modernization	New Software
2022-01	2023-04	Security assessment gap remediation	Security and Privacy	Security hardening
2022-01	2023-03	AQI migration	Scalability	Cloud migration
2022-01	2023-10	OregonBuys	Centralized management	Analysis and Implementation
2022-03	2022-08	RDS Environment Consolidation	Maintainability	Software upgrade
2022-04	2023-06	Workday Migration / Q-Cat App Development	Software Development	New Software
2022-04	2023-01	Heavy Duty Diesel Retrofit Application	Software Development	New Software
2022-06	2022-11	Public web server refresh	Lifecycle management	Software upgrade
2022-06	2023-12	OneDrive "User" folder migration	Standardized systems	Cloud migration
2022-07	2023-04	SDI Dev Server refresh	Lifecycle management	SDC migration
2022-09	2023-10	M365 Intune migration	Standardized systems	Cloud migration
2022-09	2024-05	HQ file server upgrade	Maintainability	SDC migration
2022-10	2024-01	AWQMS migration	Lifecycle management	Cloud migration
2022-12	2023-06	Job Scheduler upgrade	Lifecycle management	Software upgrade

Start Date	End Date	Roadmap Item	Primary Goal	Type
2023-01	2023-06	Q-Net migration to SharePoint Online	Lifecycle management	Cloud migration
2023-01	2024-02	Server 2012 R2 EOL Upgrades/Migrations	Lifecycle management	Software upgrade/SDC Migration
2023-02	2023-05	Water Quality file server creation/migration	Maintainability	SDC migration
2023-02	2023-10	Rapid Application Development Scaffolding	Software Development	New software
2023-04	2023-12	FTP Upgrade	Lifecycle management	SDC migration
2023-06	2024-04	GIS Modeling Server Migration	Lifecycle management	SDC migration
2023-06	2023-11	Speak Up Title IV	Software Development	Software upgrade
2023-06	2024-12	VIP Opus Server and Storage Migration	Lifecycle management	SDC migration
2023-06	2024-03	Air Quality file server creation/migration	Maintainability	SDC migration
2023-07	2024-12	HDC Server and Storage Upgrade	Lifecycle management	Hardware Upgrade
2023-07	2023-10	JavaScript Dependency Automation	Software Development	Security hardening
2023-07	2023-11	Web App Security Upgrades	Software Development	Security hardening
2023-07	2024-12	SharePoint 2019 Team Site migrations to SharePoint Online	Lifecycle management	Cloud migration
2023-08	2024-06	Centralized Password Storage Tool	Standardized systems	Cloud migration
2023-08	2023-11	.NET Version Standardization	Software Development	Software upgrade
2023-10	2024-05	CSD file server creation/migration	Maintainability	SDC migration
2023-10	2024-01	Land Quality file server creation/migration	Maintainability	SDC migration

Start Date	End Date	Roadmap Item	Primary Goal	Type
2023-10	2024-06	PST file clean up and management	Maintainability	Analysis and Implementation
2023-11	2024-02	SPOTS Log Card Management	Software Development	New software
2024-01	2024-03	Leave allocation prorate automation	Software Development	Automation
2024-02	2024-07	Northwest Region file server upgrade	Maintainability	SDC migration
2024-01	2024-12	Azure discovery and implementation	Lifecycle management	Analysis and Implementation
2024-01	2024-04	Ground Water ASP app consolidation	Software Development	New software
2024-02	2024-04	Google translation services	Software Development	Software upgrade
2024-06	2024-12	Software application decommissioning	Lifecycle management	Archiving

Appendices

Appendix 1: Drivers

Federal and State Mandates: Federal and State mandates extend across agency mission- and non-mission-related responsibilities. Legislative or legal processes from these can create funded and unfunded mandates affecting agency business processes. As example, DEQ has federal mandates with EPA reporting compliance for major program areas in air, land, and water. These generally include information about the environmental interests at sites around the state, as well as compliance violation information. The federal mandates also include restrictions on security protocols and allowable mechanisms for providing electronic reports. IT mandates from DEQ and the state include IT security, transparency including public records disclosure, system development life cycle management, performance assessment, financial accountability, collaboration services and privacy protection.

Interested Party Expectations: Oregonians, indigenous peoples, the regulated community, DEQ employees and our partners in other state, local and federal agencies, deserve efficient, simplified, and integrated IT services to access and exchange information freely across all levels of government and with the public.

Fiscal Responsibility: Fiscal constraints require new levels of innovation and leadership across organizations, programs, and partnerships. DEQ will find new ways IT can maximize efficiencies to meet business demands using the optimal combination of in-house and third-party services. When available, DEQ will use shared services and technologies for common business needs to better meet interested party needs, improve public services, and lessen funding needs across programs and agencies.

External Factors: Science constantly identifies new risks, recalibrates known risks, and presents new operational challenges for agencies. Managing greenhouse gas emissions and protecting human health and the environment with a growing population will continue to challenge Oregon's use of the state's natural resources. Therefore, DEQ must adapt rapidly and remain agile to manage these unplanned demands.

Aligning IT with agency goals and outcomes: DEQ's mission is to be a leader in restoring, maintaining, and enhancing the quality of Oregon's air, land and water. The agency's IT initiatives must support and enable the achievement of this mission and its strategic objectives, helping to maximize the value of IT investments. This includes the exploration and adoption of new technologies and approaches that can improve the agency's environmental outcomes. DEQ is also committed to leveraging technology to provide better, faster, and more cost-effective

services to residents, businesses, and other interested parties, enhancing overall satisfaction and trust in the agency.

Improving operational efficiency: It is essential that DEQ’s technology resources are employed to streamline processes, reduce redundancies, and automate manual tasks. This will increase productivity, reduce costs, and improve the overall performance of the agency. This includes ensuring the agency has the right mix of hardware, software, networks, and other technology assets to support current and future needs, as well as to maintain system performance, reliability, and scalability.

Enhancing collaboration and communication: DEQ depends on its IT resources to facilitate effective information sharing, decision-making, and coordination among different departments and levels of the agency, as well as with external partners. This helps to create a more connected, efficient, and agile environment, fostering innovation and better service delivery.

Managing IT resources: Ensuring the effective allocation, use, and oversight of the agency’s IT budget, personnel, and other resources, helping to minimize waste and optimize return on investment. By implementing robust IT governance structures, monitoring processes, and resource allocation strategies, agencies can better balance the competing demands for limited resources, ensuring that critical needs are addressed while maintaining flexibility to adapt to changing circumstances and opportunities.

Appendix 2: IT Environment

DEQ has 13 offices across the state of Oregon as well as eight additional locations for vehicle testing that require IT support for applications and infrastructure.

Table 1. IT support for applications and infrastructure by office location.

Area	Locations	Staff PC	Other PCs	Mobile Devices
Headquarters	Portland	462	64	425
Laboratory	Hillsboro	125	37	84
Lab remote sites	State-wide	0	45	0
Western Region	Coos Bay, Eugene, Medford, and Salem	125	10	125
Eastern Region	Bend, The Dalles, Klamath Falls, and Pendleton	107	6	57
Vehicle Inspection Program (VIP) Testing Stations	Clackamas, Gresham, NE Portland, Hillsboro, Medford, Scappoose, and Sherwood	44	60	60
VIP Tech Center	SE Portland	51	4	20
	Totals	914	226	771

There are a total of 1,140 personal computers (Staff PCs and Other PCs) utilized within the agency; of these, the Information Services IT Operations department supports 526 computers at the Headquarters, NW region in Portland and the DEQ Data Center that is co-located at the Hillsboro Laboratory. The remaining 614 PCs are supported by regional, lab, or VIP Local Area Network (LAN) Technicians who report to the different regional administrators or delegated office administrators. Lab remote sites are monitoring locations using telemetry to send data back to the laboratory.

The DEQ Information Technology team helps to support 80 workstation, server, and cloud-based applications. These range from standard operating systems to specialty software for development and project management.

The agency has application and file servers located in regional offices, DEQ’s Hillsboro Laboratory, the VIP tech center, and at the State Datacenter. Many of these servers are wholly supported by DEQ’s IT staff, while administrative duties are shared with State Datacenter staff for servers located at SDC as well as for SDC field office servers located in regional offices and the VIP tech center. In total, DEQ’s production environment includes a total of 120 servers.

DEQ’s network is divided into three major segments:

- Main DEQ network used for most of the production work throughout the agency for access to email, internet, file shares and software applications.
- Vehicle inspection network separates the traffic for the vehicle inspection program’s payment transactions.
- Laboratory network separates the laboratory equipment traffic from the main network traffic and has no internet access.

The agency provides separate, isolated wireless networks for access to DEQ’s network and for visitors.

The Software Development and Integration (SDI) team supports approximately 93 different software applications that are budgeted by program areas or central services, 42 of which are scheduled for replacement by YDO.

Table 2. Custom software applications by division.

Software applications by division	Custom apps supported by SDI	Scheduled for replacement by YDO
Air Quality	12	6
Land Quality	4	20
Water Quality	12	7
Laboratory	5	0

Software applications by division	Custom apps supported by SDI	Scheduled for replacement by YDO
Enterprise Systems	18	9
Total Applications	51	42

SDI is primarily responsible for managing the agency’s custom developed applications. SDI developed some of the applications in-house; others were developed by a third party and then transitioned to SDI for ongoing maintenance and support. The Hillsboro data center and the State Data Center in Salem hosts these applications.

The DEQ Information Technology team helps to support 80 workstation, server, and cloud-based applications. These range from standard operating systems to specialty software for development and project management.

The Laboratory has three large COTS systems (Envidos/Dr.DAS, Promium ELEMENT, Gold Systems AWQMS) and two smaller systems (SmartVue and Savance EIOBoard) that are primarily supported by the systems administrator and data coordinator at the laboratory.

Appendix 3: Your DEQ Online Modernization Initiative

Rather than pursuing parallel tracks to modernize numerous individual systems, DEQ initiated a major modernization effort to replace approximately 100 legacy systems, databases, and spreadsheets with a single, vendor-hosted and web-based Commercial-off-the-Shelf (COTS) platform. This effort had originally been referred to as the Environmental Data Management System (EDMS) project. In preparation for its first public launch in 2021, an agency team rebranded it to Your DEQ Online (YDO). The YDO project is central to the agency’s work to achieve all six of the modernization goals outlined in Appendix 9: Current IT Landscape.

Your DEQ Online is modernizing the way that DEQ accepts, processes, and shares information internally, with the regulated community, and with the public. Through the YDO project, the agency is consolidating and standardizing technology systems, moving from isolated program-specific software to an agency-wide enterprise application integrating information and processes across multiple programs. YDO is streamlining the agency’s permitting, licensing, certification, compliance and invoicing practices. In total, DEQ will consolidate hundreds of regulated services and thousands of agency processes into YDO.

Features of the YDO system include:

- Online access for regulated community to apply for permits, licenses, and certifications
- An internal portal for DEQ staff to manage and perform permit processing
- A self-service public portal to reduce the need for public records requests

- Workflows to manage certification, permit, and license processes
- Standardized processes and centralized data across programs and regions
- Improved transparency and accessibility
- Online payments via e-Commerce capabilities (ability to pay with credit card and ACH)
- A mobile-friendly interface

Twenty-three agency programs are part of the YDO’s project scope. Thirteen agency programs successfully launched from 2021 to 2023. The remaining ten programs are scheduled for implementation in 2024. Figure 1 below illustrates the in-scope programs that have and have yet to launch as of December 2023, when this IT Strategic Plan was finalized. Each program’s move to YDO includes related data migration, invoicing and enforcement functionality.

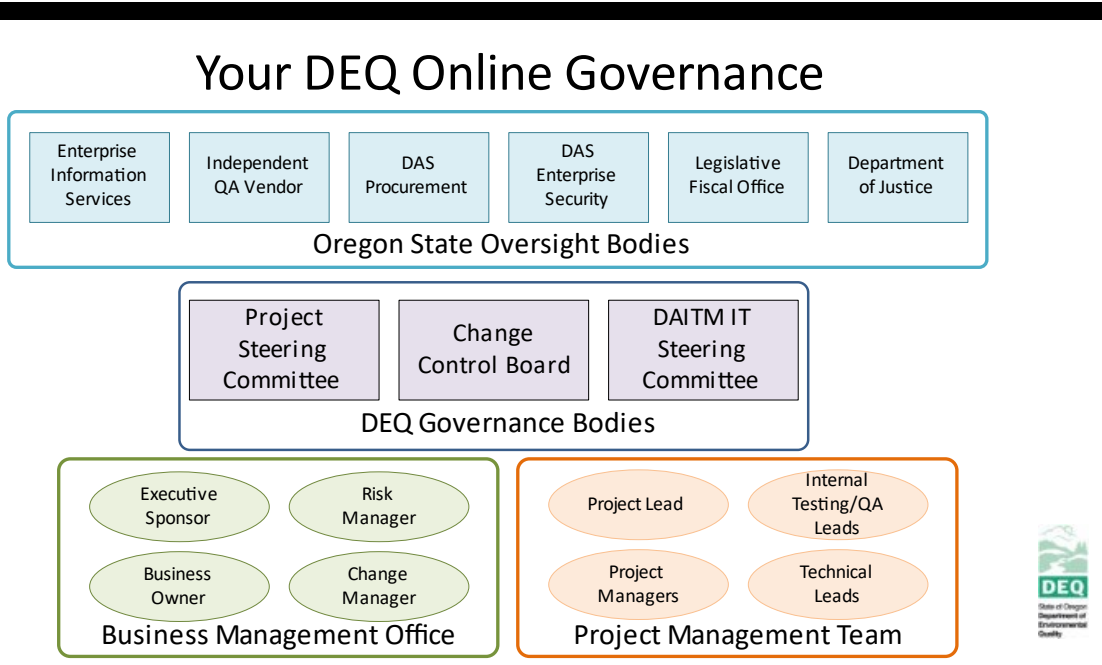
Figure 1: Agency programs planned for implementation in Your DEQ Online

Currently Live	2023 – 2024 Planned Launch
<p>Air</p> <ul style="list-style-type: none"> - Asbestos Program - Gasoline Transporter Permits - Greenhouse Gas Reporting for Electricity and Natural Gas Suppliers - Climate Protection Program, pt 1 - Climate Protection Program, pt 2 - Greenhouse Gas Reporting for Permitted Sources <p>Land</p> <ul style="list-style-type: none"> - Hazardous Waste <p>Water</p> <ul style="list-style-type: none"> - Industrial and Construction Stormwater - Underground Injection Control - 401 Certification - Wastewater Operator Cert - Onsite Sewage Disposal Service <p>Agency-wide Service</p> <ul style="list-style-type: none"> - Complaints 	<p>Land</p> <ul style="list-style-type: none"> - Environmental Cleanup and Leaking Underground Storage Tanks and Heating Oil Tanks - Solid Waste Permits - Underground Storage Tanks (UST) and UST and Heating Oil Tank Licensing - Cost Recovery <p>Water</p> <ul style="list-style-type: none"> - WPCF Onsite Certification - NPDES and WPCF General Permit - NPDES and WPCF Individual Permits <p>Air</p> <ul style="list-style-type: none"> - Air Contaminant Discharge Permits (ACDP)/Area Source Registration - Title V Permit Program - Emissions Inventory Reporting

The estimated total cost for the YDO project will exceed \$18M through its expected 2024 completion. The YDO project is overseen by the EIS Stage Gate process, a third-party quality assurance vendor, as well as the agency’s evolving and robust governance model to ensure

quality, integrity, and transparency. Figure 2 below outlines the YDO project’s governance model.

Figure 2: The Your DEQ Online Governance Model



Additional information about Your DEQ Online can be found on [DEQ’s website](#).

Appendix 4: IT Capability Goals

In addition to the IT alignment goals identified through the COBIT 2019 Toolkit, DEQ has identified strategic goals corresponding to specific functional areas that will ensure the quality and consistency of the agency’s IT portfolio. A description of each functional area along with their respective strategic objectives are provided below.

Security and Privacy

Along with providing the value for the agency and its interested parties, IT systems and services also expose DEQ to risks such as major internal or customer-facing service interruptions as well as costly and damaging data breaches. Modern threats range from attempts to access sensitive information to encrypting entire systems and holding them for ransom. In response, IT security is an essential agency function and a top priority for the agency’s technology organization.

Information security is primarily focused on the protection of information from various threats. This protection results in minimizing business risk and maintaining business continuity. DEQ is responsible for information security by establishing controls within existing business processes.

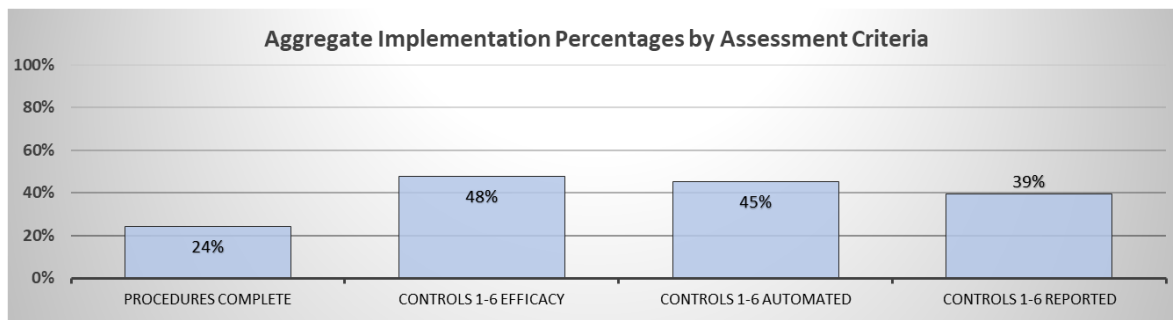
Cyber Security Services (CSS) is responsible for implementing the State Information Security Plan, which outlines requirements for each state agency to follow. Although Executive Order (No. 16-13) and SB 90 in 2016/2017 resulted in many IT security functions being consolidated within CSS, DEQ is still responsible for maintaining operational security and remediating vulnerabilities identified within individual systems and services.

To help identify security gaps and prioritize DEQ's security efforts, CSS conducted a cybersecurity assessment of DEQ's technology environment in 2021. This assessment evaluated the agency's current operations in relation to the CIS Basic Six, which is an industry standard set of cybersecurity controls. The CIS Basic Six control categories are as follows:

- CIS Control 1: Inventory and Control of Enterprise Assets
- CIS Control 2: Inventory and Control of Software Assets
- CIS Control 3: Data Protection
- CIS Control 4: Secure Configuration of Enterprise Assets and Software
- CIS Control 5: Account Management
- CIS Control 6: Access Control Management

While the results of that assessment are Level 3 restricted, DEQ's results the aggregate findings are summarized below. Overall, the assessment found DEQ has implemented 39% of the CIS Basic controls. This is illustrated in Figure 3 below. The state's objective for agencies at this stage was to have implemented 40% of the CIS Basic controls.

Figure 3: DEQ's Aggregate Implementation Percentages by CSS Assessment Criteria



According to the report, "the assessment found commendable practices at DEQ in the areas of inventory and control of hardware and software assets (CIS Controls 1 and 2), and continuous vulnerability management (CIS Control 3). Conversely, the assessment found gaps in DEQ's overall information security policy and procedure documentation, secure configurations for

hardware and software (CIS Control 5), and maintenance, monitoring, and analysis of audit logs (CIS Control 6).”

IT Operations

IT Operations at DEQ provides the day-to-day technical supervision of the agency’s IT infrastructure. Operations activities primarily draw from documented processes and procedures, which ensures a high degree of quality and consistency. The services provided by DEQ’s IT Operations team include:

- IT Services Continuity Management - covers the processes by which plans are put in place and managed to ensure that IT services can recover and continue even after a serious incident occurs. It is not just about reactive measures, but also about proactive measures – reducing the risk of a disaster occurring.
- Security Management – ensuring the security of the agency’s information technology. The primary goal of information security is to protect information assets against risks. This is commonly expressed in terms of ensuring confidentiality, integrity, and availability, along with related properties or goals such as authenticity, accountability, non-repudiation and reliability.
- Change Management - ensures that standardized methods and procedures are used for efficient handling of all technology changes. The primary goals of change management are to minimize adverse impacts of change, reduce the need to use change “back out” procedures, and to ensure the economical use of resources to implement a change.
- Service Desk – handles incidents and requests while providing a coordinated interface with other service management activities. DEQ’s Service Desk provides a single point of contact for agency staff and an integrated mechanism for tracking service level targets and measuring performance.
- Incident Management - aims to restore normal service operation as quickly as possible and minimize the adverse effect on business operations, thus ensuring that the best possible levels of service quality and availability are maintained.
- IT Application Management – provides technical support and proactive maintenance for the portfolio of software applications and cloud services in use throughout the agency.
- Infrastructure Management – manages physical IT infrastructure such as servers and network devices as well as the management of vendors that provide related services. Infrastructure management ensures that:
 - Systems are reliable and secure
 - Operational events are logged
 - Configuration and procedural documentation are accurate and complete
 - Monitoring is in place to ensure the current operational state is always known

Our current IT operations support the mission and vision of DEQ by providing reliable, secure, and innovative technology solutions that enable our business processes and enhance our customer experience. We have invested in on-site and cloud-based technologies to optimize our IT infrastructure, data management, and service delivery. Some of our strengths include:

- Modernizing and innovating our IT systems and platforms to leverage emerging technologies and improve efficiency and effectiveness.
- Enhancing data capabilities and services to support data-driven decision making, analytics, and reporting across the organization.
- Advancing data and information security protections to safeguard our assets, systems, and data from cyber threats and ensure compliance with relevant standards and regulations.
- Enhancing IT investment management and governance to ensure strategic alignment, prioritization, and oversight of our IT projects and resources.

However, we also face some challenges and opportunities for improvement, such as:

- Coordinating across the agency to support data management and integration and IT modernization initiatives that require collaboration and alignment among various stakeholders
- Prioritizing the construction and use of enterprise platforms that can provide common services, tools, and capabilities for our diverse IT needs.
- Communicating and managing change effectively to ensure broad understanding, adoption, and evaluation of new IT capabilities and solutions.

As an integral part of this IT Strategic Plan, IT Operations has created an IT Infrastructure Roadmap that outlines anticipated IT infrastructure-related projects over the next 3-years. The roadmap will help the agency plan and budget for needed technology investment while providing transparency within and across teams. The roadmap will also help inform DAITM's decision-making and prioritization by identifying work that may complement or conflict with project proposals under consideration. The IT Infrastructure Roadmap is Section 6 of this document.

Cloud Services

DEQ's IT staff manage and support the agency's on-premises server and network infrastructure as well as numerous services hosted at the State Datacenter and in the cloud. The agency's IT staff work tirelessly to ensure DEQ's portfolio of systems and services are secure, reliable, maintainable, and can scale to meet the agency's expanding needs.

One of the ways in which IT staff keep pace with the agency's evolving technology needs is through an increasing use of cloud services. As outlined in Oregon's Cloud Forward framework v1.0, the use of these services "frees up IT organizations from having to manage traditional IT infrastructure and operations tasks and provides opportunities to enable their business and program units through strategic use of data, business intelligence, integrations, and agile development."

By transitioning systems and services to cloud and vendor-managed services, DEQ seeks to provide the following benefits:

- Maintaining and managing in-house IT infrastructure is resource-intensive and time-consuming for DEQ staff. Cloud services will offload much of this burden to the cloud service provider, allowing DEQ to focus on its core mission and responsibilities.
- DEQ manages vast amounts of sensitive data. Cloud services provide scalable and cost-effective storage solutions, along with advanced data management and analytics tools, enabling agencies to store, process, and analyze data more efficiently and securely.
- DEQ often faces fluctuating resource demands due to changing policies, initiatives, and population needs. Cloud services offer on-demand scalability, allowing DEQ to easily adjust resources as required without significant upfront investments or lengthy provisioning times.
- DEQ typically operates with a constrained budget, making cost efficiency crucial. Cloud services follow a pay-as-you-go model, converting many fixed costs into variable costs, leading to significant cost savings and better resource utilization.
- DEQ has geographically dispersed offices and remote workers throughout the state, leading to challenges in collaboration and communication. Cloud services enable seamless access to shared resources, tools, and applications from anywhere, fostering better collaboration and communication among and across teams.

DEQ has aligned its guiding principles for the use of cloud services with those outlined by EIS in Oregon's Cloud Forward framework v1.0. Those guiding principles are as follows:

- **Cloud-First.** Cloud will be the first and preferred option for all new IT investments. It should not be conflated with the idea of "cloud everything."
- **Agility Counts.** Cloud migration decisions will be driven by considerations of business agility and overall cloud value, in addition to considerations of cost, time, effort and risk.
- **SaaS, PaaS.** Software-as-a-Service (SaaS) will be the preferred cloud tier and be evaluated before other cloud tiers (i.e., PaaS or Laas) or migration models.
- **Lift-and-Shift Last.** As a migration strategy, re-hosting or "lifting and shifting" provides little (if any) cloud value or cost savings. Re-hosting should only be considered as last resort.

- **Multi-cloud.** Embracing multi-cloud positions the state to leverage the unique value propositions and capabilities offered by leading cloud service providers.
- **Upskilling.** As a state we are committed to upskilling our existing IT workforce and preparing them for a cloud-defined future.
- **Business Enablement.** Embracing the cloud frees up IT organizations from having to manage traditional IT infrastructure and operations tasks and provides opportunities to enable their business and program units through strategic use of data, business intelligence, integrations, and agile development.

At the start of 2022, DEQ has several major projects underway to shift agency IT capabilities from in-house infrastructure to cloud environments.

Bearing these guidelines in mind, DEQ's strategic goals for cloud services are to:

- Decommission or archive the legacy in-house systems, databases, and spreadsheets that are being replaced by YDO. Decommissioning or archiving legacy systems will help to eliminate redundancies, reduce complexity, and lower maintenance and support costs. This will free up resources for higher-value work that directly supports DEQ's mission.
- Centralize the administration of all cloud services consumed by agency staff. Centralizing the administration of cloud services will allow for more effective oversight, control, and coordination, leading to improved efficiency and cost savings. It will also enable DEQ to implement consistent policies, procedures, and security measures across all cloud services, enhancing overall governance and risk management.
- Provide capability for IT to monitor cloud service activity, prohibit unlicensed usage, and enforce security policies. This will help to maintain visibility and control over the agency's technology infrastructure, enabling proactive issue identification and resolution. Prohibiting unlicensed usage will ensure compliance with licensing agreements and reduces the risk of unauthorized access to sensitive data. Enforcing security policies will help to maintain a consistent security posture across all cloud services, protecting data and systems.
- Migrate DEQ's public facing laboratory databases to cloud platforms. This will provide improved reliability, accessibility, and scalability. It will also enable the laboratory data management to align with IT standards across DEQ's other divisions, improving governance, consistency, and service quality.
- Implement additional M365 tools included in state licensing. This will increase the efficiency and security of DEQ's IT environment and will eliminate the need to continue using stand-alone services where capabilities overlap with M365, such as Sophos Antivirus and IBM MaaS 365 Mobile Device Management. Additional M365 services will include:

- Defender for Cloud Apps for managing agency cloud services
- Defender ATP for anti-malware protection
- OneDrive for file sharing and management
- InTune for mobile device management

Appendix 5: Software Development

The Software Development and Integration (SDI) team provides an expertise in system analysis, application design, development, implementation, integration, and application maintenance to DEQ software programs. In addition to in-house development, SDI also provides integration of 3rd party commercial off the shelf (COTS) or custom solutions, including consulting on technology or software product acquisition by DEQ.

SDI creates and maintains software applications with the following objectives:

- **Security and privacy:** Work closely with IT Operations and CSS security experts to keep a high-level focus on ensuring software products are free of security and privacy concerns.
- **Reliability:** Continue to use industry standard software development tools and coding languages that provide a consistent level of up-time availability to users.
- **Maintainability:** Build software using industry wide best practices and standards that can be maintained by the whole team without a high degree of difficulty.
- **Scalability:** Architect software using micro services concepts and object-oriented design patterns to allow for increased demand when necessary.

Software Development Services

SDI provides a variety of services to agency staff, government officials, and the public. Those services include:

- ESRI Geocortex Geographical Information Systems (GIS) map-based data about regulated entities associated with Air, Land, and Water divisions.
- Integrations and interfaces between DEQ systems and DAS-managed systems such as Workday and the State Financial Management Application (SFMA).
- Custom report creation out of agency databases.
- Data migration, report writing, and consultation for Your DEQ Online (YDO).
- Maintenance of more than 100 in-house applications including bug fixes and security patches.
- Creation of custom applications using the latest software development standards.
- Providing advanced technical support and issue resolution for custom applications.

Software Development Life Cycle

SDI follows a Software Development Life Cycle (SDLC) approach with clearly defined processes for creating and maintaining high-quality software that meets requirements. The SDLC approach includes the following phases:

- **Planning** - Software development is completed using Agile Kanban methodologies and the Scrum framework to organize and prioritize the work. During the planning phase we determine resources, costs, time, and benefits. Due to the iterative nature of Agile practices, this initial planning process may happen multiple times as needed to suit new functionality or changes to existing specifications.
- **Analysis** - During the analysis phase SDI works closely with Project Management, Business Analysts and Subject Matter Experts to understand the functional requirements and ensure the new system can meet expectation.
- **Design** - This phase is where the detail of necessary specifications and functionality is visualized using user workflows, wireframes, mock-ups, entity relationship diagrams and security plans of the proposed system.
- **Development** – After initial planning, analysis, and design, development of the application code and or database begins using team-wide agreed best practices for processes and tools.
- **Integration and Testing** - To maintain quality and control, the application will undergo several automated and manual regression tests to ensure high levels of quality and consistency. The product will also go through extensive User Acceptance testing to determine if it meets the initial set of business goals.
- **Implementation** - Given a minimum viable product is approved for release, the product is placed into a production environment using a regimented release request process.
- **Operations and Maintenance** - Ongoing work may be done to fine-tune the system, increase performance, or add new features to meet additional user requirements.

Comprising a diverse group of talented individuals, SDI's current environment is primed for growth and success. One of the team's greatest strengths lies in SDI's exceptional knowledge of DEQ software and business processes. Each team member also possesses a deep understanding of programming languages, frameworks, and software development industry best practices. Their proficiency allows them to tackle complex challenges. The team also thrives on open communication and regularly engages in knowledge sharing sessions, fostering an environment of continuous learning and growth.

Equally important, just as the broader IT team, SDI aims to collaborate across the agency to support key initiatives such as Data Management and Integration (DMI) and IT modernization. These efforts necessitate close collaboration and alignment among various stakeholders, further reinforcing SDI's commitment to foster a culture of teamwork and joint objectives.

Appendix 6: Data

DEQ's strategic goals for data and information management have been established by the agency's Information Governance Council, a subcommittee of DAITM. For more information on IGC, please see Appendix 9: Current IT Landscape.

The IGC's strategic goals came from an agency maturity assessment based on the following Information Governance Principles developed by ARMA International:

Principle	Description
The Principle of Accountability	A senior executive (or a person of comparable authority) shall oversee the information management to appropriate individuals.
The Principle of Transparency	An organization's business processes and activities, including its information governance program, shall be documented in an open and verifiable manner, and that documentation shall be available to all personnel and appropriate, interested parties.
The Principle of Integrity	An information governance program shall be constructed so the information assets generated by or managed for the organization have a reasonable guarantee of authenticity and reliability.
The Principle of Protection	An information governance program shall be constructed to ensure an appropriate level of protection to information assets that are private, confidential, privileged, secret, classified, essential to business continuity, or that otherwise require protection.
The Principle of Compliance	An information governance program shall be constructed to comply with applicable laws, other binding authorities, and the organization's policies.
The Principle of Availability	An organization shall maintain its information assets in a manner that ensures their timely, efficient, and accurate retrieval.
The Principle of Retention	An organization shall maintain its information assets for an appropriate time, considering its legal, regulatory, fiscal, operational, and historical requirements.
The Principle of Disposition	An organization shall provide secure and appropriate disposition for information assets no longer required to be maintained, in compliance with applicable laws and the organization's policies.

The purpose of the maturity assessment was to clearly understand the current state of the organization so DEQ could develop an optimum path from where it is to where it wants to be. ARMA’s IG Maturity Assessment Model outlines 5 levels:

- Level 1: Substandard
- Level 2: In Development
- Level 3: Essential
- Level 4: Proactive
- Level 5: Transformational

The assessment enabled the agency to chart a roadmap forward and evaluate progress through measurable standards. In addition, it provides a framework for prioritizing action steps given limited resources. The results of DEQ’s assessment of its current state for information governance follows:

Principle	Current Level	5 Year Target Level
Accountability	Level 3: Essential	Level 3: Essential
Transparency	Level 3: Essential	Level 3: Essential
Integrity	Level 2: In Development	Level 3: Essential
Protection	Level 2: In Development	Level 3: Essential
Compliance	Level 2: In Development	Level 3: Essential
Availability	Level 2: In Development	Level 3: Essential
Retention	Level 2: In Development	Level 3: Essential
Disposition	Level 2: In Development	Level 3: Essential

DEQ is not substandard in any area, but overall it is still in development towards a more mature information governance program, with significant opportunities for improvement. Based on the outcome of the maturity assessment, the IGC identified the following four priority objectives for implementation in 2020-2025:

1. Update records retention schedule. The goal is to simplify the schedule, align it cross-program, and enable automation of records retention based on pre-defined schedules.
2. Implement Open Data Standard requirements. DEQ will work with the State’s Chief Data Officer to inventory agency data systems and ensure compliance with new State transparency objectives. More information about Oregon’s Open Data Standard is available here: <https://data.oregon.gov/>
3. Implement retention and security policies in Microsoft 365. This will enable appropriate defaults to be set for the most common situations and enable staff to easily select alternative schedules based on their assessment of needs for a specific data asset.
4. Implement DAS data governance policy. DEQ will implement the DAS data governance policy, which is described by DAS as follows: “Data and information are strategic assets

of the state and must be actively governed in order to preserve and enhance their value. This policy sets forth a statewide approach to data governance and establishes a baseline framework and accountability structure for agencies to use in establishing internal data governance programs.”

The IGC has also developed a Data Governance Plan that established goals for the 23-25 biennium. The three data governance goals are to:

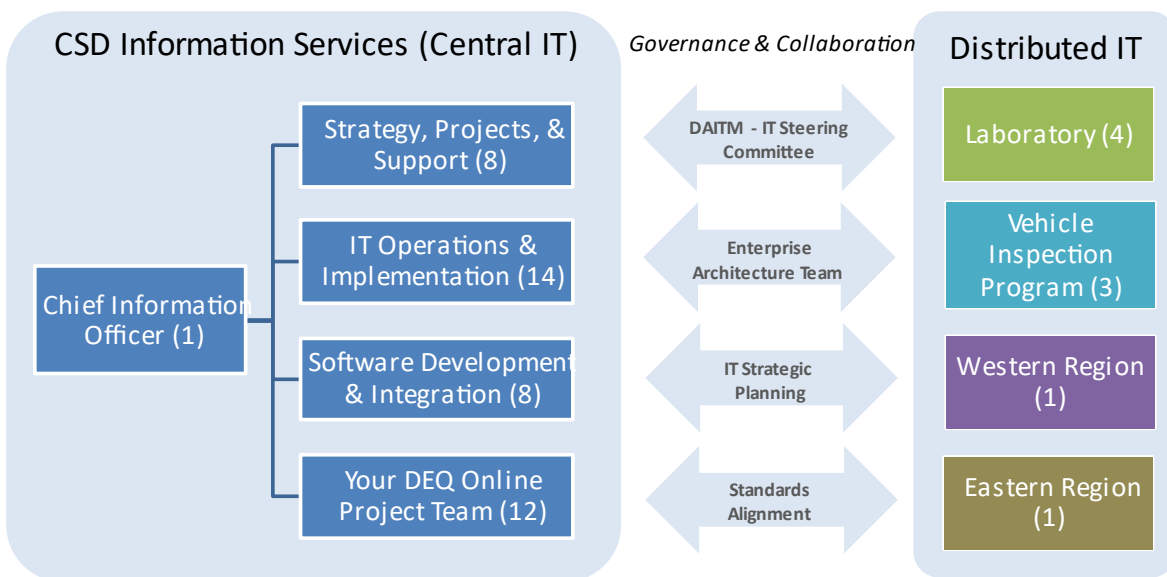
1. Establish mission and vision for agency data governance.
2. Develop and socialize definitions for data governance.
3. Identify appropriate stewardship models and roles for agency.

Appendix 7: Staffing

DEQ uses a distributed model for coordinating its IT operations statewide. The largest IT function is the Central Services Division’s Information Services organization. This organization is best known as the agency’s “Central IT” and has 43 employees, primarily located within the Portland metro area. Additional IT staff members are within DEQ’s laboratory (4), Vehicle Inspection Program (3), Eastern Region (1), and Western Region (1) organizational structure. However, all technology staff throughout the agency adhere to standards set by CSD Information Services and governed by the DAITM IT Steering Committee.

Figure 4 below illustrates the relationship between DEQ’s Central IT and Distributed IT staff and the mechanisms that facilitate governance and collaboration for IT staff throughout the agency.

Figure 4: DEQ’s Distributed IT Organizational and Governance Structure



Strategic planning for technology staffing at DEQ continually evaluates skillsets and capacity needed to support current operations and anticipates future projects, plans, and initiatives. When feasible, technology program leadership addresses gaps by aligning requests with the biennial agency request budget process. When unanticipated, time sensitive needs arise, technology leadership selects the best of several available options based on the characteristics of the need at hand. Options for staffing include:

- Create a new position through a Policy Option Package.
- Create a new position as a part of the Agency Request Budget.
- Reclass an existing position.
- Create a non-budgeted position.
- Create a rotational job opportunity for an existing state employee.
- Procure a temporary employee through a staffing company available on statewide contract.
- Outsource project work with a defined scope to a third-party organization.

Investment in skilled, experienced staff ensures the agency makes effective, efficient, and consistent use of powerful new modern technology systems and services such as Your DEQ Online. This results in cost savings through staff efficiency, an improved ability to ensure data quality and security, and enhanced customer service to the regulated community and the public. Investing in staff in this way also allows DEQ to take proactive measures ensuring its portfolio of systems and services are kept current while the business processes depending on those systems are continually improved.

DEQ's strategic goals for IT staffing are to:

- **Promote a diverse, equitable, and inclusive team culture, and ensure the professional environment is open and welcoming to all.** Fostering a diverse and inclusive team culture enhances creativity, innovation, and problem-solving by bringing together different perspectives, experiences, and ideas. An open and welcoming environment also helps to attract and retain top talent, improve employee satisfaction and engagement, and creates a sense of belonging for everyone on the team.
- **Develop realistic Position Descriptions that accurately represent agency needs.** Accurate and well-defined position descriptions help ensure the hiring process attracts candidates with the right skills, experience, and capabilities to meet the agency's needs. This contributes to improved efficiency, better alignment of resources with strategic objectives, better job satisfaction, and a smoother onboarding process for new employees.
- **Provide the tools and training required to ensure staff succeed with their assigned tasks.** Equipping staff with the necessary tools and training enables them to perform

their tasks effectively and efficiently, leading to higher productivity, improved service delivery, and increased job satisfaction. This investment in staff development also helps to enhance the overall capabilities of the IT team and promotes a culture of continuous learning and improvement.

- **Optimize work assignments to use the strengths of existing personnel, resulting in more total value creation for DEQ and more job satisfaction for employees.**

Assigning work based on the strengths and expertise of team members ensures tasks get completed efficiently and to a high standard. This approach maximizes the team's collective potential, improves job satisfaction, and allows for more effective resource allocation. By leveraging the unique skills and capabilities of each team member, the IT team can better support DEQ's mission and objectives.

For the 23-25 biennium, Information Services plans to request a total of four new positions. These anticipated requests are described below:

- **IT Manager 1 IT Service Desk Manager.** The IT Service Desk and IT Operations teams for DEQ's Central Services Division both report to the agency's existing IT Operations Manager. The new IT Manager 1 position would take over management of the IT Service Desk team and report to the IT Operations Manager. This would enable the existing and the new managers to focus on their respective teams, providing specialized and timely leadership and support to IT staff. The increased management support will ensure the agency's IT services scale to meet the agency's expanding needs while maintaining a high level of quality and consistency.
- **ISS-7 Enterprise System Administrator.** This position would report to the IT Operations Manager within the Information Services organization. This position will coordinate and provide strategic direction, enterprise-wide planning, research, design, development, implementation, and operational support of agency-wide IT systems and services. This position will also work closely with The State of Oregon's Cyber Security Services (CSS), which is responsible for defining enterprise security architecture and policy and for coordinating security incident response. In partnership with CSS, this position will serve as an on-site counterpart at DEQ to implement State security standards and best practices, consult on agency technology initiatives, conduct security risk identification and remediation, and assist in security incident response activities. The creation of this position will reduce the advanced infrastructure management and security implementation workload from existing staff who are over-extended, ensuring the agency can keep pace with the rapidly changing technology environment.
- **ISS-3 Eastern Region Service Desk Specialist.** DEQ's Eastern Region only has one IT staff person, an ISS-5 Regional LAN Administrator, who provides on-site support at the agency's offices in Eastern Region. One IT person is not sufficient to provide timely

technical support to the 100+ Eastern Region staff spanning three offices. Furthermore, the commute from DEQ's Bend office to the office in Pendleton is over four hours long. The travel delay on days when issues have arisen in both locations impedes timely issue resolution. Meanwhile the IT support person is unable to support other Eastern Region matters while in transit. The new ISS-3 position would help distribute the travel responsibilities. The ISS-3 would also serve as a first point of contact and triage for Eastern Region IT issues, enabling the existing ISS-5 to provide escalation support for larger or more complex issues. DEQ had a similar challenge in its Western Region, where again a single ISS-5 Regional LAN Administrator was over-extended. The creation of an ISS-3 position in Western Region resolved the matter and significantly improved IT service delivery.

- **ISS-3 LEAD Service Desk Specialist.** DEQ's laboratory only has one IT staff person, an ISS-5 Laboratory LAN Administrator, who provides on-site support at the agency's Hillsboro laboratory. One IT person is not sufficient to provide timely technical support to the 100+ lab staff whose work requires the use of highly specialized laboratory equipment. The new ISS-3 position would serve as a first point of contact and triage for laboratory-related IT issues, enabling the existing ISS-5 to provide escalation support for larger or more complex issues. This will improve the quality of IT service delivered to laboratory staff, improving efficiency and reducing IT-related work-stoppages.

Appendix 8: IT Strategic Planning Process

DAITM collaborates with DEQ's CIO on the creation of the IT Strategic Plan through DAITM's IT Strategy Subcommittee (ITSS). The purpose of ITSS is to ensure strategic alignment between Information Services and DEQ's mission and strategic objectives. ITSS includes all voting DAITM members, plus additional non-voting DAITM members as needed to ensure the committee provides diverse perspective. Through a combination of individual contributions and working meetings, the CIO and ITSS developed this 2022-2024 IT Strategic Plan document. DEQ also solicited input from the Assistant State CIO and the Strategic IT Portfolio Manager for the Natural Resources Policy Area throughout the strategic planning process. Both individuals were included in the CIO/ITSS working meetings.

To help inform the strategic planning process, the CIO and ITSS utilized the COBIT 2019 Design Toolkit. COBIT 2019 is a standard published by ISACA. ISACA is an international association that develops standards for IT governance. According to ISACA, "COBIT 2019 is a framework that helps enterprises plan a strategy and also achieve their governance goals to deliver value through effective governance and management of enterprise information and technology." (Source: ISACA.org). DEQ used the COBIT 2019 Design Toolkit to first elicit enterprise goals, then

to identify suggested IT strategies that integrate and align with the enterprise goals. The IT strategies that were identified from the COBIT process are outlined in Section 5, Strategic Goals.

DEQ's Leadership Team sponsors the agency's IT governance structure. IT governance institutionalizes the processes, responsibilities, authorities, and accountability framework required to ensure strategic and optimal use of information technology throughout the agency to support its mission. Alignment of IT projects and operations with the agency's mission and strategic objectives is a critical objective of IT governance. In addition to strategic and operational alignment and leadership, IT governance provides resource allocations, business-focused prioritization, policy development, and is accountable and transparent to the agency.

The Chief Information Officer (CIO) leads IT strategic planning and implementation at DEQ. The CIO serves in a strategic-level position meeting with the Central Services Administrator weekly and participates in setting the strategic direction for integration of technology with DEQ programmatic and administrative functions. The CIO facilitates strategic planning efforts in collaboration with the DEQ Agencywide Information Technology Management (DAITM) steering committee, the agency's expert technology staff, and other interested parties to define the future-state technical environment for DEQ and the implementations plans to make the future-state become reality.

The IT governance structure is designed to be inclusive, and DAITM's membership includes diverse representation across agency divisions. Generally, members are selected to represent Air Quality, Water Quality, Land Quality, Central Services, Regions, and the agency's Laboratory.

Appendix 9: Current IT Landscape

Data and Information Governance

Data and information governance at DEQ are overseen by the Information Governance Council (IGC). The IGC's mission is to develop a FAIR (findable, accessible, interoperable, reusable) infrastructure to manage DEQ information (inclusive of records and data) throughout its lifecycle, which respects transparency, equity, privacy and security for internal and external interested parties.

The IGC is a chartered subcommittee of DAITM. IGC's responsibilities include:

- Review and approve agency-wide records policies and procedures.
- Review and approve agency-wide data policies and procedures including, but not restricted to, retention and public availability.

- Considerations related to data storage and integrity, including protection from internal and external disruption
- Strategic planning for information governance maturity at the agency, including prioritization of improvement projects
- Review and provide guidance on process improvement or technology projects with significant records and/or data implications
- Request resources as needed through DAITM, e.g., for implementation of specific changes that affect operating groups

IGC works to achieve the following outcomes:

- Keep pace with industry and government standards related to information and data governance.
- Assess DEQ's ability to meet industry standards; provide a strategic plan for achieving greater maturity.
- Advocate for information governance at DEQ.
- Be a central resource to agency groups on matters of data governance, access control, and information retention.
- Reduce time and resources spent locating, producing, or recreating information so employees can focus on the core work of achieving the agency's mission.
- Conduct an annual Information Governance Maturity Assessment and report progress to agency leadership.

IGC does not have budget authority, but forwards recommendations for specific expenditures to DAITM or the Leadership Team as appropriate.

IT Project Portfolio Management

Major factors in the achievement of DEQ's IT strategy are the alignment of its IT project portfolio with the agency's mission and objectives, and the successful execution and completion of each commissioned project. In this context, a project is a temporary endeavor undertaken to create a unique product, service or result. A project is temporary in that it has a defined beginning and end in time, and therefore defined scope and resources. DAITM receives and evaluates new project proposals on an ongoing basis.

DAITM provides governance over DEQ's IT projects by:

- Reviewing the business case, rationality, and completeness of project proposals.
- Determining prioritization to create the best value for DEQ.

- Monitoring the progress of current projects and offering guidance to project teams as needed.

The mechanism by which project status is visually tracked, reviewed, and updated is the iPMO page on DEQ's Q-Net intranet site (iPMO). The iPMO is maintained by DEQ's Strategy, Projects, and Support (SPS) team under the direction of DAITM and in consultation with the agency's CIO.

To see DEQ's current list of active projects, visit the [iPMO portal on Q-Net](#).

The information tracked and maintained on the iPMO includes, but is not limited to:

- Project Name
- Project Manager
- Sponsor
- Project Size
- Project Stage
- Scope Status
- Schedule Status
- Budget Status
- Resource Status
- Priority Score

The iPMO portal also contains project artifacts such as Charters, Business Cases, Schedules, and Budgets.

DAITM has defined four categories of technology projects coordinated within the agency. An explanation of the four project tiers is provided below.

- **Tier 1** – Small projects, with an estimated effort of less than 100 hours of technology staff time, and technology staff can self-manage without an assigned project manager. In this category are well understood project implementations posing very little risk to other systems. For example, recurring requests including system updates to reflect fee increases or vendor-provided upgrades to commercial off the shelf (COTS) systems.
Approval Authority: Any technology manager.
- **Tier 2** – Small to mid-sized projects, with an estimated effort of 100-250 hours of technology staff. These are low/medium risk projects that do not involve contracting. Tier 2 projects related to custom-developed applications are generally contained within a single program area but could include more programs. The cost of a Tier 2 project is over \$10,000 and may be part of a grant. The DAITM Tactical Subcommittee (DTS) is

authorized to determine whether a project manager is required or if a specific project can instead be managed by a technology manager.

Approval Authority: DAITM Tactical Subcommittee.

- **Tier 3** – Large projects, including projects with medium and high risks and costs exceeding \$50,000. This tier includes projects that change systems and processes across multiple program areas, contract for external resources, interface with external systems (DAS or other agencies), or otherwise have perceived risks according to DTS review. Estimated effort is over 250 hours of technology and project management staff time but may be less if third party contractors or vendors are involved. Project managers are assigned to Tier 3 projects.

Approval Authority: Tier 3 projects require DTS review and DAITM approval.

- **Tier 4** – Large projects exceeding \$150,000 in estimated total life-cycle costs require submission of an IT Investment (ITI) and an Initial Complexity Assessment (ICA) form to Enterprise Information Services (EIS). All projects exceeding \$1,000,000 in total cost, or select projects over \$150,000 based on EIS determination, are designated “Stage Gate” and require oversight by EIS through the project’s duration. DEQ categorizes any project designated as Stage Gate by EIS as Tier 4. DAITM provides the same internal governance function over Tier 4 projects as it does for Tier 3 projects, but the project must also conform to the [EIS Stage Gate procedures](#).

Modernization

In 2021, Enterprise Information Services published the Modernization Playbook v1.0. Within the document, EIS explains that “many of the state’s IT systems have not aged well and have become increasingly complex and difficult to adapt to changing circumstances.” The modernization playbook continues, explaining that, “beyond the rigidity and fragility of these systems, potential security vulnerabilities, and associated IT staffing challenges, the long-term total cost of ownership (TCO) of maintaining these antiquated systems may exceed the cost of replacing them. Furthermore, with the accelerated digitalization of our personal lives, there is a growing gap between customer expectations and their experience with state IT systems.”

These sentiments accurately describe DEQ’s IT environment. When developing DEQ’s 2018-2021 IRM Strategic Plan, the agency had over 100 custom-built applications and over 90% of those no longer had defined budgets, lifecycle management plans, or owners. Furthermore, the agency did not have an IT asset replacement budget for PCs, servers, switches or other infrastructure components. To fund lifecycle replacements for these assets, the agency historically kept vacant IT positions unfilled.

Between 2017 and 2021, DEQ sought to address these shortcomings by fully funding its technology services while simultaneously pursuing modernization efforts to improve service quality, consistency, and sustainability. Although DEQ's modernization efforts preceded publication of the EIS Modernization Playbook v1.0, they are in alignment with the document's objectives, including improving "agency performance and efficiency" and improving services "while transitioning to more nimble and sustainable technology."

DEQ established the following goals to guide its IT modernization efforts:

1. **Modernize DEQ's portfolio of legacy systems and employ proactive system lifecycle management.** By modernizing legacy systems, DEQ can take advantage of the latest technologies, which often offer greater efficiency, reliability, and security. Proactive lifecycle management helps to ensure systems remain up-to-date and effective, reducing the risk of failures or security breaches that could disrupt services.
2. **Standardize business processes in the agency's core business areas, such as permitting, compliance and enforcement, and invoicing to create opportunities for systems consolidation.** Standardizing business processes can improve efficiency, consistency, and data accuracy across the agency. It also creates opportunities for systems consolidation, which can lead to cost savings, simpler management, and better integration between different areas of DEQ.
3. **Collaborate with Enterprise Information Services and other agencies in the procurement and use of systems supporting common business processes.** Collaboration can help to share costs, knowledge, and resources, leading to more efficient and effective procurement and use of IT systems. Using common systems can also improve interoperability and data sharing between different agencies.
4. **Improve internal and external access to environmental information and records.** By making environmental information and records more accessible, DEQ can improve transparency, foster better decision-making, and enhance services for both staff and the public. This can also aid in compliance with regulations and contribute to environmental conservation efforts.
5. **Continuously improve security measures to protect the agency's data and operations.** Continuous improvement of security measures helps to protect the agency's data and operations from the ever-evolving threat landscape. This is important for maintaining trust, ensuring the privacy of sensitive data, and ensuring the continuity of DEQ's services.
6. **Employ modern standards and methodologies to create exceptional value and customer satisfaction.** Modern standards and methodologies, such as agile

development or user-centered design, can help DEQ deliver higher-quality services more quickly and efficiently. This can lead to greater value for money and higher satisfaction among the agency's customers, whether they are other departments, external partners, or the public.

These modernization goals will support the agency's strategic objective to deliver efficient, effective, and secure services, while also enabling continuous improvement and adaptation in a fast-paced, technology-driven environment.