IT Strategic Plan

October 2020 – September 2022

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Executive Summary

This is the Strategic Plan for the SLAC IT Division for FY21 and FY22. The purpose of this document is to inform the SLAC Community on goals of the central IT organization over the next two years, to document the portfolio of services the IT division currently offers to the lab, and to introduce a revised IT governance model to better prioritize IT initiatives and the allocation of IT resource in alignment with the mission of the lab.

SLAC IT currently offers approximately seventy-five centrally provided IT services to the SLAC Community. These services can be broken down into four broad categories.

- **Oversight and Planning** – Strategic planning, the cybersecurity program, etc.
- **Systems Administration & Operations** – Network engineering, ERP, identity management, etc.
- **Consulting & Support Services** – Scientific computing, help services, web development, etc.
- **Applications and Productivity Tools** –– Email, telecommunications, printing, applications, etc.

In order to improve our overall service delivery and increase the value IT delivers to the lab, SLAC IT has identified four goals for the next two years. Each goal is supported by a primary initiative and two secondary initiatives.

The goals and initiatives are listed below:

- *Partner with Stakeholders*
  - **Primary Initiative: Introduce a revised IT Governance & Advisory Model**
  - Operationalize the Shared Data Facility (SDF) to better support the science mission
  - Begin planning for Stanford Research Computing Facility annex (SRCF-II)

- *Evolve Internal Processes*
  - **Primary Initiative: Introduce an IT Service Management Program**
  - Establish a Service Criticality and Dependency Framework
  - Launch a Strategic Vendor Management Program

- *Modernize IT Systems*
  - **Primary Initiative: Redesign the Identity & Access Management (IAM) infrastructure**
  - Migrate SLAC Web Presence to the Cloud
  - Implement Unified Communications

- *Improve the Customer Experience*
  - **Primary Initiative: Launch SLAC IT Marketplace to enable easy computer purchasing**
  - Develop a solution to enterprise search
  - Continue to Evolve the Cyber Security Program

Scope & Purpose of Strategic Plan

This document outlines the high-level plans, projects, and initiatives of the SLAC IT organization over the period of October 2020 through September 2022. The purpose of these initiatives is to improve the ability of SLAC IT to enable and support the overall lab mission. The intent of this document is to better inform the SLAC community of upcoming IT initiatives while providing an opportunity for the lab community to provide input and feedback on the IT Strategic Plan.

Goals of this Plan

In October of 2019, an external review of IT operations revealed some areas in need of improvement. In response, a corrective action plan was developed and executed in order to remediate the areas of greatest need, specifically:

- To develop an operational model to clarify roles and improve efficiency
- To improve the customer support experience
- To increase the communication and transparency of the IT organization with the lab

While significant progress was made toward the goals of the corrective action plan, there remains work to be done. The goals of this document, and for SLAC IT over the next two years, are to continue the progress made on the corrective action plan while working to make the improvements necessary to fully support IT needs of the evolving research mission of the lab. These improvements include modernization of systems, automating internal processes and promoting an agile, responsive culture within the IT organization. To do this, SLAC IT will be focusing on four main goals over the next two years:

Partner with Stakeholders

Building on the theme of the corrective action plan to improve communication and transparency with the lab, SLAC IT will continue to evolve those emerging relationships into true partnerships where stakeholders have real input on the resource allocation and roadmap decision of the IT organization.

Evolve Processes

Again, building on one of the themes of the corrective action plan to develop a sustainable operational model for IT, SLAC IT will continue working to improve operational efficiency by aligning the internal processes used to deliver its portfolio services to industry best practices. This will include communicating service expectations with stakeholders and reporting on the ability of the IT organization to meet those expectations.

Modernize Systems

Aging infrastructure and reliance on manual processes limit the ability of SLAC IT to deliver value to the lab and introduce risk due to lack of adequate service resiliency. A focus area over the next two years will be to modernize some foundational services, specifically identity management and middleware systems, to improve efficiency, security and audit-ability. These updates will also offer a new suite of capabilities to the lab.

Improve the Customer Experience

Over the next two years SLAC IT will work to improve the overall user experience by reducing the reliance on the support team through improved service management, automation, self-help tools, and improved user interface design. SLAC IT will also take a proactive approach to promoting a culture of incident ownership. Decision making authority will be delegated to the lowest level possible and IT staff will be expected to provide end-to-end support of IT services.

Mission of SLAC IT

The SLAC Information Technology Division provides technology guidance and services to the SLAC National Accelerator Laboratory in support of the lab's overall mission of discovery.

Overview of SLAC IT

The SLAC IT organization, also known as the SLAC Computing Division, is tasked with providing core IT services to the SLAC Community. As part of the corrective action plan, a new IT operating model was introduced to better clarify roles and responsibilities of the various groups within IT.

SLAC Operating Model
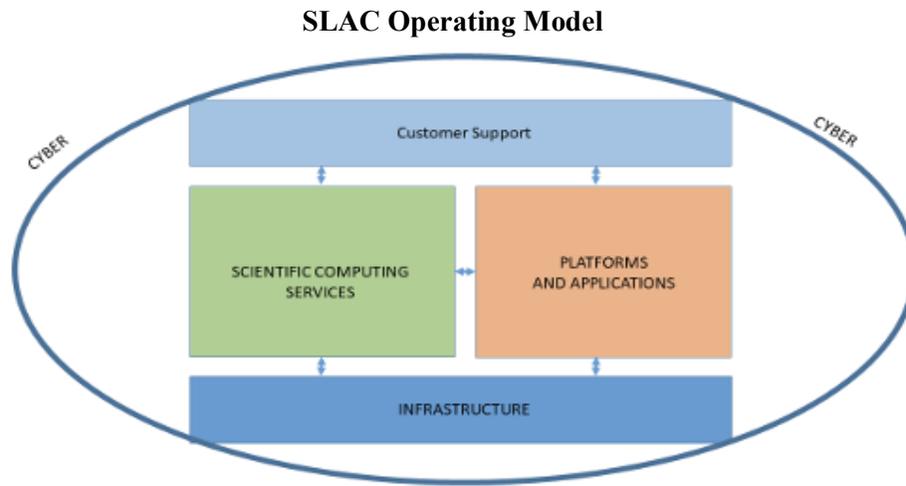
SLAC IT continues to operate under this model, though some additional operational capabilities have been added that are not reflected in the operating model. These new capabilities include IT communications, IT vendor management, and an enterprise systems architect.

SLAC IT Organizational Structure
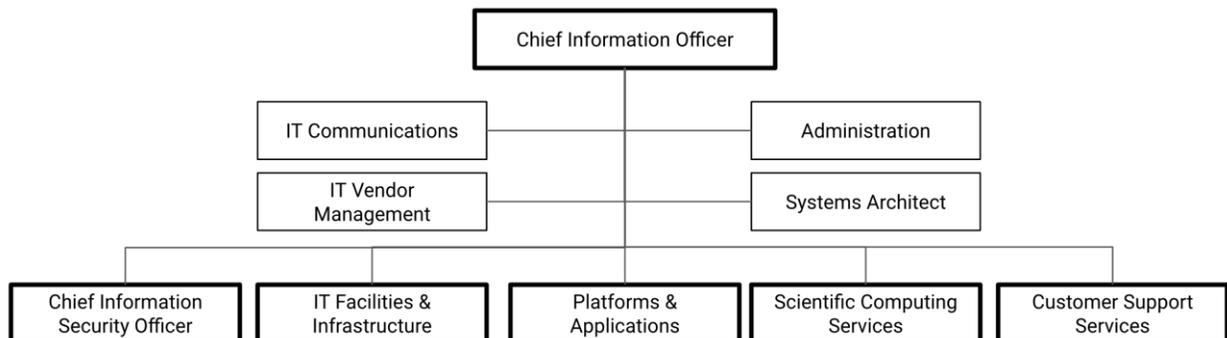
The SLAC IT Service Portfolio

A SLAC IT maintains a portfolio of IT services it delivers to the SLAC Community. These services fall into four basic categories. There are those services that are provided to the SLAC community that are largely invisible to the average SLAC user. These oversight services and systems administration services are vital to the operations of the lab but have little impact to the day-to-day work of the lab users unless the delivery those services are interrupted for any reason.

SLAC IT provides more customer facing services in the form consulting and user support. These services have a high degree of interaction with the SLAC Community and are most commonly mentioned when discussion the performance of IT. SLAC IT also provides a suite of productivity tools and applications that are used by most of the members of the community in the course of their day-to-day work.

In the graphic below, there is a depiction of the current SLAC IT service portfolio broken down into the four service categories. There is also a fifth category of proposed services. These are areas of identified need for the lab that have yet to be operationalized into an IT service at this point. The full IT service portfolio is under review and will be included as an appendix in the near future.
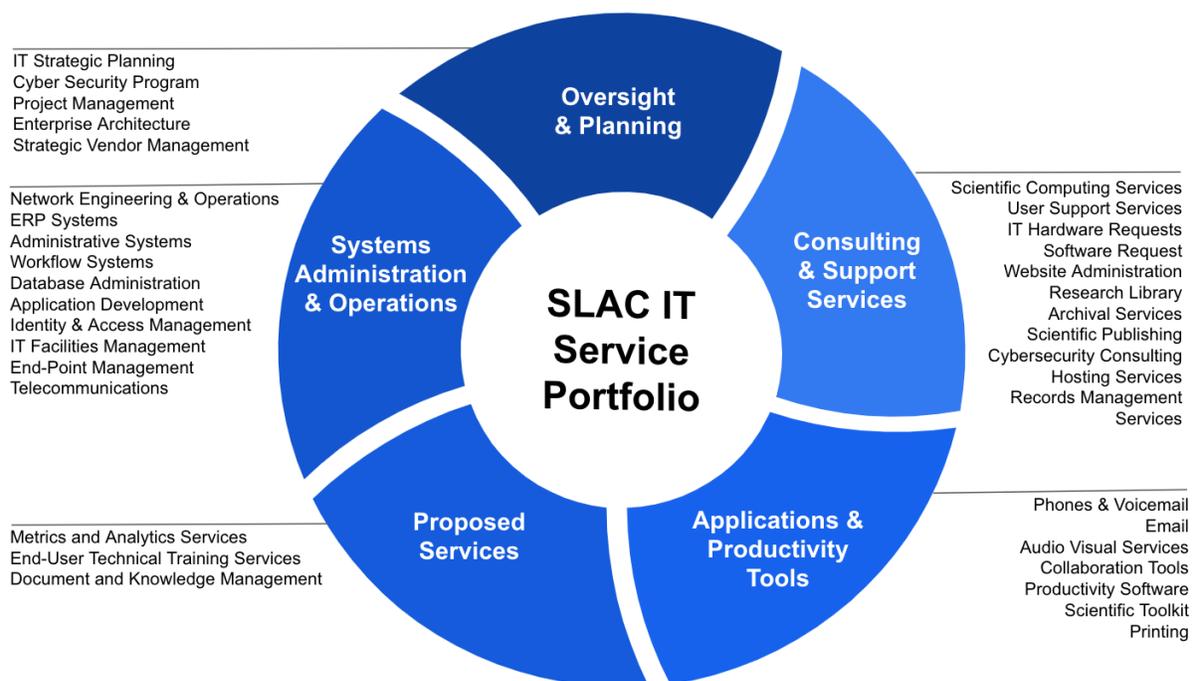
SLAC IT Strategic Initiatives for FY2021 – FY2022

SLAC IT will be undertaking the following initiatives over the next two years in order to achieve the four goals of improving partnership with lab stakeholders, evolving internal processes, modernizing administrative systems, and improving the customer experience. Four primary initiatives have been identified, one in support of each goal. Eight other initiatives have also been identified, two in support of each goal. While it is intended to complete all twelve initiatives over the next two years, the four primary initiatives have been deemed the most critical and will be prioritized accordingly.

Partner with Stakeholders

SLAC IT will work to partner with stakeholders to ensure the service portfolio and IT roadmap continues to be aligned with the mission and goals of the lab. Specific initiatives in support of this goal include:

Primary Initiative: Introduce a revised IT Governance and Advisory Model

The existing IT governance structure enables the SLAC Operations Council to provide direct interaction with the CIO on IT strategy, resourcing, and performance. Additionally, external groups like the Board of Overseers Business Technology Audit & Compliance committee and the SLAC IT Independent Review Board provide assessments of the performance of SLAC IT. Other groups, such as the Stanford CIO Council and the DOE National Laboratories CIO group provide collaboration opportunities, information on industry trends, lessons learned, and best practice.

This governance structure, as robust as it is, does not provide a meaningful feedback loop for the majority of the SLAC customer base, especially the research community. To remedy this issue, SLAC IT will be forming an IT council that will provide stakeholders with an opportunity to inform the strategic direction of SLAC IT. This IT council will include representation from a cross section of the lab. Their purpose will be to provide input on the strategic priorities of SLAC IT and to provide feedback on its performance.

SLAC IT Governance Model
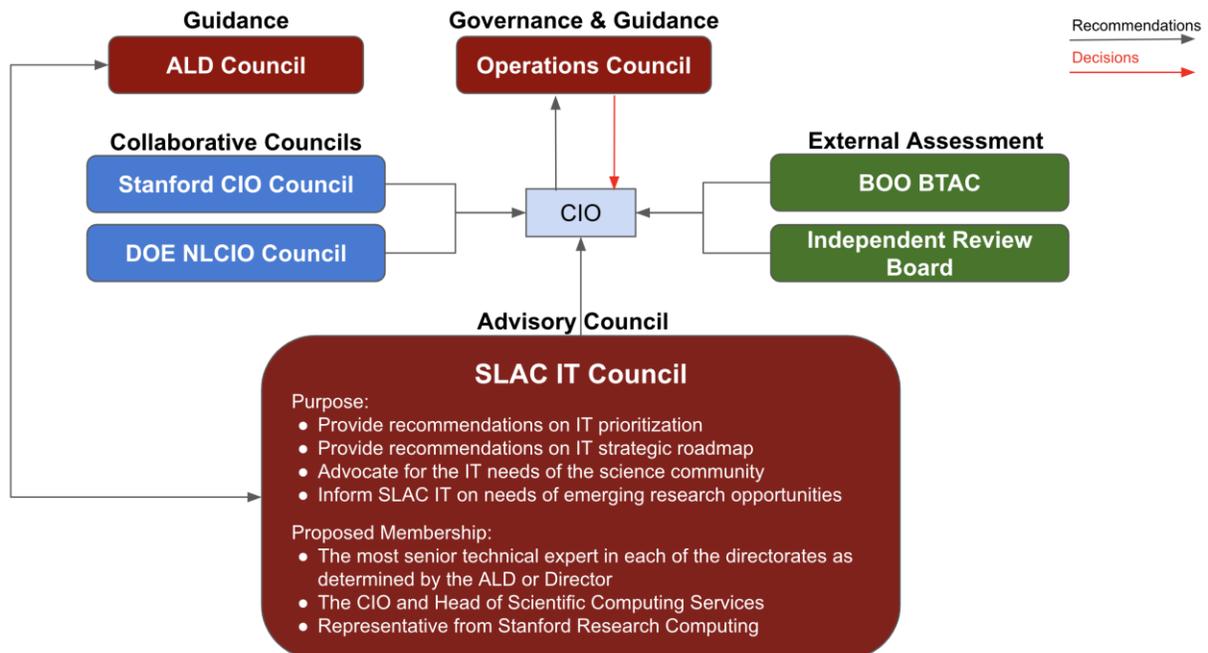
Operationalize the Shared Data Facility

SLAC IT, in partnership with SLAC's research community, developed the Shared Data Facility (SDF) model to establish a common shared computing infrastructure designed to tackle massive throughput data analytics at SLAC. SDF benefits SLAC by creating a centrally integrated hardware architecture. This allows for increased operational efficiency, coordinated procurements for economies of scale, and increased utilization by leveraging idle/free compute cycles. This overarching computing strategy incorporates a common software stack. This approach is more sustainable and builds lifecycle management toward more modern, capable solutions for science delivery. The goal for SDF is to ensure both its continued value to the SLAC scientific community and its financial sustainability through continued partnership with stakeholders.

SRCF-II Scoping and Planning

As SLAC's computing needs expand with the commissioning of LCLS-II and other high-level research initiatives, SLAC IT will collaborate with Stanford Research Computing (SRC) in the expansion of SRCF with the construction of SRCF-II. The demands of LCLS-II compute, extremely high data throughput and low-latency real-time analysis requirements will be well suited to the SRCF-II facility. SLAC IT Scientific Computing and SLAC's research partners will continue to work closely with SRC in the planning and implementation of this new facility.

Evolve Process

SLAC IT will continue working to improve operational efficiency by aligning the internal processes to industry best practices. This will also include communicating service expectations with stakeholders and reporting on the ability to meet those expectations. Specific initiatives include:

Primary Initiative: Implement IT Service Management

SLAC IT currently manages a number of systems on behalf of the lab. Historically, these systems have been managed individually based on the individual function or capability that each system provided.
As a result, the experience for the lab community can be disjointed as users move from system to system. IT Service Management is a process framework in use at most, mature IT organizations. IT Service Management focused on providing a consistent, valuable experience across all technical services. Over the next two years, SLAC IT will implement a service management program with the intent to provide an improved, consistent user experience. The service management program will include communicating service level expectations and reporting on the ability to meet those expectations. The program also aims to improve the communication and transparency of service requests and include a formal continuous improvement program.

Establish Service Criticality Framework

SLAC IT will establish a standardized method of determining service criticality that takes into account any service dependencies and defined resiliency requirements. This framework will be applied to SLAC IT service and scientific systems to ensure the end-to-end resilience appropriate to each system. This framework will help identify areas for improvement in the SLAC service architecture and will help inform the IT facilities strategic roadmap.

Launch Vendor Management Program

SLAC IT shall develop a new program designed to ensure that enterprise hardware and software procurement decisions are conducted as efficiently as possible. This program will explore partnerships with the DOE and Stanford University, when possible to reduce costs. The vendor management program will also work with the lab community to align on common platforms and standards where possible. Finally, the program will help to ensure the request process for new IT hardware and software is easy and efficient for the lab community.

Aging infrastructure and reliance on manual processes limit the ability of SLAC IT to deliver value to the lab and introduce risk due to lack of adequate service resiliency. Over the next two years SLAC IT will modernize select foundational services, specifically identity management and middleware systems, to improve efficiency and security. These updates will also offer a new suite of capabilities to the lab.   Specific initiatives include:

Primary Initiative: Identity & Access Management

The Identity and Access Management (IAM) project will address several shortcomings in the current IAM infrastructure including the need to maintain multiple types of accounts, the lack of audit-ability for system access, a comprehensive account lifecycle management process, the lack of single sign-on capability, automated password reset, and the inability to federate identities with trusted partner institutions. SLAC IT will spend the next two years redesigning the IAM process to address all of these issues by implementing a new IAM infrastructure using modern, open standards. This infrastructure will also leverage cloud hosting to improve resiliency while preserving datacenter resources for the science mission.

The end goal of the project will be to transform the current IAM process and from this:
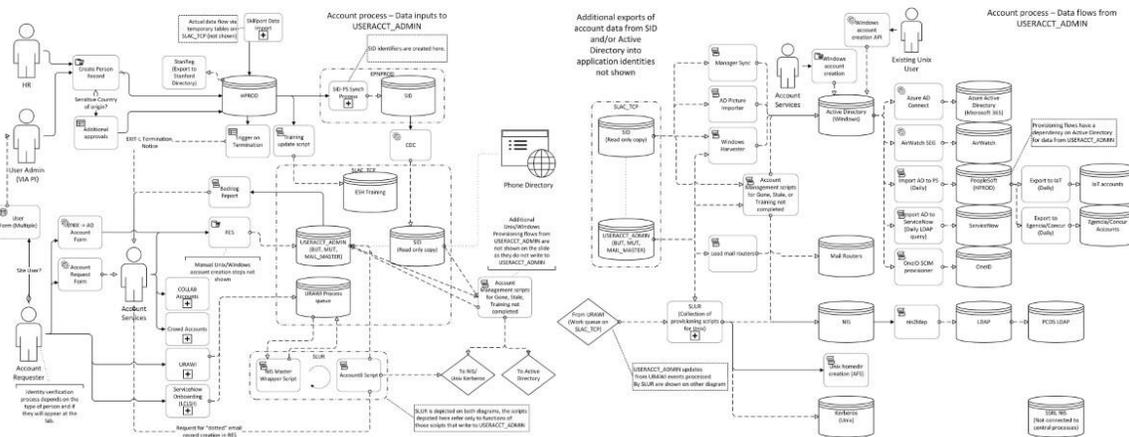
To a process that looks similar to this:
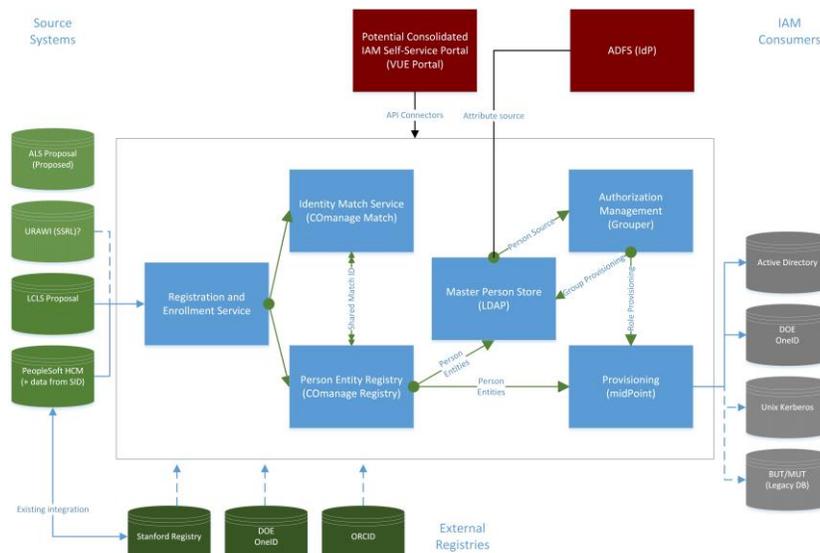
Update SLAC Web Hosting Infrastructure

The majority of SLAC websites are hosted on SLAC owned infrastructure in SLAC datacenters. Over the next two years, SLAC IT will develop a model to help program websites migrate to enterprise scale, cloud hosted platforms while migrating to a new style guide as defined by SLAC Communications. This web operating model will allow for programs to have flexibility in how the communicate in the internet but align to a common look and feel so that the lab can present a common presence to the world.

Unified Communications

SLAC IT will be upgrading its telecommunications systems to enable a suite of unified communications services over the next year. These services will include a soft-phone capability that will allow the SLAC community to make and receive calls using software on their computer. This will allow remote workers and teleworkers have a single office phone number regardless of their location. This will also enable a move away from physical phone handsets where appropriate, reducing operational costs. This will also enable users to forward office calls to their cell phone and have their voicemail forwarded to their email account.

SLAC IT will undertake several initiatives to improve the overall IT user experience. First and foremost, SLAC IT leadership proactively promote a culture of end-to-end incident ownership, improving the support experience. Decision making authority will be delegated to the lowest level possible and IT staff will be expected to provide a holistic support experience. Simultaneously, SLAC IT will be working to reduce the need for support through improved service management, process automation, more self-help tools, improved documentation, and improved user interface design. Specific initiatives include:

Primary Initiative: Launch SLAC IT Marketplace

The SLAC IT Marketplace will be the front-end to a revised hardware and software request process. The intent is to simplify the request process for the SLAC community while reducing the amount of time it takes to fulfill those requests. When SLAC IT launches, a standard computer purchase will take less than ten days from request to delivery. It will also provide information on any centrally provided software available to the SLAC community.

Enterprise Search

Finding documentation and information at SLAC remains a challenge. There is a need for a reliable way for users to successfully search the various information sources at SLAC. There are several strategies that can be employed in this area including aligning on a central content platform, implementing a search appliance, curating a search path solution, or developing a machine learning enabled search capability. Over the next two years, SLAC IT will investigate these options and propose a permanent solution to the problem of enterprise document management and search.

Continue to Evolve the Cybersecurity Program

The SLAC Cybersecurity program will continue to enhance the cyber posture through the execution of its roadmap, which balances strategic and operational endeavors. There will be an emphasis on compliance, due to new federal initiatives flowing through DOE. This includes additional improvements in the areas of controls testing, self-assessments, and updates to policies and security plans. Enrichment of continuous monitoring, data protection, training and awareness, and network security capabilities are the strategic focus for the next two years. Cybersecurity will also participate in the DOE efforts to help protect sensitive technology assets and controlled unclassified information.

Summary

The purpose of this document is to inform the SLAC Community of the goals of SLAC IT division over the next two years based upon the information available at this point in time. The initiatives outlined in this plan are subject to change as the mission of the lab, its priorities, and the resourcing landscape evolve. One of the main goals of this plan, and with SLAC IT in general, is to improve alignment with the needs of the lab. Our goal will be to remain responsive to the requirements of the lab and communicate any changes in prioritization or direction to the SLAC leadership and the rest of the community.

Please direct any questions about this document to either SLAC IT Communication Director Neal Adams (neal@slac.stanford.edu) or SLAC CIO Jon Russell (jdrussel@slac.stanford.edu).