ENTERPRISE TECHNOLOGY SERVICES BUSINESS PLAN

Who We Are and What We Do

DAS

DEPARTMENT OF
ADMINISTRATIVE
S E R V I C E S

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SECTION 1 INTRODUCTION

Oregon

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Dear Colleagues,

For the last four years, the mission of ETS was generic enough to encompass the wide variety of services offered by ETS.

> *To provide reliable, agile, and flexible IT service choices while optimizing the state's IT investments.*

This mission adequately reflected the provisioning of a wide variety of service offerings, such as data center network and computing operations, end-user help desk and desktop support, electronic government solutions, and the associated security of these services. The organization was directed to pursue an entrepreneurial management model, meaning to provide as many disparate services as possible to a wide and growing customer base as quickly as possible. This model was put into place to establish economies of scale, thereby reducing the cost per unit of these services. While there was some degree of success with this model, ETS did not grow or become the State's service provider of choice, as was intended.

The management model of ETS is now changing. Programs not core to data center operations have been split off from ETS such that the ETS mission will change to only providing core data center network and computing infrastructure operations. The Enterprise Security Office, while separate and distinct from ETS, remains physically embedded within the data center facilities and provides data center security services in addition to their enterprise-wide security responsibilities.

With these changes, there is a new shared vision for what ETS is to become.

> *ETS is the organization in which State agencies want to house their infrastructure and obtain their data center services -AND-*
>
> *ETS is the organization for which people want to work.*

To achieve this vision, our energy will be applied to attaining depth in skills rather than breadth in skill sets. Our focus will be on providing high quality customer service and support. Our safe and respectful work environment will promote innovation and creative thinking. Our systems and structures will be modern and architecturally sound. Our work processing will be repeatable and effective. Our staff will be willing and eager to produce high-quality work products on behalf of the customers we serve and the citizens of Oregon.

This shift in thinking is gaining traction with our staff and governance, and is becoming evident in the perceptions of ETS by our customers. We are nearing completion of some of the foundational work to support this vision, and we look forward to solidifying our role as the service provider of choice in State of Oregon information technology.

Tony Black, Administrator
Enterprise Technology Services

Section 1 Introduction

OVERVIEW

Enterprise Technology Services (ETS) has been in existence in one form or another since 2006. When initially created, ETS, then known as the State Data Center (SDC), focused primarily on providing shared computing and network infrastructure services. In 2012, the scope of services for ETS expanded to include Department of Administrative Services (DAS) desktop support, application development, and the e-government program. During the 2015 legislative session HB 3099 passed, which among other things, gave responsibility for all DAS Information Technology (IT) policy and operations, (including ETS) to the State Chief Information Officer (SCIO). Subsequent to the passage of this legislation, an evaluation of the organizational structure of the Office of the State CIO (OSCIO) was conducted. This evaluation concluded that ETS should revert back to its pre-2012 scope, and focus on providing computing and network infrastructure services.

As ETS began the process of re-scoping its service catalog, it became apparent that the process would benefit from the creation of a business plan for ETS. The business plan is intended to set the foundation that all subsequent work related to reestablishing ETS' service operations will be built on.

PURPOSE AND AUDIENCE

The purpose of this document is to articulate the scope of the services provided by ETS, the customers served by ETS, how ETS is organized to deliver those services, and how finances are managed. As mentioned above, the aim is to create a base description of who ETS is, what ETS is in the business to do, and how ETS aligns with its customer base.

The document is intended to be used by ETS management and staff, customers, and stakeholders. The plan is meant to communicate to all interested parties the scope of ETS services as well as baseline expectations.

DOCUMENT SCOPE

This business plan includes the following sections:

- **Introduction** – An overview of the document, its purpose and intended audience
- **Context and Background -** A discussion of the historical events and current conditions that shape where ETS should focus and the resulting service delivery model
- **Overview of ETS and OSCIO –** a description of the operational context within which ETS exists as a division within the Office of the State CIO
- **Environmental Scan –** PEST Analysis – A review of the internal and external factors that shape ETS and its operation.

- **ETS Description** – A basic overview of ETS and the fundamental principles that drive its service delivery model and the customers served.
- **Service Delivery and Customer Alignment** – An introductory discussion of the services provided by ETS, the skills required to delivery those services, and alignment with the customer.
- **Customer Profile and Service Catalog Review** – A detailed discussion of the services provided by ETS and the customers served.
- **Organization Plan** – A description of how ETS is organized, the organizational principles applied and a basic description of how workflow is managed.
- **Financial Plan** – An outline of how ETS is financed and finances are managed.

DOCUMENT MAINTENANCE HISTORY

Version	Activity	Author	Contributors	Date
0.1	Draft	Koreski		9/23/15
0.2	Edit	Light		9/28/15
0.3	Edit	Light	ETS Executive Team	9/29/15
0.4	Release draft	Light		9/29/15
0.5	Edit	Light	Julie Pearson	10/12/15
0.6	Edit	Miller	John Koreski	10/30/15
0.7	Edit	Light	John Koreski	2/19/16
1.0	Final			

Section 2 Context and Background

PURPOSE

This section describes what a business plan is, how it differs from a strategic plan and why both are important. It also describes the origins of the data center and the major milestones and decisions that have shaped its performance.

CONTEXT

In private industry, business owners often develop business plans as part of efforts to secure funding or just to create a foundation for an organization. Along with creating strategic plans, these business management best practices provide a framework for an organization to know who they are, what they do, (the content of a business plan) and how and when they will act to optimize the value their business provides (the direction provided by a strategic plan). While ETS, and the State Data Center before it, have created and managed growth and expansion using strategic plans, they have operated without the benefit of a business plan.

As the IT marketplace for providing enterprise cloud-based IT services has matured and agency business needs have evolved, there is a need to reassess ETS' core business objectives, its organizational structure and the services provided. The creation of an ETS business plan is an effective way to clearly articulate the alignment between ETS service offerings and customer business needs. The business plan also serves as the basis for the establishment of a simple, well-understood financial model that provides customer transparency into the rational for service charges that are designed to equitably recover the cost of the services provided to ETS' customers.

The Information Technology Infrastructure Library (ITIL) will provide the framework for both the business plan and future operations. The business plan will underpin ETS operations, provide insight into customer alignment and business needs, and provide a foundation for a meaningful service catalog and transparent financial management practices.
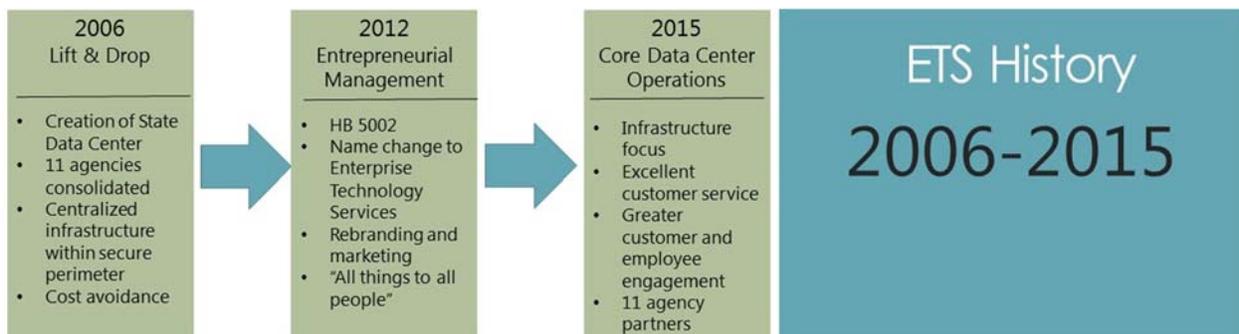
BACKGROUND

The legacy of Enterprise Technology Services and the State Data Center trace their origins to the Computing and Network Infrastructure Consolidation (CNIC) project. The Oregon Legislature funded the CNIC project with an initial investment of $63.6 million in 2005 having the intention of generating costs saving and operational efficiencies through IT consolidation. The CNIC project ultimately migrated eleven agencies' data center operations, including equipment and staff, into a state-owned and operated data center. The primary strategy was to "lift and drop" agency network and computing infrastructure into the new SDC facility.

CNIC was intended to leverage computing and network infrastructure technology across the state using a utility service model. Utility services are those services that are delivered by a single provider in order to realize economies of scale, achieve systems integration, obtain consistency or uniformity and where customization is unnecessary to achieve core business objectives. From its inception, the SDC has worked to promote a virtualized computing and network environment in an effort to keep costs down and provide an infrastructure with high availability.

ETS and the SDC have been successful in significantly increasing capacity in major service offerings with minimum increases in budget, and staffing levels have stayed relatively stable since 2008. Many service management and service delivery processes have matured to a highly repeatable state and disaster recovery capabilities have improved through an innovative partnership with the State of Montana. Yet, there are, and have always been challenges to address.

In its 2006 audit, "*Department of Administrative Services: Computing and Networking Infrastructure and Consolidation (CNIC) Risk Assessment*," the Secretary of State's (SOS) Audit Division identified "significant weaknesses in the department's project planning and management process". The audit highlighted concerns over project management, contract management, lack of quality assurance and accounting and compliance issues. In a subsequent 2008 report, entitled *"Department of Administrative Services: State Data Center Review,"* the Audits Division noted that full infrastructure consolidation had not been achieved, cost savings were unlikely to be realized, operational controls did not address service level agreements and that the SDC was not prepared to "timely resume data center operations" after a major disruption or provide a secure computing environment.

In its 2015 audit report entitled "*State Data Center: First steps to address longstanding security risks, much more to do*" the Secretary of State's Audit Division observed that "Over the last nine years, security weaknesses at the state data center have put confidential information at risk. The weaknesses continued because the state abandoned initial security plans, did not assign security roles and responsibilities, or provide sufficient security staff. The ... Chief Information Officer [has] taken the first step to fix these problems, but the solutions will take time, resources, and cooperation from state agencies."

Entrepreneurial Management and the FullCost Maturity Model (FMM)

In 2011, as the Department of Administrative Services transitioned to an entrepreneurial management framework, the SDC was combined with DAS Technology Support Center (TSC), Application Development and the E-Government program to become ETS. These organizational changes were instituted with limited employee engagement. They introduced confusing employee roles and responsibilities and decreased the transparency of rates and assessments paid by agency customers.

As DAS was transitioning to entrepreneurial management, the SDC acquired the FullCost Maturity Model Excel-based tool and methodology. FMM was purchased to improve financial transparency and provide the ability to show customers the costs that go into establishing a rate.

The Hackett Report

In fall of 2012, the Governor's Balanced Budget for 2013-15 sought to reduce costs associated with administrative services by including a budgetary hold back roughly equivalent to $16 million General Fund dollars and $51 million Total Fund dollars. The hold back was intended to identify opportunities for savings through strategic reductions and operational efficiencies in core administrative areas—a task requiring strategic thinking about the organization of these services at the enterprise level. This work was informed by what would later be known as the Hackett Report, which was a performance and benchmarking project that evaluated the efficiency and effectiveness of the state's Information Technology, Finance, Human Resource and Procurement functions.

The Hackett Report determined that Oregon's total IT cost per End User Equivalent (EUE) was high relative to its peers and that there were significant opportunity gaps and low business value realization for IT investments. Key findings within the Hackett Report, included:

- While Oregon's total IT cost per EUE is similar to comparable states, it is higher than the peer and World-Class medians, driven by the labor cost
- State of Oregon's IT cost distribution shows a significant labor allocation with a lower percentage of spend on outsourcing and technology (labor costs account for 57% of IT Cost distribution relative to its peers at 41%)
- FTEs within IT are not well-leveraged across the organization
- Oregon pays a premium for the Infrastructure Management and Application Maintenance processes – again due to decentralization and complexity in the processes (an estimated $838 per EUE for infrastructure management and $1076 per EUE for application maintenance)
- Oregon's decentralized application environment generates an inordinate number of applications to support which drives up maintenance costs.

The administrative budget reductions and Hackett data set the context for work of the IT "Strategic Work Action Team" and Common IT Service Delivery project.

Common IT Service Delivery

In late 2014, DAS initiated an Enterprise Technology Review involving representation from 16 agencies and the Office of the State CIO.[1] During the review, the group reviewed the Enterprise IT Governance framework, developed a utility definition, established workgroups and reviewed the entirety of the ETS service catalog—identifying a preliminary list of utilities.

What is a Utility?

Utility services are those where it make sense to have a single supplier for all users when balancing:

- – economies of scale;
- – the need for one integrated system;
- – a strong need for uniformity; and
- – core business objectives are not impacted by a lack of customization.
- – A service can also be declared a utility for compelling policy reasons.

A utility service has a "community benefit" whether or not everyone takes advantage of the service.

The *Common IT Service Delivery (CITSD)* project extended the work of the Enterprise Technology Review by focusing on two related questions: first, what IT services should be considered utilities; and second, what is the best delivery mechanism for each utility service, including: brokered arrangements with third-party vendors, shared service agreements with other agencies or through insourcing or outsourcing arrangements. Convened in January of 2015, the *CITSD* Advisory Group validated utility designations, prioritized implementation and recommended a service delivery model for each utility. Taken together, the priority utilities build on previous work completed following the 2012 Hackett Report as part of the IT SWAT Evaluation.

The prioritized recommendations of the CITSD Advisory Group, were as follows:

1. **Unified Communications.** Proceed with the implementation of an outsourced vendor solution to provide the state telephone and unified communication services. Recommend a single vendor management resource.
2. **Network.** Outsource WAN/LAN under a single vendor-managed solution. Recommend a single vendor management resource.
3. **Enterprise Email.** Leverage the existing Microsoft (MS) enterprise agreement to obtain Office 365. Discontinue investment in the current ETS offering.

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[1] Agencies involved included: DCBS, DHS, DOC, DOJ, DOR, HCS, ODA, ODE, ODFW, ODOT, OED, OHA, OMD/OEM, OPRD, OSP and WRD

Building on previous work, the CITSD Advisory Group prioritized implementation of the above recommendations based on procurement status, implementation timeframes, technical feasibility, embedded cost structures, implementation costs, market maturity, sustainability of the current state, potential for ETS and agency staffing impacts and implementation risks.

The 2015-17 DAS Budget Note

During the 2015 Legislative Session, there was an increased concern about ETS financial transparency, which was exacerbated by difficulties in execution of the sustainability initiative—a project intended to reverse long-term disinvestment in the lifecycle replacement of key IT infrastructure (e.g., network switches, field servers, server virtual environment) at the ETS. Consequently, the 2015-17 DAS Budget included the following budget note:

> *"Given the uncertainty involving which services Enterprise Technology Services will offer in the future due to the ongoing IT Common Service Delivery review currently underway and concerns over management of ETS which has led to numerous outside reviews and audits, the Subcommittee agreed to only partially fund the Enterprise Technology Services budget requests for 2015-17. The State Chief Information Officer (SCIO), through the Department of Administrative Services (DAS), shall return during the 2016 legislative session to the appropriate subcommittee of the Joint Ways and Means Committee with recommendations on changes to ETS information technology services provided, which services it will no longer offer and state agencies will then be responsible, the budgetary impact of these decisions on state agencies, as well as DAS, changes in ETS operations implemented or considered as a result of outside reviews and audits completed by the time of the report, and timelines for additional changes to ETS services or operations being contemplated and how those could affect budgets, In addition, SCIO shall recommend a new funding formula for ETS that refocuses charges to state agencies on fees for service and deemphasizes the use of assessments which fund all positions regardless of reductions in services delivered, show how reductions in services purchased by state agencies would be reflected in reductions in operating expenses, and include price list adjustments needed for implementation of a new revenue formula at the start of second year of the biennium."*

HB 3099

In 2015, operational responsibility for ETS was temporarily assigned to the State CIO. This reassignment and delegation of joint authority over statewide IT policy and operations was put into statute under HB 3099 (2015), which provided that the State CIO is an independent official, directly responsible to the Governor as the primary advisor on statewide IT policy and operations and telecommunications.

Prior to the passage of HB 3099, the Chief Operating Officer (COO) retained substantial authority over state IT operations and policy. As a DAS employee and direct report to the COO, the State

Chief Information Officer's authority over statewide IT policy was largely advisory. Under this model, there was a clear disconnect between statewide IT policy and service delivery.

HB 3099 clarifies the role of the State CIO and ensures alignment between statewide IT policy and operations. Among other provisions, the bill also codified the stage gate review process for IT projects over a $1 million and provided the State CIO with independent procurement authority, oversight responsibilities, and contract enforcement abilities.

Conclusion

ETS and the SDC have been through many changes and iterations over the years, driven by external reviews and oversite, as well as internal self-evaluation. While much work has been done to mature the technology and processes used to deliver services to our customers, there is obviously still much more work to be done. This business plan is intended to establish the foundation for defining ETS' fundamental purpose as it focuses on being the state of Oregon's premier utility provider of computing and network services.

Section 3 Overview of ETS and OSCIO

PURPOSE

The purpose of this section is to provide the operational context within which ETS exists as a division within the Office of the State CIO. The contents below include vision and mission alignment, the organizational components of the OSCIO and the overall IT governance structure.

OSCIO VISION AND MISSION

OSCIO Vision. Enabling state agencies and partner jurisdictions to better serve Oregonians through enterprise technology solutions.

OSCIO Mission. Mature enterprise technology governance, leverage investments in shared services, ensure transparency, provide oversight, and deliver secure and innovative solutions.

Customer-centered. Listening and understanding our customer's needs.	**Deliver value.** Doing the right things right to meet our customer's desired outcomes.	**Be a partner.** Forging trusting partnerships across the enterprise.	**Innovation.** Providing solutions in creative ways.

OSCIO SECTIONS
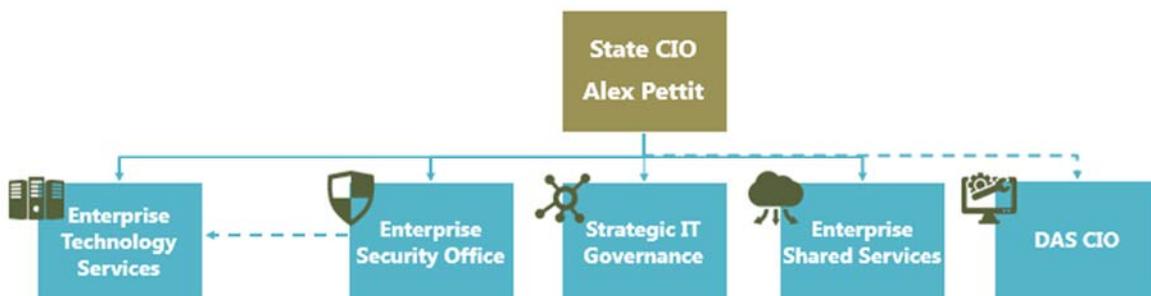
Enterprise Technology Services

Enterprise Technology Services is the shared services provider for computing and network infrastructure relied on by state agency IT support organizations.   As a shared services provider of information technology infrastructure, ETS operates as an external service provider. ETS'

primary customer base are state agency IT shops responsible for developing innovative solutions aimed at automating the business operations that support the Oregon constituents they serve. The operations of ETS are outside the direct management control of these agencies and are guided by a governance structure that is business centric to ensure business needs drive key decisions regarding the IT infrastructure supported by ETS. The infrastructure components supported by ETS are made up of local and wide area network connectivity, storage management, computer hosting, and disaster recovery. Consumers of ETS services include partners (consumers who rely exclusively on all services provided by ETS) and clients (consumers who rely on only selected ETS services). As noted in the Enterprise Security Office section, ETS has a strong reliance on its relationship with the ESO.

Enterprise Security Office

The Enterprise Security Office brings together all enterprise security - governance, policy, procedure and operations - under a single accountable organization. This will allow for end-to-end direction setting and execution for enterprise security. The team will be composed of a policy and controls section for setting enterprise security policy and the associated controls to ensure compliance, a solutions section driving enterprise security architecture, a services section to deliver on day-to-day enterprise security operations in the data center and a security operations center (SOC) to provide dedicated, real-time security monitoring and response across all enterprise operations. Enterprise Security Office personnel work collaboratively with ETS technical domain teams to deliver secure solutions to customers.

Strategic IT Governance

This newly created office is key in implementing and using the new IT Governance Framework which includes oversight and portfolio management of all major IT investments. Using the standard framework and statewide policies the office will work with agencies to identify and resolve IT project issues and strike a balance between central delivery and agency flexibility.   The staff serves as advisors, making recommendations for agency alignment with enterprise strategies and architecture, project management and IT governance maturity, industry best practices and agency business goals. They look for solutions and cost-sharing opportunities across multiple agencies and offer alternate solutions to business problems. This office helps facilitate efficient decision making, policy and statutory adherence and provides tools and training to assist agencies in achieving project success.

Enterprise Shared Services

This office enables the standardization of processes for soliciting and contracting for vendor-provided services, implementation of an effective framework for vendor management, consistency with best practices and development of internal capacity for successful negotiation of IT modernization telecommunications projects. Together with the teams that work on IT governance, project management and Quality Assurance, the Shared Services office will exercise policy and operational authority over projects prior to their solicitation and during implementation. The development of a vendor management strategy and establishment of a strategic sourcing group will enable vendor segmentation, evaluation of vendor performance,

effective vendor management, risk management and increased vendor diversity—enabling the development of strategic vendor relationships. By focusing on ensuring standardization, best practices, and an enterprise-wide focus in technology procurement, contract negotiation and oversight, the TBD will ensure alignment with project management principles and strategies. Additionally, it will cultivate skilled professionals who have the competence and specialized knowledge to successfully negotiate IT- and telecom-related contracts to mitigate risks and realize benefits across the enterprise.

DAS Agency CIO

This office will provide an internal champion for DAS that is focused on internal business needs, technology support, legacy systems replacement and meeting the IT needs of client agencies. The establishment of a DAS agency CIO will ensure that DAS models IT Governance best practices and should increase the responsiveness and effectiveness of the TSC through colocation, and an assessment or rate model based on the actual costs of service provision. The need for DAS IT leadership is critical, given statewide reliance on legacy systems that are approaching the end of their useful lives.

ENTERPRISE IT GOVERNANCE
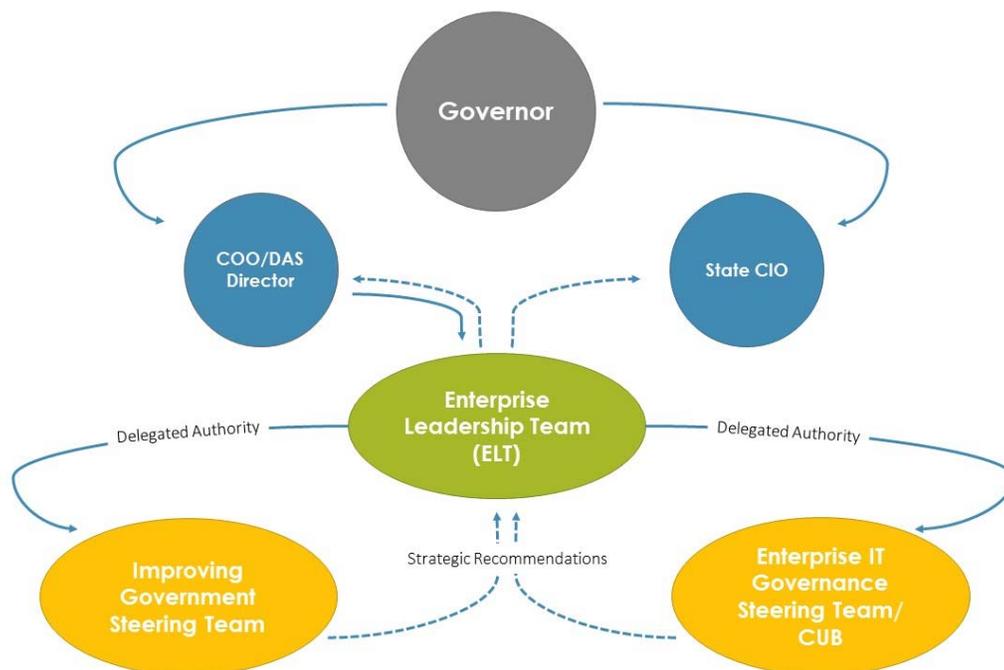
Office of the State CIO

With the passage of HB 3099 (2015) the State CIO is responsible for ensuring alignment between statewide IT policy and operations, advising the Governor on enterprise technology and telecommunications, implementing the IT Governance framework and establishing the state of Oregon's long-term IT strategy through the Enterprise Information Resource Management Strategy (EIRMS). More specifically, the State CIO oversees IT investments in excess of $1 million, providing project planning, quality assurance and overseeing the implementation of the stage gate review process. In carrying out these responsibilities, the State CIO possesses independent procurement authority, oversight responsibilities, and contract enforcement abilities. Additionally, the State CIO chairs, advises and participates on a number of chartered and statutory IT governance bodies.

Enterprise Leadership Team (ELT)

Established by the Office of the Chief Operating Officer, the Enterprise Leadership Team includes twenty agency directors and is charged with setting the overall vision for the administration of state Government in Oregon and coordinating the Governor's statewide initiatives. ELT sets general parameters for long-term cross-agency initiatives, establishes performance benchmarks and provides an important stakeholder forum. With respect to IT Governance, ELT charters the Enterprise IT Governance Steering Team and its responsibilities include:

- Establishing enterprise business objectives
- Approving and supporting enterprise standards
- Ensuring enterprise transparency

Enterprise IT Governance Steering Team (EITGST)

Enterprise IT Governance manages the day-to-day decision making related to the investment in and the deployment and management of IT resources across the state. Delegated decision-making authority falls into the following broad categories:

- Development of enterprise policy and implementation standards to be recommended to the ELT/State CIO for adoption
- Monitoring of major IT projects through the stage gate process utilizing an enterprise project portfolio management system and recommending action to the State CIO as needed
- Assessment and prioritization of emerging technology solutions aligned to business needs as either agency specific, shared service or enterprise utility, with associated recommendations to the ELT/State CIO
- Reviewing, modifying and approving recommendations from appointed business and IT workgroups on details of policy and project implementation for enterprise or shared service projects approved by the ELT/State CIO
- Monitoring and assessing the maturity and effectiveness of the state's IT architecture
- Escalation of issues or conflicts to the ELT/State CIO as needed

ETS Customer Utility Board (CUB)

The Customer Utility Board exists to provide DAS' customers with a meaningful voice in the cost, type, quality, and quantity of utility services delivered. This CUB acts as a governing board for those services provided by ETS that have been designated as utility services. The Board serves as a forum to recognize and respond to customers' needs as well as a communication channel to keep the exchange of information flowing between customers and providers. This takes its shape in the form of four primary responsibilities:

- Approving rate-setting methodologies and resulting rates
- Approving general service level agreements
- Reviewing business plans and annual financial statements
- Settling unresolved service complaints

An arm of the ETS CUB is the ETS Advisory Council. This council is chartered to support the State CIO, the Enterprise IT Governance Steering Team and the ETS Customer Utility Board by ensuring quality thinking and well-constructed recommendations are available to members leading to informed, high-quality decision-making. The ETS Advisory Council provides the consistent forum needed to explore and fully consider the range of issues defined in scope that support shared service data center governance.

SECTION 4 ENVIRONMENTAL SCAN – PEST ANALYSIS

Section 4 Environmental Scan – PEST Analysis

PURPOSE

The purpose of the Political, Economic, Social, and Technology (PEST) evaluation is to complete an external analysis to identify the macro-environmental factors considered by organization when establishing its business position and operation. A summary of the PEST findings is provided in the chart below.

Political	Economic	Social	Technological
• HB 3099 (2015) • 2015 Budget Note • Governor • Compliance	• Cost Recovery • Value Proposition • Capacity On Demand • Internal Investment • Staffing	• Democratization of IT • Customer Expectations • Transparency • Workforce	• Moore's Law • Underutilization • Models of Service Delivery • Legacy Systems

*The following PEST analysis was conducted with the ETS executive team and therefore may not reflect the opinions of DAS or the OSCIO.

POLITICAL

There are several political factors currently impacting ETS, including HB 3099 (2015), the new Governor, the ETS budget note, and continued emphasis on regulatory and legal compliance. As discussed above, the passage of HB 3099 has significant implications on the role of the State CIO relative to statewide IT policy and service delivery. Additionally, there is substantial ambiguity with respect to roles and responsibilities between the OSCIO, the Department of Justice and DAS procurement. While it is clear that the OSCIO has gained substantial authority with respect to procurement, it is unclear the extent to which this authority is independent or overlapping. Furthermore, with the codification of the stage gate review process, there are still details to work out in terms of implementation.

The ETS budget note in the 2015-17 DAS budget coupled with a modified current service level budget, ensures that ETS will remain a subject of legislative inquiry. In returning to the February session, ETS will be required to report on the status of the Common IT recommendations, its future service catalog, progress in moving towards a funding model that emphasizes rates over assessments, and addressing current resource gaps. To do this, it will be necessary to report on the status of implementing HB 3099.

As for the new Governor, ETS has been and remains in the spotlight given recent HR and police investigations into the leaking of the previous administration's emails. IT continues to be the subject of heightened scrutiny given the failed implementation of the Cover Oregon website and continuing litigation with Oracle.

ECONOMIC

Concern over rate development and cost recovery are major themes in terms of economic factors influencing ETS—both of which tie to the discussion of the budget note. Given technological innovation and changing agency business needs, the four-year rate development schedule is overly restrictive and inhibits ETS' ability to accurately predict future expenditures and revenue. Given its embedded cost structures and limited ability to predict future agency demand, ETS lacks the ability to scale its service offerings and adjust its rate structure accordingly. Concern over cost recovery also inhibits ETS' willingness to fully utilize existing assets. One example discussed was unified computing, which could automate both internal and customer IT functions and enable customers to effectively spin-up servers on demand. The inability to determine a rate model or cost recovery mechanism may delay implementation of this service.   With respect to pass-through expenditures on behalf of customer agencies, the current ETS structure and budget process requires both ETS and the agency to obtain increased expenditure limitation. On a related note, there was also concern expressed regarding ETS' ability to articulate a clear value proposition to client agencies given the dynamics of the legislative process.

Another issue was internal capacity in terms of infrastructure and human resources. One capacity gap is the absence of a billing and time tracking system. While recognized as a long-standing need, previous denials of policy option packages and a reluctance to repurpose available revenues has hampered a key investment. In addition to infrastructure gaps, there was concern expressed regarding human capital management. In particular, there are concerns regarding ETS' ability to recruit and retain needed talent given private competition and wage differences. Additionally, there is a growing need to build a succession plan for key competencies as the number of retirements accelerates.

SOCIAL

There is currently a trend known as the democratization of IT occurring in the marketplace. This trend reflects the desire of customers to have control over their own IT. This in turn drives the need to have new technologies and access points that allow this democratization. In addition to the interest in democratization, customer expectations have changed in other ways including the need for increased access to applications on the web and the need for solution mobility. It is important that customer desires present today, and those expected for the future, are factored into the future of ETS.

The last element of the social category relates to the current, and future, workforce within ETS. Younger employees have different expectations of work environments and ETS needs to be prepared to accept a new paradigm as an employer. Despite the need to change the work

environment, there is a continued need to support legacy systems – some of which are no longer included in educational programs from universities. It will continue to be difficult to attract new talent with the skillsets needed to complete the work within ETS.

TECHNOLOGICAL

One factor that has a great deal of impact on ETS operations is the rate at which technology changes along with the associated costs of that technology – this is commonly known as Moore's Law. This not only affects the need to update technology, but it greatly affects customers' expectations of what services should be delivered. This factor means the baselines and best practices are constantly moving forward and are difficult to keep up with. This further exacerbates the difficulties with the budget and rate setting process beginning four years ahead of the biennia.

New models of service delivery and legacy systems are both important to the future of ETS and, in some ways, are in juxtaposition to one another. ETS has to continue supporting legacy systems that host data and programs important to service delivery to Oregonians. To retire end-of-life hardware and software, ETS can only move as fast as the business units of the agencies. At the same time ETS needs to look to the future and work towards new models of service delivery to meet both customer and citizen expectations.

Another challenge facing ETS is the difficulty of predicting and preparing for customer demand for services. Because agencies face the same uncertainties about availability of funds, large projects are often undertaken on short notice and may require extraordinary efforts to meet schedules. This can be exacerbated by requests for non-standard and one-off solutions which require additional efforts to design and fulfill.

SECTION 5 ETS DESCRIPTION

Section 5 ETS Description

PURPOSE

The purpose of this section to provide a high-level picture of the core attributes that make up ETS as a shared services provider. IT service management, service provider definition, continuous process improvement, and service boundaries are all discussed in this section. The narrative contained in this segment of the business plan is intended to provide the foundation that services, service delivery, organizational structure, and financial models are built upon. Detailed discussion of these components are provided in sections 6, 7, 8 and 9 respectively.

ETS FUNDAMENTALS

Enterprise Technology Services is the shared services provider for computing and network infrastructure relied on by state agency IT support organizations. A fundamental core that shapes how these services are delivered to agency customers is IT service management as defined by the guidance provided by the Information Technology Infrastructure Library.

ITIL is a best practices framework for IT service management that enables organizations to align IT services with the needs of the business. ITIL outlines processes, procedures, tasks and structured approaches for developing an IT organization's strategy, defining and delivering value, imbedding a culture of continuous service improvement and maintaining an acceptable level of competency.

ITIL takes a lifecycle approach to IT service management. The five stages in the lifecycle are service strategy, service design, service transition, service operations, and continual service improvement. Each stage contains a series of process areas with best practice approaches and techniques for IT service management that result, if implemented properly, in defined and repeatable processes for clearly delineating the services provided, and delivering affordable IT services with reduced down-time and increased responsiveness.
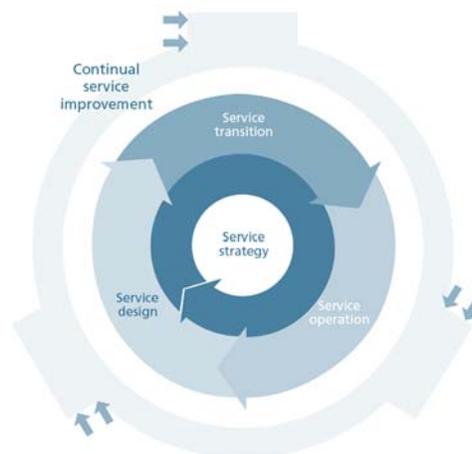
The primary focus of the ETS business plan is to anchor the strategy of and services provided by ETS into a foundational document that describes the factors that influence service delivery, why the business exists and what they are in business to do, who the business is serving and what their customers expect, how the business is organized to provide the highest level of customer service, and how, through financial management, valued services are offered. ITIL's Service Strategy Management process area helps focus the business plan on ensuring customer needs drive service delivery.

Service Strategy Management's objectives are to:

- Assess service provider offerings and capabilities to inform the development of a service strategy that meets customer demands.
- Ensure the right mix of services are being delivered to meet state agency customer outcomes.
- Define budgeting, accounting, and cost recovery requirements.
- Analyze, anticipate, and influence customer demand.
- Provide a development mechanisms for building and maintaining positive customer relations so that customer needs can be identified and appropriately delivered.

ITIL Service Strategy Management outlines three distinct provider types:

1. **Internal service provider**: exists within an organization and provides service solely for a unique business unit
2. **Shared service unit**: exists within an organization, but provides service for more than one business unit
3. **External service provider**: operates outside organization

As a shared services provider of information technology infrastructure (see section 6 for a full description of the information technology infrastructure components), ETS operates as an external service provider. ETS' primary customer base consists of state agency IT shops responsible for developing innovative solutions aimed at automating the business operations that support the Oregon constituents they serve. The operations of ETS are outside the direct management control of these agencies and are guided by a governance structure (described above in section 3) that is business centric to ensure business need drive key decisions regarding the IT infrastructure supported by ETS.

CONTINUOUS SERVICE IMRPOVEMENT (CSI) AND MEASURES

ITIL has been chosen as the basis for ETS's service management strategy not merely because it is recognized as a collection of industry best practice for structured processes. Through the guidelines contained within the continuous service improvement ITIL stage, ETS is able to align IT services with changing business needs by identifying and implementing improvements to IT services. Of critical importance is identifying what to measure, understanding why it's being measured, and determining success outcomes.

Primarily, ETS performance measures are aimed at determining the quality of the product or service delivered to the customer and the mean time for delivering the service or repairing the system when a service disruption occurs. Measures from these two broad categories are used as input into CSI processes to:

- Review, analyze, prioritize, and recommend improvement opportunities across the service lifecycle
- Review and analyze service level achievements
- Identify and implement improvements to service and processes
- Improve the cost effectiveness of an IT service without sacrificing customer satisfaction
- Apply relevant quality management methods to CSI activities
- Ensure processes have clearly defined objectives and actionable measurements[2]

ETS BUSINESS ECOSYSTEM

A business ecosystem model is a visual depiction of a "collaborative network of complementary organizations, groups and customers. . . All organizations exist in an 'ecosystem' – a network of other organizations that interact to create shared value. . . Ecosystem models are a powerful way to represent roles and relationships, and to spur discussions among stakeholders. . . Business ecosystems share similarities with biological ecosystems:

- **Large numbers of loosely interconnected participants** who rely on each other

- **Open system** participants can come and go

- If the ecosystem is **unhealthy**, then **all participants will suffer**

- The **network of relationships** is as important as the individual nodes

- It is dynamic and adaptive, tending toward **homeostasis**."[3]

Ecosystems are dynamic entities that are subject to periodic disturbances and are generally in the process of recovering from some past disturbance. When an ecosystem is subject to disturbance, it responds by moving away from equilibrium. The tendency of a system to remain close to its equilibrium state, despite that disturbance, is called its *resistance*. On the other hand, the speed with which it returns to some equilibrium state after disturbance is called its *resilience*.

The diagram below represents the ETS business ecosystem model. It depicts the entities and relationships that ETS management and staff interact with on a daily basis. It shows how ETS provides infrastructure services that are used by agencies to provide government services to the

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[2] Global Knowledge (June, 2014). *ITIL Foundation M2975C-009-4* page 6-6

[3] : Toolkit: Business Ecosystem Modeling by Marcus Blosch and Betsy Burton, 10 June 2015, Gartner G00277777

citizens of Oregon. It also shows the complex web of governance, direction and oversight that ETS operates within.

By creating awareness of this network of relationships, ETS can work to become more agile, more flexible and more responsive to its customers. The goal is to build up the *resistance* of our ecosystem, so that a disturbance does not jeopardize our service delivery. At the same time, ETS needs to build *resilience* so that disturbances are dealt with quickly, resulting in a new state of equilibrium within our ecosystem.
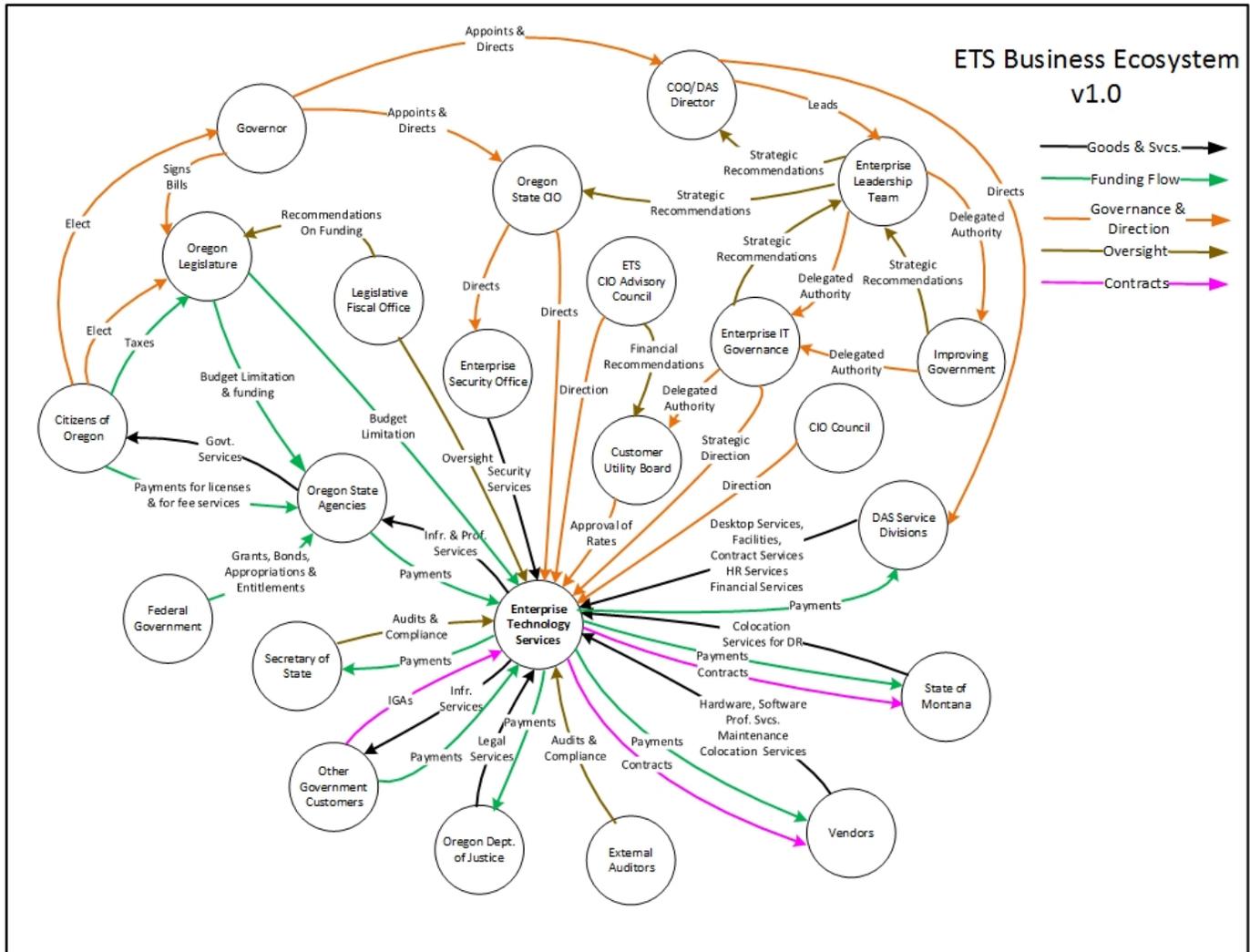
Section 6 Service Delivery and Customer Alignment

PURPOSE

As introduced in the previous section, a primary goal of a business plan is to clearly articulate the alignment of the business need, as expressed by stakeholders and customers, and the services provided by ETS in support of the business need. The purpose of this section is three fold. First, this section provides an outline of the service categories provided by ETS to agency IT units to support their need for computing and network infrastructure. Second, is to outline staff core skill competencies required to provide the requested service. Finally, is to show the alignment of core skill competencies to the services provided.

This section is intended to initiate the service to service delivery discussion. Customer profiles, a detailed service catalog description, and staffing strategies will be covered in more detail in sections 7 Customer Profile and Service Catalog review, and 8 Organizational Plan.

ETS SERVICES PROVIDED TO AGENCIES

This section describes the basic services provided to ETS agency customers. The services outlined below represent the core technical infrastructure and related service offerings that customer agencies rely on to effectively deliver their business-centric operations. The level and depth of service consumed by a particular agency is driven by whether they are a partner or client consumer type.

Local Network Connectivity

Local area network services provide networking of computing devices within the customers' physical locations and to the state network, allowing:

- Computing resources such as files, printers and applications to be shared
- Data and messages to be sent and received in a secure and reliable manner

Statewide Network Connectivity

State network access services provide connectivity to state and agency resources (such as servers at the SDC), to other governmental offices that are connected to the state network and to the Internet.

Storage Management

Data storage services provide secure technology and capacity management to store customers' data in a manner that meets their performance and availability needs.

SECTION 6 SERVICE DELIVERY AND CUSTOMER ALIGNMENT

Backup services create reliable copies of data, related software and supporting configurations for the purpose of reproducing data from a specific point in time in the event the original is lost, erased, damaged or changed in error.

Data storage services provide secure technology and capacity management to store customers' data in a manner that meets their performance and availability needs.

Computer Hosting

ETS engineers, builds and supports customized hosting solutions designed to help customers improve IT quality, efficiency and reliability. Depending on infrastructure needs, ETS can virtualize existing servers, build an entire custom hosted infrastructure or simply provide a managed server. ETS has a wide array of professional capabilities to provide the right solution to meet customers' needs.

Secure Connections

Security Services manage software, hardware, processes, and procedures to ensure all data and communications are appropriately secured for availability and access. As with the other services, Security Services engage in the development of the new, combined environment along with the normal information technology support of customers' needs. As noted in Section 3, these services are delivered as a collaboration between ETS and ESO.

Enterprise E-mail

Enterprise email services enable sending, receiving and reviewing email from Outlook clients, web browsers or mobile devices. It incorporates calendaring within the email system and removes mailbox size limitations.

ETS CORE COMPETENCIES

This section describes the basic proficiencies required to deliver the services outlined above.

Mainframe – Primary Function/Core Skills

This primary function covers the actual mainframe computer systems software (operating systems, networks, DBMSs, etc.). They are responsible for the efficient performance of the mainframe and typically perform tasks that integrate mainframe vendors' software, utilities, databases and communications. Their customers are generally technical staff, such as application programmers, versus end-users or citizens. In the event of an outage, this function would either act as the expert on some or all of the mainframe computer system; or consult, coordinate and direct the other mainframe disciplines and specialties until replaced by the person with the specialized expertise needed to address the outage.

The primary disciplines and specialties include:

- Mainframe Systems Administration (zOS, DB2, IMS, CICS Programmers)
- Mainframe Database Administration (DB2, IMS)
- Mainframe Storage management
- Mainframe Network Administration

Intel Computing Services – Primary Function/Core Skills

This primary function covers responsibility for the engineering, configuration and installation of the enterprise's Intel-based internal servers, operating systems and computer systems. They design, evaluate and install solutions based on various operating systems (OSs), including Linux or Microsoft systems. They maintain and support the enterprise's Intel-based internal servers, operating systems and computer systems. They administer, install and troubleshoot various operating systems, including Linux and/or Microsoft systems, for reliability, stability and performance. They perform day to-day systems maintenance tasks, such as system backup, recovery and file maintenance. They install new software releases and systems patches, configure software and resolve technical problems on Microsoft and Linux operating systems.

The primary disciplines and specialties include:

- Operating System Administration (Windows, LINUX)
- Platform Administration (VMware, UCP)
- Database Administration (SQL)
- LDAP Administration (Active Directory)

Midrange Computing Services – Primary Function/Core Skills

This primary function covers responsibility for the engineering, configuration and installation of the enterprise's internal UNIX servers, operating systems and computer systems. They design, evaluate and install various operating systems, including UNIX, Iseries and Linux systems, and computer systems for databases, middleware and access management. They maintain and support the enterprise's internal servers, operating systems and computer systems. They administer, install and troubleshoot various operating systems, including Linux and/or UNIX systems for reliability, stability and performance. They perform day-to-day systems maintenance tasks, such as system backup, recovery and file maintenance. They install new software releases and systems patches, configure software and resolve technical problems on these operating systems.

The primary disciplines and specialties include:

- Midrange Administration (UNIX, iSeries)
- Database Administration (DB2, Oracle, Sybase)
- Middleware Management? Data Access ?(WebSphere and WebLogic)
- LDAP Administration

Network Services– Primary Function/Core Skills

This primary function covers responsibility for the engineering, configuration and installation of the enterprise's internal data communication systems. They design, evaluate and install LANs, WANs, and other Internet and data communications systems. Network staff must have extensive knowledge of LAN/WAN, data communications systems, Internet and telecommunication protocols, remote access systems, PC and LAN hardware systems, routers, switches, firewall, remote access systems, etc. They maintain and support the enterprise's internal data communication systems. They troubleshoot and fix network-related issues and problems. They administer, install and troubleshoot LANs, WANs and other Internet and data communications systems.

The <u>primary</u> disciplines and specialties include:

- WAN Administration
- LAN Administration
- Wireless Administration

Security Services– Primary Function/Core Skills

This primary function covers responsibility for the engineering, configuration and installation of the enterprise's internal security systems, including the physical security devices, security software systems and security management systems. They design, evaluate and install various security technologies. They maintain and support the enterprise's security environment. They perform daily analysis of security related events and participate in security-related incidents. They administer, install and troubleshoot various security technologies for reliability, stability and performance. They perform day-to-day security systems maintenance tasks. They install new software releases and systems patches, configure software and resolve technical problems on the enterprise security environment.

The <u>primary</u> disciplines and specialties include:

- Security Device Management (Cisco)
- Security Network Administration (Cisco)
- Firewall Administration (Cisco, F5)
- End User VPN (Cisco, F5)
- Security Protection Administration (FortiMail, Snort, TrendMicro antivirus, DeepSecurity)

Storage Services– Primary Function/Core Skills

This primary function covers responsibility for the engineering, configuration and installation of the enterprise's internal storage systems, including the physical storage devices, storage operating systems and storage management systems. They design, evaluate and install various storage technologies. They maintain and support the enterprise's storage environment, storage operating systems and storage management systems. They administer, install and troubleshoot

various storage technologies for reliability, stability and performance. They perform day-to-day storage systems maintenance tasks, such as system backup, recovery and file maintenance. They install new software releases and systems patches, configure software and resolve technical problems on the enterprise storage environment.

The <u>primary</u> disciplines and specialties include:

- Storage Area Networks
- Backup
- Storage Hardware Management
- Storage Administration

Enterprise E-mail – Primary Function/Core Skills

This primary function covers design, development, installation, implementation, modification and support of new or existing enterprise email systems. In the event of an outage, this function would either act as the enterprise email specialist or consult, coordinate and direct the infrastructure disciplines and specialties until replaced by the person with the specialized expertise needed to address the outage.

The primary disciplines and specialties include:

- Microsoft Exchange
- Windows Server Administration
- Dell Quick Connect
- Dell Password Management

IT Business Services – Primary Function/Core Skills

This primary function utilizes expertise in running ETS as an IT business. They lead the creation and implementation of strategy, aligning IT services with business strategy and functional requirements. They build and manage relationships with business units. They ensure IT services are provided as efficiently and effectively as possible. They allocate and acquire resources required by other functional areas in the delivery of IT services. They ensure the level of services delivered meet documented customer needs and expectations.

The <u>primary</u> disciplines and specialties include:

- IT Business Operations (HR, Finance, Procurement, Billing)
- IT Process (ITSM – Information Technology Service Management)
- IT Performance Management (Services & Service Levels, Data, Metrics)
- IT Customer Relationship Management
- IT Project Management

SECTION 6 SERVICE DELIVERY AND CUSTOMER ALIGNMENT

SERVICE TO CORE COMPETENCY ALIGNMENT

The table below shows the relationship between the core services provided by ETS the core competencies required to deliver those services.

Services Provided / Core Competencies	Local Network Connectivity	Statewide Network Connectivity	Storage Management	Computer Hosting	Secure Connections	Enterprise E-Mail
Mainframe			■	■	■	
Intel				■		
Midrange				■		
Network	■	■				
Security		■			■	
Storage			■			
Enterprise E-mail						■
IT Business Services	■	■	■	■	■	

Section 7 Customer Profile and Service Catalog Review

PURPOSE

This section is intended to provide a detailed description of the ETS customer base and services offered by ETS. The customer profile outlines three distinct groupings and the support needs of each. The service catalog review lists the service offerings as well as the ETS support boundary, which describes where ETS service responsibilities end.

	LAN	WAN	Storage	Computer Hosting	Secure Connections	Enterprise Messaging
Heavily Invested	⚙	⚙	⚙	⚙	⚙	⚙
Moderately Invested	⚙	⚙	⚙	⚙	⚙	⚙
Nominally Invested		⚙	⚙			
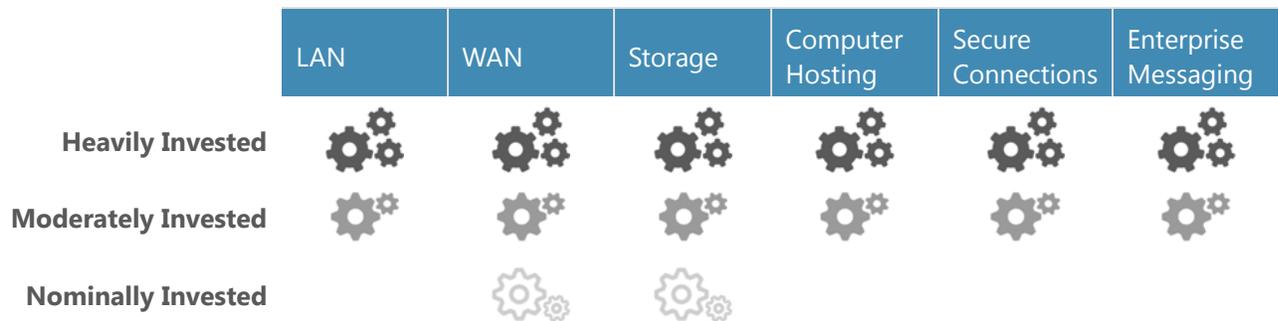
*Saturation represents the level of customer engagement within a service line.

CUSTOMER PROFILE

The ETS customer base is primarily made up of three distinct groups. These included partners, state agency clients, and non-state agency clients. These three groupings are graphically displayed below, showing the array of services each generally rely on from ETS.

The customer groups are described below:

Heavily Invested – Customers in this category rely most heavily on the full catalog of services provided by ETS. They utilize ETS as their primary provider of computing and network infrastructure services. As displayed in the graph above, these customers are deeply invested in the functionality and performance of the services provided by ETS.

Moderately Invested – This group of customers are state agencies that procure a discrete subset of services offered by ETS. For the most part, the services purchased are in the areas of network and data storage, including backup and recovery.

Nominally Invested – These are customers from qualified governmental jurisdictions outside of Oregon state government. Among these are school districts, and county and municipal governments. Like agency clients, they sometimes purchase from the specific subset of services

offered by ETS in order to augment a need their IT organization cannot provide. Chief among these is data backup and restore.

SERVICE CATALOG REVIEW

IT Support Services

Hosting – Windows/Linux

Windows/Linux based servers can be standalone or in a shared environment. Hosting services provide the technical infrastructure and support services for customers to install, operate and maintain their applications and services on a variety of operating system platforms. Key strategies within this environment include:

- Virtualize wherever possible because of cost efficiencies, lower power and footprint requirements, higher availability and improved disaster recovery.
- Be prepared to restore services quickly.
- Ensure server size is appropriate for requirements and usage.
- Centralize and eliminate remote servers where possible.
- Reduce power utilization.
- Drive application compatibility with ETS standards.

The base service includes:

- Infrastructure and operating system to host the customer application or system
- Infrastructure and operating system management and administration
- Network connectivity within the State Data Center
- Secure access control
- Operating system monitoring

Offerings and Options

- **Server Instance:** Includes the hardware platform/OS instance which also includes, patching, antivirus, OS health monitoring, file transfer, OS network bandwidth and OS backup. Requires memory and CPU to use
- **System CPU Resource Allocation:** The number of CPU server cores associated with a server instance in increments of 1 CPU core
- **System Memory Resource Allocation:** The amount of memory associated with a server instance in increments of 1 GB RAM
- **Server Load Balancing Service:** Additional support services required to create and maintain a load balanced configuration on multiple servers. Charged per server

- **Server Clustering Services:** Additional support services required to create and maintain a server cluster. Charged per server
- **NAS Storage Unit:** Use of a NAS file instance. The rate is under reevaluation due to changes in infrastructure costs. (Placeholder)
- **Appliance Support Services:** Hosting of a non-standard asset

Demarcation

Customer Responsibilities:

1. Providing and maintaining application services and associated data
2. Data/application business continuity
3. Installation of customer applications or systems
4. Configuration of customer's application or system
5. Migration of data associated with customer application or system
6. End-user devices (desktops, printers, plotters, etc.) and management of those devices
7. Power and cooling for customer-site systems
8. End user testing of customer application or systems
9. Customer application or system change management
10. Customer application or system security

ETS Responsibilities:

1. Infrastructure and system software management:

   - Operation and support of the hardware
   - Hardware and system software lifecycle management
   - Security
   - Patch management
   - Troubleshooting and tuning of environments for optimum availability and performance
   - Equipment and operating system monitoring
   - Scheduled and ad hoc maintenance
   - Managed equipment and system software configuration

2. 24 x 7 support
3. Redundant power sources and climate control for equipment at the state data center
4. Operating system platform and system software change management
5. Operating system platform and system software security

Hosting – Mainframe

The mainframe system collects computer processing data each time a user logs in to the computer, executes a job, runs reports, or does queries with online files. Usage information is assigned to customers based on where the usage information resides, application name, or user

name. The unit of measure for mainframe computing is the Computer Processing Unit (CPU) minute with usage data reported daily. Hosting services provide the technical infrastructure and support services for customers to install, operate and maintain their applications and services on a variety of operating system platforms.

The base service includes:

- Infrastructure and operating system to host the customer application or system
- Infrastructure and operating system management and administration
- Network connectivity within the state data center
- Secure access control
- Operating system monitoring

ETS can customize services to meet the individual requirements of the customer.

Offerings and Options

- Batch Processing
- CICS Processing
- DB2 Processing
- TSO Processing
- Disaster Recovery Test Environment
- Mainframe Hardware –cost pooled across all externally sold customer units[4]

Demarcation

Customer Responsibilities:

1. Providing and maintaining application services and associated data
2. Data/application business continuity
3. Installation of customer applications or systems
4. Configuration of customer's application or system
5. Migration of data associated with customer application or system
6. End-user devices (desktops, printers, plotters, etc.) and management of those devices
7. Power and cooling for customer-site systems
8. End user testing of customer application or systems
9. Customer application or system change management
10. Customer application or system security

ETS Responsibilities:

1. Infrastructure and system software management:

    - Operation and support of the hardware

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[4] Internal only sales.

- Hardware and system software lifecycle management
- Security
- Patch management
- Troubleshooting and tuning of environments for optimum availability and performance
- Equipment and operating system monitoring
- Scheduled and ad hoc maintenance
- Managed equipment and system software configuration

2. 24 x 7 support
3. Redundant power sources and climate control for equipment at the state data center
4. Operating system platform and system software change management
5. Operating system platform and system software security

Hosting – Midrange

Midrange systems run in the UNIX ("AIX") or IBM System ("iSeries") environment. Rates in Midrange Systems include those for hosted computing as well as for specific services including managed database environments, web application servers, and SFTP services. These systems support many critical applications, such as tax systems, youth corrections case management and other high up-time applications. Hosting services provide the technical infrastructure and support services for customers to install, operate and maintain their applications and services on a variety of operating system platforms.

The base service includes:

- Infrastructure and operating system to host the customer application or system
- Infrastructure and operating system management and administration
- Network connectivity within the state data center
- Secure access control
- Operating system monitoring

Offerings and Option

- Unix Lpar instance
- iSeries Lpar instance
- Application Server Services, Oracle on UNIX
- Application Server Service, Web Sphere or Cold Fusion on UNIX
- DBMS Service, DB2 on UNIX
- DBMS Service, Oracle on UNIX
- Secure File Transfer Service, UNIX

SECTION 7 CUSTOMER PROFILE AND SERVICE CATALOG REVIEW

Demarcation

Customer Responsibility

1. Providing and maintaining application services and associated data
2. Data/application business continuity
3. Installation of customer applications or systems
4. Configuration of customer's application or system
5. Migration of data associated with customer application or system
6. End-user devices (desktops, printers, plotters, etc.) and management of those devices
7. Power and cooling for customer-site systems
8. End user testing of customer application or systems
9. Customer application or system change management
10. Customer application or security system

ETS Responsibilities:

1. Infrastructure and system software management:

   - Operation and support of the hardware
   - Hardware and system software lifecycle management
   - Security
   - Patch management
   - Troubleshooting and tuning of environments for optimum availability and performance
   - Equipment and operating system monitoring
   - Scheduled and ad hoc maintenance
   - Managed equipment and system software configuration

2. 24 x 7 support
3. Redundant power sources and climate control for equipment at the State Data Center
4. Operating system platform and system software change management
5. Operating system platform and system software security

Co-Location

Colocation services provide a secure location in an access-controlled facility for housing servers and related equipment that customers own and manage. This service can assist with disaster recovery, redundancy and backups, or simply provide a physical space for proprietary equipment to be located with hosted applications. This service includes the immediate escalation of incidents related to the physical asset in accordance with procedures provided by the customer. It does not provide monitoring of the operation of the software running on the co-located equipment. Additionally, customers must purchase network ports as needed.

Colocation facilities offer physical space for customer-owned equipment and include:

- High physical security and access control, including 24 hours video surveillance
- Fire detection and extinguishing devices
- Multiple connection feeds and bandwidth
- Uninterruptable and filtered power, with backup power generators
- Redundant air-conditioning
- Intrusion detection at network border
- Staff and automated 24x7 monitoring of environmental and physical security

Offerings and Options

Customers can choose from:

- Open floor space for your equipment
- Caged floor space for a higher level of security
- Space in an existing rack

Demarcation

Customer Responsibilities:

1. Managing all user-installed servers and equipment
2. Ensuring co-located equipment meets all industry electrical, thermo and magnetic standards required by the facility
3. Complying with access control policies of facility
4. Investigating reports of potential security vulnerabilities and removing equipment as appropriate
5. Hardware and software delivery, asset tracking and lifecycle
6. Rack-mount kits for rack space

ETS Responsibilities:

Managing and troubleshooting network equipment up to the connection to the customer's equipment.

State Wide Area Network Access (WAN)

State network access services provide connectivity to state and agency resources (such as servers at the ETS), to other governmental offices that are connected to the state network, and to the Internet. Network connectivity charges include transport costs, taxes, interlata charges, installation charges and domain registrations. These are charged by the telecommunications vendors and passed on to the customer. A five (5) percent charge is added to cover managing network telecommunications service contracts, attorney general fees associated with these contracts and personal services to provision the services.

State network access provides:

- A redundant core infrastructure

- Bandwidth to the state network
- Segregated customer network environments
- Allocated IP address blocks
- Intrusion detection and monitoring
- Internet connectivity
- Tools for customers to use to monitor their agency's network traffic

Offerings and Options

The customer has optional bandwidth choices from 9.6 kilobits to 1 gigabit per month.

Demarcation

Customer Responsibilities:

1. Management of customer devices, such as workstations and printers
2. Management of customer device connections to the local area network
3. Secure physical space for equipment, including power and accessible to ETS Staff

ETS Responsibilities:

1. Performance monitoring, management and reporting of networking equipment, such as switches
2. Management of the logical network components – the communications protocols that create the system of digital message formats and rules for exchanging data, which includes signaling, authentication and error detection and correction capabilities
3. Hardware and software lifecycle management for network equipment and components
4. Providing the IP address block for customer usage

State Local Area Network Access (LAN)

Local area network services provide networking of computing devices within customers' physical locations and to the state network, allowing:

- Computing resources such as files, printers and applications to be shared
- Data and messages to be sent and received in a secure and reliable manner

State local area network access provides:

- Staff and expertise to manage the customer's internal network
- Networking equipment such as switches and wireless access points required to provision the LAN
- All the communications protocols needed for the exchange of data and messages

SECTION 7 CUSTOMER PROFILE AND SERVICE CATALOG REVIEW

Offerings and Options

- **Wired LAN:** Devices physically connected to the LAN with cables. Wired LANs require the use of central devices like switches, offer high reliability, and superior performance
- **Wireless LAN:** Devices connected to the LAN without cables. Wireless LANs, sometimes referred to as WLANs are provided through Wi-Fi signals. They are less reliable than wired LANs and have more limited performance capability, but offer greater mobility
- **Options** – customers may also opt to have:
  - Secure user remote access (end user VPN) to allow individuals to access specified computer resources through the Internet
  - The service provides IP addresses for devices to be connected to the LAN
  - Customers may choose to manage IP addresses themselves or have ETS manage them

Demarcation

Customer Responsibilities:

1. Management of customer devices, such as workstations and printers
2. Management of customer device connections to the local area network
3. Secure physical space for equipment, including power, and that is accessible to ETS staff. Need text and additional explanation

ETS Responsibilities:

1. Performance monitoring, management and reporting of networking equipment, such as switches
2. Management of the logical network components – the communications protocols that create the system of digital message formats and rules for exchanging data, and including signaling, authentication and error detection and correction capabilities
3. Provision of IP addresses for use by customer devices
4. Hardware and software lifecycle management for network equipment and components
5. Maintaining and managing the network addresses for the LAN

Data Storage and Backup

Data storage services provide secure technology and capacity management to store customers' data in a manner that meets their performance and availability needs. Storage tiers enable customers to determine which level of storage performance best meets their price and availability requirements. Various solutions are available to meet customer and application needs. Data storage is located in two environments: disk storage and disk backup. Disk storage can be local attached storage (within the server) or it can be attached to the Storage Area Network (SAN). Disk backup is an on-site and off-site copy.

The base service for data storage includes:

- Reserved storage space
- Capacity increase/decrease upon request
- Usage reporting
- Customer controlled retention
- Storage infrastructure management

Backup services create reliable copies of data, related software and supporting configurations for the purpose of reproducing data from a specific point in time in the event the original is lost, erased, damaged or changed in error.

The base service for backup includes:

- A primary backup copy at the State Data Center
- A secondary backup copy generated and stored offsite
- Creation of full backups which provide complete copies of the content of the selected file
- Creation of incremental backups which only copies the content of the designated files that have been changed since the last full backup, making backup sizes and run times more economical and efficient
- Tools for customers to monitor usage and to restore backups

Offerings and Options

- **Enterprise Storage:** SAN (includes iSeries) provides a flexible and efficient environment for enterprise class storage needs. Dynamic/automatic movement of data from one class of disk to another will allow the customer to meet changes in demand for that data without need for manual intervention.
- **Mainframe Storage:** Highest performing disk storage, fiber connected, fiber channel disk. Disk storage is internal to the Hitachi VSP. All components are fully redundant. This is dedicated SAN disk storage formatted specifically for the Mainframe. The Mainframe environment utilizes a VTS (Virtual Tape System) and data is backed up and sent to an offsite secure storage location.
- **Local Attached Storage:** Local attached (non SAN) disk storage for the Windows/Linux server environments.
- **Backup Services:** Customers define their backup requirements and are given the tools to restore their data. Additional assistance from ETS is available for data restoration. On- and off-site disk backup. Daily back-ups are stored on disk for Distributed and UNIX environments. Back-ups are retained on-site for 30 to 60 days while a second copy of the backup is stored off site for 30 days. Agencies can request different retention periods if required. The iSeries environment backs up to tape with a local copy stored onsite and a second set sent to an offsite secure storage location.
- **Disaster Recovery Disk Replication:** Rate and service definition under re-evaluation.

Demarcation

Customer Responsibilities:

1. Defining performance requirements
2. Migration of data to ETS storage
3. Data integrity – maintaining and assuring the accuracy and consistency of the data
4. Classification and management of stored data

ETS Responsibilities:

1. Storage system administration
2. Storage system monitoring
3. Managing system performance

Email

Enterprise email services enable the sending, receiving and reviewing of emails from Outlook clients, web browsers or mobile devices. It incorporates calendaring and instant messaging within the email system and provides unlimited mailbox storage.

The service provided for each account includes:

- Oregon.gov and a state.or.us email address for each mailbox account
- Archiving, search and discovery capabilities based on a customer determined retention and customizable retention period
- Effectively unlimited email storage to prevent denial of service attacks and to provide easier mailbox management for users
- Ability to access emails through Outlook Client, web browser and/or mobile devices depending on the needs of the customer
- Calendaring with the ability to share calendar information with other enterprise email system customers

Offerings and Options

- Instant messaging (IM) tool with messages stored in the email system. Option to use IM across customer agencies who are using the enterprise email system.
- Mail hub service

Demarcation

Customer Responsibilities:

1. Compliance with Statewide Policy 107-004-110, Acceptable Use of State Information Assets.

2. Email client licenses and management of Outlook if used.
3. Mobile device and web browser configurations and management.
4. Public records requests and HR inquires management.
5. Password resets if self-service password reset option not enabled.
6. Account authorization if ETS managing accounts; account management if agency managing accounts.

ETS Responsibilities:

1. Email infrastructure and system maintenance and support.
2. Backup of email and calendar data.
3. Run customer requested scripts in ETS approved task automation and configuration management frameworks.

Section 8 Organizational Plan

PURPOSE

The purpose of this section is first, to provide a listing of the principles that are the keystones to the organizational structure. In order for the organizational structure to deliver maximum benefit to partners and clients these principles serve as the foundation for the construction of the structure and its component parts. Second, this section presents a basic picture of the ETS organization and how workflow processes are applied to ensure organizational boundaries between sections do not act as impediments to meeting customer needs.

ORGANIZATIONAL STRUCTURE PRINCIPLES

The following principles represent conditions that must be present within the organizational structure.

- Establish clear lines of responsibility and accountability at all levels of the organization
- Align the organizational structure with the budget and rate setting
- Increase communication and synergy within and between workgroups
- Foster trusting and collaborative customer relationships
- Engage employees through communication and collaboration
- Be innovative in our technological practices
- Ensure that services are understandable to staff and customers
- Empower staff to do their best work by giving them the proper tools, training and information

The principles have been applied to the creation of the organization structure to help foster the following organizational attributes:

- Consistently documented processes and system designs
- Cross-trained staff with deep support knowledge and team backup
- Little or no organizational fragmentation
- Clearly defined lines of responsibility, authority and accountability
- Clearly defined path for customer inquiries and requests for services
- Tailored solutions that meet customer needs
- Improved workforce management in the areas of succession planning, staff retention, and alignment of skill sets
- Flexible work schedules

ORGANIZATION STRUCTURE AND WORKFLOW

How we are organized

As an IT infrastructure service provider, it is critical that ETS is organized for effective and efficient service delivery and support. ETS delivers technical solutions that are designed to meet customer business needs. Sections within ETS provide all the components of an IT service provider.

Primarily, ETS is organized around technical domains that align with the computing and network shared infrastructure services offered. In order to promote synergy within work teams, the organization structure is grouped into like kinds of technical expertise (e.g. mainframe, midrange, server, network, and storage). Aligning staff in this manner establishes a working environment that results in work teams that are cross-trained, able to more readily back each other up, deeper in terms of technical expertise and able to better manage workload demands. This organization structure also reduces organizational fragmentation of job duties, clearly establishes roles and responsibilities and provides a clear line of sight for ETS customers.

One exception to the single-technology-domain grouping strategy is the establishment of the Service Operations Center (SOC). The Service Operations Center Team is a sub-component of an overarching IT Operational Unit. The Service Operations Center Team focuses on many customer facing aspects of service delivery that tend to be reactive in nature. This includes the ownership and actions associated with the following ITIL concepts:

- Incident Management process
- Event Management process
- Problem Management process
- Request Fulfillment process
- Service Desk function

Although the SOC does not manage the Change Management process, they are the gatekeepers of allowing, or denying, changes to be introduced into the production environment. Similarly, while the SOC doesn't manage the Access Management process they are responsible for user account management for infrastructure systems, internal applications and tools.

The intent is to create a Service Operations Center Team that will be able to:

- Provide a single point of contact between ETS and the various Information Technology teams within the organizations who purchase services from ETS
- Resolve most Network and Server related service disruptions without escalation to additional teams (first team resolution)
- Add value to incident triage for service disruptions not related to Network and Server services
- Be the customer's advocate with service disruption tickets by:
    - Assuring timely communication
    - Assuring movement towards incident resolution

- o Being responsible for resolution of the ticket from "cradle to grave"
- Complete "simple" service requests that have documented implementation instructions
- Analyze "non-simple" service requests and route them for delivery or additional investigation
- Create, delete, add and modify rights on user accounts used for supporting infrastructure systems and accessing internal applications
- Provide a control mechanism related to the introduction of changes into the production environment

Similar to the SOC, the Solutions team is a multi-technical domain team. The Solutions team aligns customers' business needs and ETS products and services, including services for new customer transition and internal services to ETS. Service Solutions' relationship with the customer and knowledge of business needs links ETS with the customer's business strategy. Service Solutions' staff facilitates the relationship between customers and all of ETS. Service Solutions leads the architectural process and works with customers to translate their business requirements into solution options that may be built in-house or brokered. Service Solutions' staff has a broad knowledge of ETS technology and customer business needs.

In addition to the technical domain teams, the SOC and the Solutions teams described above, there are units dedicated to providing ETS operations support. These areas support those who provide and support ETS infrastructure services. These include:

- Project Management
- Account Management
- Finance Management
- Asset Management
- Process Management
- Administrative Support

Workforce Management

The Workforce Management Program develops and maintains sustainable workforce management practices that support a rapidly changing information technology environment that has an ever increasing demand for services, while at the same time reducing costs and improving employee engagement.

Workforce management aims to align people with skills, providing them with the necessary training and development opportunities while engaging and empowering them to perform at their highest possible level. Creating a workforce that feels invested in the organization and is therefore motivated from within to help it succeed.

ETS Workforce Goals:

1. Provide a formal approach to workforce planning and optimization
2. Structure to implement and maintain organizational performance goals
3. Provide learning and development for all employees

4. Provide leadership development for management
5. Provide leadership development for high-potential employees
6. Provide succession management for all employees
7. Utilize organizational change management
8. Streamline workforce processes and procedures

Workflow Management

As described in the previous section, ETS is organized primarily by technical domains. While this organizational structure reduces fragmentation and creates synergies with technical groupings, the potential exists for technical domains to become walled off from one another, resulting in incomplete service delivery when designing solutions for customers or operational support. The vast majority of customer requests for new solutions or operational assistance involve two or more domains. It is critical that staff assigned to the technical domains have processes in place that foster collaboration between technical teams.

As introduced in section 5 above, ETS has embraced ITIL as its service management strategy. Core to the successful implementation of service delivery is the SOC. All requests for services originate with the SOC. The SOC is staffed with a cross section of technical domain expertise in order to resolve as many customer requests for service at the first call as possible. For those customer requests requiring a deeper level of technical support or multiple technical domains, the SOC will serve as the integration point for organizing the resources necessary to fulfill the customer request. The SOC will be responsible for monitoring the progress of all trouble shooting and new service requests through resolution. The diagram below depicts a general overview of the ETS workflow.

ETS Workflow 2016 - Overview

1/14/2016
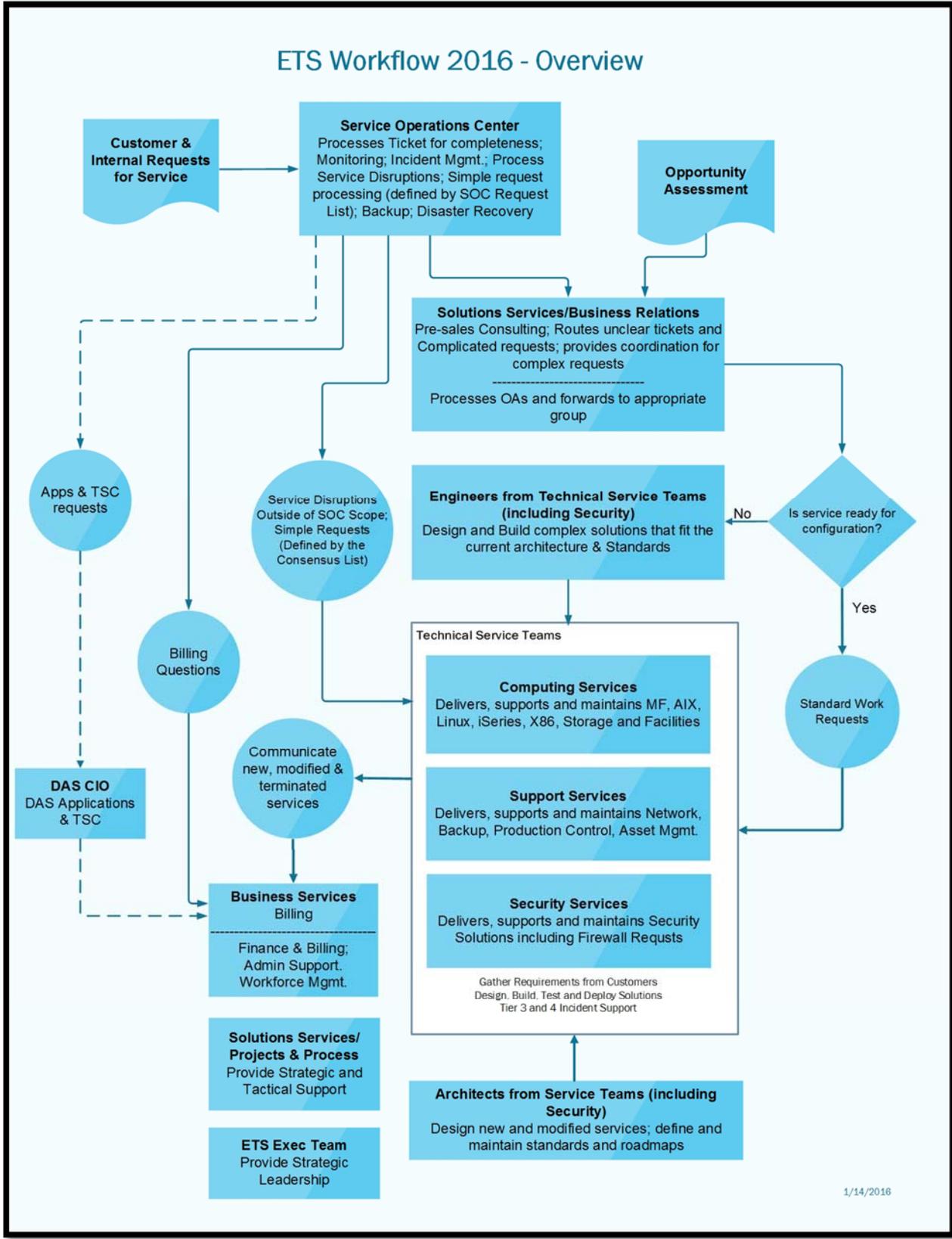
Section 9 Financial Plan

PURPOSE

The purpose of this section is to provide a high-level description of the basic cost reimbursement components and the processes used to manage ETS finances throughout the biennium.

REIMBURSEMENT METHODOLOGY

Financing of the ETS operation is based on equitably recouping the cost of delivering services from ETS customers. The cost reimbursement methodology adheres to the federal circular A-87 policy, which establishes principles and standards for providing a uniform approach for determining the fair distribution of costs. The business plan focuses on the methodologies used for cost reimbursement development rather than the actual price of services. It is also important to focus on the principles that will be used when making decision for state IT assets.

There are three categories of the cost reimbursement structure:

- **Assessment.** These costs apply to operational components that customers share based on a preset formula like number of staff or size of budget. The costs in this category are primarily associated with assets like facility debt services or core network equipment that is required regardless of the total number of customers.
- **Rates.** Rates are identified in terms of billable units. The billable unit is the metric used to measure how the service is consumed and varies with the service provided.
- **Pass Through.** These costs are traceable to individual users and specific services. However, ETS is not the actual service provider. In effect, ETS is serving in the role of a service broker.

FINANCIAL MANAGEMENT

The ETS budget is created using zero base budgeting techniques to project expenses based on projected usage of each service. ETS works closely with stakeholders and client agencies to determine their future projected usage of services. Expenses are then recovered through a blend of assessment and usage-based rates.

ETS service managers are directly responsible and accountable for the budget for their areas of responsibility. The ETS finance team works with the ETS management team through the course of a budget period by providing monthly reports that analyze expense and usage trends; update future projections and spend plans to account for changes in revenue and expenses associated with growth in demand and changes in service levels to meet business requirements.

Appendix A. Statutory Reference

Needs to be updated for HB 3099 (2015)

Statutory/Rule Reference	Oversight – State Chief Information Officer
291.038(1)	Oversee policy, coordinate planning, architecture and standardization of all information and telecommunications technology.
291.038(2) and (3)	Adopt rules, policies and standards to ensure information resources and technologies fit together. Consult with state agencies. State agencies shall cooperate in preparing and complying with the rules, policies and standards. Present the rules to Legislative Assembly committee.
291.038(3)	Review, oversee and ensure the state agencies' rules and planning, acquisition and implementation activities align with statewide information resources management pln.
291.039(1)	Office of State Chief Information Officer is established in DAS for purpose of directing, coordinating and overseeing policy related to information technology and other statutes, rules and policies that govern state agency use of information technology and telecommunications.
291.039(2)	CIO – adopt rules.
291.039(4)	CIO – adopt Information and Technology and Telecommunications Plan, update it each biennium. Recommend to the Director what resources are necessary to implement.

DAS Procurement Authority - resides with Department of Administrative Services, Enterprise Goods and Services, Procurement Services

Statutory/Rule Reference	Prohibitions
279A.050(2)	Director has the authority to carry out provisions of the Public Contracting Code. Following are _not_ subject to the Public Contracting Code: Lottery, OUS and member public universities, Legislative Department, Judicial Department, semi-independent agencies, OCE, Film & Video Council, Travel Information Council, Oregon 529 College Savings Network and Board, Oregon Innovation Council, Oregon Utility Notification Center, any other entity exempted. ORS 279A.025(3).
279A.050(7)	Director has **exclusive authority** (unless delegated) to procure or supervise procurement of **all price agreements** for more than one state agency

	(including: DHS, OHA, ODFW, Parks and Recreation, Aviation, Business Development, Housing and Community Services, DOC, Veteran Affairs, OMD; each of these agencies has some procurement authority related to its function).
279A.050(7)	*Director has **exclusive authority** (unless delegated) over all state agency **information technology contracts** – except for OHA and except if the IT is incidental to services or construction under 279C.*
291.038(3)	*Procure information technology fairly, competitively and consistent with State CIO's rules.*

DAS Authority over information technology, other than procurement:

To meet its obligation to improve the effective and efficient use of the information systems, technology, resources, and networks,

DAS shall:

Statutory/Rule Reference	Task Description
	INFORMATION TECHNOLOGY MANAGEMENT
184.475(2) and (3)	*Develop and implement state government-wide standards, policies, processes, and procedures related to information technology, integrating state agency strategic planning, budgeting and expenditures into the statewide plans and DAS' portfolio-based management.*
184.475(3)	*With state agencies' participation and cooperation, conduct and maintain a continuous inventory of each state agency's current and planned investments in information technology and assets. (information about the assets and total life cycle cost)*
184.475(3)	*Develop and implement state government-wide standards, processes and procedures for the inventory and management of the state government-wide IT portfolio.*
	State agencies shall participate in the portfolio based management and shall comply with the standards, processes and procedures.
184.475(4)	*Ensure that state agencies implement portfolio-based management of IT resources.*
184.475(6)	*Submit the policies to the Joint Legislative Committee on Information Management and Technology for review.*
184.477(2) and (4)	*With state agencies' participation, cooperation, and compliance, develop a plan for state government-wide enterprise management of distributed*

	information technology assets, prescribing the infrastructure and services for managing the assets.
184.477 (2)	*Submit the plan to the Joint Legislative Committee on Information Management and Technology for review.*
184.477(3)	*Ensure state agency implementation of the plan*
184.477(4)	*State agencies shall participate in enterprise management and comply with DAS standards, processes, and procedures.*

STATE AGENCY SERVICES

283.100	*Provide general governmental administrative functions to state agencies. Costs shall be allocated to state agencies as determined by DAS.*
283.140(1)	*Manage, supervise and control all telephone and telecommunications systems, including maintaining and operating the central telephone exchange, switching system, network services and facility, intercity or intracity network trunk or line or switchboard.*
283.140(1)	*Manage, supervise and control the budget. DAS shall charge the state agencies served*
283.143	*Assess a surcharge to each state agency and public corporation (except OUS and OHSU - need a separate agreement for the services and surcharges).*

INFORMATION TECHNOLOGY

283.505 (1)	*Coordinate the consolidation and operation of all telecommunications systems.* **The section includes a specific prohibition:** *no state agency shall construct, purchase or otherwise gain access to a telecommunications system without DAS' prior approval.*
283.505(2)	*Coordinate the consolidation and operation of an emergency telecommunications system.*
283.510(2)	*Acquire an advanced digital communication network from telecommunications providers and use the network as a core or backbone network to interconnect state government telecommunications networks. The providers must be responsible for construction, installation, operation and maintenance of the network.* **This section contains an implied prohibition:** *implies that DAS shall not delegate its authority to acquire the ADC.*
283.510(3)	*Once the ADC is built, provide all telecommunications services and operations for the state and state agencies.* **This section contains another prohibition:** *DAS shall not approve any system or equipment that is not compatible with the network.*
283.520(1)	*Contracts for the purchase, use or operation of telecommunications equipment and services cannot exceed 10 years.*

OVERSIGHT

291.038(4)	*Maintain a state of the art telecommunications network to the extent economical.*

DAS <u>may</u>:

Statutory/Rule Reference	Task Description
276.212[5]	*Acquire, design, erect, complete, maintain and operate systems for transmitting and receiving messages by radio, telephone, telegraph or other devices or systems.*
276.218	*Acquire equipment, machines, appliances, transmission poles, lines, wire or other equipment necessary for transmitting and receiving messages by telephone, telegraph or other devices. For cash, on contract, conditional bill of sale, lease, lease purchase or installment purchase. May contract to pay, as rental or otherwise. May pledge the operating funds. Repayment may be from state agencies' services charges.*
283.520(1)	*May enter into contracts for purchase, use or operation of telecommunications equipment and services.*
283.520(2)	*Per 291.038, may extend benefits of the telecommunications contracts for networks, equipment and services to nonprofit organizations designated as communities of interest.*
283.524	*Enter into installment purchase or lease purchase contracts under ORS 276.218.*
291.015	Even though DAS is responsible for *the administration and coordination of internal accounting and all fiscal services for state government and its agencies, it may delegate that authority to the state agencies, subject to its control.*
291.038(5)	*Furnish and deliver statewide integrated video conferencing and online access (connection to information resources, i.e. computers, electronic mail, databases, and internet access) to public and private entities that furnish public benefit type services. Establish rates – rates are not subject to PUC regulatory authority.* **This section contains another prohibition:** *DAS may not provide Internet access service to private entities when there are 2 or more local private suppliers.*

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[5] DOC, DHS, and OHA have limited authority with respect to communications facilities for their institutions. *See* ORS 179.065.

There are 4 prohibitions in the above referenced information technology and telecommunications statutes:

Statutory/Rule Reference	Prohibitions
283.505(1)	*No State Agency shall construct, purchase or otherwise gain access to a telecommunications system without ETS' prior approval.*
283.505(1)	*DAS shall not delegate the authority to acquire the ACD network.*
283.510(3)	*DAS shall not approve any system or equipment that is not compatible with the network.*
291.038(5)	*DAS may not provide Internet access service to private entities when there are 2 or more local private suppliers*

DAS Statewide Policies:

- Policy No. 107-004-010, Information Technology Asset Inventory & Management, eff. 9.8.08
- Policy No. 107-004-030, Technology Investment Strategy Development and Quality Assurance Reviews Policy, eff. 2.1.04
- Policy No. 107-004-040, State Information Technology Governance Policy, eff. 6.29.05
- Policy No. 107-004-110, Acceptable Use of Sate Information Assets, eff. 10.16.07
- Policy No. 107-004-130, Information Technology Investment Review/Approval, eff. 4.23.10

Important Definitions:

- "'**Advanced digital communications**' means equipment, facilities and capability to distribute digital communications signals for the transmission of voice, data, image and video over distance." ORS 283.510(a).
- "Information resources" means media, instruments and methods for planning, collecting, processing, transmitting and storing data and information, including telecommunications. ORS 291.038(8)(a).
- "**Information technology** includes, but is not limited to, all present and future forms of hardware, software and services for data processing, office automation, and telecommunications." ORS 184.473(1).
    OR
- "**Information technology**" includes, but is not limited to, present and future forms of hardware, software and services for data processing, office automation and telecommunications. ORS 291.038(8)(b).

- **"State-of-the-art services"** includes equipment, facilities and the capability to distribute digital communication signals that transmit voice, data, video and images over a distance. ORS 291.038(8)(e).
- "For the purposes of this section, **"telecommunications"** means media that communicate voice, data, text, images or video over a distance using electrical, electronic or light wave transmission media." ORS 283.140(4).

  OR
- "**Telecommunications"** means hardware, software and services for transmitting voice, data, video and images over a distance." ORS 291.038(8)(h).