



Computing Services

STRATEGIC PLAN

FY21

FY22

INTRODUCTION FROM THE CIO

Carnegie Mellon has a well-deserved, impressive reputation for academic excellence across a broad range of academic programs and research areas, especially through interdisciplinary collaboration among teams with diverse backgrounds and complementary expertise.

As part of the Carnegie Mellon team, our own efforts in Computing Services sometimes blend into the background, but that is by design within a landscape of high expectations for effective and efficient IT capabilities. Our own hearts are steadfast in our work and we are inspired by the aspiration of those we serve - students, faculty, and other staff. We celebrate their accomplishments through our dedication to collective successes.

Successful organizations are clear on their mission and maintain alignment with it. They periodically evaluate their performance and adjust their approach as circumstances dictate. Resources must be aligned, and efforts must be directed to deliver on that mission effectively over the long term. So just as the university periodically visits and renews its strategic priorities, we do the same. In this action, we reaffirm our commitment to the CMU mission and refresh our approach based on the updated strategic goals of the institution. At the same time, we align to the contemporary business and information technology landscape of the day.

Ordinarily, we would be here for a routine update of our Strategic Plan. We started that effort in November 2019 with expectations to publish in spring of 2020. The leadership team selected a brief inspirational vision statement and we continued in January with a group of volunteers from across Computing Services to draft five strategic focus areas and ideas for potential initiatives in each. After a first draft, the effort was interrupted in March by the unprecedented and jarring circumstances of the COVID-19 pandemic and incidents of social unrest, and these events have entirely suspended the ordinary. While the focus areas remain core to our Mission, new priorities dictate that we reprioritize our efforts and adjust our plan to account for what is likely a multi-year impact to priorities and resources. Thus, we offer a two-year plan for fiscal years FY21 and FY22, aligned with the University Strategic Plan, focused on both the immediate and evolving needs resulting from the pandemic and our intention to positively impact the campus culture through increased diversity, equity and inclusivity. It also addresses our new and on-going mission-critical initiatives to serve the university for long-term success.

Throughout the original disruption and unparalleled pivot to remote operations during the spring semester, Computing Services responded to many urgent requests in teaching, research, and administration, and we will continue to rise to meet whatever circumstance, as the university prepares for the new academic year in the spring.

I hope you will see yourself represented in the document as much as I see the great possibilities for the future. We look forward to our opportunities to shine. Let's make it happen!

Best,

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Our Vision for Computing Services

One Team, Innovating and Collaborating to Drive Transformation

One Team...

I, in my own group acting locally and thinking as part of the university community...
Personally embracing diversity, equity, and inclusion in my personal and group interactions...
Sharing common goals, plans, practices, priorities, and resources...
Considering the potential opportunity and impact of my actions to affect others...

Innovating...

Continually learning and maturing my skills, capabilities, techniques, and tolerance...
Listening, watching, thinking, imagining, and applying novel ways that might make us more effective...
Candidly and quickly transforming a failing path to a learning opportunity for iterative improvement...
Being patient, kind, and fearless in how I share and respond to new possibilities...

Collaborating...

Openly contributing my own energy and perspective, without bias or prejudice...
Actively seeking diverse, honest input and feedback from experts, clients, peers, and partners...
Faithfully using and supporting maximum effectiveness in shared resources, tools, and processes...
Honestly committing to my own responsibilities and actively supporting the success of my peers...

to Drive Transformation...

Being an energetic, positive force to inspire improvement...
Equally considering the value of both opportunities we have and challenges we must face...
Leveraging dependable, effective, and sustainable shared practices for agility in dynamic circumstances...
Creating services that learn and mature through continuous improvement...

ONE TEAM

Innovating and Collaborating to Drive Transformation

TRANSFORM



Digital Transformation

Digital transformation is about reimagining services, products, and business processes through the adoption of emerging technologies. Organizations like Carnegie Mellon have engaged in digital transformation efforts for many years and will continue to do so into the future. Beyond merely automating current activities, this approach enables a culture of creativity, collaboration, and innovation which can revolutionize efficiency and value across the board, in areas including teaching and learning, research and entrepreneurship, and administrative efficiency, as well as the daily lives of every member of our community. Computing Services will be more informed through data, making us more effective and better equipped to respond to changing circumstances in the world around us.

Goal

Maximize business value across the institution. To support this goal, Computing Services will engage with clients to seed Digital Transformation initiatives, as well as facilitate continual improvement and support for ongoing success.

ENGAGE



Client Focus

Computing Services must manage active, structured relationships with university partners and constituent groups to gather feedback and identify opportunities for positive, sustainable change in the dynamic technology landscape. Through these collaborations, clients will have a routine opportunity to share challenges and ideas and receive guidance from a trusted technology partner. Likewise, Computing Services will attain better perspective to help measure and improve overall value across the institution.

Goal

Maximize client engagement to improve service value. To support this goal, Computing Services will leverage and augment our existing set of client relationships through formation and leadership of several constituent committees geared specifically toward facilitating feedback, communication, and enhanced collaboration.

RESEARCH



Research Services

Research activities require many different types of information technology support including storage, networking, data management, and compliance. As a critical mission component and leading opportunity area for the university, there is much to be gained by providing centrally supported computing services to augment the localized research support resources available within the colleges and their departments. This is supported by the Faculty Senate Research Data Management Resolution from several years ago. This resolution states, "Researchers in all disciplines are faced with a range of data management needs as research becomes more collaborative, data-intensive, and computational ... and an institutional commitment to effective data management is required for faculty to participate."

Goal

Provide readily available, compliant, and responsive research computing capabilities in partnership with existing localized resources. To support this goal, Computing Services has partnered with the Office of the Vice President of Research (OVPR) to explore opportunities to consolidate research computing support when a solution can effectively scale for the enterprise. This will improve the universities' ability to practice its core research mission while enhancing capability, reducing enterprise risk, and promoting efficiency.

WORKFORCE

A woman with glasses is shown in profile, looking towards the right. She is in front of a screen displaying a data visualization with a line graph and a bar chart. The entire image has a green tint.

Workforce Development

Computing Services is an organization affected by continuous change, driven by the accelerated pace of technology advances, demands for digital transformation, and desire for business process efficiencies. Creating and improving an environment where all staff may learn, thrive, and contribute in accordance with their unique strengths is critical for successfully keeping up with change. A key component is to deliberately focus on building a diverse, equitable, and inclusive culture where all contributors with various life experiences are not merely tolerated but invited to bring perspectives with broader, more heterogeneous visions of how to engage, innovate, and serve.

In order to attract, retain, and develop staff to create a top-notch workplace with world-class IT professionals, we will commit to the continual renewal of our workforce to develop their talent and enhance their well-being. The vast and varied knowledge and experience of our people goes well beyond IT applications, systems, networks, and security. It includes planning, reading, and writing skills; speaking, listening, and facilitation skills; and creativity, resilience, and patience.

Goal

Establish, promote and support training, education, mentorships, and orientation programs to maximize our collective potential. To support this goal, Computing Services will institute programs and initiatives that seek to inspire a culture of trust and instill a growth mindset while encouraging individual and team development aligned with technology trends and organizational resilience.



PROCESS

Process Maturity

Process maturity is about both effectiveness (doing the right things) and efficiency (doing things right). In order to focus on valuable, achievable outcomes, Computing Services must collaborate through inclusive teams using standard tools and processes. We strive for organizational agility and resilience across resource shifts and unforeseen challenges. We believe excellence in IT requires explicit focus on defined business requirements, planning, project management, communication, outcome assessment, operational efficiency, and continuous learning. It is through an inclusive blend of these skills and perspectives that we not only create better outcomes, but also unleash the full potential and diverse creativity of our people. Computing Services will create and operate within a process-enabled environment in order to consistently and transparently assure timely, quality service delivery for our internal work and our collaborative engagements across the institution. We will broadly apply, measure, and evolve repeatable and effective processes to determine and deliver on commitments to our constituency.

Goal

Create a predictable, adaptive, inclusive, and sustainable operating culture. To support this goal, Computing Services will build a process portfolio to support and guide routine scalable operations across projects, services, practices, groups, and all individuals. We will use accepted frameworks to mature our engineering discipline in a diverse, collaborative culture to advance our collective ability to measure, report, control, and improve operations.

Computing Services

Strategic Initiatives for FY21 and FY22

To bring all available hands to bear, we are prioritizing our work to blend the urgency of the day with a few key focus areas identified during our original planning efforts. The end of FY20 and beginning of FY21 focused our efforts on responding to the COVID-19 pandemic. Although many of the immediate urgencies have passed, we continue to support evolving Return to Campus requirements while hoping to return some attention to strategic key focus areas as resources allow.

RETURN TO CAMPUS

CONTINUING CRITICAL EFFORTS

SELECT NEW INITIATIVES

RETURN TO CAMPUS

Ensure the Safety of our Community for Return to Campus

Based on guidance from the CDC and regional government agencies, the university established clear responsibilities for the community to ensure a culture of safety that balances health considerations with the desire to fulfill the university's core mission. Operational postures were adopted to reflect the appropriate levels of in-person versus remote activity based on the state of the pandemic on campus and in the region. Computing Services was called upon to develop data collection and visualizations for these circumstances to enable university leaders to make data informed decisions.

Before building IT capabilities, the team first needed to define requirements and processes to support compliance in the areas of physical distancing, testing, self-assessment and safety measures. Once common goals were established, systems were implemented to support:

- Daily self-assessment monitoring and compliance enforcement for students, faculty and staff.
- Data visualizations for monitoring exposure and positive cases within the community to make informed decisions on campus postures and measure effectiveness of safety measures.
- Data gathering for planned occupancy and analysis of patterns to estimate actual population density of spaces on campus.
- Automated intervention when resident students were not following required protocols.
- Tracking of inventory levels for personal protective equipment, cleaning equipment and health and safety materials (e.g., thermometers, test kits, etc.).

Support and iterative development are expected to continue as circumstances evolve and expectations progress.

Enable Teaching under Hybrid Circumstances

Recommended occupancy limitations and requirements for physical distancing posed new challenges for the fall semester along with a clear need to be flexible as pandemic circumstances changed. The university announced plans to offer courses in a hybrid format using two different teaching modalities: remote only or in-person and remote.

As members of the previously established Classroom Strategy Working Group, Computing Services collaborated to test and evaluate technology solutions to support both modalities recommending standard and enhanced technology solutions. Once the working group approved a standard, the Computing Services team completed the technical implementation for 250 registrar and departmental spaces. Development of technology training included guidance for specific use cases with live demonstrations and supporting web and video content, which eased the transition for faculty and students. There was also broad collaboration with the colleges regarding local classrooms and learning spaces to leverage common practices and required changes into new learning models.

In addition to the preparation of teaching spaces and technology, Computing Services recognized a service gap for students who lacked adequate equipment and/or internet access to successfully participate in remote courses. An early laptop lending and internet allowance process was implemented in the spring. For the fall semester, this service was refined through collaboration with partners in Enrollment Services and Student Affairs. Eligible students can now receive a computer or internet allowance to address their long-term needs and a two-week lending program is in place to cover short-term repairs. This response has provided a unique opportunity to experiment with cost-effective hardware alternatives to design a more intentional, permanent service solution.

RETURN TO CAMPUS

Set Budget Limitations for Conservative Fiscal Management

The university was not untouched by the fiscal challenges created by the pandemic. Immediate response to budgetary impacts were necessary and conservative management of finances will continue. Responsible management of tactical and operational funds provided Computing Services leadership with immediate access to the information needed to make budgetary decisions. Although we weathered the initial impact, the current situation presents a unique challenge. We must be mindful of the human and financial resources needed to support increased IT dependency and demand. Now, more than ever, we will need to set clear priorities and communicate conflicting demands on these resources. A renewed focus on demand and portfolio management processes will be crucial to successfully represent capabilities and resource needs.

Implement Interim Demand Management Process to Accommodate Return to Campus Requests

Projects to return some university operations to the physical campus and efforts to develop new hybrid teaching and learning modalities all included substantial IT dependencies. Support of these efforts required close partner collaboration along with flexibility to provide a fluid and rapid response. A lightweight Demand Management process was implemented to effectively prioritize, schedule, deliver and bring cross-division transparency to our Return to Campus efforts. Although the process was driven by an immediate need, we will use the opportunity to exercise interactions that will ultimately become part of our portfolio management practices.

CONTINUING CRITICAL EFFORTS

Ensure Business Continuity of Operational Support Services

While not new initiatives, our ongoing infrastructure and support services ensure the reliability and performance of major systems running at the university, including critical financial, HR, and student systems; infrastructure utilized by researchers and faculty; and end-customer support of faculty, students and staff. Computing Services manages, maintains and supports the network, systems infrastructure, and operational service models of the foundational services that are critical to every person at the institution. Efforts to manage and maintain these operations continue to be strategic and evolving. Our investment in maturing these services has been acknowledged at the highest level of the university and was critical to successfully supporting emergency work during the pandemic.

Continue In-Progress Strategic Work

While some planned efforts were delayed, we made progress on projects with current financial and resource investments that provide long-term strategic value. These projects include:

- Data and Application Integration Services for the Enterprise
- Identity Governance and Access Management
- Software Acquisition and Distribution
- Research Engagement
- Development of an Enterprise Architecture Practice
- Consolidated Collaborations Services (Exchange to G Suite)
- Public Cloud Service

SELECT NEW INITIATIVES

Participate in Campus Diversity, Equity and Inclusion (DEI) Campaign

Computing Services will establish a DEI team to plan and structure our intentional contribution toward realizing the DEI goals set for the university. The team's focus will follow the lead of institutional leadership, with the following set of ideas as possible initiatives:

- Conduct a local DEI review to assess current state and identify gaps and challenges.
- Immediately integrate existing HR DEI guidance into current practice, including:
 - recruiting diverse leadership and staff candidates, especially engaging the internal pipeline of graduating students
 - standardizing interview and hiring processes
 - tracking DEI metrics
- Provide training for all leadership and staff around DEI policies and known gaps in practice.
- Initiate a mentoring program to assist in career development for all employees with particular (but not exclusive) emphasis on under-represented minority groups.
- Seek opportunities for unique contributions to advance DEI goals:
 - Increase inclusivity of tools (e.g., digital accessibility)
 - Leverage customer engagement activities to specifically determine audiences excluded from or inadequately served by existing IT services

Establish Inclusive Leadership Development

Computing Services will establish a Leadership Development forum to help current, aspiring, and future leaders collaborate with and support one another, as well as investigate, learn, and share best practices. The goal is to encourage active, diverse participation and provide opportunity for leaders at all levels to support a culture that strives for collective improvement through constructive feedback.

This activity will build from the experiences of the IT Leaders Program over the past 10 years and support the creation of a long-term vision for diversity, excellence, and resilience in leadership.

SELECT NEW INITIATIVES

Engage with Campus on IT Innovation

The formation of the Business Innovation Office (BIO) has created a more focused and effective opportunity to engage with new partners anywhere on campus. Along with our deep, on-going collaborations with existing partners and more recent process work as characterized by UITPM (University Information Technology Portfolio Management), we now have most of the pieces needed to discover, consider, organize, and pipeline strategic IT investments across the institution. Through this initiative we will:

- Build a lightweight Business Relationship Management (BRM) process that will align continuing work with new requests from across the university to ensure that strategic development of services to meet priority needs.
- Continue engagement with existing partners to understand needs, identify use cases, investigate ROI and propose project opportunities. Example partner engagements include:
 - Finance - explore opportunities to leverage Robotic Process Automation (RPA) technologies for business improvements
 - Finance and Student Affairs - explore centrally managed, enterprise-level form creation and management services for use by non-technical users while driving compliance for accessibility and design standards
 - FMCS and the Provost Office - explore options for an enterprise Space Data Management system

Re-establish Commitment Management Practices for Improved Portfolio Management

Computing Services will establish a renewed demand and resource management process along with a reporting and awareness activity to provide visibility for critical control perspectives including senior management, service owners, project leaders, and resource managers. As we connect and represent the dependencies and acknowledge the scope of potential commitments, we will inform effective focus for the most strategic opportunities and better recognize critical risks as we characterize demand and evolve our services and activities in response.

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