

# IT Centralization at CWRU: The Path from IT to [U]Tech

## WHAT'S SO GOOD ABOUT CENTRALIZATION?

### DISCOVERING THE VALUE

The benefits of centralization are many, and can be roughly categorized under the following headings:

- **MANAGEMENT AND REDUCTION OF RISK**
- **INFORMATION SECURITY, BUSINESS CONTINUITY AND DISASTER RECOVERY**
- **IMPROVED IT EXPERIENCE**
- **OPTIMIZATION OF INVESTMENTS**
- **PROFESSIONAL GROWTH & STAFF DEVELOPMENT**

A few highlights of this massive effort are worthy of putting front and center. By centralizing, UTech reallocated \$1,590,350, between 2016 and 2018, and this was just what could be easily tracked at the time. Of this, \$1,256,150 was recurring and \$336,200 was one-time. With these re-allocated resources, UTech has been able to do much more without adding resources. The following list represents some of the larger projects implemented as a result of this re-allocated resources:

Development and implementation of Spartan Answers Personal Assistant
Staffing of Salesforce Customer Relationship Management (CRM) system
Purchase and pilot of Enterprise Data Lake
Implementation of new UTech Staff Mentoring Program
Expansion of university-wide IT professional development
Formation of HoloLens support group
Formation of HEC support group
Expansion of Google Suite support group
Development of Faculty Information System
Licensing of Enterprise PC Back-up
Creation of VDI team and increase of quantity of licenses and support to University
Creation of Security Operations Center
Creation of data analytics team

Development of central print service
Full Support for TVUC & Maltz's AV needs
Provision of custom modifications for School of Medicine's adaptation to Canvas

What follows are descriptions of some other anecdotal successes from centralization.

## **MANAGEMENT AND REDUCTION OF RISK**

- Over 600 servers were identified and moved from various offices on the campus network to UTech data centers. In many cases, physical servers were retired and their functions migrated to virtual machines, leading to higher availability, simpler maintenance, and significantly reduced power consumption that resulted in a decreased carbon footprint. Of the initial 600 servers, 200 were retired when it was determined they were no longer being used for their initial purpose.
- Additionally, by moving server resources to the data centers, a 'default deny' network posture was able to be implemented for the overall campus, while permitting off-campus access to server resources that are needed in the data centers. This led to a huge overall decrease in security exposure to CWRU users from malicious attack, since the character of network traffic to the campus was segmented between client and server traffic. This large project required significant cooperation across departments, schools and research organizations, enabled by new trusting relationships between IT staff under a single organization. "Default Deny" network firewall state was implemented over the same timeframe as UTech centralization, in concert with the server consolidation project. The new standard, common in non-academic cyber security management but unusual in academia, meant that any user who started a 'server' service on the campus was automatically protected from the myriad of cyber threats from off-campus. The improved collaboration between all IT staff in the support chain permitted stronger collaboration between Information Security and end-user support staff to drive secure standards and permit official experimentation/research. The default deny posture of the

network is positively reflected in the decrease of network-based attack successes and permitting the Security Fusion Center team to focus more on cloud-based attacks on users.

- A research computing service was initiated to provide up to 400 new virtual machines (VM) for no-cost faculty use, significantly reducing the need for faculty to purchase and administer servers for research purposes. This new option also hosts faculty-administered research servers that are currently located throughout campus, leading to an additional reduction in the university's carbon footprint and risk from malicious cyberattack keeping research hardware up-to-date and secure. 172 faculty-administered research servers are eligible or retired. Some are transitioned to VMs in the new service and some will be physically moved.
- In support of UTech's strategic initiative to support and expand the use in institutional data in decision making, UTech developed and implemented an enterprise data lake. The data lake provides a tool set for detailed reporting, analytics, and data governance that was not previously available. A Data Management, Analytics and Visualization team supports the analytics needs of the university with tools, processes and strategic consulting.
- The School of Dental Medicine Health Record systems and services were shifted to a full enterprise support model and included moving of related servers to CWRU's Data Center, now fully supported by UTech's Server Group
- Greater visibility into the needs of each school through centralizing has given a window into the schools to see their challenges and provide resources/ideas to resolve (i.e. classroom upgrades in law school funded by UTech). The window into the schools has also exposed dangerous data security practices that have been addressed with advice or in some cases, by moving the data to secure environments. Beyond a window, it has also opened up open sharing of information where there had been silos before.
- UTech became the driver in a process that engaged budget officers from across campus to create and endorse a collective reporting/analytics solution for financial, student and research data. Working

with UTech, the administrators were satisfied with results as new budget systems and reporting systems are put into place. This effort demanded a tremendous amount of collaboration and trust, and will go a long way to improve many users' interactions with various datasets. It will also provide a fluid method for sharing appropriate data between different management centers.

## **INFORMATION SECURITY, BUSINESS CONTINUITY AND DISASTER RECOVERY**

- While noted in the 2015 REN-ISAC and the 2016 Security Program Review as chronically under-resourced, the Information Security Office was able to implement a Security Fusion Center, an operational monitoring capability, to support the increased size of UTech overall service footprint. These resources, primarily in staffing, were sourced by minor growth and re-purposed IT staffing within the overall UTech team. Notably, most of the new hires to the Information Security Office over this timeframe were from in-house talent, which is now being developed with security training and certifications.
- The Information Security team was able to re-purpose some UTech resource savings to apply to activities to develop the first full IT Business Continuity Plan (BCP) in 2017. Having completed the BCP, a rework of the Disaster Recovery Plan was started to account for the influx of new IT staff under a centralized UTech organization. The process of training a new cohort of IT leaders in the skills and processes needed for high-intensity IT operations is underway, something which was neither feasible nor available to IT staff outside of the infrastructure management teams. This is an important set of skills and leadership development needed for both the university and for the next generation of IT leaders.

## **IMPROVED IT EXPERIENCE**

- UTech created a brand-new HoloLens support model leveraging existing staff, a model which also reached to the fine arts program by supporting HoloLens dance performances. This innovation led to the creation of a HoloAnatomy curriculum for use in the medical school.

- The School of Engineering’s Virtual Desktop Initiative (VDI) Engineers were able to combine forces in support of other schools’ VDI initiatives and extend services to the larger university with no additional headcount or duplication of services in these schools and providing differing cost savings in various situations. VDI benefits the entire university by providing immediate access to multiple software packages on almost any endpoint.
- UTech staff from across the organization came together voluntarily to develop and implement a new CWRU voice-enabled Personal Assistant, called Spartan Answers. The Spartan Answers project was implemented in an inventive way that would not have been possible in a non-centralized structure. The CIO challenged the full UTech staff to consider taking on the project of creating a campus ChatBOT on a volunteer basis, with no extra compensation or time. An enthusiastic and interested group of 15 UTech staff came together voluntarily to develop and implement the new CWRU Personal Assistant, now called “*Spartan Answers*,” in record time, and without additional staff or funding.
- UTECH staff from the Law School, the College of Arts and Sciences, UGEN and Executive Support, Desk Side Services, and the Windows Server Team are collaborating to create a campus-wide print server. The server is up and operational after piloting in one of the schools. A single campus print server will greatly reduce the duplication of effort in print management on campus. It will also allow Desk Side Services and the Call Center to provide better support, because they can be trained on and given access to this one common system. This effort showcases an increase in the efficiency of staff time and a magnification of that staff’s availability due to centralization. Before centralization, each school made independent decisions about how to manage printing – now, as a centralized collective think tank, it is possible to take a larger view and support a more efficient, campus-friendly wholistic system.

- The School of Dental Medicine (SODM) created and funded an Analytics position intended to focus primarily on SODM but established as a UTech employee and as such, is able to help establish the enterprise-wide Analytics group.
- UTech has launched the implementation of the Salesforce platform to improve the methods of student engagement as well as providing a consistent, effective enterprise relationship management platform for the university. This project will focus first on the Student Success Initiative and university marketing team. The student success navigators currently use multiple separate and distinct systems to support their student needs, and with this project that conglomeration will be reduced to one modern, intuitive platform with greatly increased functionality. Current communications efforts are carried out across campus without any insight on the effectiveness, or a total view of how many times the community is contacted by the various entities. This platform will greatly improve the ability of the university to gain insight into the effectiveness of marketing and communication campaigns, while also preventing email exhaustion for the community. Existing skill sets from throughout the organization were repositioned to support the first initiative with no additional staff. This platform will continue to grow throughout the university in the coming years.
- Prior to centralization, a previous med school accreditation finding of "satisfactory with a need for monitoring" on information technology resources/staff was a concern that needed remediation. Data from the Independent Student Analysis indicated student dissatisfaction with timely technical support. In response to this concern, the school convened a new committee to address these student concerns. When the next accreditation review occurred, (in 2018, after centralization) the Liaison Committee on Medical Education's finding for information technology resources/staff was a Satisfactory, the highest score possible for a follow-up report. This improvement demonstrated that the changes UTech made within the new centralized organizational model, resulted in necessary improvements.
- With the implementation of GSuite many years ago, services were limited to GMail, Google Drive, and Google Contacts. The original support role was assigned to several people that were already

supporting email and identity management as add-on assignments continued. As the number of services grew, it became too much for the small group to support. The amount of services Google offered became a whole suite of products, and it became apparent that the service model needed to shift to a model encompassing subject matter experts. G-Suite support of the larger product offerings was expanded by reallocating headcount and scaling up to 33 people contributing to 13 different service areas. This allows the people with expertise to create a better customer experience with service excellence, while not overloading any one person. All of this became possible to implement through the centralization of UTech, as this allowed for a bigger pool of experts from which to select.

- Canvas Learning Management System (LMS) became the single LMS for the entire university, through cooperative effort by UTech Teaching and Learning Technologies staff and UTech centralized staff. UTech was able to retire an old, home-grown, and hard-to-support system at the med school and adapt Canvas to serve the unique schedule and needs of professional medical education. This effort was carried out collaboratively and collectively to transition the med school successfully into Canvas, something less likely to have happened prior to centralization as individual shops operated more in a vacuum.
- As mentioned earlier in the Early Adopters section, centralization spurred the creation of a new client support organization for Executive IT and University General (UGEN) by reallocating and reorganizing the former Student Affairs IT staff team. The Executive IT organization initially focused on support for the university President's and Provost's Offices, then expanded to support UGen Administration departments such as Finance and the Office of General Counsel followed by all deans with unanticipated accolades.
- An Engineering Professor is using a geographic information system in his courses. The Windows-based software package was not compatible with other operating systems such as macOS or Linux. The prof reached out to UTech for a solution, and UTech was able to stream the software through a web portal. Since applications streamed through this portal can run on any operating system, students from any platform or devices are able to run the software along with the instructor during his courses

to improve the learning experience. The additional benefit to streaming is that the students no longer need to install, configure, or update the software themselves. Students simply log into the web portal and launch the software package of the appropriate version and functionality that the Professor is already familiar with, reducing any potential discrepancies in the learning environment. This classroom need was met within hours and at no additional cost to the students or department.

- During the transition to UTech, two of three staff members supporting Ellucian's Advance and iModules applications moved to other positions. After hiring a service manager for the area, to support the remaining developer, the team will be built out further to support the University Relations and Development division. This is modeled after the ERP areas. Through the team building effort, the Advancement team developed a road map for the applications assuring ongoing support from the vendor and a clear strategic direction toward needed functionality.
- After looking for a new system for over five years, UTech staff supporting the medical school Faculty Information System worked together to create an entirely new enterprise Faculty Information System. Phase 1 was implemented and well-received by the clients.
- Three siloed event/space management systems were merged into one to serve the whole enterprise, eliminating EMS and ASTRA, and improving the user experience campus-wide. UTech consulted with the Office of Student Affairs in the implementation of Campus Groups to replace OrgSync and integrate with this unified event management system, thereby reducing redundancy and providing a much-improved feature set and mobile interface.
- The CWRU web hosting transition required teamwork from UTech. Existing web development staff in these groups worked with University Media & Communications (UMC) to complete the transition to Drupal.
- Centralization has allowed UTech to better serve academic units in identifying and supporting online learning initiatives. Greater collaboration between the schools and UTech is helping to promote a university-wide strategic plan for online learning.

- A Support Group for a large new health education campus facility was established that utilizes UTech staff from the medical, nursing and dental schools, and the Help Desk to create a unified support model. Centralization is helping to ensure that faculty, students, and staff are trained on academic technologies before the move so everyone was ready to successfully transition into the new campus.
- The UTech Service Management area collaborated with many different divisions throughout UTech and the campus to improve the online printing program called WEPA. To enhance the technology, UTech coordinated the replacement of printers in all of the WEPA kiosks across campus. In addition, UTech cross-trained the Desk Side support team to handle common WEPA issues. Also, WEPA alerts are now also being sent to the help desk email address and being assigned to the proper representative to handle the printer issue. WEPA signage is being redesigned to clearly promote how to get assistance with WEPA issues.
- A new central print server is up and running and serving all of the faculty and staff printers for the Law School. Also, several other schools have access and are beginning to set up printers. Historically each school, unit, or department, of the University had to manage its own printing. Many areas set up their own print servers, leading to a great deal of duplication of effort. Others set up direct connections from printers to each individual computer, a time-consuming prospect. When a printer changed, each impacted computer had to be touched. Across all of campus printing, there was no centralized monitoring, reporting, or support. When printing-related calls came into the service desk, the analyst typically did not have the access or scripts to handle the issue. Often it was even difficult to determine who managed printing for that area and appropriately route the ticket. The campus faculty and staff print server frees system administrators from each area from having to run and monitor individual print servers. It allows for a much more efficient management of printing for areas that did not have a print server in the first place. Finally, support can be much more effective, as the service desk and desk side services now have the training, documentation, access, and insight to handle campus-wide printing issues.

- Several managers whose areas were geographically close to one another on campus recognized that they could combine forces and help each other now that they were all on the same team. They created and implemented the “Zone Support System” in which any of the teams could respond to service requests from that shared physical area (North Quad) of campus. This innovation provided a deeper bench for support staff, lessening the possibility that there would be no team member available to respond and also providing consistent increased depth on the bench by joining forces.

### **OPTIMIZATION OF INVESTMENTS**

- The UTech Director of IT at the Law School was able to add on the responsibilities of a suddenly vacant Director of IT position at The College of Arts and Sciences (CAS), saving in salaries and fringe benefits. By taking on the support and management of IT for the College of Arts & Sciences, with a faculty, staff & student population of 2,125, in addition to his pre-existing role with the Law School, this individual effectively supported both schools, cutting technology leadership personnel in half to both schools while also providing strategic planning and guidance to the senior leadership.
- Migration of the Weatherhead VMware infrastructure into the enterprise VMware infrastructure was completed. If this change had not been made, Weatherhead would have continued to pay approximately \$14K per year for VMware licensing and hardware maintenance. Given that the old hardware was ready for replacement, Weatherhead also will not have to spend the approximately \$57K for that replacement.
- Subsequently, the Director of IT at the business school was able to take on a suddenly vacant Director of IT position at the Mandel School of Applied Social Sciences (MSASS), enabling funds to be reallocated to support a much-needed enterprise-wide accessibility position. Eventually, the additional law school responsibilities were folded in such that one Director now oversees all three areas creating more localized leadership on that side of campus, and again reallocating the CAS director’s resources for more enterprise-wide duties.

- MediaVision and the Weatherhead School of Management's (WSOM) AV Team collaborated on a HuddleCam pilot project. The WSOM Classroom Technology and Facilities Department were seeking an alternative solution to using freelance and/or student videographers for recording classes. After testing and piloting, it was determined that the HuddleCam was in fact a viable solution to expensive external contracted employees.
- In a similar example, MediaVision staff (formerly decentralized)) teamed up for a book signing in October 2018 to provide video and audio support for a high-profile author, avoiding a forced reliance on expensive vendor staffing.
- MediaVision was able to produce Hudson Relays, an annual athletic event, with little assistance from external vendors by leveraging the distributed AV teams from across the division resulting in a large savings. This is also as a direct result of the [U]Tech centralization and using staff differently.
- A staff person in the School of Medicine who was supporting the med school's Learning Management System (LMS) retired and that salary was reallocated to hire an IT Technician providing comprehensive laptop support and technical service for more than 700 medical students and approximately 100 physician assistant students.
- CWRU commissioned Zoom as an enterprise collaboration system and decommissioned Adobe Connect saving \$13,000/year and simplifying the user experience in the process. A work group comprised of UTech staff from across campus researched, proposed and implemented this transition.
- As a result of UTech centralization efforts, significant budget savings were realized in audio-visual (AV) support and maintenance for the Tinkham Veale University Center (TVUC) and the Maltz Performing Arts Center (MPAC). Since construction, these buildings have received AV support and maintenance supplied through separate Master Services Agreements (MSA) by the companies who performed the original AV integration. As the current service agreements for supporting TVUC and MPAC were expiring, UTech was able to leverage a different current contract from a vendor already

supplying operational support and maintenance for the University's 100+ UGEN classrooms. The savings were immediate and breakdown as follows:

<b><u>Building</u></b>	<b><u>Previous Cost</u></b>	<b><u>New Cost</u></b>	<b><u>Annual Savings</u></b>
TVUC	\$36,000	\$15,214	<b>\$20,786</b>
MPAC	\$56,311	\$25,848	<b>\$30,464</b>

- A cross-campus UTech committee collaborated to develop endpoint standardization to provide quicker delivery of desktops, laptops and tablets to administrative users. By crafting a system that provides functional out-of-the-box equipment, consistency was increased, costs were lowered, both for the equipment as well as the staff time to set up said equipment. The standards also enhanced the ease of ordering and asset tracking. At the time of implementation, it was projected the university would be able to reallocate \$83,265 in funding for hardware and \$104,100 in labor costs for a total savings of \$187,365.
- The centralized UTech organization now takes ownership of all IT capital requests and prioritizes them for efficient review and funding.
- A new IT acquisition policy and process was established to include a full contract review, security review, and web review. Since implementation, the group is evaluating an average of 80 contracts/month eliminating duplication or purchase of software that is insecure or will not work on campus. This effort has effectively helped to avoid costs duplicate services:
- Faculty and Students benefit from the purchase of an additional enhancement to CWRU's Mathematica site license. This strategy, that evolved as a result of the centralization culture, resulted in a significant savings.
- The centralization of Weatherhead's old virtual infrastructure into the enterprise VM infrastructure completed. The move was successful and will result in a shutdown of the old equipment.

Weatherhead will no longer have to spend approximately \$25K per year in licensing costs specific to their old infrastructure and they are also escaping the need to refresh their old hardware.

- Before centralization, the WSOM AV team used an aging editing system for modifying videos. Leveraging the licensing, expertise and infrastructure in place at MediaVision allowed for upgrading the WSOM to the current standard. WSOM video is also backed up to this same infrastructure instead of using numerous nonredundant physical hard drives at WSOM. This represents another large savings that was reallocated for additional services.
- Since becoming part of MediaVision via centralization, the Law School AV department has utilized MediaVision equipment, such as sound systems, rather than paying to rent them from a vendor partner.
- When a recent need in the Law School arose to replace several old, outdated classroom PC's, UTech was able to direct some spare PC's to serve as their replacements, resulting in a significant savings.
- SpartaIRB was deployed to replace two iRIS applications used by both the IRB offices of CWRU and University Hospitals. By combining both existing IRB applications, research teams are now able to see all of their related studies in one application. SpartaIRB introduces a much-simplified compliance report feature which will save weeks of effort every 2-3 years to maintain AAHRPP (accreditation agency for human research protection). This improvement greatly simplified the IRB study submission forms to make the process much easier for human subject research. This system is critical to maintaining research funding to the university, and is now managed and supported following best practices for enterprise systems including the necessary budget and personnel to sustain it.
- CWRU currently contracts with a third-party vendor for the desk side support provided to the campus community. Through the centralization process, UTech has gained insight into the support needs across campus and was able to develop a creative approach to future support contracts. Through an RFP process, UTech brings in-house a majority of the desk side support staff to provide a higher level

of support while at the same time lowering annual costs. This creative change saves the university \$50k/year over the current contract and \$130k/year over the next five years. This is a great example of creatively managing existing resources.

- As a result of scale and centralization, the practice of billing schools and faculty for physical servers co-located in data centers was ceased.

## **PROFESSIONAL GROWTH & STAFF DEVELOPMENT**

- The commitment to IT staff professional development has greatly increased since centralizing. By leveraging combined training budgets and negotiating quantity discounts, UTech has been able to send staff to approximately 260 sessions at Weatherhead Executive Education since 2016, and saved significantly on technical online training courses provided through New Horizons. UTech also had 15 staff participate in Weatherhead's Leadership Lab for Women in STEM, as well as 2 participants in the year-long Women's Staff Leadership Development Institute. Around 1046 individual trainings of one form or another have been consumed by UTech since centralization, plus there have been five all-staff trainings delivered.
- Making an investment to develop future leadership for the division, UTech sent every manager through a year-long training from the MOR Leaders Program. Going through this rigorous program as a group also helped cultivate relationships across the division and contributed to a new culture of "we." Approximately 40 people have received/are receiving this rigorous training.
- A unified strategic leadership group evolved with representation from all of the previous satellite IT shops and also the pre-existing core IT organization. Most of the members of this Strategy Group went through the aforementioned one-year MOR Leadership Development program. The group meets monthly to share resources/experiences/ideas across all schools, avoiding re-invention of the wheel for every new problem in every school and providing a Think Tank for creative problem solving and

innovation. The creation of this Think Tank showcases the newly created bonds and network within the new organization.

- An all-new staff mentoring program was created by an UTech staff person, formerly situated in the CAS, who saw a need and an opportunity for entire division. She not only developed and implemented this program, but she had the full impetus of the centralized organization and collective leadership behind her to back up the initiative. This served as a unique professional development opportunity not only for the one individual driving the initiative, but also for the many of her peers who will ultimately benefit from the program.
- An official Audio-Visual (AV) job family was implemented for the 12 (centralized) UTech AV team members at CWRU. The creation of the AV job family yielded several immediate benefits including establishing 4 levels of AV Technicians based on skill level and the requirements of the various schools. The new positions provide consistency and equity across the AV team at CWRU. Many AV staff members saw their salary grade increase, and a new career path emerge as a direct result of the new job family.
- Amazon Web Services is providing free training for UTech staff due to a VDI-friendly environment and large cohort size that results from centralization. If UTech were multiple smaller shops across campus, each one would have to pay for AWS training individually. There is also savings on AWS usage through volume discounts of at least 5% over individual AWS accounts.
- Centralization also brings the opportunity to hold classes in groups. By mere co-location this gives people more opportunity to interact with their counterparts across the university, and to learn about topics that they might not learn about if they were in silos. Creating a community of people with common knowledge helps when one has questions or runs into problems.
- The Project Management Team mobilized to create an internal project management training series, instead of hiring an outside provider, offered to all UTech staff. There were 118 individuals across the division who attend the six sessions.[U]Tech Project Management Tools and Templates team

drive gives access to the training materials to everyone across the division. Over time, additional templates are being added to the drive. This resulted in tremendous savings as well as common practices.

- Various Community of Interest groups, including a web management group, a strategy group, etc., have been created by the UTech staff to bridge gaps, building a sense of team and make connections.
- An inaugural conference event hosted by University Technology division ***[You]Tech 2019: Inspire/Aspire*** was produced on July 30, 2019, at the Tinkham Veale University Center on the campus of Case Western Reserve University. The conference welcomed nearly 400 registered attendees from UTech, across campus and the Northeast Ohio region. UTech's executive leadership team strives to cultivate a culture of imagination and empowerment for all employees—from that mission, this conference grew into a celebration of the great and diverse range of talents and experience of the people within the division. In addition to Keynote Speaker Jaime Casap, a Google Education Evangelist, there were 44 additional presentations by UTech staff selected by a committee of peers. The event was successful and a true celebration of centralization.