IS&T Technology Plan

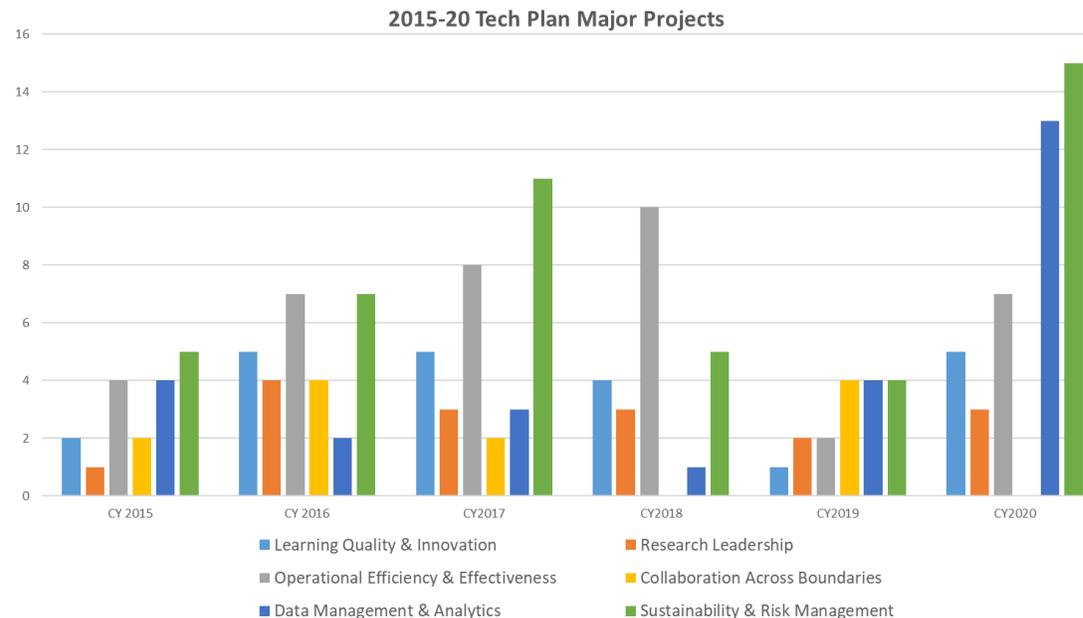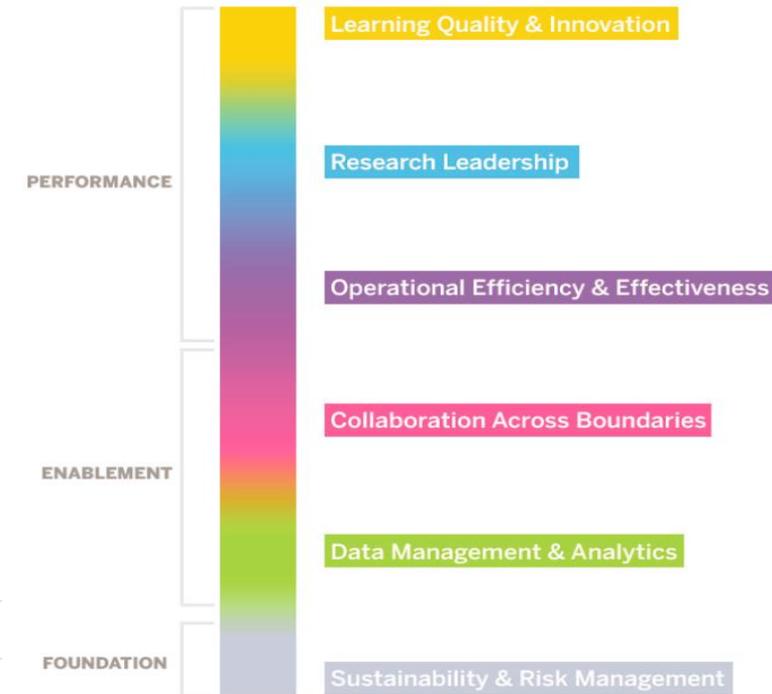# FY22-24

January 2023

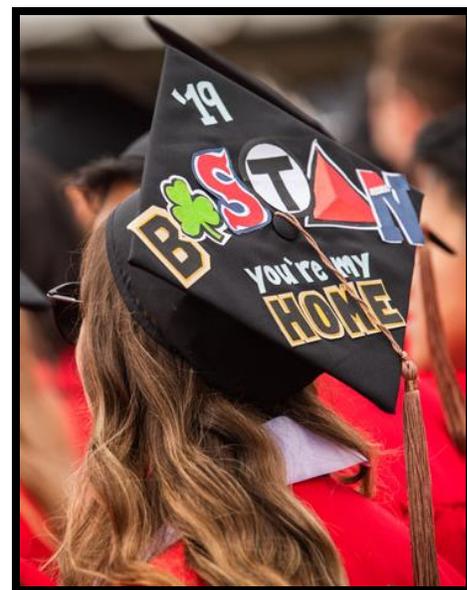# 2015-2020 BU Technology Plan

Where we've been

- BU established a set of strategic capabilities as areas of focus for 2015 – 2020, as well as a set of principles.

- We have executed numerous projects in each capability area, making significant progress toward our vision of each.

INNOVATIVE
USABLE
OPEN SECURE
GLOBAL PROFESSIONAL DEVELOPMENT
SERVICE CULTURE
SHARED SERVICES
GOVERNANCE

PERFORMANCE
ENABLEMENT
FOUNDATION

Learning Quality & Innovation
Research Leadership
Operational Efficiency & Effectiveness
Collaboration Across Boundaries
Data Management & Analytics
Sustainability & Risk Management

2015-20 Tech Plan Major Projects

Legend:
- Learning Quality & Innovation
- Research Leadership
- Operational Efficiency & Effectiveness
- Collaboration Across Boundaries
- Data Management & Analytics
- Sustainability & Risk Management
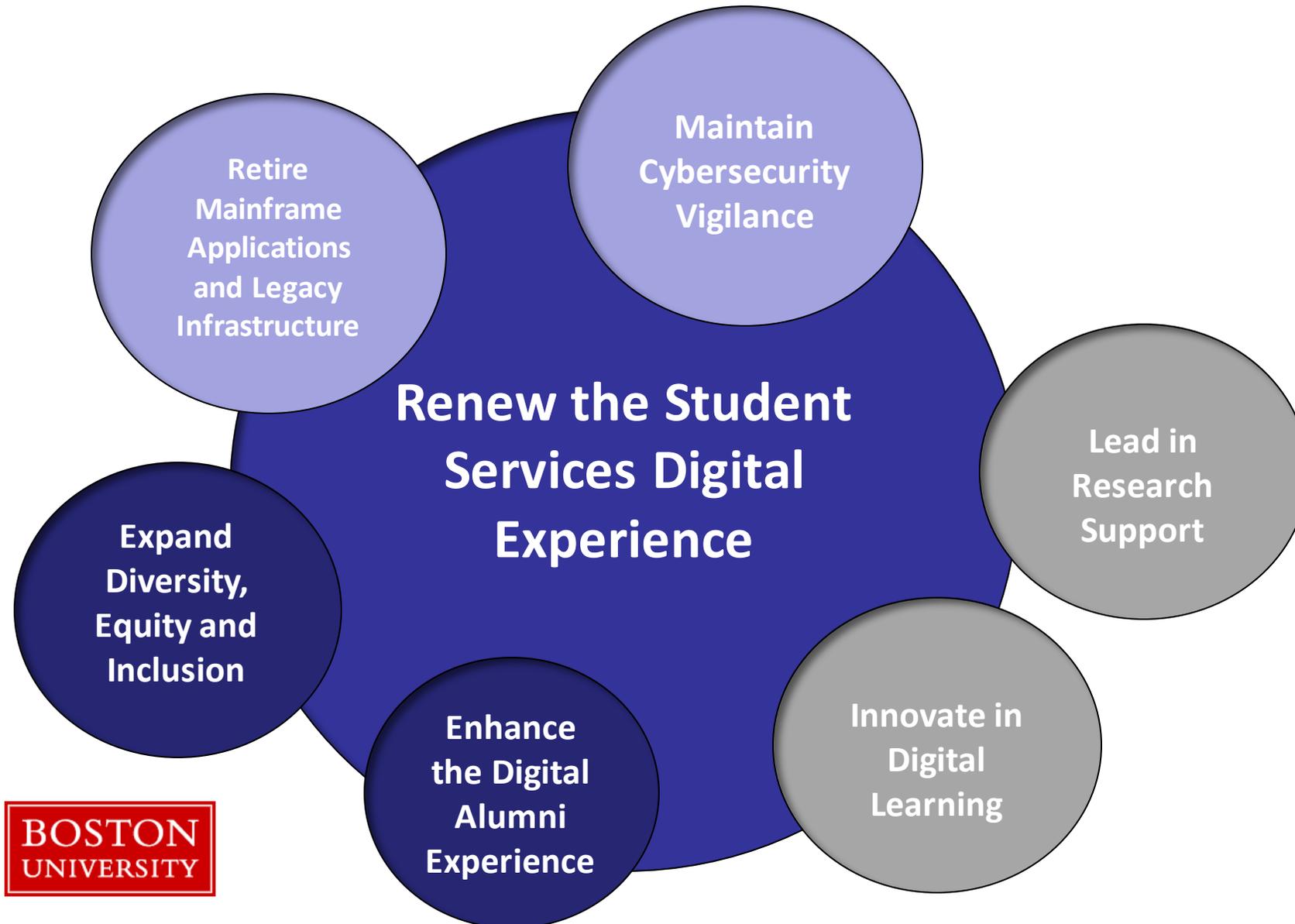
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A New Technology Plan for FY22-24

The completion of the 2015-2020 plan and the development of the new University-wide strategic plan for 2030 have made the need for a new technology plan clear. Accordingly, a new set of priorities were proposed by the BU VP, IS&T, reviewed by IS&T governance bodies, and the community at large. These priorities cover a shorter time-frame, FY22 – 24, given the dynamic nature of the BU environment and need to remain flexible on direction beyond 2024.

1. Vibrant **Academic** Experience

2. **Research** that Matters

3. **Diversity**, Equity, and Inclusion

4. **Community,** Big yet Small

5. **Global** Engagement

Technology Strategic Priorities, FY22-24

Retire Mainframe Applications and Legacy Infrastructure

Maintain Cybersecurity Vigilance

Renew the Student Services Digital Experience

Expand Diversity, Equity and Inclusion

Lead in Research Support

Enhance the Digital Alumni Experience

Innovate in Digital Learning

These seven major priorities will be the focus of institution-wide technology services effort over the course of these three years.

At the core is the renewal of our student information systems, which touch most, if not all aspects of the student academic and co-curricular experience.

Each of the seven priorities is further described in the following material, including an overview, scope, key stakeholders, metrics, and sample component projects. Projects may be revised and/or added/removed over the course of the plan execution period.

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Current and Potential Strategic Projects, FY22-24: Status

Strategic projects have been identified in each of the six priority areas, described below. These projects range in status as follows:
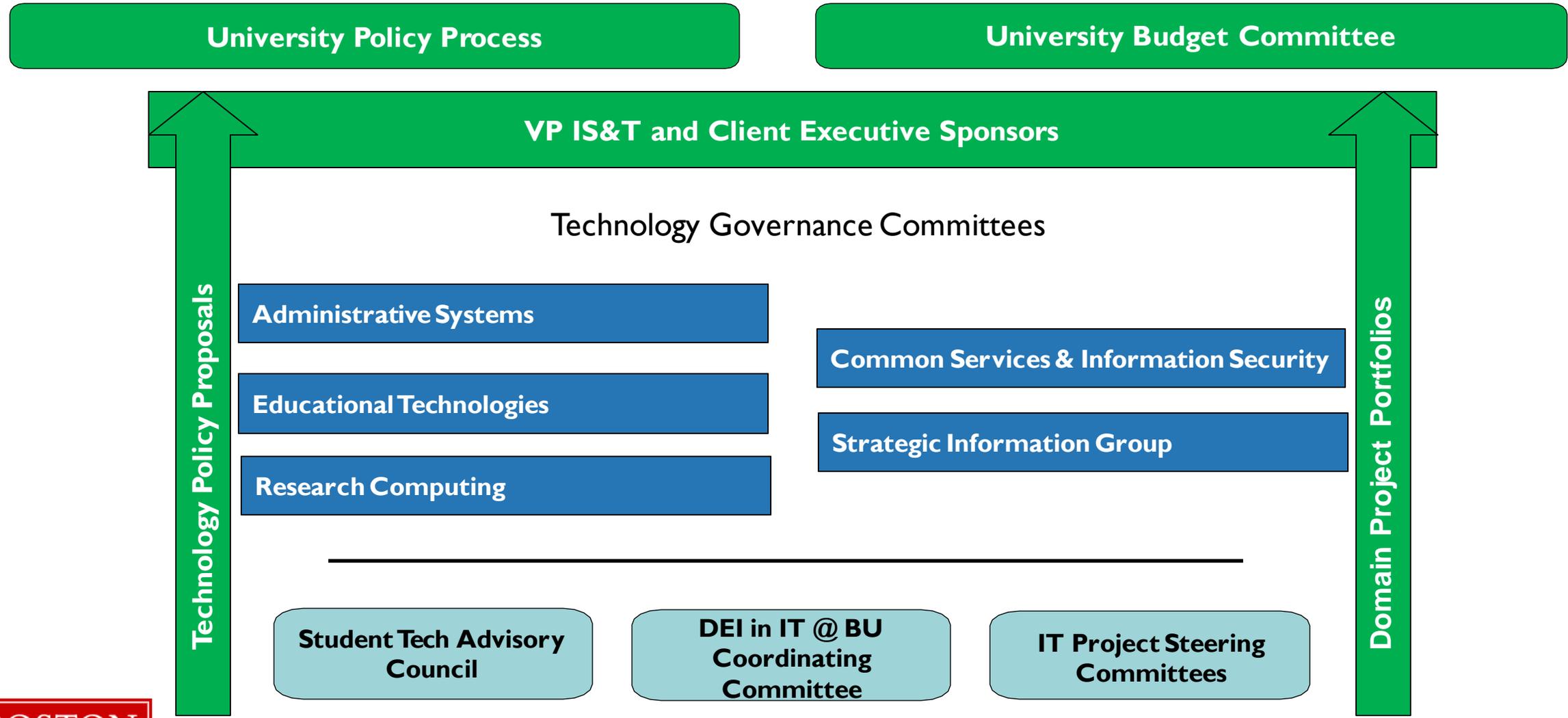
- **Identified**: The project need or idea has been identified, but no other steps have yet been taken.
- **Prioritized**: The project has been indicated by the Portfolio Manager(s) as a priority to move forward with resourcing and scheduling investigation and/or implementation.
- **Investigating**: An investigation effort is underway to clarify the scope, approach, and solution, including time and resources needed to implement.
- **Proposed**: The project has been formally proposed for resources, either current or new
- **Approved**: The project resources have been approved and the project will move into implementation on an approved schedule.
- **Active**: project is in active implementation
- **Complete**

Project Demand Management Principles FY22-24

The following principles apply to the management of new project demand for the duration of this BU Technology Strategic Plan:

- Changes (including defect fixes, enhancements, and new data integrations) to existing mainframe applications should only be made for regulatory or enterprise critical reasons. **Enterprise critical changes to mainframe applications must be approved by the University Provost.**

- New services that are already in scope for replacement by SIS Renewal or Mainframe Applications Retirement should be replaced by those efforts, not separate projects. **Project or purchases to separately replace or implement SIS Renewal in-scope functionality must be approved by the University Provost.**

- Non-strategic projects must be prioritized by portfolio managers and will proceed as resources and strategic project dependencies allow.

- Large projects, both strategic and non-strategic, continue to require review by the **appropriate technology governance committee.** Incremental funding is approved by **the University Budget Committee.**

- Conflicts between projects or groupings of projects, based upon concurrency, will be resolved by the **VP IS&T, the sponsoring executive of the projects, and the University Provost and/or President**.

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BU IT Governance Structure

University Policy Process

University Budget Committee

VP IS&T and Client Executive Sponsors

Technology Governance Committees

Technology Policy Proposals

Domain Project Portfolios

Administrative Systems

Common Services & Information Security

Educational Technologies

Strategic Information Group

Research Computing

Student Tech Advisory Council

DEI in IT @ BU Coordinating Committee

IT Project Steering Committees

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Renew the Student Services Digital Experience

We will reimagine and renew the student services digital experience of Boston University, including administrative services, advising tools, and personalized communications, in a contemporary platform, improving efficiency and quality and enabling future flexibility.

Scope

We will update how all students engage with BU administrative and academic support services, from when they apply through when they graduate, and how BU faculty and staff can support students while they are here. This change will be made across all schools and colleges, supporting programs on Charles River and Medical campuses. The current Student Link and Faculty Link will be replaced with modern, mobile-friendly interfaces, supported by contemporary technology that will provide all BU students with new capabilities, such as the ability to update their preferred names and self-identify their gender. No longer constrained by the limitations of the old mainframe system, we will also be able to provide features such as class registration waitlists and course pre-requisites.

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Renew the Student Services Digital Experience

Stakeholders

- Students are the key stakeholders of this IS&T strategic priority. The planned initiatives will impact students at each school and college, and all faculty who advise students or submit grades.
- Teaching and advising faculty will have an updated platform to review student information, post grades and engage in academic advising activities.
- Staff within each school/college who manage admissions, curricula, registration, advising, student accounts, student jobs, diplomas & transcripts will have new capabilities.
- Central administrative offices like Enrollment & Student Administration (ENSA), Student Accounts, and the Provost's office will use new tools and follow corresponding updated processes.

Representatives of these groups will be involved in decisions as the new system is designed and be provided early looks and demonstrations of new systems, in the lead up to launches of new functionality.

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Renew the Student Services Digital Experience

Key Success Metrics

- Increase in community satisfaction
  - Pre-and post-community IT service satisfaction surveys
- Breadth of use of student portal
- Increase ease of use for navigating student portal
  - Pre-and post- ease-of-use surveys and click counts for common actions
- Reduce the number of shadow systems that are used by schools/colleges
  - Inventory of major shadow systems being taken by SIS Renewal program as part of implementation
- Significantly reduce the number of End-of-Life Services
  - Annual Enterprise Risk Management Key Performance Indicator
- Approved project budget(s) to actual

Renew the Student Services Digital Experience

Major Projects

- **Student Information System (SIS) Core Implementation** - Active
  Replace the current mainframe-based student information system with a contemporary, proven system, Oracle Campus Solutions, in a way that improves the overall experience for students, faculty and staff and provides a foundation of capability to execute on BU strategic priorities. This project will support Admissions, Financial Aid, Student Records, Curriculum Management, Student Financials and Academic Advising.

- **Student Portal & Academic Transactions -** Active
  Replace the current Student Link to provide a modernized, personalized and mobile-friendly portal for students. This will provide students with easy access to things like interacting with an advisor, registering for classes, searching the course catalog and paying tuition and fees.

- **Identity Access Management Modernization for SIS -** Active
  Create a new repository of all BU person records (UID, name, other key attributes for identity matching) across all roles (student, faculty, staff, alumni, affiliate), update and automate processes for student BU account provisioning and deprovisioning, and enable BU students, faculty, staff, alumni and affiliates to maintain aspects of their displayed identity.

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Renew the Student Services Digital Experience

Major Projects (cont.)

- **Student Information System (SIS) Reporting - Active**

  Update the data source of current Academic Data Warehouse reports from the mainframe SIS to Oracle Campus Solutions and incorporate new data elements and structures as appropriate. Ensure continued ability to produce longitudinal reports over time spans including both source systems and carry out ad-hoc reporting.

- **Student Employment - Active**

  Replace the current Student Employment system leveraging BU's broader Human Capital Management platform, SAP. Update the student experience of applying for jobs and reporting time worked, as well as how internal and external employers post positions, hire/terminate students and administer payments. Enable the student employment office to monitor and support department managers.

- **SIS Renewal - Tuition Remission – Active**

  This project introduces a new Tuition Remission solution utilizing SAP and Campus Solutions, replacing our legacy mainframe-based system. The solution includes functionality to perform the calculations and subsequent awarding of tuition remission to eligible employees and family members.

- **SIS Renewal - ISSO Terra Dotta Implementation - Active**

  This project will implement Terra Dotta, a new system for international student and scholar immigration management, replacing the legacy mainframe-based system.

Renew the Student Services Digital Experience

Major Projects (cont.)

- **Graduate Admissions Cycle (23-24) – Active**
  This project is coordinating the annual graduate admissions cycle with BU schools/colleges, Liaison International (vendor), and the BU teams to configuring the graduate applications and admissions tools for the 2023-2024 admissions cycle. The project will include transitioning graduate admissions data to Campus Solutions for this cycle year.

- **Undergraduate Admissions Cycle ('22-'24) – Active**
  This project will prepare MyBU and related undergraduate admissions functions in support of the migration to Campus Solutions. This will include all changes required to MyBU for the '22-'23 admissions cycle as well as the regular MyBU annual cycle operational activities from Summer 2022 to Spring 2023.

- **Undergraduate Orientation Replacement – Active**
  This project will provide the Dean of Students Office with an updated Orientation platform likely utilizing the Salesforce student platform. The solution will include an Orientation portal, event management, communications, and reporting.

- **Study Abroad Application and Enrollment Replacement – Active**
  Implement Terra Dotta to manage the application and enrollment processes for Study Abroad, replacing the current Filemaker solution and manual processes currently used by Study Abroad.

Renew the Student Services Digital Experience

Major Projects (cont.)

- **Mainframe Replenishment – Active**
  This set of projects will deliver student data from Campus Solutions back to the mainframe Student Information System (SIS), to ensure that the jobs, application interfaces, and tasks that rely on student data will continue to operate as expected after Campus Solutions goes live. This data is needed to keep Natural Adabas applications (e.g. Financial Aid, Dining, Vending, etc.) operating until they are replaced.

Retire Mainframe Applications and Legacy Infrastructure

We will complete the replacement or retirement of all remaining applications on BU's antiquated ADABAS Natural application platform and complete the modernization of infrastructure to remove antiquated operating systems and middleware, enabling improved agility and reducing risks and costs.

Scope

The ADABAS Natural Retirement program encompasses a broad range of projects that are required for full retirement of the ADABAS Natural application development platform, which dates back to the early 1980s. These projects range from replacing very large applications to multiple small applications that still reside in the ADABAS Natural environment. Also included is activity to replace ADABAS Natural where it is used as an integration point, creating an archive of data and the decommissioning of the environment.

Infrastructure Modernization will remove dependencies on long standing, outdated but deeply entrenched technologies within BU infrastructure. Primary examples include Kerberos 4 (a security protocol used for authentication), Andrew File Systems (AFS- a higher ed developed service used to share files remotely), our own BU-developed Weblogin (software that allows you to retain login credentials across multiple internal websites), and Sun Solaris operating systems and hardware. While these technologies were once leading assets, they are now liabilities that severely limit BU's agility in keeping pace with rapidly evolving technology service needs.

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Retire Mainframe Applications and Legacy Infrastructure

Stakeholders

Primary stakeholders for Mainframe Applications retirement are central offices who delivery university services using these systems, as well as the campus community members who receive those services. These offices will collaborate with IS&T in identification and implementation of replacement systems as well as execution of testing associated with decommissioning of each application and data archiving. These offices include:

- Auxiliary Services, BUMC, BUPD, Campus Planning & Operations, Dean of Students, Enrollment & Student Administration, Financial Affairs, Global Programs, Human Resources, NEIDL, Provost Office
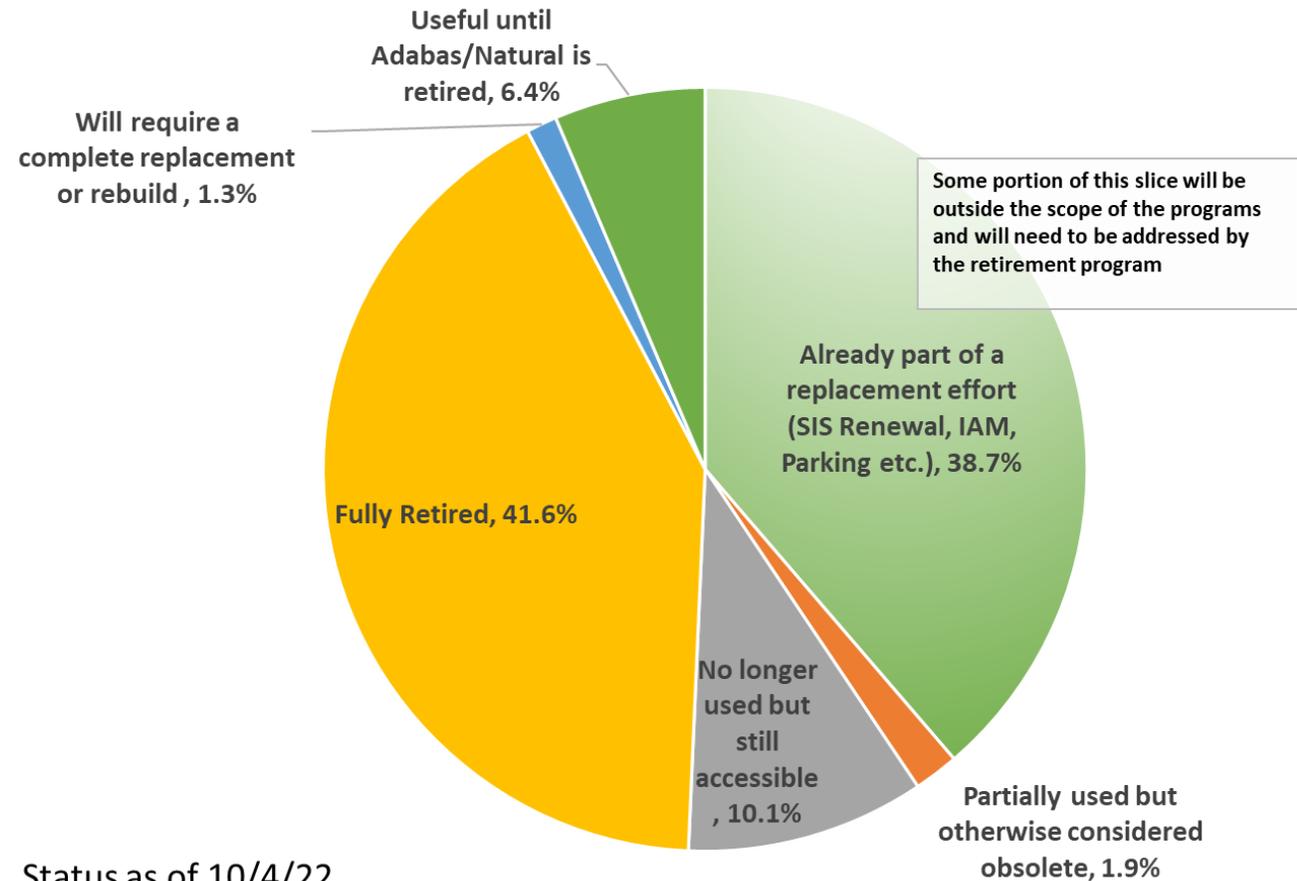
Legacy infrastructure retirement will impact all BU community members (students, faculty, staff, alumni, and affiliates) due to the scope of use of BU authentication and directory services, web sites, email, and library services. The Common Services and Information Security governance committee will provide primary oversight for this priority.

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Retire Mainframe Applications and Legacy Infrastructure

Key Success Metrics

- ADABAS Natural Applications Disposition chart
- Stable community satisfaction
  - Pre-and post-community IT service satisfaction surveys
- Significantly reduce the number of End-of-Life Services
  - Annual Enterprise Risk Management Key Performance Indicator
- Approved project budget(s) to actual

Mainframe Application Status

Useful until Adabas/Natural is retired, 6.4%

Will require a complete replacement or rebuild , 1.3%

Some portion of this slice will be outside the scope of the programs and will need to be addressed by the retirement program

Already part of a replacement effort (SIS Renewal, IAM, Parking etc.), 38.7%

Fully Retired, 41.6%

No longer used but still accessible , 10.1%

Partially used but otherwise considered obsolete, 1.9%

Status as of 10/4/22

BOSTON UNIVERSITY

Retire Mainframe Applications and Legacy Infrastructure

Major Projects – Mainframe Applications

- **CCure building access system re-integration (Housing Clearance System) - Proposed**
  Eliminate the dependency on the mainframe for key card access to buildings. Replace automated door access provisioning.

- **Dining System replacement - Proposed**
  Replace legacy technology components supporting University Dining Plans and the Terrier Convenience Plan with a modern supportable platform.

- **Card Services - Proposed**
  Replace the legacy automation and integration necessary to produce physical ID Cards and store the student, faculty, and staff photos used across multiple University applications. Create a new data repository for BUID card specific data (including photos and metadata) and an updated process for lost card administration.

- **Emergency and incident notification management system replacement - Complete**
  Improve BU's ability to communicate in a crisis or incident by implementing a new system.

- **Parking system replacement - Complete**
  Replace the legacy, mainframe-based parking permit management system with a modern, cloud-hosted SaaS solution.

- **PoliceLink Replacement - Investigating**
  Enable University Police to access student, faculty, and staff photos and identity/contact information in support of investigations, active incidents, wellness checks, etc.

- ~~**RACER Remediation - Identified**~~
  ~~Ensure that the University can continue to accurately report on Race and Ethnicity data and that all BU Community members have a consistent and uniform way to update their information.~~

- **Student Immunization Records and Medical Insurance Waiver - Active**
  Replace the existing legacy system that enables students to report immunization records and request insurance waivers.

- **Employee MBTA Pass Management - Prioritized**
  Replace Employee MBTA pass management system and related employee benefits.

Retire Mainframe Applications and Legacy Infrastructure

Major Projects – Mainframe Applications (continued)

- **Technology Service Monitoring and Event Management/Notifications Replacement - Prioritized**
  Eliminate the dependency on the mainframe for 24/7 monitoring of University servers and services. Ensure timely notifications to on-call support staff when systems become unresponsive or produce errors.

- **XML Gateway and Secure Redirect Retirement - Identified**
  Replace legacy web interfaces that enable external applications to authenticate BU community members and/or request/update University data via a web-based Application Programming Interface (API).

- **ADABAS Natural Small Applications Retirement - Active**
  Replacement of 20-30 small scale applications

- **Mainframe Integrations Replacement - Identified**
  Replace integrations developed using the mainframe as a data integration tool.

- **ADABAS Natural Data Archiving - Identified**
  Once legacy applications have been replaced, legacy data will be moved to a long-term storage location.

- **ADABAS Natural Decommissioning - Identified**
  Remove all legacy application user access and programs when all legacy applications have been replaced.

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Retire Mainframe Applications and Legacy Infrastructure

Major Projects – Legacy Infrastructure

- **Web Hosting Infrastructure Retirement, including:**

  - **Migrate PHPBin Applications to Amazon Web Services (AWS) - Complete**
    Move custom IS&T web application (called "BIN") developed on Hypertext Preprocessor (PHP) to our Amazon Web Services cloud (example- online Calendar and Faculty Applicants)

  - **Decommission BU DBIN - Complete**
    Rehost custom non-IS&T PHP applications at AWS (example-college of engineering applications)

  - **Remove AFS and BU WebLogin dependencies from Virtual Web Host server - Complete**
    Modernize the infrastructure for web hosting with specialized client requested site name (example-favoritepoem.org)

  - **Remove Andrew File System (AFS) Dependency from WebLogin Application - Complete**
    Pending full replacement, remove reliance of legacy BU Weblogin services on obsolete remote file system (AFS)

- **Communications Infrastructure Retirement**

  - **Replacement of BU Simple Mail Transport Protocol (SMTP) outbound email - Complete**
    Implement a standard platform for routing specialized email, including bulk-mail, for outbound emails

  - **Remove Andrew File System (AFS) dependencies from mailing list manager service (MajorDomo) and broadcast mail services - Prioritized**
    Pending full replacement, remove reliance of legacy list email services on the obsolete remote file system (AFS)

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Retire Mainframe Applications and Legacy Infrastructure

Major Projects – Legacy Infrastructure

- **Identity & Access Management Services Legacy Retirement**
  - **BU WebLogin Retirement (multiple projects) - Active**
    The retirement of our legacy, homegrown web authentication program will be completed through a series of projects to convert specific in-scope applications to our newer platform (Shibboleth).
  - **Legacy Account Provisioning Retirement - Active**
    The deployment of a new identity system in FY22 will retire some mainframe components directly, but further work will be required to fully retire functionality provided by supporting systems such as Microsoft Identity Manager (MIM).

- **Legacy Operational Directory Retirement - Active**
  This program will consolidate multiple legacy operational directories, eliminating some legacy, homegrown solutions such as "Ph". The solution will streamline how applications are able to consume directory information, eliminate custom code, and retire legacy hardware

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Maintain Cybersecurity Vigilance

We will continue to enhance our cybersecurity processes and technologies, in line with best practices and the evolving threat landscape, to protect the confidentiality, availability and integrity of university digital services and information.

Scope

We will focus on two areas: Adopting tooling and awareness to address perennial issues like phishing and emerging threats like extortion via ransomware; and Improving the Identity and Access Management experience through adoption of new technologies to ease identity administration and support individual control over identity attributes.

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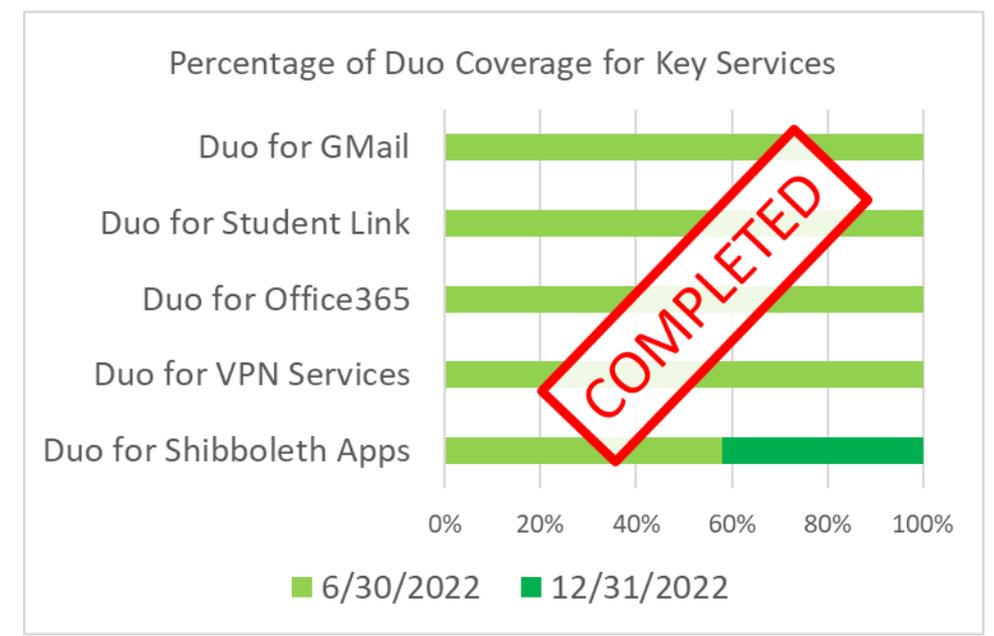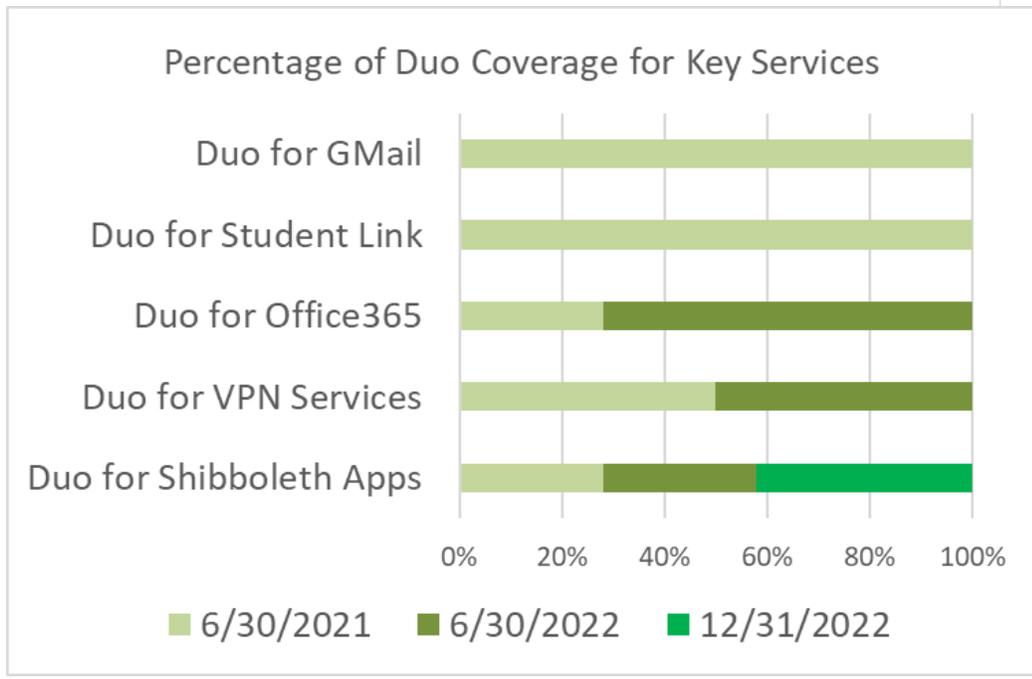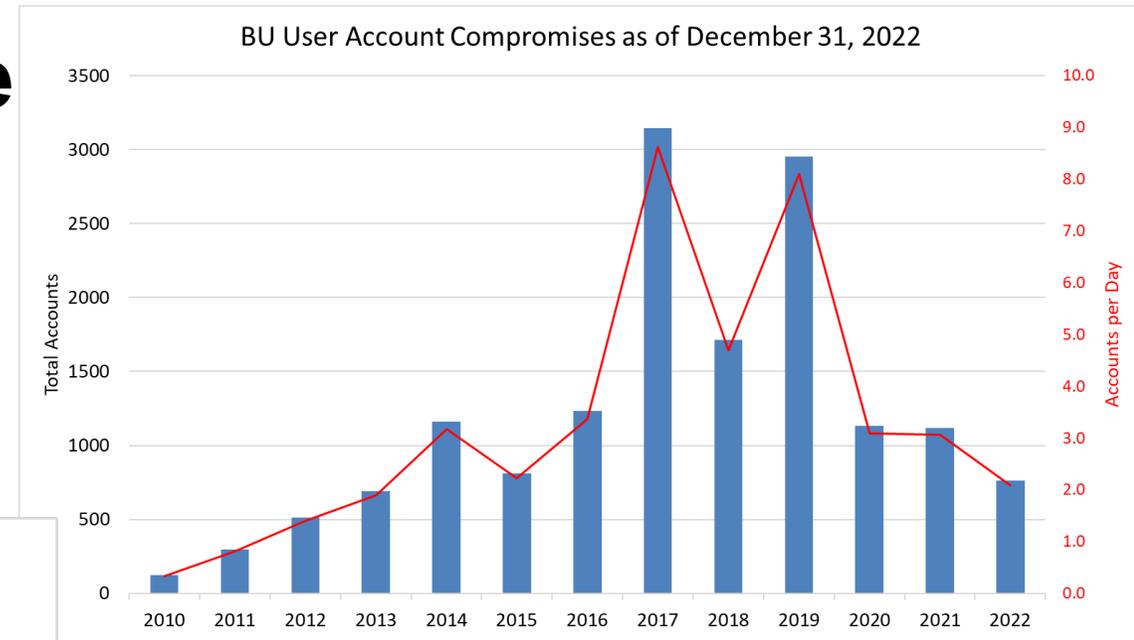# Maintain Cybersecurity Vigilance

Key Stakeholders

- Strong cybersecurity practices will require everyone's participation and will benefit everyone as our data will be better protected. The Common Services and Information Security Governance Committee helps to govern the information security program and becomes the voice for everyone in the program, providing input on priorities, organizational change management, and communication efforts

- The IAM program will bring particular benefits to non-binary individuals through support for gender fluidity, personal pronouns, and preferred name. The IAM Steering Committee will help guide the introduction of these and other features and includes representation from key identity providers: Enrollment Services, Human Resources, and Alumni Relations

- The mission to secure the university's data both provides input to and takes guidance from IS&T's Data Governance program on data management policy, roles and responsibilities, and needed controls. Increasingly this work will need to align with the University Privacy Coordinating Committee, particularly as legal regulations on data privacy grow.

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Maintain Cybersecurity Vigilance

Key Measures

Our single largest risk to data today is our rate of user account compromises and our best control is the adoption of multifactor authentication.

BU User Account Compromises as of December 31, 2022

Percentage of Duo Coverage for Key Services

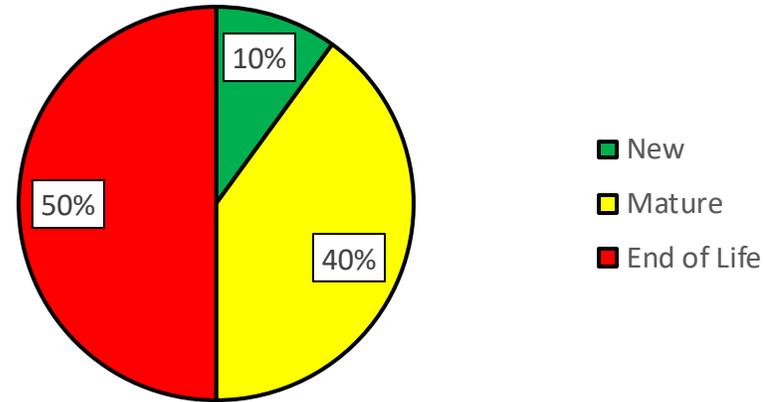Percentage of Duo Coverage for Key Services

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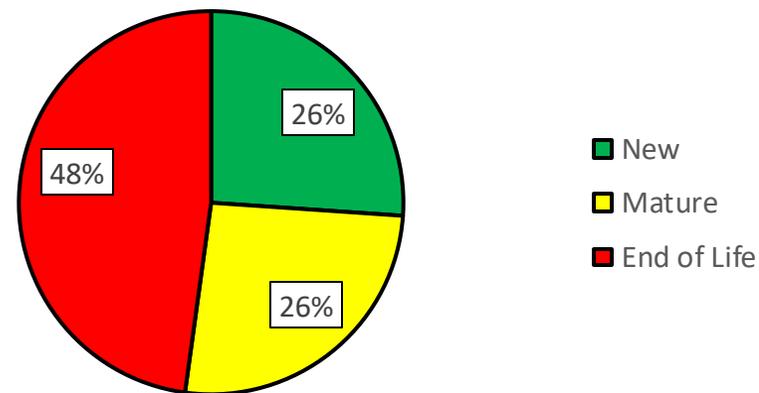
Maintain Cybersecurity Vigilance

Key Measures

A key measure of our IAM services is the age of our services. Half of the component applications that make up our IAM ecosystem are past their end of service life, lack vendor support, or rely on legacy hardware. Retiring these older components and replacing them with modern and more flexible components is key to our future success.

IAM Component Maturity, June 2021

- New
- Mature
- End of Life

IAM Component Maturity, July 2022

- New
- Mature
- End of Life

Update:
Over the 2021 to 2022 timeframe, we have added new healthy services to our portfolio, but still have not retired our older services. This will change over the next two years.

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Maintain Cybersecurity Vigilance

Key Projects – Tooling and Awareness

- **Data Center Firewalls, Phase 1 -** **Active**
  Install Palo Alto Networks Firewalls in front of our IS&T data centers

- **Data Center Firewalls, Phase 2 -** **Prioritized**
  Install Palo Alto Networks Firewalls in front of BUMC data centers and administrative systems at MGHPCC

- **Domain Name Service (DNS) Security -** **Active**
  Provide security controls at a low level of the network that can effectively thwart malware including ransomware with minimal impact on normal usage.

- **Email Security Improvements -** **Active**
  Deploy additional industry-standard security controls (DKIM/DMARC) in the BU e-mail environment that reduce the risk of receiving or being the source of phishing attacks and other fraudulent e-mail on the Internet and decrease the number of legitimate outgoing e-mails that are discarded as spam by remote mail systems.

- **Entity Analytics -** **Prioritized**
  Provide analytical toolkit for our Security Event and Incident Management tool to detect new and anomalous behavior of devices on our network to enable better detection of compromised devices, especially "Internet of Things" devices

- **Expand Multifactor Authentication -** **Complete**
  Continuing from FY21, this effort will increase the number of places that multifactor authentication will be required including Office365, VPN services, and additional web applications.

- **Integrate Vulnerability Management into ServiceNow -** **Prioritized**
  Integrate the results of our vulnerability scanner directly into our IT service management system to enable enhanced reporting and better risk assessment

- **Third Party Risk Management Tooling -** **Identified**
  Evaluate tools and services to measure, track, and manage the risk of vendors with access to our sensitive data

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Maintain Cybersecurity Vigilance

Key Projects – Improving the Identity and
Access Management experience

- **Authorization Management** - **Investigating**
  Provide enhanced group management capabilities,
  potentially including self-service, to enable efficient use of
  centrally-stored attributes to define access control for
  applications

- **Identity and Directory Modernization** - **Complete**
  Replaces our legacy, homegrown, mainframe-based
  identity system with vended, cloud-based identity solution

- **Identity Governance and Administration** - **Identified**
  Provides an enhanced toolset for leaders, managers, data
  trustees, auditors, and individuals to review, request,
  authorize, and revoke privileges for individuals.

- **Student Lifecycle Provisioning and Deprovisioning** - **Active**
  Standardizes the processes by which student accounts are
  created and given access rights and manages how those
  rights evolve based on student status. This also includes a
  self-service portal to enable password reset and update of
  gender identity, pronouns, and preferred name.

- **Campus Solutions Integration** - **Active**
  Integrates our IAM solution with the new Student
  Information System and addresses authorization of
  individuals within Campus Solutions for role-based and ad-
  hoc needs.

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Lead in Research Support

We will provide leadership class computational research infrastructure and supporting services that enable the productivity and creativity of BU researchers and their collaborators. We will also provide information systems for research administration that enable BU researchers to spend more time on their research and less time on managing it administratively.

Scope

BU Researchers across all domains have increasing needs in advanced computation to enable their productivity. These demands have accelerated with the pervasive reach of data science across all aspects of society. In addition, federally funded research is increasingly burdened with complex cybersecurity requirements. Strategic projects include developing new services such as the BU-deployed research cloud resources and scalable analytical support of restricted-use data, expanded research facilitation and security compliance services, and implementation of next-generation data center and cooling infrastructure.

Research administration system improvements include replacement of our primary institutional proposal and award management system, deployment of new proposal development system, and replacement of our research conflict of interest system.

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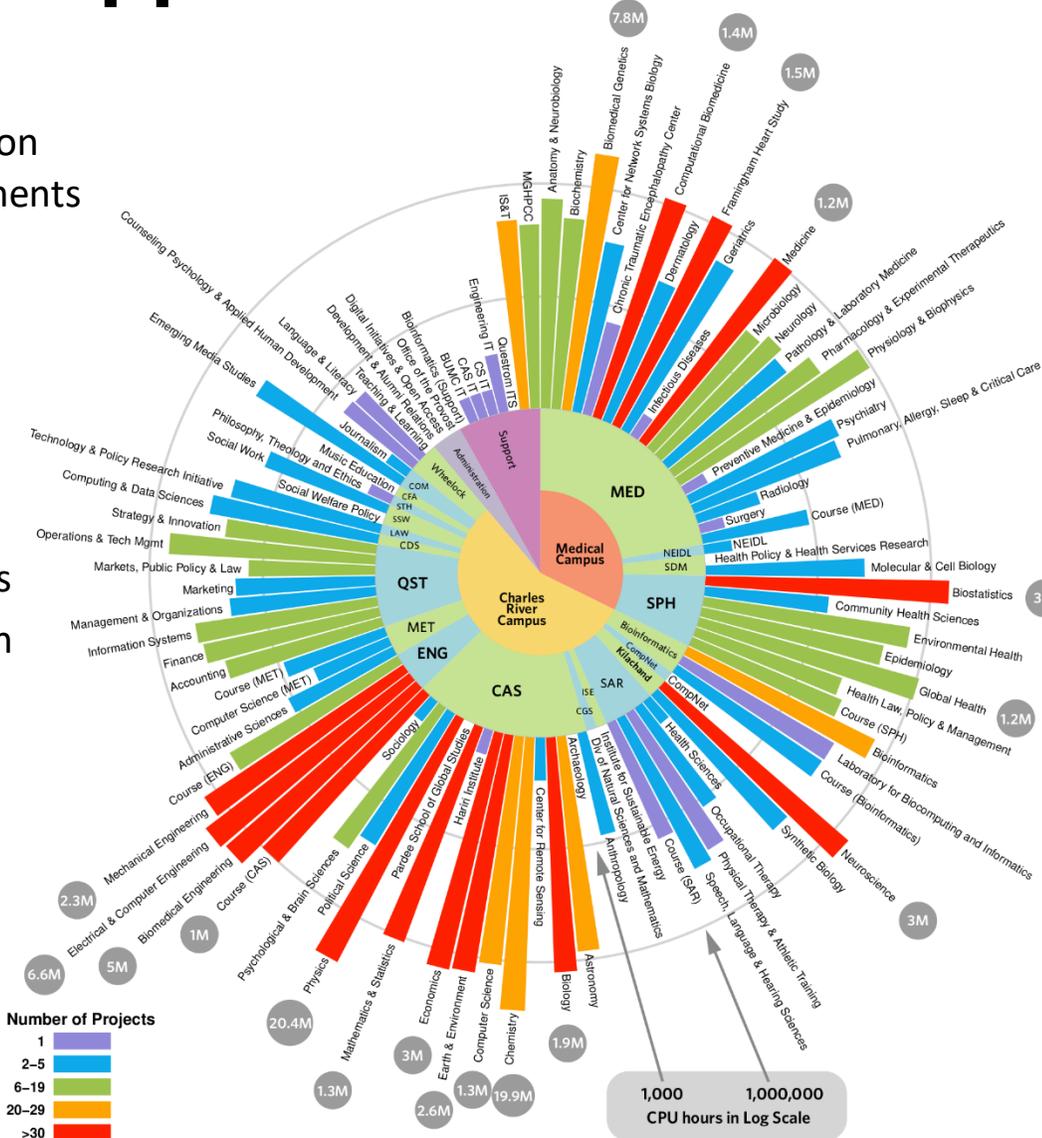
Lead in Research Support

Stakeholders

- The University research faculty and their collaborators are the primary stakeholders for this strategic priority.
- Teaching faculty who leverage advanced computation for their student's academic coursework.
- Other research, IS&T, and IT Partner groups who leverage data center infrastructure located at the Massachusetts Green High Performance Computing Center (MGHPCC).
- The Office of Research, especially the Office of Sponsored Programs, Research Compliance, Industry Engagement, and Post Award Financial Office (PAFO) are key partners in the research administration aspect of this priority.
- Department Administrators who support researchers in grant proposal development and grants management.

Oversight for initiatives in this area will be provided by the Research Computing and Administrative Systems Governance Committees.

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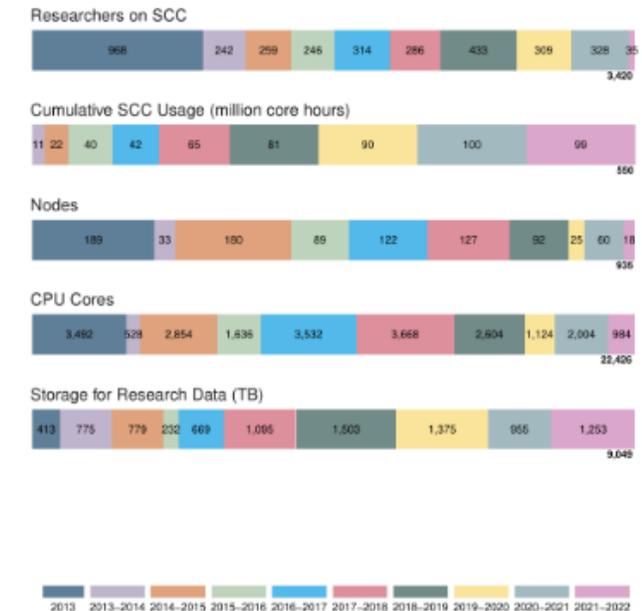UNIVERSITY

Lead in Research Support

Key Success Metrics

- Research Computing service utilization across schools, colleges and departments
- Count of completed cybersecurity consultations/plan for research proposals
- Grant awards to faculty who use research computing services and/or security consulting services
- Research infrastructure grant awards
- Researcher satisfaction with research computing services (survey)
- Research satisfaction with research administration systems (survey)

Lead in Research Support

Associated Projects – Research Computing

- **New England Research Cloud - Active**
  The New England Research Cloud (NERC) is a collaboration between Boston University and Harvard University whose goal is to build a stable, cost-effective on-premise cloud service to support data intensive research workloads. With sponsored funding by the MassTech Collaborative, the NERC team will implement a pilot cloud service, onboarding select proof of concept use cases from institutions within the Massachusetts Green High Performance Computing Center (MGHPCC) consortium and the region.

- **Student Ambassador Pilot Program - Active**
  This project will train students in applying high-performance computing best practices to their fields of study. In turn, these students will aid fellow researchers in their departments in the use of Research Computing services, further strengthening the relationship between IS&T and the BU research community.

- **Shared Computing Cluster (SCC) Academic Course Support - Complete**
  The Shared Computing Cluster (SCC) currently supports academic courses that require advanced computation in their curriculum. The number and breadth of courses supported on the SCC continue to grow as Data Science becomes more mainstream in the learning experience. This project will formalize a service and associated processes, documentation, and training to aid teaching faculty in establishing course-related projects and student accounts on the cluster.

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Lead in Research Support

Associated Projects – Research Computing

- **Restricted Use Research Data Support Investigation -** **Investigating**
  The Shared Computing Cluster (SCC) currently supports the analysis of public and confidential research data, including dbGaP and HIPAA Limited datasets. This project will investigate the implementation of a service that will support the analysis of restricted research data, such as non-limited HIPAA data sets, at scale.

- **Accounts / Resource Management System Overhaul -** **Investigating**
  Researchers require a high degree of flexibility and visibility to organize their computing activities for their labs and collaborators. This project will overhaul Research Computing Service's existing administrative management system, providing researchers a more user-friendly interface and streamlined processes for creating accounts, tracking utilization, and managing their resources.

- **Implement GPU Infrastructure Improvements - Active**
  This project aims to identify more scalable and attractive offerings for the researcher community to address the increasing demands for computing accelerator technology, such as Graphics Processing Units (GPU's) that have become commonplace in Data Science research.

Lead in Research Support

Associated Projects – Research Computing

- **Massachusetts Green High Performance Computing Center (MGHPCC) Water Cooling Investigation / Pilot - Active**
As high-density computing servers evolve, they increasingly require more power and cooling to operate. Traditional air-cooled technology will soon not be sufficient to support their continued use. This project will examine the technology and costs of utilizing alternate water and hybrid (water/air) cooling methods at the Massachusetts Green High Performance Computing Center (MGHPCC) to support BU's future computing infrastructure investments.

- **Massachusetts Green High Performance Computing Center (MGHPCC) Build Out - Identified**
The MGHPCC was built to facilitate future expansion into unused data center space by University consortium members. This project will identify the costs and implement the buildout of Boston University's space within the data center to support future Research Computing infrastructure needs.

Lead in Research Support

Associated Projects – Research Administration

- **Conflict of Interest System Replacement - Active**
  This project will implement the Huron Research Suite Conflict of Interest Module, including Integrations with CITI Training, SAP ECC HANA, iMedris, and other Huron modules (including IACUC and AOPS).

- **Proposal development, Grants and Agreements – Proposed**
  This project will deploy new proposal development functionality and replace the Kuali Research Proposal Log, Institutional Proposal, Award, Subaward, and Negotiations modules with Huron Research Suite Grants and Agreements, including all associated data migration and system integrations.

- **BUMC Research Cores Management System - Complete**
  This project will implement iLab to replace the BUMC legacy research cores management system.

Associated Projects – Cybersecurity Compliance

- **CMMC Compliance Gap Assessment - Complete**
  Work with consultants to assess our current state of compliance with Cybersecurity Maturity Model Compliance (CMMC) requirements potentially imposed by the Department of Defense on future research and propose a strategy for meeting those requirements

- **CMMC Compliance Solution Implementation - Proposed**
  Based on GAP assessment, implement a solution to meet CMMC Compliance objectives

- **21 CFR Part 11 Compliance - Complete**
  Ensure BU REDCap and related-systems comply with Food and Drug Administration (FDA) Rule on Electronic Records and Electronic Signatures, to support FDA-related research, such as clinical trials

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Innovate in Digital Learning

We will partner with the Digital Learning & Innovation (DL&I) team to provide best in class educational technology solutions for residential, hybrid, and fully online learning.

Scope

This technology priority area's initiatives flow principally from the BU 2030 Strategic Plan top level priorities of Diversity, Equity and Inclusion, Vibrant Academic Experience, and Community, Big yet Small. Major themes include technology equity and access, enhancement of learning environments both on campus and online, and the development of new ways to digitally track student engagement and development of competencies through both academic and co-curricular experiences.

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Innovate in Digital Learning

Stakeholders

- Students, particularly student learning experiences and outcomes, are at the center of this priority.
- Faculty will drive decision making and be supported in carrying out experiments, pilots, and full implementations of new or improved strategies and tools.
- The Classroom Technology Steering Committee will oversee final proposals for Charles River Campus classroom renovation. Medical Campus renovations will be driven by the BUMC Provost.
- Various university offices engaged in student development and support, such as the Dean of Students, First-Generation Center, Enrollment and Student Administration, and the Provost's Office broadly, will be engaged.

We will look to BU 2030 Initiative Owners and/or associated working groups to provide direction for specific projects. Additional input and broad oversight will be provided by the Educational Technology Governance Committee.

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Innovate in Digital Learning

Key Success Metrics

- Learning Technology Readiness assessment results, number of students assisted in addressing gaps
- Student and faculty satisfaction with classrooms and educational technology services (survey data)
- Distribution of technology-rich classrooms enabling BU-supported pedagogies
- Satisfaction score of faculty on Ed Tech support of their DL&I grant
- Satisfaction scores of Online MBA students with BU technology Services and the online learning experience

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Innovate in Digital Learning

Associated Projects - Technology Equity and Access

- **Learning Technology Readiness Assessment and Support Program Development** - **Identified**
  Develop an instrument for student self-assessment of their technology readiness to learn in their BU program, and a process to support students in addressing identified gaps.

- **Student Broadband Access** - **Identified**
  Develop a formal program to facilitate access to mobile broadband equipment for students that have a financial need and do not have access to high-speed internet.

- **Student Computer Access** - **Investigating**
  Expand and formalize a program to provide loaner hardware for students who do not have access to the minimum laptop requirement to run software necessary for BU courses. A pilot program is currently being conducted to determine program feasibility.

Associated Projects – Enhanced Residential and Online Learning Environments

- **CRC Classroom Technology Upgrades and Renewal** - **Active**
  Optimize learning spaces in alignment with pedagogical needs.

- **BUMC Team Based Learning Center** - **Active**
  BUMC is renovating the 4th floor of the Instructional Building, into a dynamic, open space, team-based learning environment to support BUSM's case-based learning curriculum, the space will also serve as a large venue for special events.

- **Online Student Feedback on Courses** - **Identified**
  In partnership with the Director of Assessment, investigate (re)deploy a university-wide student course feedback system.

- **Online Degrees at Scale** - **Active**
  Continue the creation, delivery and support for the at-scale Questrom Online MBA and School of Public Health Masters in Public Heath.

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Innovate in Digital Learning

Associated Projects – Student Engagement

- **Co-Curricular Activities/Event Management System and Data Analytics - Identified**
  Investigate, pilot, integrate, and deploy new activities/events management system that can be part of the integrated student experience (Salesforce), and leveraged to support a holistic view of and support for student learning.

- **Co-curricular Competencies Badging Service - Identified**
  Assess and expand current PostDoc Academy badging pilot around skill competencies to see how it can be replicated for graduate and undergraduate programs.

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Expand Diversity, Equity & Inclusion

We will partner with the Provost's Office of Diversity and Inclusion and related initiative sponsors to provide information systems and services in support of University Diversity, Equity, and Inclusion work. We will also develop and execute on a plan to enhance Diversity, Equity and Inclusion among technology workers at BU.

Scope

University-wide technology services in support of DEI will be identified and sponsored through other University planning processes and groups, such as the University Strategic Planning Implementation Group and Antiracism Working Group. Within IS&T, scope and approach will be determined by an ongoing committee charged with overseeing execution of a set of projects recommended by the IS&T DEI Task Force of 2020-21, which fall into four major areas: Language, training, and education; Recruiting, hiring, promotion, and retention; Strategy and organizational implementation; Community, culture, and change

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Expand Diversity, Equity & Inclusion

Stakeholders

- All members of the University community, as we all contribute to creating a diversity, inclusive, and equitable environment
- The Provost's Office of Diversity & Inclusion
- Central offices sponsoring initiatives to enhance DEI, such as:
  - Admissions
  - Human Resources
  - Equal Opportunity Office
- Technology and data-intensive workers at BU, in IS&T and local units

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Expand Diversity, Equity & Inclusion

Key Success Metrics

- University DEI climate survey outcomes within IS&T
- Improved recruitment, retention and promotion of diverse BU faculty and staff
  - University-wide and within IS&T, measurement to align with University overall approach
- Improved community scoring of the extent to which they feel respected and valued when they interact with IS&T staff
- Accessibility of course materials and public web sites, based upon accessibility scans/reviews

Expand Diversity, Equity & Inclusion

Associated Projects – DEI-related IT services

- **Accessibility Scanning, Assessment and Remediation of Instructional and other Public Web Content** - **Identified**
  This project will assess current and potentially deploy additional tools to scan BU instructional resources and public web site for ADA accessibility and expand remediation services and support.

- **Employee Applicant Tracking System Replacement** - **Proposed**
  This project would apply data, workflow, and process standards in order to ensure more consistent capture of Equal Employment Opportunity (EEO) and Affirmative Action data, improve our understanding of the demographic profile of candidate pools, and actively source from diverse and inclusive communities.

- **Equal Opportunity Office supporting system** - **Investigating**
  This project would select and deploy an information system to help the BU EOO more effectively intake and manage its case work.

- **Identity & Access Management: Display Name and Pronouns Adoption** - **Complete**
  This set of projects will implement the use of appropriate name and personal pronouns in BU enterprise systems, leveraging new collection of this information by the SIS Renewal program Identity and Access Management project.

- **Undergraduate Admissions: Questbridge Implementation** - **Complete**
  This project will implement BU's participation in QuestBridge, a non-profit organization that works with first generation and lower income students.

- **Gender Affirming Housing Implementation** – **Active**
  This project seeks to improve our housing processes to better support students. The BU Queer Activist Collective identified a set of housing barriers that the proposed solutions in this project hope to address. Meeting the outlined objectives will include changes in the StarRez housing system to accept new data elements: Chosen Name, Pronouns, Gender Identity, and potentially others. Additionally, room selection and assignment processes will need to be reconfigured.

Expand Diversity, Equity & Inclusion

Associated Projects – BU Technology staff DEI

Phase 1

- **Assessing Personal Bias - Identified**
  The purpose of this project is to begin a conversation about bias, raise awareness of the existence of bias within each of us, and to "destigmatize" having biases so that we can openly discuss how bias operates in all of us.

- **DEI Content Library for IT workers - Approved**
  This project will build a multi-purpose library of diversity, equity, inclusion, and antiracist resources with a focus on technology workers. The library will be a repository of learning assets for general DEI education and for awareness of IT challenges.

- **DEI Engagement in IS&T Onboarding - Identified**
  The purpose of this project is to set a baseline of awareness of Diversity and Inclusion issues for all IS&T staff members.

Phase 2

- **IS&T Inclusive Management Toolkit - Identified**
  This project will implement a toolkit for managers to learn, develop, and use inclusive management skills, with a focus on DE&I subjects and areas of weakness that are identified within IS&T.

- **Advancing DEI in IS&T Hiring – Proposed**
  This project will review existing hiring processes (including job descriptions and minimum job qualifications) with an eye to improving diversity, equity, and inclusion.

- **DEI in the IS&T Promotion Process - Identified**
  Review existing promotion processes with an eye to improving diversity, equity and inclusion, by making them more transparent and objective.

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Expand Diversity, Equity & Inclusion

Associated Projects – BU Technology staff DEI

Phase 3

- **Get2Gether - Identified**
  Develop a scalable approach to facilitating topical meetups between staff to have one-to-one or small group discussions of DEI topics.

- **Guided large Group DEI Sessions - Identified**
  Develop content and methodology for IS&T all-staff and other regularly scheduled meetings to build understanding and competency in broad DEI areas such as bias, equity, and agreements.

- **Individual Contributor Resources for DEI - Identified**
  Develop resources for individual contributors in BU technology teams to help employees understand their work style and build their strengths, as well as identify and address opportunities to improve inclusive collaboration.

- **Manager-Employee Check-in DEI Resources - Identified**
  A component of the Inclusive Management Toolkit, develop guidance for effective regular check-ins between manager and direct report to ensure open lines of communication and supportive guidance across lines of difference.

- **Transparent Metrics for DEI - Identified**
  Establish metrics available to IS&T management and staff broadly to measure and monitor equity of compensation, job levels, and career progression in the organizational structure of IS&T.

BOSTON UNIVERSITY

Enhance the Digital Alumni Experience

We will broaden our approach to engagement of alumni and friends to encompass interest and affinity groups, and to leverage more diverse forms of digital interaction.

Scope

The goal is to provide the Office of Development and Alumni relations with a manageable digital ecosystem in which current engagement activities are accessible to DAR staff for KPI monitoring and decision making. We will provide a robust predictive analytical environment to support alumni engagement and philanthropy activities. We will implement solutions to acquire and retain alumni and donor affinities in order to better understand their current interests, leading to personalized communication with prospects and donors which demonstrates that Boston University understands their engagement and philanthropic affinities. We will deliver intuitive tools, assisting engagement officers to connect with potential donors. We will implement better data integration between platforms, particularly events management and marketing solutions, to ensure an accurate and current 360-degree engagement profile of our alumni and friends.

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Enhance the Digital Alumni Experience

Stakeholders

- Alumni, donors and unaffiliated prospective donors will have an opportunity to engage in the manner they wish with BU about things that interest them.
- Alumni engagement DAR staff will have new capabilities for better communication targeting, data gathering, volunteer management, and event management.
- Development officers will benefit from lead generation as a result of better understanding of prospect funding interests.
- Development and Alumni Relations leaders will gain new insight into drivers of engagement and philanthropy, based on current interest information.

Representatives of these groups will be involved in decisions as the new system is designed and be provided early looks and demonstrations of new systems, in the lead up to launches of new functionality.

BOSTON UNIVERSITY

Enhance the Digital Alumni Experience

Key Success Metrics

- Increase in alumni engagement
- Adoption and breadth of use of alumni web portal
- Engagement via new communication channels
- Increase in annual giving donors
- Increase in affinity group activity
- Ability to measure and report on robust engagement metrics

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Enhance the Digital Alumni Experience

Major Projects

- **BU Connects Implementation – Complete**
  Implement the BU Connects service - a platform enabling users to search for and connect with other users affiliated with BU for professional/career networking opportunities based on group(s) affiliation. Establish a data integration between BU Connects and the existing Alumni CRM.

- **Salesforce Consultation - Complete**
  Consult with Salesforce to investigate and propose potential solutions in support of the recommendations laid forth by the Boston University Alumni Relations Task Force (ARTF) to enhance digital alumni engagement. This will provide DAR with a world class engagement platform that will be updated with quality current alumni professional, life stage, interest, location, and communication preference data.

- **Event Data Improvement - Complete**
  Optimize event management capabilities between the current Alumni Portal and BU's existing Alumni CRM. This includes creation of a mechanism enabling bi-directional synchronization of event records such as registrants and attendees. Improvement of event data hygiene and DAR user experiences within existing CRM event management features. This will ensure that event quality attendance details are available as engagement factors within our data analysis ecosystem.

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Enhance the Digital Alumni Experience

Major Projects

- **Affinity Tagging Platform - Complete**
  Build a new, custom Affinity Tagging platform within BBEC to enable gathering and analysis of constituent affinities and interests. Ensure that alumni interest information is current and contemporary based on various engagement points, including interactions, event registrations, and giving history. This will make possible the real-time collection of affinity information, while also indicating areas of philanthropic interest.

- **Salesforce Implementation Planning – Complete**
  Select and partner with a 3rd party consultant to investigate and design an implementation plan for potential Salesforce Marketing Cloud, Experience Cloud, Salesforce CRM and supporting event management software. This will prepare BU to leverage more diverse forms of digital interaction to better engage alumni and friends.

- **Affinity Tagging: Phase II - Identified**
  Expand and enhance DAR's application of Affinity Tags and Strategic Interests to provide richer constituent data for optimizing alumni and donor engagement. Phase II of this initiative augments the new DAR Affinity Tagging Platform in BBEC with additional capabilities to intake affinity tags in bulk via a batch entry solution, automatically derive affinity tags based on revenue transactions, improve user experiences through surfacing the affinity tag wizard on research and constituent data entry forms, among other features.

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Enhance the Digital Alumni Experience

Major Projects

- **Salesforce Implementation – Identified**
  Implementation of selected Salesforce Marketing Cloud, Experience Cloud, Salesforce CRM and additional event management software. If experience cloud is selected, a basic prerequisite instance of Salesforce CRM will be implemented. This will implement select digital interaction functionality to engage alumni and friends.

- **Alumni Engagement Dashboard – Identified**
  Creation of a next-generation, user-friendly, intuitive dashboard reflecting various alumni engagement indicators. This will be used by the alumni engagement program to evaluate and manage strategic direction.

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