

2020/21 LBCIO Report from Higher Education CIOs on the Impact of the Global Covid19 Pandemic

What we have learned and what are we thinking?

LBCIO Survey of Chief Information Officers in Higher Ed



Leadership Board for CIO's

Dr. Michael Zastrocky
Executive Director of LBCIO

The entire content in this report, including but not limited to text, design, graphics, and the selection and arrangements thereof, is copyrighted as a collective work under the United States and other copyright laws and is the property of the Leadership Board for CIOs.

Copyright © 2020 ALL RIGHTS RESERVED. Leadership Board for CIOs in Higher Education (LBCIO)

You may electronically copy, download, and print hard copy portions of the report solely for your own, noncommercial use. You may not modify, copy, distribute, transmit, display, reproduce, publish, license, create derivative works from, transfer, or sell any information obtained from this report without the express, written authorization of the LBCIO.

If you would like more information about the survey or The Leadership Board for CIOs in Higher Education or would like to become a member of LBCIO, please contact —

Dr. Michael Zastrocky
Executive Director, LBCIO
1271 Cedar Street
Broomfield, CO 80020
+1 720 242 5150
mzastrocky@lbcio.org

Or visit the LBCIO Web site at: www.lbcio.org

Introduction

2020 will likely go down as the year when higher education globally was forever transformed by a virus, not a computer virus but a human virus, Covid19. What began in March 2020 as a “temporary” shutdown of campuses has progressed to a change in the way higher education institutions carry out the business of teaching and learning, research, community service and managing resources. What higher education institutions thought were short-term shutdowns and closed campuses in 2020 has turned into major transformation for all of education. As we look back at 2020 and the start of 2021, we will explore what we have learned, what issues and concerns face us as we move forward into 2021 and beyond. We will identify some of the changes we faced in 2020 that are not temporary but transformational.

At the beginning of 2020, few would have expected that investments in plexiglass or face mask production would be a sure-fire way to make money! In January 2020, the global economy was stronger than in many years. However, higher education institutions faced many trials dealing with declining enrollments and challenges from many leaders on whether higher education degrees were as necessary as they had been in the recent half-century. Our major concerns as CIOs in higher education were how to keep the wheels on and continue to move forward with tight enrollments and stretched budgets.

At the sign of the first shutdowns in March 2020, Leadership Board for CIOs in Higher Education (LBCIO) member Dr. Jan Fox suggested we quickly do a short survey to check the pulse of higher ed and then do several additional short surveys in the months ahead to see what might have changed. Her suggestion was quickly endorsed by the full board and we sent out our first survey early in March 2020. At that time, LBCIO decided to replace the annual global CIO survey outlining major IT activities and planning for IT on college and university campuses with several short surveys dealing with the global pandemic and how higher education institutions were handling the Covid19 crisis and orders to close campuses. We wanted an early picture of what CIOs and their institutions were doing and their initial thoughts about the crisis and what actions were important to them and their institutions in the early stages of the pandemic. We also wanted to monitor change in plans and attitudes as the crisis progressed. In October 2020 we asked one final question to see how higher education CIO attitudes may have changed on the extent of the change and when we might get back to “pre-pandemic way of doing business”. We repeated that question in March 2021 to check the current thinking of CIOs in higher education on that question.

In August of 2020, Jan lost her battle with cancer and while we mourned our loss, we celebrated her life during our annual Fall LBCIO Meeting. She represented the best of the Leadership Board for CIOs in Higher Education. She was a thoughtful leader who

had tremendous insights and heart for higher education and shared much with our board and others through workshops, seminars, podcasts, and webinars. The heart and soul of LBCIO is the relationship between members and the ability to share thoughts with peers and get feedback from each. That caring illustrates great concern and care for one another and supports their efforts to plan for and manage technology use in higher education.



We are thankful for all your time and support for LBCIO! You are missed!

In this report for 2021, we have enlisted the help of LBCIO members to share insights and thoughts concerning 2020 and current activities and plans for 2021 and beyond. We wanted to highlight some of what we have learned, what has been difficult and what may lie ahead for higher education institutions. We hope these insights will be useful as you plan for the future and what you and your institution may face in 2021 and beyond.

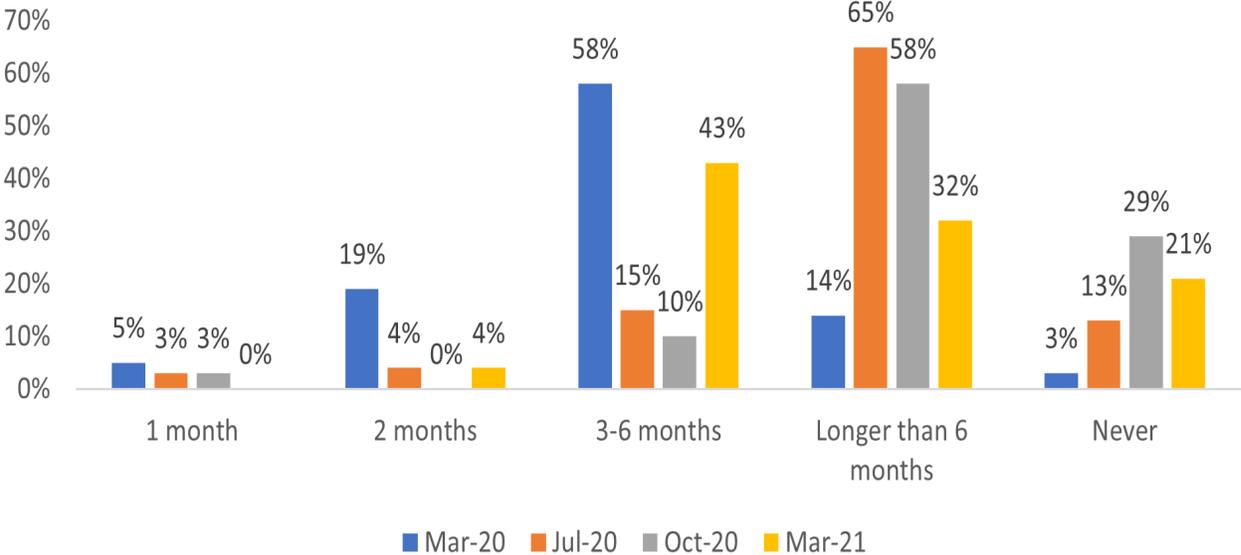
Note: The two short reports from 2020 may be downloaded from the LBCIO web site (<https://lbcio.org/>) along with all our annual LBCIO reports from 2010 - 2019.

I especially want to thank the following LBCIO members for their help and assistance with the survey and this report. Daniel Aracena, Teacher's College Columbia University; Jim Burke, John Carroll University; Micah Cooper, Cedarville University; Jon Cutler, Marshall University; Paul Czarapata, Kentucky Community and Technical College System, Tim Ferguson; University of Northern Kentucky; Jan Fox, Marshall University; Paul Foster, University of Cincinnati; Doyle Friskney, University of Kentucky; Vince Kellen, University of California San Diego; Steve Landry, Seton Hall University; Zareh Marselian, California Lutheran University; Don Mihulka, Missouri Southern State University; Annette Ready, University of Cincinnati; Jose Rodriguez, Rhodes College; Tina Stuchell, University of Mount Union, and Viola Sprague, Kettering University.

Dr. Michael Zastrocky
Executive Director
LBCIO

The following chart shows the results from a question we asked in March, July and October 2020 and March 2021. This question is an example of how attitudes and plans are changing as we move forward. What was hoped to be short-lived and finishing out a semester in March 2020 is turning into a long-running and possible game-changing experience. In March 2020, 82% believed it would be resolved and their institution would return to business as usual in 6 months or less. In July, 22% believed it would be resolved in 6 months or less while 78% indicated it would be longer than 6 months. In October only 13% believed it would be resolved in 6 months or less. In March 2021, the attitude seems to be changing and in March 2021, 47% believe it will be resolved in 6 months or less. What is interesting is that those who indicate their institution will never go back to pre-pandemic work and behavior went from 3% in March 2020 up to 29% in October 2020 but down to 21% in March 2021. The comments and issues from LBCIO members in this report may help understand these shifts. It appears that IT leaders are learning to live with the changes that have occurred from the pandemic and are already planning the future around those changes.

When do you expect your institution to get back to pre-pandemic work and behavior?



A few selected responses from our short surveys in 2020:

From March 2020 Survey: What has been your greatest barrier/obstacle to getting everyone online as of today?

A word cloud of responses to the March 2020 survey. The most prominent words are 'training', 'faculty', 'online', 'students', 'use', 'work', 'change', 'lack', 'access', 'staff', 'internet', 'tools', 'support', 'teaching', 'need', 'home', 'time', 'limited', 'courses', 'familiar', 'remote', 'move', 'equipment', 'Learning', 'internet', 'instruction', 'equipment', 'Learning', 'internet', 'tools', 'support', 'teaching', 'need', 'move', 'limited', 'familiar', 'remote', 'move'.

From July 2020 Survey: What is your greatest security threat during this time?

A word cloud of responses to the July 2020 survey. The most prominent words are 'security', 'home', 'work', 'phishing', 'remote', 'access', 'employees', 'working home', 'using personal devices', 'computers', 'end user', 'User', 'environment', 'People', 'via remote', 'data', 'using personal computers', 'increase phishing', 'systems', 'controls', 'remote access', 'phishing', 'Ransomware', 'remote', 'protection', 'access', 'resources', 'network', 'faculty staff', 'personal devices', 'equipment', 'devices', 'health', 'Increased', 'Ransomware', 'attacks'.

Computer Replacement Plans During the Pandemic

Late in 2020, we asked LBCIO members for their insights into how the pandemic has impacted their replacement plans for PCs. The following are some of their comments.

Before this year, we were on a 4-year cycle for everything (except engineering labs and folks who wanted to pay from their own budgets to move earlier). I had decided pre-COVID to slide desktop systems for low intensity users back to 5 years because our 4-year-old systems had solid state drives, 8-16gb of RAM, and the new CPUs weren't faster. Then COVID hit and we skipped our replacement plan completely this year.

We upgrade full time faculty/staff computers every 4/5 years depending on budgets. Classroom/lab computers are on a similar rotation. There are years when we can't do them all, and we do the most urgent; it all comes down to budget to be honest. We even have a customer service policy, and in that policy we state our general rotation depending on budgets.

As a new CIO to the institution in March 2020, I began exploring this same question, unfortunately with the pandemic, a lot of that review was put on hold, until recently. In my analysis of our lab devices, we have not been replacing lab devices on any regular schedule! We use a product (Labstats) that provides utilization, age, model, type of usage, etc. data on all our 1200+ lab PCs, which reside in roughly 60 labs across the campus. Our pre-pandemic lab usage hovered around 15-20% (highest usage), low lab usage was 1-2% for many of the labs (of course this usage fluctuates around activity patterns throughout the semester). I also found that roughly 50% of the lab PCs are over 5 years old! Thus, we developed a 3 phased approach – Reduce, Upgrade and Virtualize (RUV Plan). The plan is to initially focus on those PCs of lowest usage and eliminate them – reclaiming the space and re-purposing it for collaborative areas where students can comfortably gather and work in teams (post-Covid of course). The second phase (running concurrent with the 1st phase) is to identify the highest usage devices and those that support very specialized software requirements (engineering, business, nursing, etc.), and begin a 4–5-year refresh plan (dependent upon budget). This phase will also include a 'downsizing' strategy that will minimize the device footprint with a new, lower cost unit that provides basic internet access. The third phase is to virtualize as much of the remaining lab equipment that we can over the next 4 years, as well as inclusion of BYOD, which must also be part of the strategy going forward. Our staff/faculty devices are on roughly a 5-year cycle, but this is also very highly dependent upon available budget.

Before the pandemic, our replacement cycle for computers was as follows:

*Labs – every three (3) years
Faculty – every three (3) years
Staff/Admins – Every four (4) years*

Several years ago, we went to laptops for most staff/admins and reduced our PC field support team; for most issues, PC techs can remote into the user's computer, and for hardware issues, the user takes the laptop to a PC Tech office (one on

each campus) to swap it out for a loaner while the laptop is being repaired. This was a boon to use during the rush to emergency remote teaching and work; most of our workforce already had a laptop.

As a practical matter, these replacements were shifted a couple of years ago from operating to capital budgets, in part because accounting preferred to capitalize and depreciate the assets, and this made it easier for Finance to track the assets. Most capital budgets were suspended this year due to the pandemic, with those funds being diverted to pandemic preparedness such as the deployment of HyFlex classrooms, so while we've refreshed faculty laptops on schedule, some of the lab and staff/admin replacements are being deferred until next year. Note: HyFlex is a course design model that presents the components of hybrid learning in a flexible course structure that gives students the option of attending sessions in the classroom, participating online, or doing both. Students can change their mode of attendance weekly or by topic, according to need or preference.

There are several factors involved beyond a hard calendar date that we consider. (e.g., 3 vs. 4 vs. 5-year replacement cycle).

First, budgeting. As a planning number, we've encouraged business and academic units to use a 4-year lifecycle replacement for the primary computer for each employee. Other considerations are needed when you have individuals who want/need multiple devices – e.g., laptop, tablets – and can the laptop be a 'desktop replacement' configuration with a docking station, external monitor, etc.

Second, standardized configuration. IT works with our primary vendor to establish a solid standardized configuration for both desktop and mobile platforms. These configurations are based on their enterprise platform and specify a minimum CPU, RAM, and disk configurations. Based on expected (past) purchasing volume, we can optimize pricing for a higher-ed configuration in some cases at or below what an 'ala carte price' for a lesser machine. We find that we have a more difficult time reaching a 3–4-year lifecycle on a lower-end machine, whereas a higher-end config can last 6 or more years.

Third, consider the user/area workload. Some applications and individuals may require a more aggressive replacement cycle; others can stretch a 4 year into 5, 6 or more. In some cases, we use a 'trickle-down' model where high-visibility/high-performance areas may get a refresh every- or every-other year and their 'old' machines get reassigned to other areas. (e.g., our Library 24-hr Study Center is a very high-traffic, high-demand area; so, we tend to refresh these machines with the latest gear and then move those machines to other labs which are less frequently used). Note: A note of caution on the 'trickle-down' method. You need to have an efficient method to reimage the computers and a standardized approach (for faculty and staff) of where their individual files are stored, device config preferences, and non-standard software otherwise any savings will be 'spent' on lost productivity by your IT Deployment and

Service Desk staff who are handling the shuffling of machines; as well as the lost customer productivity of faculty and staff during those initial few days (weeks?) one may need to settle in to a new computer.

Fourth, consider your experience with hardware maintenance with regards to extended warranty costs. Depending on the vendor, and the particular platform choice (back to item 2 above about 'standardized config') you may find that you do not worry about extended warranty for a desktop PC beyond an initial 2–3-year period. You may be able to 'self-insure' by having a few extra 'loaner' computers around to cover a system failure; keep a few extra hard drives on a shelf to cover the inevitable drive failure. Laptops, that's another matter. Their very nature of being smaller/more fragile/portable makes them a higher risk for breakage; also, the integration of components – on board RAM and SSD, integrated video – provide few options for organizations to facilitate self-repair or upgrades after the purchase.

We have standardized on a laptop model from Dell for all purchases. There are exceptions for things like our Apple Swift courses, but we're trying to hold to one standard because it gives us a 40% discount off list.

I am relatively new to the institution (less than 2 years into my role as CIO) and currently we have 4–5-year replacement, with case-by-case determinations at times and often driven by budget. We have been trying to put the rotations on a relatively even distribution for each of the five years (i.e., replace 1/5 of the computers annually), but because it hasn't always been that way in the past (to my knowledge), and because the pandemic forced upgrades/replacement we would not have naturally made in our cycle policy, it may take several years to get an even, more balanced annual replacement cycle going.

We also try to redeploy replaced computers in secondary-use areas – for student workers mostly - and we don't broker the resale of computers to employees, as much as they would like that. A computer never seems good enough for work, but curiously can become a highly desirable heirloom at the time of replacement.

Starting in 1999, we leased all laptops and desktops on a 3-year refresh cycle. This was for labs, faculty, and staff, across the board. In 2016 we made the decision to move the refresh of laptops to a 4-year cycle; staff desktops to 5 years but keep the lab desktops at 3 years. We don't refresh all categories at the same time, we stagger some of the labs and desktops, but the cycle is basically as described.

COVID has put us in a bad situation with the laptops. We had to skip the refresh planned for this past summer and they will now be refreshed next summer making them 5 years old. Our plan though, is to move the laptops back to 3 years along with the computer labs and keep the office/staff desktops at 5 years.

We had been on a 3-year replacement cycle for laptops and PCs for faculty, and staff until recently. Once replaced, all old primary personal computers are returned to Information Services and used as secondary computers. We had been discussing a move to a 4-year replacement cycle and decided to do so this year during the pandemic. We saved money by not replacing any systems this summer.

We now have a four-year replacement program for primary desktop/laptop computers. All departments on campus are divided into four replacement groups.

Computer Replacement Program - Year A Group (2021)

Computer Replacement Program - Year B Group (2022)

Computer Replacement Program - Year C Group (2023)

Computer Replacement Program - Year D Group (2024)

Under the replacement plan, a department will receive new computers for all full-time users in their specified replacement year. All computer classrooms, managed Information Services labs, computers in classrooms, library public computers, and a few other public spaces are on the 4-year cycle. They are distributed over the 4 years just like the users (not all at the same time). We have many secondary lab environments. There are several hundred systems distributed to such spaces: the natural sciences, psychology, etc. So, basically, not all our labs are on a 4-year replacement cycle.

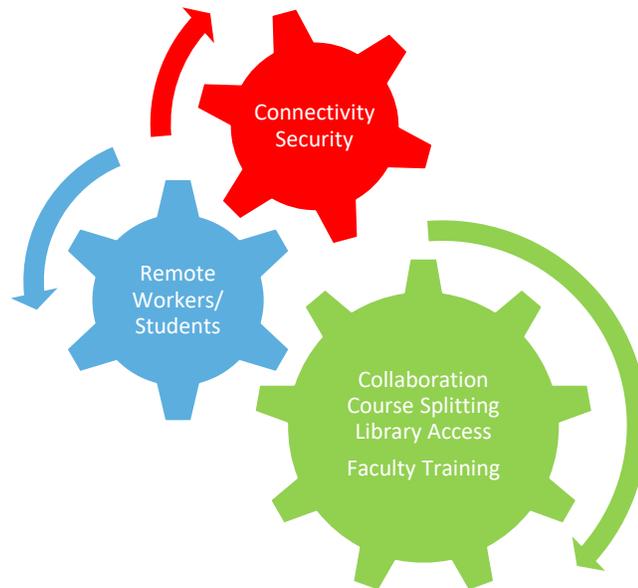
Because computers are overall more reliable and replacing hard drives with SSDs can extend the productive life of a computer, we moved from a three-year cycle to a four-year cycle two years ago, which smoothed out our replacement budget.

This year we have suspended the replacement cycle to only replace those that absolutely need to be replaced; we will carry over funds to the next fiscal year as appropriate. The effects of Covid will linger well past achieving herd immunity.

Replacement plans for many institutions were adjusted to deal with COVID and changing requirements as more faculty, staff and students worked remotely. We expect institutions will continue to adjust their replacement plans and cycles to reflect the move to remote work. We will address this issue again in the summer of 2021.

Member Insights and Thoughts

Below are some LBCIO member insights concerning major changes and current plans due to the pandemic and a move to more remote behavior.



Annette Ready, Interim CIO for the University of Cincinnati and Paul Foster, AVP for Enterprise Shared Services put together the following list of things they learned during this past year:

What did we learn in 2020?

1. First, we all learned how to mute ourselves and each other on web conferencing. Now, we're all trying to learn how to unmute ourselves – and it's proving a more difficult lesson.
2. As we tussled with working and collaborating remotely, we learned to use every web conferencing tool on the market. In the process though, we learned just how much we genuinely like and miss our colleagues – and yearn for the return to three-dimensional interactions.
3. We learned the names of all our colleague's pets and their extended families – and, really, more about our colleagues than we had ever known before. We also got in close and had a personal look in some cases at their homes and various living arrangements. What a pleasant experience that has been.
4. We learned the importance of high-speed internet connectivity and we learned what the Digital Divide is. We then realized how much work there is to do to begin closing it.
5. Finally, we learned, even in the midst of a worldwide pandemic, how committed we all are to learning itself!

Tim Ferguson, CIO at Northern Kentucky University provides some insights into chief barriers that he and other CIOs faced this past year.

As the world of higher education pivoted in response to the Covid-19 Pandemic, there were several obstacles that had to be overcome. Some were immediate such as getting faculty, staff, and students the proper technology to connect from home and the inherent training that some required. Other barriers became a reality over time as the prospects for either a Fall 2020 100% work/teach/learn remotely or at least a hybrid model became a reality.

With regards to the immediate barriers, Higher Education (HE) CIOs faced back in March, most of these dealt directly with access – access to mobile technology, access to the necessary tools, access to virtual training, and consistently the lack of quality internet access at the employee or student remote location. Most CIOs were able to start the efforts to provide loaner based mobile equipment and to deal with the training problem as we all had some ability to address these concerns. But for individuals that had poor connectivity from their remote location, this became a key issue that continues to affect higher education. Many institutions provided loaner hotspots, but this ultimately did not address the quality of remote learning or working as this was simply a stop gap. There were other immediate challenges in March such as licensing issues with vendors for work/learn at home, virtual access to computer labs and assisting faculty that had not taught online before but ultimately, HE made it through the abrupt change with perseverance and using the agility skills already developed due to changing business requirements.

As institutions shifted focus towards the reality of the situation for the remainder of 2020 and beyond - having to be prepared for any scenario and to provide either full remote learning access or at least hybrid classroom models, CIOs started the process of acquiring the technology to enable the flexibility that was required for this changing environment. The reality sank in quickly that webcams, cameras for classrooms, a/v equipment, laptops and other necessary equipment was in high demand not just within the HE marketplace but also across all industries. HE CIOs were now competing with corporate world in many cases for the equipment and vendors to assist us with preparations for the remainder for 2020. If you were one of the proactive and nimble CIOs, you may have placed orders early on and before you were ready. This enabled many to be ahead of the game, but for the majority, everyone is still working through the supply chain issues to get the equipment needed in order to be prepared for the fall and uncertainty that we all face in the future. Inevitably, this issue resolves itself with time and HE CIOs have been agile to pivot quickly to plan b, plan c, etc. Many of the obstacles that surfaced in March around training and adapting to the new “norm” continue to be challenges at varying levels depending upon the institution and their overall preparedness for this emergency.

In summary, the access to technology that everyone was hit with immediately in March has gotten better other than the remote internet access for students and staff. This may be somewhat less needed this fall, but that barrier as well as the others will continue to be on top of the mind for CIOs in HE as we move forward in 2021. Budget cuts, furloughs and quarantines for staff will continue to face HE but we will overcome.

Zareh Marselian, CIO at California Lutheran University offers the following thoughts on projects that were necessitated by the pandemic at a residency-based private university.

A few projects necessitated by the pandemic were:

- 1) Course splitting, where we split classes into groups of two or three depending on how many times a week classes meet to maintain social distancing within classrooms. Students would be on ground one day, virtual the other days.
- 2) Daily health check; we devised a daily COVID symptom check for staff and students. If the Health Check is not completed by 10AM, building card access is locked until the individual fills out the health check form.
- 3) Outdoor classrooms. Being in Southern California affords us the luxury of offering outdoor classes. We have now set up ten outdoor classrooms to minimize chances of infection while trying to maintain a campus atmosphere.

José C. Rodriguez, CIO, Rhodes College, provides his experiences as they worked through transforming their institution quickly to respond to the changes necessitated by the pandemic.

Remote learning and work: Like nearly every other school, Rhodes College pivoted to fully remote, online classes and work in March of 2020. The stories of perseverance and success are well-known by now, but how this broad change will impact the future of teaching and learning is still to be seen. Faculty instructors across the spectrum of technology savvy are now well versed in teaching via Zoom, Webex, Microsoft Teams and other desktop videoconferencing solutions. As they begin to increase their skill with these tools, they also become more creative in their remote teaching and more dependent on the ability to connect with students when they can't be physically present in a classroom. Currently that serves a critical need to provide continuity for students who are being quarantined or have tested positive for COVID-19 and are either asymptomatic or mildly so. But a year or two from now when COVID may not be as big a factor, will the expectation to provide remote access to the classroom need to be extended for students out sick with other maladies, at home with family for an important family event, or maybe just needing a mental health day away from campus? What will be the criteria by which faculty and Academic Affairs deans support and encourage these needs for extended continuity? How will it impact the procurement and maintenance of equipment for instructional technology? And how will it influence, and potentially require, adjustments to classroom design and renovation?

Similarly, how will the success and flexibility we are seeing in remote work impact the culture of presence for employees on our campuses? What will it mean for space use and allocation? And what we might call a gamechanger – how will remote work extend our

opportunities to hire from broader pools of skills and diversity? Many of my colleagues are actively involved in these questions and their solutions right now and find themselves instrumental in rewriting the rules (official and cultural) on what it means to work “somewhere.”

Library reserves, interlibrary loan, and digital materials: Often less discussed is the impact of the pandemic on library services. Rhodes’ Information Services division is a merged organization of both technology and library services; thus, I’ve had a firsthand look at how the move to remote has changed our library and patrons’ needs. Because there is still a question around how long covid can remain active on surfaces, particularly the rough more absorbent surfaces of physical books, interlibrary loan operations between institutions ceased for most of 2020 and are still not back to pre-covid levels. Additionally, libraries have had to reduce or suspend books and other materials on reserve because there isn’t enough time between recirculation of the materials to effectively quarantine the books for the next patron’s use. These impacts have pushed us to purchase more e-books and provide expanded digital access to materials and collections. It adds cost, but it opens doors wider to digital information options we have been discussing in library circles for years. One major disadvantage is how this is playing out in the area of textbooks. Publishers are on to this need as well but instead of opening digital access to textbooks for libraries, they continue to focus on individual customer subscription models which retain high textbook prices, but without the benefit of book ownership or sellback. This Educause article from Jan. 2021, describes this predicament in good detail: <https://er.educause.edu/articles/2021/1/farewell-print-textbook-reserves-a-covid-19-change-to-embrace>

Of course, there are many other pandemic impacts to libraries beyond collection access – increased effort in deep cleaning surfaces and spaces, limited patron density, increased stress of public exposure, and a new role in monitoring safe behavior that adds to that stress.

The extended role of the CIO: Many of us in technology leadership positions are already members of Presidents’ and Chancellors’ cabinets and senior teams, accustomed to giving input on a range of institutional situations beyond technology. But starting March 2020, we also began to see an expansion of our roles into broader leadership and administrative roles, as the critical perception of technology services quickly grew beyond foundational infrastructure and user services. In my own experience, I immediately became an active contributor in committees formed for Health & Safety Leadership, Emergency Operations, Academic Implementation, Memphis Healthcare Partnerships, and Revenue Generation. In talking with my CIO colleagues, this experience seems to have been broadly shared. Sharon Blanton (College of New Jersey) and Carlos Garcia (Vassar College) coined the term CIO+ to describe the phenomenon in an editorial they wrote for Educause in May, 2020 where they posed the question “What’s Next for CIOs?”:

<https://er.educause.edu/articles/2020/5/the-cio-plus> . But as with any expansion of responsibility, there is also a danger of dilution and moving further away from the core mission and value of a CIO. Again, in my case, I have found that I am having to manage delicately to avoid getting constantly allocated to other leadership “opportunities”. It is a performance tax we all need to be aware of and learn to manage for ourselves, but also for the perception and expectations of the role of CIO.

Jim Burke, CIO at John Carroll University describes how they had to move quickly to provide training and support for faculty who often had little experience teaching online.

The pandemic came at a time when higher education was already dealing with several confluent forces from reduced demographics to the economic realities of delivering a high-quality personal learning experience, to the evolution of learning technologies that begin to deliver an effective learning experience at scale with reduced cost. The need to abandon our campuses and move to a remote learning environment was enabled by many technologies which have been around for a while but were not considered mainstream learning tools. One of the most encouraging experiences was watching faculty who were not technology-oriented embrace technologies that allowed them to continue nurturing their students.

My university moved from discussing the potential for online ‘practice days’ to all classes are now online in just a few hours. The first days of the pandemic saw a massive mobilization of ITS. Suddenly, workshops that were poorly attended in the past were full-to-overflowing with faculty and staff who needed new skills to succeed in this remote environment. Dozens of workshops brought hundreds of faculty and staff up to speed in just a few short days.

In addition to training the campus at large, ITS quickly organized workshops to teach the remaining IT staff what they needed to know to support the campus through the transition to an all-virtual learning format. The word agile doesn’t begin to describe the response of the IT staff as programmers and server administrators worked side by side with the IT Service Desk staff to support the deluge of help calls that came in. I believe we will emerge from this crisis with a faculty capable of delivering education across a spectrum of communication channels – stronger and prepared for whatever comes next.

Viola Sprague, Vice President and CIO at Kettering University describes the changes that have taken place due to the pandemic.

The transition regarding technology was not an obstacle for Kettering. The infrastructure for virtual delivery was put in place prior to the pandemic. The challenge was adoption of the technology. While the solutions were in place, employees (Faculty and Staff) were not all willingly leveraging the technology. When the pandemic stopped the world as we know it, that meant people were forced into adoption. With limited staff this required an all-hands-on deck approach to get every Faculty member trained and ready to teach virtually.

The comfort level has vastly improved. The incoming tickets for virtual assistance have decreased over 50% since March 2020. Faculty are now participating on a committee I'm leading to look at the next level of virtual and hybrid learning. Not only have they adopted the model, but they are also ready to enhance the modality.



Vince Kellen, CIO, University of California San Diego, outlines shared services projects UCSD is working on during this pandemic season.

UC San Diego IT unit is now reaching out to colleges and universities on three shared services:

1. CloudBank Enterprise (CB-E). CloudBank is an NSF sponsored cloud reseller collaboration between UC San Diego, University of Washington, UC Berkeley, and cloud reseller Strategic Blue. CloudBank Enterprise lets universities procure cloud and take full advantage of the financial engineering that CB-E provides through Strategic Blue, guarantee to meet or beat all major cloud prices, provide better use of reserved instance and committed use agreements that pass significant savings to institutions, profit sharing with the reseller in which a portion of the reseller profit is returned back to the institutions for the purposes of advancing researcher support and facilitation, up-front cash-back discounts for committed purchases into the future. CB-E's mission is to:
 - a. Reduce cost and friction for cloud services.
 - b. Provide some financial support for institutional research facilitation
 - c. Work with existing cloud enterprise and institutional agreements

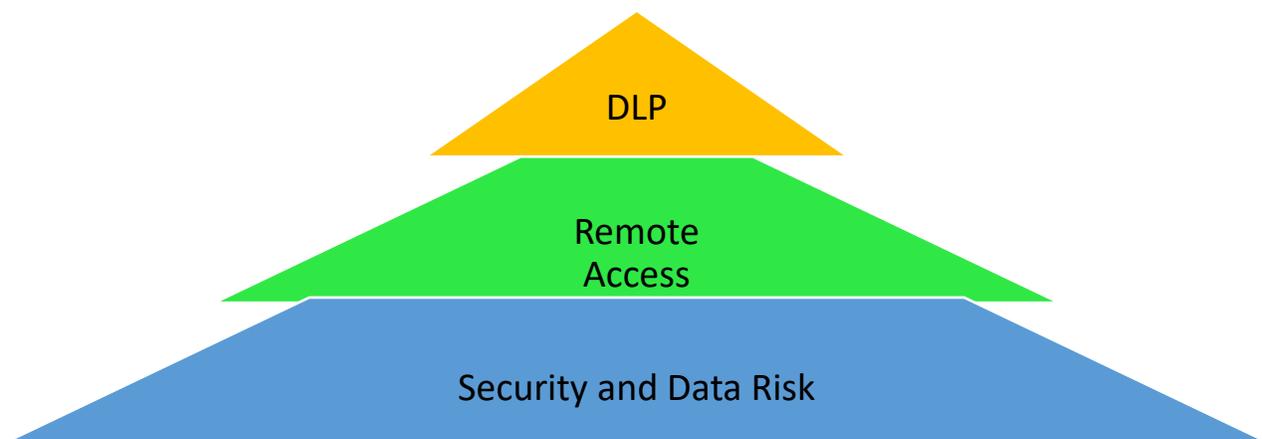
2. Do-it-Yourself (DIY) Enterprise System Replacement Coaching. Just as it is always good to get into shape ('prehabbing') to prepare for a major surgery, like a hip replacement, institutions need to prepare themselves for enterprise system replacement. UC San Diego's recent approach for implementing major cloud-based enterprise systems is resulting in practically no use of more expensive consultants or system implementers. UC San Diego offers 'guide-on-the-side' coaching to share with universities the numerous aspects of our

DIY approach. As part of this service, we are collaborating with Gartner, as the DIY methodology borrows from Gartner's post-modern ERP concepts. Our goal here is simple. It is ungodly how much universities spend on enterprise system replacements. There must be another way (and there is).

- In support of the DIY ESR coaching services, we have a partnership with a remarkably interesting technology staff augmentation firm called Slower, Inc. We can share our designs and templates for parts of our cloud architecture and for data integration and data development work. Slower works in a way more in alignment with what UC San Diego is doing. They work in a low-cost, open-book way where prices more closely match institutional internal resources prices.

3. Student Activity Hub (SAH). UC San Diego is offering other universities the Student Activity Hub. This cloud-based solution brings together institutional student data and learning system data into one comprehensive model. Census-driven retention, progression and student enrollment analysis can be done side-by-side with learning system data including Caliper-based 'live events' in a single institution tenancy model. Institutions can extend the environment with additional data and analytic models. SAP and UC San Diego are completing agreements where UC San Diego will be the entity selling and supporting this solution. Today we are using SAH to collect Canvas Live Event data and the LMS data (Canvas and Open EdX), SIS data, our advising system data and seamlessly integrate views of the data. UC Merced has recently adopted the SAH as well.

We are doing this work in an 'open-book' method that is designed to help institutions collaborate on common solutions. We want to avoid the typical vendor-customer problems, including price obfuscation. We are carefully picking areas where this makes sense since shared service collaborations don't always work well, especially if institutional autonomy is curtailed even in subtle ways.



Daniel Aracena, CIO Teacher's College Columbia University addresses overall security concerns.

Pre-COVID security concerns revolved around Data Loss Prevention (DLP). We were trying to get a handle on data exfiltration. We have identified and protected our data stored

centrally and it has been a challenge educating staff on the proper access and distribution of sensitive data. Most understand proper use of the data, but we still must educate all to understand how that data is shared.

Post-COVID concerns continue to revolve around DLP but increasing even more. Now with the entire campus working remotely, and not having policies and procedures in place for using personal equipment and storing sensitive data on those personal computers, we are introducing a new level of exposure to the College that needs to be addressed.

Overall security exposure of unmanaged personal equipment at home, will help to introduce another data risk pathway into our Campus network. The need to either eliminate the use of personal equipment or provide college managed equipment to all remote workers will help address that concern.



Don Mihulka, CIO at Missouri Southern State University shares his insights from launching his role as CIO at a new institution at the very beginning of the pandemic after spending more than thirty years in IT leadership roles at the University of Nebraska.

As I reflect on my past nine months in my new work 'home' of Missouri Southern State University, I recall many of the accomplishments we have achieved, in spite of the pandemic. Rolling back the clock to the beginning of March, when I had great aspirations of what I planned to accomplish during my first 90-180 days, that all changed 3 days into my new position. Our IT department was asked to quickly assist our faculty, staff, and students to transition within a week's period to an entirely online, distance learning environment. For me, it was a particularly challenging (and a little invigorating) time, not only learning about my new institution, community, and colleagues, but doing so at lightning speed and making decisions on the fly. It felt a lot like many of the major system implementations I had experienced, or more like drinking directly from a four-foot-wide firehose. All requiring quick decision-making, fighting through stressful situations, and handling both mental and physical

fatigue – all within the first month! I learned very quickly about the importance of resiliency, agility and persevering through this challenging time.

As I settled into this new normal over the spring and summer months, we quickly turned our attention and preparation to the fall semester, actively participating on faculty and staff committees, the University-wide Covid Task Force; and numerous other meetings and committees in preparation for returning to a face-to-face learning environment. Additionally, the spring crisis turned into a budget crisis during the summer. We immediately kicked off an internal effort to cut 10% of our IT operating budget by July 1st, followed by contingency plans for additional, major operating reductions (up to an additional 10%), staffing reductions and staff furloughs that would follow. Again, I learned even more about the importance of resiliency, agility and perseverance and pushing through this time.

As students and staff returned to campus in August and September, it began to feel a little 'more' normal, but an utterly new norm. 'Normal' IT project and task planning started back up and we moved ahead with tackling several large projects, completing them concurrently while continuing to address and tackle additional pandemic challenges throughout the fall. We successfully rolled out a major new Voice Over IP phone system (saving the university hundreds of thousands of dollars each year!); we kicked off the implementation of a major, new campus-wide Scheduling Management System, improving and automating scheduling processes and efficiencies (this will be complete by the end of this year); we developed and began implementing major components of a new security roadmap, that will significantly improve the security posture of the university; and, many, many other projects that were implemented and have begun making a real impact and improvement on how we teach, learn and work across the university. In addition to instilling a new project management methodology and structure, I continued to grow and learn about the importance of resiliency, agility, and perseverance.

However, the most important thing I have learned through my short (but productive) time so far at MSSU, is the importance of developing and growing a high-performing IT team. None of the above could have been completed without the collective, collaborative, trusted community that I now proudly call my IT leadership team and IT colleagues. The interesting part of this was approximately a month after beginning my new position, the previous CIO took a position at a nearby college and proceeded to hire and offer positions to many of my leadership members and several of our critical technology staff. While I didn't blame many of these staff for following their previous CIO, initially it felt like a one-two punch, and even a bit devastating at the time.

As I look back, the loss of these key and critical team members was a true blessing. It allowed me to build a new team and organization structure, develop a new team culture, and build a new level of team trust, communication, and openness. Through resiliency, agility, and perseverance, I was able to move through this rehiring, development and building stage, and I believe I now have a cohesive, trust-based team that has truly been high-performing, and will be a great foundation for transformational, future success.

Summary

The past year has brought many changes to all higher education and CIOs in higher education have been called upon to manage and provide for the expanding use of information technologies to allow their institutions to support their missions during a global shutdown due to the pandemic. Institutions who have long been known for their beautiful buildings and campuses found they had to compete with other institutions in an online environment where much of the tradition and beauty of the campus wasn't able to be shared with students/faculty/staff and others. Institutions who have a longer history of providing online courses and remote access suddenly found they were in the lead in this movement while others who were "elite" institutions were struggling to bring faculty online who never even considered online teaching in their careers.

The question "when will our institutions return to pre-pandemic work and behavior" has become almost a moot question. Even if there had been no pandemic, the way we work and behave is constantly changing especially in light of ongoing changes in information technologies. Perhaps the greater question is "will the mission of higher education be transformed forever by these changes" or are we just being challenged to continue to support and evolve the mission of higher education during challenging times. Are our institutions still expected to support teaching and learning, research, and community service? Are we still expected to move beyond the dissemination of information and knowledge to bring about wisdom and understanding? How can information technologies expand the reach of quality teaching and learning, research, and community service while supporting the personal relationships that are key to building bridges of wisdom and understanding? Most institutions have worked hard and long to answer these questions and are beginning to get comfortable with the use of IT to provide a quality teaching and learning experience. The move to hybrid or hyflex teaching (allowing students the option of attending classes physically or online or both) is now a part of the planning for all higher education institutions in the future. Students will have more options for how they want instruction delivered and even mixing and matching courses from different institutions into their academic plan. We hope that the information that LBCIO members have shared in this report will bring about greater understanding of the challenges and how to meet those challenges in the days ahead.

Current LBCIO Members

Mark C. Adams
Vice President for IT and CIO, Sam Houston State University

Daniel Aracena
CIO, Teachers College, Columbia University

Edward Aractingi
CIO, William and Mary College

Carol Ann Boyle
CIO, Adelphi University

Jim Burke
CIO, John Carroll University

Patrick Burns
Dean of Libraries. VP for IT, Emeritus
Colorado State University

Michael Cato
Senior VP and CIO, Bowdoin College

Reid Christenberry
CIO Emeritus, Tennessee Tech

Brian Cohen
Vice Chancellor for Technology and University CIO
City University of New York

Micah Cooper
Associate VP and CIO, Cedarville University

Paul Czarapata
VP/CIO and Interim President, Kentucky Community &
Technical College System

Mitchel Davis
Vice President and CIO, Dartmouth College

Leonard De Botton
Sr. Vice President /CIO, Berkeley College

Arturo de los Santos
Senior Director, Trinity University

Tim Ferguson
CIO, Northern Kentucky University

Doyle Friskney
University of Kentucky

Bret Ingerman
Vice President for Information Technology
Tallahassee Community College

Attie Juyn
Senior Director of IT, University of Stellenbosch (South
Africa)

Vince Kellen
CIO, University of California San Diego

Kendra Ketchum
Vice President/CIO
University of Texas at San Antonio

Stephen Landry
CIO, Seton Hall University

Mark Legg
CIO Emeritus, Flinders University (Australia)

David E. Lewis
Vice Provost/CIO, University of Rochester

Ed Mahon
CIO Emeritus, Kent State University

Zareh Marselian
CIO, California Lutheran University

Keith McIntosh
Vice President/CIO, University of Richmond

Don Mihulka
CIO, Missouri Southern State University

José C. Roderiquez
CIO, Rhodes College

David Sanchez
CIO, Austin Peay State University

Allan Morris
Senior VP and CIO, Southern Cross University (Australia)

John Murphy
CIO/Director of Digital Technologies
Nottingham Trent University (UK)

Brian Nichols
CIO, University of Kentucky

John Rathje
CIO, Kent State University

Annette Ready
CIO, University of Cincinnati

Lígia Maria Ribeiro
CIO Emeritus
Universidade do Porto (Portugal)

David Rotman
CIO Emeritus, Cedarville University

David Sanchez
CIO, Austin Peay State University

Viola Sprague
Vice President and CIO, Kettering University

Jenn Stringer
CIO, University of California Berkeley

Tina Stuchell
Executive Director of IT/CIO, University of Mount Union

Neal Sturm
Vice President/CIO, Fairleigh Dickinson University

Allen Taylor/Jon Cutler/Michael McGuffey
Interim CIOs/Marshall University

M. Lewis Temares
VP/CIO, Dean of Engineering Emeritus, University of Miami

Rodney Tosten
Vice President for Information Technology
Gettysburg College

Walter Weir
CIO Emeritus, University of Nebraska