COLORADO
Department of
Higher Education

1600 Broadway, Suite 2200
Denver, CO 80202

Jared Polis
Governor

Dr. Angie Paccione
Executive Director

MEMORANDUM

TO: Representative Brianna Titone, Chair, Joint Technology Committee

FROM: Kennedy Evans, CDHE Lead Finance Analyst

DATE: November 1, 2022

SUBJECT: FY 2023-24 CCHE Capital Information Technology Request Submission

This memorandum accompanies documents for the Colorado Commission on Higher Education's (CCHE) FY 2023-24 capital budget request. State law, C.R.S. 23-1-106(7)(a), delegates to the CCHE the responsibility of recommending a prioritized capital project list for the system of public higher education. This submission contains a prioritized list of all capital information technology project requests, the required financial and narrative forms, and the compiled list of current state-funded capital information technology improvement plans submitted by institutions of higher education.

On May 25, 2022, Colorado's state institutions of higher education submitted a total of 11 new capital information technology (IT) project requests to the Colorado Department of Higher Education (CDHE). CCHE's Finance, Performance, and Accountability (FPA) Standing Committee and CDHE staff reviewed and scored 11 projects, one of which was later withdrawn. Of the 10 remaining projects, four are continuations, and six are new. In total, institutions have requested a total of $29.2 million in new state funds with a pledged match of $3.4 million in institutional cash contributions.

To prioritize the projects, CDHE staff worked with the CCHE FPA Standing Committee to apply a uniform set of criteria to evaluate the projects. The FPA Committee held two public meetings to review submitted capital projects. An initial prioritized list was shared and discussed on July 22, 2022. After this meeting, institutions were invited to appeal their initial scores and provide supplemental documentation to assist in supporting their requests. On August 19, 2022, the FPA met again to act on the revised prioritized list, and it voted to approve a revised prioritized list and forward it to the full Commission. The full CCHE approved the prioritized list on September 1, 2022. One project, "Auraria Higher Education Center Technological Infrastructure Core Modernization" was withdrawn by the institution after preliminary prioritization was released.

Capital information technology projects were reviewed and scored separately from the capital continuation and renewal requests. A separate prioritized list and supplemental documentation for capital construction and renewal project submissions will be sent to the Capital Development Committee and Joint Budget Committee.

If you have any questions or need additional information, please do not hesitate to contact me.

Sincerely,

Kennedy Evans
Lead Finance Analyst
Colorado Department of Higher Education
P: 303-974-2661
Kennedy.Evans@dhe.state.co.us

ATTACHMENTS:

- FY 2023-24 CCHE Capital IT Prioritized List – Final
- FY 2023-24 Prioritized Higher Education Capital IT Budget Request
- CCHE Capital IT Scoring Criteria

CCHE CAPITAL IT PRIORITY RANKING FY2023-24

Ranking	Institution Name	Project Name	Score	CCF	CF
CONTINUATION PROJECTS					
1	**Colorado State University**	Network Hardware Upgrade for CSU	**N/A**	$ 2,244,053	$ 748,392
2	**Metropolitan State University**	Network Infrastructure Modernization	**N/A**	$ 795,000	$ 500,000
3	**Community College of Denver (CCCS)**	Classroom and Conf. Room Technology	**N/A**	$ 1,627,899	$ 103,908
	Metropolitan State University/Colorado School of Mines	Collaboratively Transforming the ERP/SIS Experience	**N/A**	$ 11,354,456	$ 1,146,613
NEW PROJECTS					
5	**Community College of Aurora (CCCS)**	Improving Server Room	100.0%	$ 814,740	$ 71,093
	University of Northern Colorado	ERP Modernization and Cloud Migration	100.0%	$ 1,291,651	$ 55,222
7	**Front Range Community College (CCCS)**	Network and IT Security Upgrade	98.1%	$ 3,420,000	$ 380,000
8	**Western Colorado University/Fort Lewis College**	Next Generation Wi-Fi: A network infrastructure collaboration between Fort Lewis College and Western Colorado	96.2%	$ 1,760,438	$ 75,264
9	**Colorado Mesa University**	ERP Modernization	92.5%	$ 3,290,340	$ 369,660
11	**Colorado State University**	Wireless (Wi-Fi) Technology Infrastructure Upgrade	41.5%	$ 810,550	-
GRAND TOTAL:				**$ 27,409,127**	**$ 3,450,152**

Appendix D: CCHE Capital IT Scoring Criteria

#1 IT Health, Security and Industry Standards

ALL INSTITUTIONS	
IT Health, Security and Industry Standards	**Points**
IT systems associated with proposed project are fully supported by developer[1]	**/2**
Cybersecurity of IT systems/devices associated with project is up to industry standards (e.g. two-factor authentication, does not compromise FERPA compliance, etc.)	**/2**
Articulates how project fits in with current disaster recovery system	**/2**
Project mitigates urgent/serious IT risk (e.g. imminent risk of system failure or serious security IT risk (e.g. imminent risk of system failure or serious security vulnerability)	**/2**
Project has life safety function[2]	**/2**
TOTAL	**/10**

Clarifications:

[1] "Fully supported" means that the developer of the software actively provides updates, addresses security concerns, and provides full IT support for the version of the software utilized. For hardware, full support and replacement parts must be available from manufacturer.

[2] Examples of a life safety function would be security cameras, emergency alert systems, etc.

#2 Other Fund Sources[1,3,4,5]

GROUP 1: ASU, CSU-P, FLC, UNC, WCU	
Cash Contribution of Total Funds Requested	**Points**
1-2%	**2**
2-3%	**4**
3-4%	**6**
Over 4%	**8**
GROUP 2: CCCS Urban/Suburban Campuses[2]	
1-3%	**2**
3-6%	**4**
6-8%	**6**
Over 8%	**8**
GROUP 3: CMU, MSU	
1-4%	**2**
4-7%	**4**
8-10%	**6**
Over 10%	**8**
GROUP 4: CSM, CSU-FC, CU	
1-8%	**2**
8-16%	**4**
17-25%	**6**
Over 25%	**8**
Other Fund Sources Total	**/8**

[1]AHEC, CCCS-Lowry, and CCCS Rural Campuses (CNCC, LCC, MCC, NJC, OJC, PCC, and TSJC) are exempt.

[2]CCCS Urban/Suburban Campuses are ACC, CCA, CCD, FRCC, PPCC, and RRCC.

[3]Pledged cash contributions may not be changed after initial submission for scoring purposes, unless there is documented proof of a late gift or award that was not final at the time of initial submittal but became available prior to the final CCHE Finance Performance and Audit Committee (FPA) prioritization vote. Supporting materials must be submitted to the CDHE and FPA at least one day prior to the August FPA meeting. If non-gift additional funds become available, an increase in cash spending authority may be requested without scoring impact.

#3 Quality of Planning/Proposal

ALL INSTITUTIONS	
Quality of Planning/Proposal	**Points**
Cost-benefit analysis performed with positive outcome	**/2**
Proposal articulates how the project fits in the with institution's strategic IT plan	**/2**
Alternatives analyzed	**/2**
Proper measures in place to prevent time and cost overruns	**/2**
Proposed project is cohesive and is not a combination of smaller, unrelated projects	**/2**
TOTAL	**/10**

#4 Achieves Strategic Plan Goals

ALL INSTITUTIONS	
Achieves Goals	**Points**
Articulates request's alignment with one or more of the strategic goals in the Colorado Higher Education Strategic Plan, *Colorado Rises*.[1]	**5**
TOTAL	**/5**

[1] http://masterplan.highered.colorado.gov/read-colorado-rises/

#5 Governing Board Priority[1]

INDIVIDUAL INSTITUTIONS NOT IN A SYSTEM & AHEC	
Cash Contribution of Total Funds Requested	**Points**
37 points to distribute across all projects, with a maximum of 20 points per project.	**0-20**
COLORADO STATE UNIVERSITY SYSTEM	
52 points to distribute across all projects, with a maximum of 20 points per project.	**0-20**
UNIVERSITY OF COLORADO SYSTEM	
64 points to distribute across all projects, with a maximum of 20 points per project.	**0-20**
COLORADO COMMUNITY COLLEGE SYSTEM	
96 points to distribute across all projects, with a maximum of 20 points per project.	**0-20**
Other Fund Sources Total	**/20**

Bonus Points:

Project involves multiple institutions, all of which award the project a full 20 points.[2]	**+2**
TOTAL	**/0**

[1]Governing board priority order may not be changed after initial submission, except for when a project is withdrawn from consideration. If a governing board withdraws a project from consideration, any projects prioritized below the withdrawn project will move up one rank in priority level and be rescored accordingly. In order to have projects rescored, the CDHE and CCHE Finance Performance and Audit Committee (FPA) must be informed of the withdrawal at least one day prior to the August FPA meeting.

[2]Multiple institution bonus points apply only to collaboration across separate, distinct institutions. This includes multiple community colleges within CCCS and AHEC.

COLORADO
Department of Higher Education

FY 2023-2024 Capital IT Request

-Prioritized State Funded Budget Request -

1600 Broadway, Suite 2200 • Denver, Colorado 80202 • (303) 862-3001

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CCHE CAPITAL IT PRIORITY RANKING FY2023-24

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Network Hardware Upgrade for CSU

Colorado State University

COLORADO Department of Higher Education

STATE OF COLORADO
DEPARTMENT OF HIGHER EDUCATION

Print Date: 8/10/2022

FY23-24 CAPITAL INFORMATION TECHNOLOGY PROJECT REQUEST- *COST SUMMARY (CC_IT-C)**

(A)	(1) **Funding Type (Cash, CCF, Cash & CCF):**	**Cash and CCF**	(2) **Intercept Program Request? (Yes/No):**	No
(B)	(1) **Institution:**	Colorado State University	(2) **Name & Title of Preparer:**	Shelly Carroll
(C)	(1) **Project Title:**	CSU Network Hardware Upgrade	(2) **E-mail of Preparer:**	Shelly.carroll@colostate.edu
(D)	(1) **Project Phase (__ of __):**	Phase 3 of 3	(2) **State Controller Project # (if continuation):**	
(E)	(1) **Project Type (IT):**	Capital IT	(2) **Institution Signature Approval:**	Date
(F)	(1) **Year First Requested:**	FY 20-21	(2) **CDHE Signature Approval:**	Date
(G)	(1) **Priority Number (Leave blank for continuation projects):**	_____ of _____	(2) **OSPB Signature Approval**	Date

(1)		(a) **Total Project Costs**	(b) **Total Prior Year Appropriation(s)**	(c) **Current Budget Year Request**	(d) **Year Two Request**	(e) **Year Three Request**	(f) **Year Four Request**	(g) **Year Five Request**
	Land /Building Acquisition							
(2)	Land Acquisition/Disposition	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(3)	Building Acquisition/Disposition	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(4)	***Total Acquisition/Disposition Costs***	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	Professional Services							
(5)	Consultants/Contactors	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(6)	Quality Assurance	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(7)	Training	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(8)	Leased Space (Temporary)	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(9)	Feasibility Study	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(10)	Other Services/Costs	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(11)	Inflation Cost for Professional Services	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(12)	Inflation Percentage Applied		0.00%	**0.00%**	0.00%	0.00%	0.00%	0.00%
(13)	***Total Professional Services***	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	Associated Building Construction							
(14)	Cost for New (GSF):	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(15)	New $_____/GSF							
(16)	Cost for Renovate GSF:	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(17)	Renovate $_____/GSF							
(18)	Site Work/Landscaping	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(19)	Other (Specify)	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(20)	Inflation for Construction	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(21)	Inflation Percentage Applied		0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
(22)	***Total Construction Costs***	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	Software Acquisition							
(23)	Software COTS	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(24)	Software Built	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(25)	Inflation on Software	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(26)	Inflation Percentage Applied		0.00%	**0.00%**	0.00%	0.00%	0.00%	0.00%
(27)	***Total Software***	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	Equipment							
(28)	Servers	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(29)	PCs, Laptops, Terminals, PDAs	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(30)	Printers, Scanners, Peripherals	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(31)	Network Equipment/Cabling	$ 4,889,565	$ 1,897,120	$ **2,992,445**	$ -	$ -	$ -	$ -
(32)	Other (Specify)	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(33)	Miscellaneous	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(34)	***Total Equipment and Miscellaneous Costs***	$ 4,889,565	$ 1,897,120	$ **2,992,445**	$ -	$ -	$ -	$ -
	Total Project Costs							$ -
(35)	***Total Project Costs***	$ **4,889,565**	$ **1,897,120**	$ **2,992,445**	$ -	$ -	$ -	$ -
	Project Contingency							
(36)	5% for New	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(37)	10% for Renovation	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(38)	***Total Contingency***	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	Total Budget Request							
(39)	***Total Budget Request***	$ **4,889,565**	$ **1,897,120**	$ **2,992,445**	$ -	$ -	$ -	$ -
	Funding Source							
(40)	Capital Construction Fund (CCF)	$ 3,431,172	$ 1,187,119	$ **2,244,053**	$ -	$ -	$ -	$ -
(41)	Cash Funds (CF)	$ 1,458,393	$ 710,001	$ **748,392**	$ -	$ -	$ -	$ -
(42)	Reappropriated Funds (RF)	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(43)	Federal Funds (FF)	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	TOTAL	**4,889,565**	**1,897,120**	**2,992,445**	-	-	-	-

*Sould match CC_IT-N Form

COLORADO
Department of Higher Education

STATE OF COLORADO
DEPARTMENT OF HIGHER EDUCATION

FY 2023-24 CAPITAL IT PROJECT REQUEST- *NARRATIVE (CC_IT-N)*		
Capital Construction Fund Amount (CCF):	**$2,244,053**	
Cash Fund Amount (CF):	**$748,392**	
Intercept Program Request? (Yes/No):	No	
Institution Name:	Colorado State University	
Project Title:	Network Hardware Upgrade for CSU	
Project Phase (Phase _of_):	3 of 3	
State Controller Project Number (if continuation):		
Project Type:	X	Technology Hardware
		Technology Software
Year First Requested:	FY 2021 - 2022	
Priority Number (Leave blank for continuation projects):		
Name & Title of Preparer:	Shelly Carroll, Capital Construction program manager	
E-mail of Preparer:	Shelly.Carroll@colostate.edu	
Institution Signature Approval:		Date
OSPB Signature Approval:		Date
CDHE Signature Approval:		Date

A. PROJECT SUMMARY/STATUS:

This request encompasses the third and final phase of a project to upgrade out-of-date networking hardware over three years to allow CSU-Fort Collins sufficient time to ramp up to a steady-state funding model. Critical needs supported by this upgrade are:

1. Increase 10X in capacity comprehensively in the network, including at the border, in the core, firewalls, and switches at the edge, needed to support next generation Wi-Fi, big data, high-performance computing, and other extant applications requiring these speeds.
2. IT Security enhancements required to address vulnerabilities in existing systems. Over the past two years, we have observed a startling increase in the number and severity of threats directed at the University. A careful analysis has indicated that we need significant enhancements in our border routers and firewalls to provide adequate threat protection in today's malicious threat environment.
3. Support for life and safety devices that require modern switches capable of supplying Power over Ethernet to Internet of Things systems such as surveillance cameras in critical areas, sensors, monitors, and alarms.
4. This request represents the final year of the three-year plan articulated above and described in full below. The students of CSU have implemented an increase to their University Technology Fee specifically to co-sponsor and support the objectives of this project, and CSU is developing a new chargeback mechanism that will serve as steady-state funding for the items listed in this request at the conclusion of the third year of the project – fulfilling our commitment to refrain from future requests of this nature to the JTC. CSU is deeply appreciative of the support provided by the JTC to-date, and we appreciate JTC consideration of continued support for this essential initiative in its third year.
5. Note that due to continued inflation and increased costs stemming from constrictions in the global supply chain, the figures reflected in year three (current year) of this initiative have been increased by 4%.

B. SUMMARY OF PROJECT FUNDING REQUEST:

Funding Source	Total Project Cost	Total Prior Appropriation	Current Budget Year Request	Year Two Request	Year Three Request	Year Four Request	Year Five Request
Capital Construction Funds (CCF)	$3,431,172	$1,187,119	**$2,244,053**	$0	$0	$0	$0
Cash Funds (CF)	$1,458,393	$710,001	**$748,392**	$0	$0	$0	$0
Reappropriated Funds (RF)	$0	$0	**$0**	$0	$0	$0	$0
Federal Funds (FF)	$0	$0	**$0**	$0	$0	$0	$0
Total Funds (TF)	**$4,889,565**	**$1,897,120**	**$2,992,445**	**$0**	**$0**	**$0**	**$0**

C. PROJECT DESCRIPTION/SCOPE OF WORK/JUSTIFICATION:

Core infrastructure (border routers, core switches, and firewalls):

- **Upgrade to 10X current capacity** – Our existing core infrastructure is 10 gig (ten gigabits per second, or ten billion bits per second). We have over four hundred buildings on our main, south, and foothills campuses, and dozens of these buildings are connected at 10 gig; thus, the core infrastructure manifests a severe point of congestion, needing a 10X upgrade in speed/capacity to 100 gig.
- **Current IT security capability** – We need to upgrade the core infrastructure to smart, adaptive, real-time IT security configuration changes that will derive from the global internet's IT security infrastructure. Our current IT security configurations in our current core devices are static – we can change the IT security configurations only manually, and thus cannot react fast enough to catch the dramatically increasing number of threats in the global internet environment. This new capability is needed to react automatically in real time to IT Security threats and vulnerabilities that will provide much greater needed protection for our network and our users.

Edge switch upgrades:

1. **Capacity upgrade** – Upgrade is needed to 10X the current capacity – many existing edge switches provide 100 meg (megabits per second or one million bits per second) to users, whereas our current standard for edge switches is 1 gig to the user. Simply put, users need a 1 gig interface to exchange existing and increasing number and size of files required for education and research. We have observed that files used for research of size one terabyte (10^{12} bytes) take more than a week to transmit. Files much larger than this cannot be transmitted at all, and numerous smaller files transmitted through a slow 100 meg interface impede the quality and quantity of research and education that must be conducted in today's environment. We have fallen behind in the upgrade of our network, and this funding request will allow us to catch up, achieve steady-state upgrades, and meet today's and tomorrow's increasing needs.
2. **Power over Ethernet (PoE) upgrades** – The existing switches are not capable of providing PoE that is required for connection of life and safety devices. The most critical need here is a backlog of more than one hundred video surveillance systems that have been approved by the Public Safety Team, and need new switches that provide PoE interfaces. Other life and safety devices needing PoE are also in the queue waiting for switch upgrades.
3. **IT Security upgrades** – Existing switches that are beyond end of life no longer receive patches and upgrades required to keep up with current IT security needs, presenting IT security vulnerabilities to users connected to them.
4. **Two-factor authentication (2FA)** – Existing switches that need upgrading do not accommodate two-factor authentication. It is critical for us to implement and sustain 2FA in the edge switches in front of our critical systems, including our Human Resources Management System, our Financial Management System, our Student Information System, our Research Management Systems, and other

systems as may emerge over time needing this capability. We have already implemented the *Duo* 2FA system for our off-campus access. We need to implement 2FA in front of all of our critical systems, as observations from other higher education institutions that have implemented 2FA comprehensively indicate that this has provided almost perfect protection of their systems against phishing, malware, and ransomware – this is our greatest IT security risk today.

5. **Central management, administration, and IT security configurations of edge switches** – Older switches are not capable of being fully integrated into our central, automated edge switch management, control, administration and IT security configuration environment. This central control system provides the capability to upgrade all edge switches to the latest software and firmware configurations, maintaining the latest IT security protections, including Network Access Control and Software Defined Networking. The central systems also allow monitoring of edge switches and traffic patterns that may indicate an IT security issue on user devices (computers, printers, FAX machines, etc.). We must upgrade old switches to fit into this environment.

The need to upgrade edge switches and the central core infrastructure is great. The core infrastructure is quite expensive and State funding will allow us to progress to steady-state funding of our network upgrades in year four. A recent inventory found 260 switches beyond end of life and in need of immediate upgrade. The 3-year plan contains upgrades for these edge switches in the first two years, with core infrastructure upgrades in years two and three. In the third year of the project, the steady-state number of edge switches will be achieved, as indicated in Table 2 below on page 6 containing the steady-state replacement cycles.

3-YEAR PROJECT PLAN

1. **Edge switche**s – are planned to be replaced as follows:
    a. Year 1: 200 – in progress
    b. Year 2: 60
    c. Year 3: 157 (steady-state annual replacement number)
2. **Core devices** – will be replaced as follows:
    a. Year 2: Replace two core switches
    b. Year 3: Replace two border routers and two firewalls

The three-year plan is proposed to: 1) allow us time to put funding in place to achieve steady-state self-sufficiency, 2) deal with the most critical problems first (the most critical problem is to deal with upgrading edge switches that are woefully out of date and present great IT Security risks), and 3) continue to deal with extremely urgent needs in years two and three. We will procure all devices under state/university purchasing and fiscal rules, and perform all configurations, installations, and testing using in-house staff. We estimate the value of this internal labor to exceed $250,000 over the three-year term of the project. We have already procured a commitment of an additional discount of 3% for edge switches over and above our substantial education discount, due to the volume of purchases, and this is reflected in the budget request. Devices upgraded/replaced will be sent to surplus property in accordance with State fiscal rules.

D. PROGRAM INFORMATION:

The project involves multiple institutions as CSU Fort Collins evolves to encompass operations for the full CSU System in the following ways:

- CSU-Fort Collins operates Kuali Financial System for three locations: CSU-Fort Collins, CSU-Pueblo, and the CSU System Office.
- CSU-Fort Collins is well into the process of implementing the Banner Student Information System for two locations: CSU-Fort Collins, and CSU-Pueblo. CSU-Fort Collins is already live, and "go live" for CSU-Pueblo was August 2021. CSU-Global has begun to evaluate whether this system is appropriate for them after CSU-Pueblo goes live on Banner.

- CSU-Fort Collins and CSU-Pueblo are in the process of consolidating Identity and Access Management at the CSU- Fort Collins campus using Internet2's TIER environment.
- CSU-Fort Collins and CSU-Pueblo are exploring implementing a new HR system at the CSU System level after the Banner project is complete.

The upgrade of the core devices proposed in the project is necessary to accommodate sufficient capacity and IT Security for access from CSU-Pueblo into these systems.

E. CONSEQUENCES IF NOT FUNDED:

Critical needs that we are unable to keep up with are:

1) The need to upgrade our aging border routers.
2) The need to upgrade our aging "core" switches.
3) The need to upgrade our enterprise (campus-level) firewalls to provide adequate network and IT security for the campus.
4) The need to upgrade our aged edge switches.
5) Unable to support adequate integration of CSU-Pueblo campus.
6) Unable to increase general capacity of network connectivity.
7) Unable to support POE for some life/safety devices.

These needs are near-term, and we simply do not know where the funding needed in the near term would come from if this proposal is not funded by the State.

F. ASSUMPTIONS FOR CALCULATIONS:

Cost estimates for equipment was provided by our approved vendors.

G. OPERATING BUDGET IMPACT:

N/A for Higher Education.

H. PROJECT SCHEDULE:

The project schedules is given in the table below.

Table 1 Project Schedule.		
All 3 phases	**Start Date**	**Completion Date**
Planning	June 2021	August 2021
Implementation	August 2021	June 2024
Testing	August 2021	June 2024
Closing	August 2023	June 2024

I. ADDITIONAL INFORMATION:

Three-year roll forward spending authority is required:			X❑ Yes	❑ No
Request 6-month encumbrance waiver:			❑ Yes	❑ X No
Is this a continuation of a project appropriated in a prior year:			❑ Yes	❑X No
State Controller Project Number (if continuation):				
CONTINUATION HISTORY: (DELETE IF NOT APPLICABLE)				
	FY 2021-22 Appropriated	FY 2022-23 Appropriated	FY 2XXX-XX Appropriated	**Total Appropriations**
Total Funds	$760,000	$1,137,120		**$1,897,120**
General Fund	$541,000	$646,119		**$1,187,119**

Cash Funds*	$219,000	$491,001		**$710,001**
Reappropriated				
Federal Funds				

J. COST SAVINGS / IMPROVED PERFORMANCE OUTCOMES:

There are several critical needs requiring a minimum standard of network connectivity in higher education environments:

- **General Capacity** – The amount of information available worldwide, accessible by the Internet, keeps growing exponentially at a rate exceeding 25% increase per year. Simply put, regular switch replacements/upgrades are required to keep up with ever growing needs for capacity. Most of our current unmet needs are to replace older switches (older than seven years) that operate at 100 Mbps (million bits per second) to the wall jack (user). CSU has adopted a national trend of standardizing on gigabit per second connectivity at the user level, or 1,000 Mbps (1 Gbps) to every wall jack. In many campus buildings, connectivity is sub-standard.
- **Support for Life and Safety** – Older switches are not capable of supplying Power Over Ethernet (POE) that is required for some life and safety devices, including video cameras, life and safety monitors (fire, smoke, environmental conditions, etc.), and sensors. This POE technology is available in all modern switches, where both a network signal and electrical power are supplied over the same networking wire. At the end of FY 19, we had 1,634 video cameras deployed, with over 150 additional systems targeted for deployment, and such deployment has stalled due to covid. Having so many older switches that do not have POE capability limits our ability to deploy such devices in areas of critical need, and it will not be possible to meet identified life and safety needs without edge switch upgrades/replacement.
- **Emerging Applications** – Emerging applications, including high-performance computing, ultrahigh-def video (8K), 3D videos, artificial reality, and virtual reality, have an insatiable requirement for new, much higher capacities. All such applications also require low latency and jitter, in addition to much higher raw capacity – all motivating this request. Students already are showing a need for these types of applications to meet their educational needs, especially now that instruction for Spring and Summer terms 2021 have gone online, motivating increased use of advanced applications. Also, our Learning Management System and numerous associated plug-ins requested by faculty to support education is entirely online in the cloud.
- **Big Data** – Both educators and researchers are increasingly engaged in working with Big Data, files of Terabyte size or larger. Files of this size are now common and ubiquitous across the Institution. Most of our current unmet needs are to replace older switches (older than seven years) that operate at 100 Mbps to the wall jack (user). As an example, moving one 10 TB file on a 100 Mbps network will require over 9 days to complete the file transfer! Researchers often have needs to transport a number of these sizes of files across the network simultaneously.
- **Wi-Fi** – The need for, and indeed the expectation of excellent Wi-Fi connectivity exists today. The newest Wi-Fi access points require 10 Gbps uplink capability, as upload speeds from individual mobile devices can approach 1 gigabit per second each, and many such devices can be connected through a single Wi-Fi access point. Our ability to attract and retain students, researchers, faculty and staff is dependent upon infrastructure required for them to get their work done, and Wi-Fi networking is a critical component.
- **Basic Functionality** – Newer switches have enhanced features and functionality essential for a modern network architecture, involving layer-3 routing, newer network protocols, and more ports for services. We can provide additional technical details upon request, but here we simply assert that network switch technology continues to evolve and improve, and falling too far behind will severely limit our ability to deliver needed connectivity to our constituents.

K. SECURITY AND BACKUP / DISASTER RECOVERY:

IT Security – Newer switches have enhanced IT security features that interact seamlessly and automatically with routers, firewalls, intrusion detection systems, etc. Modern firewalls that operate at 100 Gbps are required to interface with the core devices running at this speed, and to include contemporary rules and algorithms for filtering an increasing malicious quality and quantity of malware. This is a dire need as we continue to elevate and enhance our IT security posture. Older switches run past end of life (as defined by the manufacturer) are no longer supplied with IT security patches. We are currently operating in a locus of high IT security risk, as 260 of our edge switches need to be upgraded to maintain an acceptable IT security posture.

L. BUSINESS PROCESS ANALYSIS:

Despite extraordinary efforts to fund network upgrades ourselves, including two grants from the National Science Foundation, inclusion of networking hardware in all capital projects, use of departmental funds, and exhausting the telecom reserve, we find ourselves behind in upgrading edge switches, and in the need to upgrade our core networking hardware. State funding for three years is intended to allow the University to alleviate the backlog and put new funding streams in place that will allow for all devices to be upgraded on a seven-year cycle. A survey of peer institutions indicated upgrade cycles for edge switches ranging from five to seven years. We have adopted seven years as the standard for upgrades for edge switches to balance cost versus functionality, leaning toward minimizing cost. Table 2 below includes example unit costs, total costs, and annualized costs for steady-state upgrades.

Table 2 Steady-State Networking Device Replacement Costs*

Item	No.	Unit Cost ($)	Total Cost (k$)	Replacement Cycle (Years)	Annual Costs (k$/yr.)
Edge Switches**	1,100	$4,604	$5,064.4	7	$723.5
Border Routers	2	$382,500	$765	7	$109.3
Core switches	2	$333,030	$666	7	$95.2
Firewalls	2	$612,000	$1,224	7	$171.9
Totals					$1,099.9

* Costs in Table 2 are 2020 costs.
** 3% special, additional discount for this project applied to cost.

CSU expects to achieve self-sufficiency in network upgrade funding in year 4. Cash funds through year 4 are comprised about equally of student technology fee funding, Provost funding, and departmental funding. The remaining funding required for core devices will be established during the second year of this project, and we hereby so commit to that. We have two types of student technology fees: 1) Technology fees that are college specific, ranging from $40 per semester for intra-university, open-option students, to $170 per semester for engineering students (most are about $100 per semester), and 2) the central University Technology Fee that is $25 per semester per student. Technology revenue stays within each college in which it is collected, and the University Technology Fee is used for central technology. After two years of discussions and advocacy from the Vice President for IT, the University Technology Fee Advisory Board, consisting entirely of students, has increased the University Technology Fee to $32 per semester per student (an increase of $7 per semester per student beginning in FY21) to fund their portion of the steady-state funding for network technology upgrades. Also, we have commitments from the Provost and the decentralized units (the departments) to progressively increase funding over the three years of the project to

achieve steady-state funding for networking upgrades. The funding from the Provost will derive from the general Education and General budget of the University, and the funding from the departments will derive from their base budget allocations.

This project will allow us to attain currency in our networking technology, and give us the time necessary to put into place internal cash funding for all networking technology over time; thus, no additional capital IT funds will be requested henceforth from the JTC for networking hardware.

Information on Achieves Goals scoring criteria, in relation to the Higher Education Master Plan

1. **Increases credentialing** – Most of our credentialing and competency-based education is offered through CSU Online, which currently serves about 4,000 students. All of these programs are offered online, through our Canvas Learning Management System (LMS), used by each and every one of those online students. The current proposal provides much-needed, enhanced and secure access in three ways: 1) adding required capacity behind an appropriate firewall to our core network necessary to maintain high-quality access from off campus to the Canvas LMS, 2) adding required capacity at the edge required by CSU instructors, TA's and graders from inside CSU who are the instructors accessing the LMS to delivering the credentialing in the LMS, and 3) adding capacity from ubiquitous student access into the LMS from student labs, Wi-Fi, and other networking access points used by students. Finally, we also note that some of the switches are used by the testing center which provides a wide variety of testing, including placement testing via credentialing for math, composition, and for other select areas, including GRE, SAT, etc.
2. **Erase equity gaps** – Critical areas to be supported by the switch upgrade include the student diversity organizations: Asian/Pacific American Cultural Center, El Centro, Black/African American Cultural Center, Native American Cultural Center, and Women and Gender Diversity Center. Also, select residential dorms including the living/learning communities, and the key communities need enhanced connectivity to campus resources via the proposed core infrastructure.
3. **Improve student success** – Excellent networking infrastructure is essential to the conduct of all education and research in today's digital environment. Most notable is the need for high-speed, high-quality access to our digital Learning Management System, Canvas, used by nearly 100% of our 30,000 residential students in over 69% of our 6,502 course sections, and by 100% of our 4,000 online/distance students. Content, Canvas plug-ins, electronic textbooks, adaptive courseware, an increasing number of enhanced learning objects (videos, computer education games, virtual reality, etc.), and sophisticated learning analytics environments exist in and are accessible from Canvas – all requiring excellent network access. Also, access to a wide variety of student success services is also digital: EAB Navigate for advising and curricular planning, transferology.com and u.achieve for degree planning, early performance feedback, and a rich suite of Learning Analytics data from Unizin (http://unizin.org) fusing Student Information System data with real-time data from the Canvas LMS all require excellent network access. The LMS is accessed through our core infrastructure behind a firewall, and the upgrade of that core infrastructure is essential to meet evolving needs of capacity and IT security through the core.
4. **Affordability and Innovation** –

Affordability – Aruba has the best, lowest cost warranty on switches of any vendor – no annual maintenance costs for software updates/patches/security enhancements, and lifetime hardware replacement at no cost for any hardware issues. Their initial purchase prices are in line with those of their competitors. Because of this, the Life Cycle Cost (purchase price, plus accumulated annual maintenance cost) of these switches manifests about a 60% savings over switches purchased from other vendors. This fiscal model is a key component in ensuring our networking environment operates at the very highest quality, and is sustainable.

Innovation – The congestion we are experiencing in our core networking and edge devices has already significantly limited our research/innovation environment. The proposed upgrade will yield two distinct benefits: 1) our users will be universally equipped with gigabit interfaces to the desktop and to

contemporary, high-speed Wi-Fi access points (indeed, next generation Wi-Fi access points will need to be connected at 10 gigabit), and 2) our core network upgrade from 10 gigabit to 100 gigabit will be able to accommodate multiple large buildings connected at 10 gigabit to our networking core. Simple math indicates that this upgrade is needed from a pure aggregation standpoint, as we cannot continue to add any more buildings connected at 10 gigabit to our 10-gigabit core. The core devices upgrade is needed to support connectivity to the shared Summit High-Performance Computing (HPC) System housed at the University of Colorado Boulder, used by over three hundred innovative researchers at CSU, where numerous very large files are transferred regularly. Hundreds of CSU researchers also access other remote HPC systems and databases. A wide variety of application areas need this enhanced connectivity, among the most notable are: extreme ultraviolet laser imaging, climate research, ecosystem sustainability, innovative small-scale weather radar systems, LIDAR systems, space propulsion research, energy systems research, innovative battery research, named data cybersecurity research, next generation materials, life sciences (many specific areas), groundwater pollution modelling, etc. One compelling recent example is deployment of an innovative, next-generation augmented/virtual reality system that is yielding pioneering patents in how doctors review patient MRIs and CT scans. Virtual reality allows doctors and veterinarians to perform more effective and less invasive surgeries - this has already had worldwide impact.

Information on IT Health, Safety and Industry Standards Scoring Criteria:

"Fully supported" – We have been deploying exclusively HP/Aruba edge switches for over a decade. Over this time period, we have enjoyed excellent support, training, and professional development from HP/Aruba, and have found it easy to maintain currency for staff in operations. HP/Aruba has the best warranty on switches of any vendor – no annual maintenance costs for software updates/patches/security enhancements, and lifetime hardware replacement at no cost for any hardware issues. This fiscal model is a key component in ensuring our networking environment operates at the very highest quality, and is sustainable fiscally. However, once switches are beyond "end of life," they are no longer supported by HP/Aruba for software patches, security patches, and software upgrades. This critical situation we are now in will be solved entirely by getting on a seven-year replacement cycle for switches, that this Capital IT Request will allow.

"Cybersecurity" – As mentioned in the previous item, once switches are beyond "end of life," they are no longer supported by HP/Aruba for software patches, security patches, and software upgrades. This critical situation we are now in will be solved entirely by getting on a seven-year replacement cycle for switches, that this Capital IT Request will allow.

"Disaster recovery" – We have a very robust disaster recovery environment with two, physically separate, redundant data centers, each on a separate leg of City of Fort Collins power (which is exceptionally reliable), each with green Uninterruptable Power Supplies that condition and supply power, and each of which is backed up with a generator. In addition to periodic full backups across data centers, we duplicate all transactional data across both data centers such that in the event of a disaster, we can recover all of the transactions and rebuild our systems of record with these transactions, losing no data. However, the full data and real-time transactional data transfers require excellent network connectivity in order to function. As our core network is becoming congested, we will lack the capacity to continue this full and comprehensive disaster recovery model that will be remedied with the requested Capital IT funding.

"Mitigates urgent/serious IT risk" – We believe this has been covered adequately in the above narrative. This upgrade is needed to provide the opportunity to attain a steady-state funding model for all of our network devices, to ensure adequate connectivity to all devices, and to ensure all IT switches are replaced on a periodic cycle and subject to regular patches and software upgrades. Some of our edge network switches that exist in our network today exceed ten years in age (the worst is sixteen years in age). This manifests an existing unacceptable IT security risk that will be remedied with the requested Capital IT funding.

“Life safety function” – We believe this has been covered adequately in the above narrative. This upgrade is needed to provide IT security interfaces supplying Power Over Ethernet (PoE) to life and safety devices including video surveillance devices.

Network Infrastructure Modernization

Metropolitan State University

COLORADO Department of Higher Education

STATE OF COLORADO
DEPARTMENT OF HIGHER EDUCATION

Five-Year Capital Information Technology (IT) Project Plan FY 2023-24 to FY 2027-28 (CC_IT-5P)

(A)	(1) **Institution Name:**	Metropolitan State University of Denver	(2) **Institution Signature Approval:**	Date
(B)	(1) **Name & Title of Preparer:**	Kevin Taylor, CIO and AVP for Information Technology Nick Pistentis, Deputy CIO	(2) **CDHE Signature Approval:**	Date
(C)	(1) **E-mail of Preparer:**	ktaylo79@msudenver.edu, npistent@msudenver.edu		

(D)	***GRAND TOTALS***	*(b) Total Project Cost*	*(c) Total Prior Appropriation*	*(d) Current Budget Year Request*	*(e) Year Two Request*	*(f) Year Three Request*	*(g) Year Four Request*	*(h) Year Five Request*
	Capital Construction Funds (CCF)	$17,105,000	$6,695,000	$5,710,000	$0	$0	$4,700,000	$0
	Cash Funds (CF)	$2,500,000	$1,035,000	$995,000	$0	$0	$470,000	$0
	Reappropriated Funds (RF)	$0	$0	$0	$0	$0	$0	$0
	Federal Funds (FF)	$0	$0	$0	$0	$0	$0	$0
	Total Funds (TF)	**$19,605,000**	**$7,730,000**	**$6,705,000**	**$0**	**$0**	**$5,170,000**	**$0**

(1)	**Project Title:**	Collaboratively Transforming the ERP/SIS Experience						
(2)	**Brief Description of Project:**	Joint initiative between MSU Denver and Mines to implement a modern ERP/SIS solution. Previous years were submitted as separate requests						
(3)	**Intercept Program? (Yes/No):**	**No**						
(4)	(a) **Priority Number:**	1	(b) **Project Type:**		(c) **Gross Square Feet:**			
(5)	(a) **Funding Source**	(b) **Total Project Cost**	(c) **Total Prior Appropriation**	(d) **Current Budget Year Request**	(e) **Year Two Request**	(f) **Year Three Request**	(g) **Year Four Request**	(h) **Year Five Request**
(6)	Capital Construction Funds (CCF)	$14,265,000	$4,650,000	**$4,915,000**	$0	$0	$4,700,000	$0
(7)	Cash Funds (CF)	$1,500,000	$535,000	**$495,000**	$0	$0	$470,000	$0
(8)	Reappropriated Funds (RF)	$0	$0	**$0**	$0	$0	$0	$0
(9)	Federal Funds (FF)	$0	$0	**$0**	$0	$0	$0	$0
(10)	**Total Funds (TF)**	**$15,765,000**	**$5,185,000**	**$5,410,000**	**$0**	**$0**	**$5,170,000**	**$0**

(1)	**Project Title:**	Network Infrastructure Modernization						
(2)	**Brief Description of Project:**	This project upgrades network infrastructure, replacing aging wired and wireless network equipment and adding redundant fiber paths between buildings.						
(3)	**Intercept Program? (Yes/No):**	**No**						
(4)	(a) **Priority Number:**	2	(b) **Project Type:**		(c) **Gross Square Feet:**			
(5)	(a) **Funding Source**	(b) **Total Project Cost**	(c) **Total Prior Appropriation**	(d) **Current Budget Year Request**	(e) **Year Two Request**	(f) **Year Three Request**	(g) **Year Four Request**	(h) **Year Five Request**
(6)	Capital Construction Funds (CCF)	$2,840,000	$2,045,000	**$795,000**	$0	$0	$0	$0
(7)	Cash Funds (CF)	$1,000,000	$500,000	**$500,000**	$0	$0	$0	$0
(8)	Reappropriated Funds (RF)	$0	$0	**$0**	$0	$0	$0	$0
(9)	Federal Funds (FF)	$0	$0	**$0**	$0	$0	$0	$0
(10)	**Total Funds (TF)**	**$3,840,000**	**$2,545,000**	**$1,295,000**	**$0**	**$0**	**$0**	**$0**

(1)	**Project Title & No. of Phases:**							
(2)	**Brief Description of Project:**							
(3)	**Intercept Program? (Yes/No):**							
(4)	(a) **Priority Number:**		(b) **Project Type:**		(c) **Gross Square Feet:**			
(5)	(a) **Funding Source**	(b) **Total Project Cost**	(c) **Total Prior Appropriation**	(d) **Current Budget Year Request**	(e) **Year Two Request**	(f) **Year Three Request**	(g) **Year Four Request**	(h) **Year Five Request**
(6)	Capital Construction Funds (CCF)	$0	$0	**$0**	$0	$0	$0	$0
(7)	Cash Funds (CF)	$0	$0	**$0**	$0	$0	$0	$0
(8)	Reappropriated Funds (RF)	$0	$0	**$0**	$0	$0	$0	$0
(9)	Federal Funds (FF)	$0	$0	**$0**	$0	$0	$0	$0
(10)	**Total Funds (TF)**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**

STATE OF COLORADO
DEPARTMENT OF HIGHER EDUCATION

Print Date: 8/10/2022

FY23-24 CAPITAL INFORMATION TECHNOLOGY PROJECT REQUEST- *COST SUMMARY (CC_IT-C)**

(A)	(1) **Funding Type (Cash, CCF, Cash & CCF):**	**Cash and CCF**	(2) **Intercept Program Request? (Yes/No):**	No
(B)	(1) **Institution:**	Metropolitan State University of Denver	(2) **Name & Title of Preparer:**	Kevin Taylor, CIO and AVP for Information Technology Services
(C)	(1) **Project Title:**	Network Infrastructure Modernization	(2) **E-mail of Preparer:**	ktaylo79@msudenver.edu
(D)	(1) **Project Phase (__ of __):**	3 of 3	(2) **State Controller Project # (if continuation):**	
(E)	(1) **Project Type (IT):**	Capital IT	(2) **Institution Signature Approval:**	Date
(F)	(1) **Year First Requested:**	FY 2021-2022	(2) **CDHE Signature Approval:**	Date
(G)	(1) **Priority Number (Leave blank for continuation projects):**	_2_ of _2_	(2) **OSPB Signature Approval**	Date

(1)		(a) **Total Project Costs**	(b) **Total Prior Year Appropriation(s)**	(c) **Current Budget Year Request**	(d) **Year Two Request**	(e) **Year Three Request**	(f) **Year Four Request**	(g) **Year Five Request**
	Land /Building Acquisition							
(2)	Land Acquisition/Disposition	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(3)	Building Acquisition/Disposition	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(4)	***Total Acquisition/Disposition Costs***	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	Professional Services							
(5)	Consultants/Contactors	$ 250,000	$ 250,000	$ -	$ -	$ -	$ -	$ -
(6)	Quality Assurance	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(7)	Training	$ 25,000	$ 25,000	$ -	$ -	$ -	$ -	$ -
(8)	Leased Space (Temporary)	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(9)	Feasibility Study	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(10)	Other Services/Costs	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(11)	Inflation Cost for Professional Services	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(12)	Inflation Percentage Applied		0.00%	**0.00%**	0.00%	0.00%	0.00%	0.00%
(13)	***Total Professional Services***	$ 275,000	$ 275,000	$ -	$ -	$ -	$ -	$ -
	Associated Building Construction							
(14)	Cost for New (GSF):	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(15)	New $_____/GSF							
(16)	Cost for Renovate GSF:	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(17)	Renovate $_____/GSF							
(18)	Site Work/Landscaping	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(19)	Other (Specify)	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(20)	Inflation for Construction	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(21)	Inflation Percentage Applied		0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
(22)	***Total Construction Costs***	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	Software Acquisition							
(23)	Software COTS	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(24)	Software Built	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(25)	Inflation on Software	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(26)	Inflation Percentage Applied		0.00%	**0.00%**	0.00%	0.00%	0.00%	0.00%
(27)	***Total Software***	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**
	Equipment							
(28)	Servers	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(29)	PCs, Laptops, Terminals, PDAs	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(30)	Printers, Scanners, Peripherals	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(31)	Network Equipment/Cabling	$ 3,315,000	$ 2,085,000	**$ 1,230,000**	$ -	$ -	$ -	$ -
(32)	Other (Specify)	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(33)	Miscellaneous	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(34)	***Total Equipment and Miscellaneous Costs***	$ 3,315,000	$ 2,085,000	**$ 1,230,000**	$ -	$ -	$ -	$ -
	Total Project Costs							$ -
(35)	***Total Project Costs***	**$ 3,590,000**	**$ 2,360,000**	**$ 1,230,000**	**$ -**	**$ -**	**$ -**	**$ -**
	Project Contingency							
(36)	5% for New	$ 190,000	$ 125,000	**$ 65,000**	$ -	$ -	$ -	$ -
(37)	10% for Renovation	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(38)	***Total Contingency***	$ 190,000	$ 125,000	**$ 65,000**	$ -	$ -	$ -	$ -
	Total Budget Request							
(39)	***Total Budget Request***	**$ 3,780,000**	**$ 2,485,000**	**$ 1,295,000**	**$ -**	**$ -**	**$ -**	**$ -**
	Funding Source							
(40)	Capital Construction Fund (CCF)	$ 2,840,000	$ 2,045,000	**$ 795,000**	$ -	$ -	$ -	$ -
(41)	Cash Funds (CF)	$ 1,000,000	$ 500,000	**$ 500,000**	$ -	$ -	$ -	$ -
(42)	Reappropriated Funds (RF)	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(43)	Federal Funds (FF)	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	TOTAL	**3,840,000**	**2,545,000**	**1,295,000**	**-**	**-**	**-**	**-**

*Sould match CC_IT-N Form

COLORADO
Department of Higher Education

STATE OF COLORADO
DEPARTMENT OF HIGHER EDUCATION

FY 2022-23 CAPITAL CONSTRUCTION/CAPITAL RENEWAL PROJECT REQUEST- *NARRATIVE (CC_IT-N)*		
Capital Construction Fund Amount (CCF):	**750,000**	
Cash Fund Amount (CF):	500,000	
Funding Type:	State Funded	
Intercept Program Request? (Yes/No):	No	
Institution Name:	Metropolitan State University of Denver	
Project Title:	Network Infrastructure Modernization	
Project Phase (Phase _of_):	3 of 3	
State Controller Project Number (if continuation):	N/A	
Project Type:	X	Technology Hardware
		Technology Software
Year First Requested:	FY 2020 -21	
Priority Number (Leave blank for continuation projects):		
Name & Title of Preparer:	Kevin Taylor, CIO and AVP for Information Technology Services	
E-mail of Preparer:	Ktaylo79@msudenver.edu	
Institution Signature Approval:		Date
OSPB Signature Approval:		Date
CDHE Signature Approval:		Date

A. PROJECT SUMMARY/STATUS:

This three-phase project upgrades network infrastructure, replacing aging wired and wireless network equipment and adding redundant fiber paths between buildings. In addition to providing a more stable and reliable foundation for our enterprise networks, updating to a modern network platform will provide greater monitoring capabilities and security measures for increased cyber security.

MSU Denver first requested funding for this project for Fiscal Year 2021-22 and began work on this initiative in July 2021. This project allows MSU Denver to deploy a modern, secure and reliable network infrastructure that will improve the student experience and effectively support 21st century Colorado learners and the dedicated faculty and staff who make that learning possible.

We thank the committee for its ongoing support of our mission and commitment to educating Coloradans, and for the investment in the first two years of this project request. This project began with a consultant-supported design and implementation plan for all MSU Denver buildings. Phase one concludes with the completion of MSU Denver's campus fiber optic loop and replacing all wired and wireless network infrastructure in three priority buildings housing classrooms and student services. This phase has been delayed due to supply chain issues but is expected to finish in December 2022. Phase two continues this work modernizing network infrastructure in three additional high-need classroom buildings.

With funding approval, phase three will finish this project, upgrading an additional four buildings housing classrooms and student labs - fully completing a campus-wide modernization of the infrastructure for our network. Two of these buildings are shared classroom buildings, and improvements to the network in these spaces will yield an enhanced digital learning experience for University of Colorado students, Community College of Denver students in addition to MSU Denver students, as well as for faculty across all three institutions who are instructors in these buildings.

B. SUMMARY OF PROJECT FUNDING REQUEST:

Funding Source	Total Project Cost	Total Prior Appropriation	Current Budget Year Request	Year Two Request	Year Three Request	Year Four Request	Year Five Request
Capital Construction Funds (CCF)	$2,840,000	$2,045,000	**$ 795,000**	$0	$0	$0	$0
Cash Funds (CF)	$1,000,000	$500,000	**$500,000**	$0	$0	$0	$0
Reappropriated Funds (RF)	$0	$0	**$0**	$0	$0	$0	$0
Federal Funds (FF)	$0	$0	**$0**	$0	$0	$0	$0
Total Funds (TF)	**$3,840,000**	**$2,545,000**	**$1,295,000**	**$0**	**$0**	**$0**	**$0**

C. PROJECT DESCRIPTION/SCOPE OF WORK/JUSTIFICATION:

Metropolitan State University of Denver (MSU Denver) is requesting state funds for the third and final phase of a three-year project to modernize our network infrastructure and address deferred maintenance. The full three-year project funds the replacement of approximately 300 edge and distribution layer switches, 450 wireless access points, and provides additional network paths between campus buildings. These improvements would provide a more robust and stable network environment capable of supporting the university's evolving needs in a scalable and secure manner.

The final phase of this project includes the replacement of approximately 150 edge switches and 200 wireless access points in four buildings housing classrooms and student computer labs. Two of these buildings are "shared classroom" buildings, providing classrooms and faculty offices for University of Colorado Denver and Community College of Denver students and faculty, as well as MSU Denver students, faculty and staff.

By continuing to fund this project, the CDHE and Legislature will be investing in an institution whose mission encompasses the four strategic goals outlined in the Higher Education Master Plan in impactful ways, including the following:

- *Strategic Goal 1: Increase Credential Completion – This goal stresses the importance of increasing the number of Coloradans with postsecondary education, including credentials in high-demand areas such as STEM and teacher education.*
    - Investing in this project supports this strategic goal by providing a modern and secure network environment, removing barriers and ensuring reliable network access to all MSU Denver students, faculty and staff. This will allow students to more speedily, and reliably, access key services and instructional platforms that are necessary elements of credential completion at the University.

- *Strategic Goal 2: Erase Equity Gaps – The second strategic goal focuses on erasing the current equity gap experienced by Colorado's largest and fastest-growing ethnic group, Hispanic/Latino.*

    - MSU Denver is a federally designated Hispanic Serving Institution, with over 5,000 enrolled Hispanic and Latino students. Over half of enrolled undergraduates are students of color, and MSU Denver invests heavily in programs to support undocumented, DACA, immigrant, and refugee students, striving to create an inclusive community of learners. Investing in this project will provide better access to these services for MSU Denver students.

- *Strategic Goal 3: Improve Student Success – The third strategic goal supports innovative approaches for improving students' timely education completion.*

    - As an innovative institution, MSU Denver must continue to take the lead in pursuing advanced technology solutions to solve today's and tomorrow's challenges. Deploying a modern wired and wireless infrastructure supports student success by improving access to the digital tools available to students as they plan their degree path, provide reliable access to registration and tuition payment tools, and make resources available to students, advisors, and support staff that drastically reduce barriers to success and frustrating interactions between students and their objectives.

D. PROGRAM INFORMATION:

All MSU Denver students, faculty and staff would benefit from this modernization project. The university's network infrastructure provides all network and telephony services, which in turn support the business of the university and all student-facing services, including admissions, registration, academic advising, financial aid, and MSU Denver's online education programs. These services support the recruitment, retention and academic success of our students.

Additionally, the fiber optic infrastructure completes a campus network loop between institutions on the Auraria Campus. This loop would create diverse network paths with redundant connections for MSU Denver and provide additional fiber capacity that could be used by other Auraria institutions in the event of an unintended fiber cut or other line-specific disruption of service.

We continue to collaborate with Colorado peers, both on the Auraria Campus and around the state, to share best practices, lessons learned, and the advantageous pricing terms that we have negotiated. In particular, we have discussed our project strategy with representatives of the University of Northern Colorado, who may pursue a similar initiative and would be interested in leveraging the buying agreements established through our project efforts.

E. CONSEQUENCES IF NOT FUNDED:

This project would address deferred maintenance in MSU Denver's wired and wireless network infrastructure. It would also address single points of failure in our network by adding redundant fiber connections between buildings.

Failure to fund this project would increase the likelihood of equipment failure as our equipment continues to age and would not address the single points of failure in our network infrastructure. In addition, this equipment creates a cybersecurity risk as devices "age out" and are no longer supported by our vendors. This could result in unintended network outages and loss of critical business and academic services for our students, faculty and staff.

Failure to fund the final year of this project will also create inequities for MSU Denver students and faculty. Academic programs housed in buildings that have not been upgraded will continue to struggle with unreliable network access.

F. ASSUMPTIONS FOR CALCULATIONS:

Estimated switch and wireless access point costs are based on current vendor pricing agreements and the number of devices. Estimated installation and cabling costs, including fiber optic installation, are based on existing designs and conduit paths.

G. OPERATING BUDGET IMPACT:

MSU Denver has reallocated funds from our IT operating budget and revenue from our student technology fee to sustain and maintain our refreshed network infrastructure going forward.

H. PROJECT SCHEDULE:

Phase 1 of 3	Start Date	Completion Date
Pre-Design	7/1/2021	8/14/2021
Design	8/10/2021	9/11/2021
Construction	9/14/2021	12/15/2022

Phase 2 of 3	Start Date	Completion Date
Construction	7/1/2022	6/30/2023

Phase 3 of 3	Start Date	Completion Date
Construction	7/1/2023	6/30/2024

I. ADDITIONAL INFORMATION:

Three-year roll forward spending authority is required:	Yes
Request 6-month encumbrance waiver:	Yes
Is this a continuation of a project appropriated in a prior year:	Yes
State Controller Project Number (if continuation):	

J. COST SAVINGS / IMPROVED PERFORMANCE OUTCOMES:

Replacement of aging equipment and addressing single points of failure are risk mitigation strategies to avoid unintended network outages. These outages would result in loss of critical business and educational services for our students, faculty and staff. By investing in these infrastructure updates, we expect to decrease the number of outages, minimizing time and work lost as a result.

K. SECURITY AND BACKUP / DISASTER RECOVERY:

This project would add diverse network paths for all MSU Denver buildings, adding resiliency to campus networking infrastructure by completing the campus fiber ring. This ring would also provide our tri-institutional partners - the University of Colorado Denver, the Community College of Denver, and the

Auraria Higher Education Center – the ability to utilize MSU Denver installed conduit to add secondary fiber links and increase the resiliency of their networks as needed.

In addition, this project would provide modern network equipment capable of supporting modern security architecture and best practices. New network innovations such as Dynamic Segmentation, Role Based Access, Dynamic Role Assignment, Device fingerprinting, and Micro Segmentation are all features found in new switching products. These advanced features would enable MSU Denver to provide a reliable, scalable, and secure network capable of supporting the ever-increasing number of wireless devices on campus.

L. BUSINESS PROCESS ANALYSIS:

As an infrastructure-focused initiative, this project proposal is designed to ensure ongoing availability of all MSU Denver academic and business services which rely on IT systems to succeed.

Replacement of campus networking equipment has been recognized as a need, but to date, competing priorities have superseded a concerted infrastructure modernization effort. As a result, much of the university's network equipment has exceeded its anticipated lifespan – in some cases, dramatically so.

MSU Denver's Information Technology Services (ITS) recommends a five-year lifecycle for network infrastructure, which aligns with many industry recommendations. However, the equipment deployed on campus today carries a median age of 6.5 years, with 80% of production network switches exceeding five years in service, 42% exceeding seven years, and ten devices exceeding ten years of operation. Devices purchased prior to 2008 run an outdated version of the Cisco operating system software which has not received security or feature updates since early 2013.

With these considerations in mind, ITS performed an analysis of the current environment, including multiple internal meetings and work sessions, as well as consultation with several external, independent vendors. From these efforts, the proposed phases were generated and appropriate levels of consulting support – intended to supplement staff time and ensure project success – were identified. By pursuing the phases as specified, MSU Denver will be able to leverage greater purchasing power and minimize additional workload for procurement team members while simultaneously delivering the maximum benefit to the campus community on a compressed timeline.

Given the pace of change in network equipment, architecture and capabilities, if the project is funded MSU Denver intends to begin the project with a final, consultant-supported design review to ensure that the proposed architecture and specified equipment remain best-of-breed and will provide the maximum return on investment for the University.

Another important aspect of this project is the addition of fiber optic cabling infrastructure on the Auraria Campus. This proposal includes the implementation of additional network links to complete a campus fiber ring, improving resiliency for core campus facilities. At present, a single fiber optic link provides network, telephony and emergency calling services for numerous campus buildings. In the event of an unexpected service interruption on this link, one or more buildings may be disconnected from the campus network for an extended period. Completing the ring would offer redundancy for those buildings in the event of a major service disruption.

Classroom and
Conf. Room Technology

Community College of Denver (CCCS)

COLORADO Department of Higher Education

STATE OF COLORADO
DEPARTMENT OF HIGHER EDUCATION

Print Date: 8/10/2022

FY23-24 CAPITAL INFORMATION TECHNOLOGY PROJECT REQUEST- *COST SUMMARY (CC_IT-C)**

(A)	(1) **Funding Type (Cash, CCF, Cash & CCF):**	**Cash and CCF**	(2) **Intercept Program Request? (Yes/No):**	No
(B)	(1) **Institution:**	Community College of Denver	(2) **Name & Title of Preparer:**	Kathy Kaoudis, VP Administrative Services
(C)	(1) **Project Title:**	Classroom and Conference Room Technology	(2) **E-mail of Preparer:**	kathy.kaoudis@ccd.edu
(D)	(1) **Project Phase (__ of __):**	Phase 3 of 3	(2) **State Controller Project # (if continuation):**	019I21
(E)	(1) **Project Type (IT):**	Capital IT	(2) **Institution Signature Approval:**	ryn R. Kaoudis 4.22.2022
(F)	(1) **Year First Requested:**	FY 2019-20	(2) **CDHE Signature Approval:**	Date
(G)	(1) **Priority Number (Leave blank for continuation projects):**	_____ of _____	(2) **OSPB Signature Approval**	Date

(1)		(a) **Total Project Costs**	(b) **Total Prior Year Appropriation(s)**	(c) **Current Budget Year Request**	(d) **Year Two Request**	(e) **Year Three Request**	(f) **Year Four Request**	(g) **Year Five Request**
	Land /Building Acquisition							
(2)	Land Acquisition/Disposition	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(3)	Building Acquisition/Disposition	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(4)	***Total Acquisition/Disposition Costs***	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	Professional Services							
(5)	Consultants/Contactors	$ 335,634	$ 231,594	$ **104,040**	$ -	$ -	$ -	$ -
(6)	Quality Assurance	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(7)	Training	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(8)	Leased Space (Temporary)	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(9)	Feasibility Study	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(10)	Other Services/Costs	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(11)	Inflation Cost for Professional Services	$ 16,782	$ 11,580	$ **5,202**	$ -	$ -	$ -	$ -
(12)	Inflation Percentage Applied		0.00%	**5.00%**	0.00%	0.00%	0.00%	0.00%
(13)	***Total Professional Services***	$ 352,416	$ 243,174	$ **109,242**	$ -	$ -	$ -	$ -
	Associated Building Construction							
(14)	Cost for New (GSF):	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(15)	New $_____/GSF							
(16)	Cost for Renovate GSF:	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(17)	Renovate $_____/GSF							
(18)	Site Work/Landscaping	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(19)	Other (Specify)	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(20)	Inflation for Construction	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(21)	Inflation Percentage Applied		0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
(22)	***Total Construction Costs***	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	Software Acquisition							
(23)	Software COTS	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(24)	Software Built	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(25)	Inflation on Software	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(26)	Inflation Percentage Applied		0.00%	**0.00%**	0.00%	0.00%	0.00%	0.00%
(27)	***Total Software***	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	Equipment							
(28)	Servers	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(29)	PCs, Laptops, Terminals, PDAs	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(30)	Printers, Scanners, Peripherals	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(31)	Network Equipment/Cabling	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(32)	Other (Specify) AV Equipment	$ 4,253,469	$ 2,786,709	$ **1,466,760**	$ -	$ -	$ -	$ -
(33)	Miscellaneous	$ 212,673	$ 139,335	$ **73,338**	$ -	$ -	$ -	$ -
(34)	***Total Equipment and Miscellaneous Costs***	$ 4,466,142	$ 2,926,044	$ **1,540,098**	$ -	$ -	$ -	$ -
	Total Project Costs							$ -
(35)	***Total Project Costs***	$ **4,818,558**	$ **3,169,218**	$ **1,649,340**	$ -	$ -	$ -	$ -
	Project Contingency							
(36)	5% for New	$ 240,928	$ 158,461	$ **82,467**	$ -	$ -	$ -	$ -
(37)	10% for Renovation	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(38)	***Total Contingency***	$ 240,928	$ 158,461	$ **82,467**	$ -	$ -	$ -	$ -
	Total Budget Request							
(39)	***Total Budget Request***	$ **5,059,486**	$ **3,327,679**	$ **1,731,807**	$ -	$ -	$ -	$ -
	Funding Source							
(40)	Capital Construction Fund (CCF)	$ 4,755,917	$ 3,128,018	$ **1,627,899**	$ -	$ -	$ -	$ -
(41)	Cash Funds (CF)	$ 303,569	$ 199,661	$ **103,908**	$ -	$ -	$ -	$ -
(42)	Reappropriated Funds (RF)	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(43)	Federal Funds (FF)	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	TOTAL	**5,059,486**	**3,327,679**	**1,731,807**	-	-	-	-

*Sould match CC_IT-N Form

COLORADO
Department of Higher Education

STATE OF COLORADO
DEPARTMENT OF HIGHER EDUCATION

FY 2021-22 CAPITAL CONSTRUCTION/CAPITAL RENEWAL PROJECT REQUEST- *NARRATIVE (CC_IT-N)*		
Capital Construction Fund Amount (CCF):	**$1,627,899 (Phase 3 of 3) – continuation project**	
Cash Fund Amount (CF):	$103,908 (Phase 3 of 3) **– continuation project**	
Funding Type:	Capital IT	
Intercept Program Request? (Yes/No):	No	
Institution Name:	Community College of Denver	
Project Title:	Classroom and Conference Room Technology	
Project Phase (Phase 3 of 3):	Phase 3 of 3	
State Controller Project Number (if continuation):	Continuation project-waiting for project number	
Project Type:	✓	Technology Hardware
		Technology Software
Year First Requested:	FY 2019 -2020	
Priority Number (Leave blank for continuation projects):	Continuation project	
Name & Title of Preparer:	Kathy Kaoudis, VP Administrative Services/CFO	
E-mail of Preparer:	kathy.kaoudis@ccd.edu	
Institution Signature Approval:	Kathryn R. Kaoudis, VP Admin Services/CFO	4.22.2022
OSPB Signature Approval:		Date
CDHE Signature Approval:		Date

A. PROJECT SUMMARY/STATUS:

Community College of Denver (CCD) is requesting $5,059,486 to replace, update, and standardize the College's classroom technology and conference room technology. CCD is grateful to the legislature for funding the first two years of this three year, phased project in the FY21-22 and FY22-23 long bill. This year, CCD requests funding for the final phase 3. We will implement the full project in phases over 3 years. The project will enable innovation in teaching, standardize teaching and conferencing technology, and refresh outdated equipment. In the words of students "the projectors are super old and half the time don't work." Critically important now, it will create stable platform for flexible remote learning and hybrid learning capabilities to prepare for unanticipated campus closures and allow students opportunities to continue learning when physical presence in the classroom isn't possible.

B. SUMMARY OF PROJECT FUNDING REQUEST:

Funding Source	Total Project Cost	Total Prior Appropriation	Current Budget Year Request	Year Two Request	Year Three Request	Year Four Request	Year Five Request
Capital Construction Funds (CCF)	$4,755,917	$3,128,018	**$1,627,899**	$0	$0	$0	$0
Cash Funds (CF)	$303,569	$199,661	**$103,908**	$0	$0	$0	$0
Reappropriated Funds (RF)	$0	$0	**$0**	$0	$0	$0	$0
Federal Funds (FF)	$0	$0	**$0**	$0	$0	$0	$0
Total Funds (TF)	**$5,059,486**	**$3,327,679**	**$1,731,807**	**$0**	**$0**	**$0**	**$0**

C. PROJECT DESCRIPTION/SCOPE OF WORK/JUSTIFICATION:

The Community College of Denver (CCD) is faced with aging and inadequate classroom and conference room technology while trying to meet changing needs of our students, faculty, and staff. Many of our faculty are already working to innovate in our classrooms and meeting significant barriers because of aging classroom technology offerings. The Classroom and Conference Room Technology project will replace and/or upgrade a majority of equipment in our 170 classrooms across 3 campuses. The project will include classroom projection, collaboration, audio and switching equipment. The increased capabilities will create a stable platform that will allow students to continue learning when not on campus, whether due to unanticipated campus closure, student school/work schedule conflicts, or other reasons. The equipment will include distance learning technology, wireless projection, instruction capture, digital whiteboards, and "BYOD" (bring your own device) connectivity to facilitate exchange of information in the classrooms and across the Internet.

This project directly impacts aspects of 4 goals in the 2017 CDHE Master Plan (Colorado Rises). CCD is strategically positioned to address these goals. This project will help CCD in efforts to address credential completion, student success, affordability and innovation, and the equity gaps in higher education. The project will address aspects of these concerns because it is in direct support of active learning in classrooms and providing continued instruction when students are learning remotely.

The Educause Learning Initiative (ELI) wrote about why emerging technologies are significant for teaching and learning spaces in "7 Things You Should Know About Emerging Classroom Technologies" in April 2018.

> *"Emerging technologies for teaching and learning spaces are significant in three broad ways. First, they nurture further movement away from a "sage on the stage" model to one of collaboration and deeper student engagement in learning. Software that converts writing on whiteboards to digital form, for example, encourages learners to be co-creators of content and enables better interaction in group work. Second, they facilitate new, more vivid learning experiences, such as those that can be created using AR and VR and that enable students to experience places they could not otherwise visit. Third, their potential to improve cognition and engagement can enhance learning."*

Areas of impact for this project:

- *Simplify classroom technology and increase reliability to reduce loss of instruction time.*
- *Enable innovation or use of new technology to better reach students and increase student engagement.*
- *Implement universal design concepts that allow all students to have better access to classroom content.*
- *Allow more flexibility in learning space to increase opportunity for students to complete in a timely manner.*
- *Better support CCD STEM faculty that are pushing to use new technology in classrooms.*
- *Increase distribution of technology to impact our workforce training and certification programs.*
- *Correct issues related to diminished brightness in projection.*
- *Enable distance learning capabilities.*

CCD completed a student and faculty survey asking for direct feedback about classroom technology. The survey was completed in May 2019 toward the end of the semester while these issues were fresh on their minds. We received 41 responses to the survey.

Student comments include: "whiteboards/dry erase markers are very hard to see especially when they dry out which is often or are not available which is more often. Perhaps SMART boards or digital Epson projectors where the dry erase marker is digital and brighter."; "Better, more reliable projectors"; "Some kind of screen sharing, Bluetooth audio sharing device so that in discussion classes, students [can participate]."; "overhead which displays paper on projection screen, add smart boards."; "I'd like it to be easier to sync with the teacher's own laptop/tablet – perhaps through a secure wireless interface rather than with a wired setup."; "I think smartboards would be a substantial benefit to my learning."; "more technological interactive programs."

Faculty comments include: "It takes over 45 minutes to get help in the evenings, and things break frequently. Some rooms – the table is in a weird place and you have to choose between using the technology, and having the students see you. We need remote controls for the technology."; "When I need to show something from a desktop, I have to stop showing from doc cam. 2 screens should be adequate."; "Setting up math classrooms with smartboards."; "Also, the lighting in some classrooms is not ideal for projection. (It's either ALL LIGHTS OFF to be able to see projection, or ALL LIGHTS ON and then the projections [are] barely visible. All classrooms should have multiple light switches with one for the front near the projection that can be turned off without turning off ALL the lights in the classroom, rendering it very dark.)"; "Classroom technology are processes, such as grades, content, announcements, etc. The missing piece is innovation, such as, student engagement software. Engagement software offers various activities, such as, project, questions, activities all related to student learning and engagement and a data analysis feature so faculty can track who is learning, and who may need extra help."; "Being able to project from the iPad pros if there is no suitable technology. Currently I have to use my own hdmi/rgb connector and cables. Means I can't walk round and interact with students."; "Having a hard time answering this, because my classroom routinely has issues."

D. PROGRAM INFORMATION:

This project will impact most academic and workforce programs across Community College of Denver. The project will replace, upgrade, and standardize technology across all classrooms and conference rooms. The positive impact will allow all faculty and part-time instructors to work with newer and more flexible technology. It will standardize connections making it easier to focus on instruction rather than how to get the technology to work. It will also allow additional capabilities to increase student engagement and outcomes across all 3 CCD campuses. This project has a direct impact on students and

faculty at CCD. Critically, this project will allow a stable platform a stable platform that will allow students to continue learning when not on campus, whether due to unanticipated campus closure, student school/work schedule conflicts, or other reasons. As over 70% of CCD students work at least part-time, the ability to capture lectures for later access by students addresses a serious equity issue.

E. CONSEQUENCES IF NOT FUNDED:

If not funded Community College of Denver will need to prioritize replacements as equipment fails. Most equipment is now 7 years or older and not standardized in most areas. The largest impact is increasing failure rate and diminished performance of classroom equipment which has a direct impact on student learning. Moreover, CCD will not be able to provide lecture capture capability to students who may not be able to be physically on campus at every class period, due to a variety of life circumstances. CCD will also need to prioritize areas of campus to begin replacements meaning that technology capabilities will likely differ more greatly among classrooms and campuses. This will continue to frustrate faculty and students.

F. ASSUMPTIONS FOR CALCULATIONS:

The project is based on technology vendor quotations for a standard solution in each area. We are assuming 5% inflation in each project year, due to the gap between the timing of the quote and the ability to receive state funds and start the project.

G. OPERATING BUDGET IMPACT:

There will be some operating budget impact related to Cisco support contracts as a result of purchase of new equipment. The support budget will be absorbed in the normal operations within the CCD IT Department.

H. PROJECT SCHEDULE:

Identify project schedule by funding phases. Add or delete boxes as required for each phase. See instructions for further detail.

Phase 1 of 3	**Start Date**	**Completion Date**
Design	**7.5.2021**	**7.30.2021**
Construction	**8.2.2021**	**12.17.2021**

Phase 2 of 3	**Start Date**	**Completion Date**
Construction	**7.5.2022**	**12.16.2022**

Phase 3 of 3	**Start Date**	**Completion Date**
Construction	**7.5.2023**	**12.15.2023**

I. ADDITIONAL INFORMATION:

Three-year roll forward spending authority is required:	❑ Yes	X No
Request 6-month encumbrance waiver:	❑ Yes	X No
Is this a continuation of a project appropriated in a prior year:	X Yes	❑ No

State Controller Project Number (if continuation):	019I21

J. COST SAVINGS / IMPROVED PERFORMANCE OUTCOMES:

This project impacts all academic programs at all campuses, in a 3-year time period. Because faculty will reduce the time spent working with differing technology in each classroom, less time will be spent setting up and more time in actual instruction. This should improve student performance and increase engagement, leading to increased student retention and completion.

In addition, this project will provide students the ability to review lectures recorded on campus from off-campus on their own schedule. This will allow the college to continue to meet student needs in the event of an unanticipated campus closure or to address individual student challenges caused by illness, work/school schedule conflicts, and other life issues.

K. SECURITY AND BACKUP / DISASTER RECOVERY:

The classroom and conference room technology plans will take advantage of existing network infrastructure and security protocols.

L. BUSINESS PROCESS ANALYSIS:

Alternatives to the project considered are to provide similar capabilities by re-using existing equipment and replacing components of the classroom and conference room solutions. While these considerations would provide for a more cost efficient solution it does not account for the primary issues experienced by the end users. The current equipment is difficult to operate and is failing at a rate that is impacting student's instruction time. The existing equipment is not consistent across buildings or campuses and is causing loss of instruction time when frequent failures occur.

A project plan will be implemented to ensure adherence to the timeline and budget allocated. The CCD IT department was able to effectively complete on-time and within budget all major projects related to the network, backups and virtualization planned since 2015. The project also fits the CCD IT strategic plan because it additionally will standardize equipment across all campuses and simplify the design of classroom and conference room technology.

Collaboratively Transforming the ERP/SIS Experience

Metropolitan State University/Colorado School of Mines

COLORADO Department of Higher Education

STATE OF COLORADO
DEPARTMENT OF HIGHER EDUCATION

Five-Year Capital Information Technology (IT) Project Plan FY 2023-24 to FY 2027-28 (CC_IT-5P)

(A)	(1) **Institution Name:**	Colorado School of Mines Metropolitan State University of Denver	(2) **Institution Signature Approval:**	Date
(B)	(1) **Name & Title of Preparer:**	John Obrecht, Sr Dir Enterprise Apps, Mines Noelle Sanchez, Controller, Mines Nick Pistentis, Deputy CIO, MSU Denver	(2) **CDHE Signature Approval:**	Date
(C)	(1) **E-mail of Preparer:**	npistent@msudenver.edu, jobrecht@mines.edu, nsanchez@mines.edu		

(D)	***GRAND TOTALS***	*(b) Total Project Cost*	*(c) Total Prior Appropriation*	*(d) Current Budget Year Request*	*(e) Year Two Request*	*(f) Year Three Request*	*(g) Year Four Request*	*(h) Year Five Request*
	Capital Construction Funds (CCF)	$14,152,701	$3,093,000	$6,439,456	$4,620,245	$0	$0	$0
	Cash Funds (CF)	$1,474,536	$361,000	$651,613	$461,923	$0	$0	$0
	Reappropriated Funds (RF)	$0	$0	$0	$0	$0	$0	$0
	Federal Funds (FF)	$0	$0	$0	$0	$0	$0	$0
	Total Funds (TF)	**$15,627,237**	**$3,454,000**	**$7,091,069**	**$5,082,168**	**$0**	**$0**	**$0**

(1)	**Project Title:**	Collaboratively Transforming the ERP/SIS Experience						
(2)	**Brief Description of Project:**	Joint initiative between MSU Denver and Mines to implement a modern ERP/SIS solution. Previous years were submitted as separate requests						
(3)	**Intercept Program? (Yes/No):**	**No**						
(4)	(a) **Priority Number:**	1	(b) **Project Type:**		(c) **Gross Square Feet:**			
(5)	(a) **Funding Source**	(b) **Total Project Cost**	(c) **Total Prior Appropriation**	(d) **Current Budget Year Request**	(e) **Year Two Request**	(f) **Year Three Request**	(g) **Year Four Request**	(h) **Year Five Request**
(6)	Capital Construction Funds (CCF)	$14,152,701	$3,093,000	**$6,439,456**	$4,620,245	$0	$0	$0
(7)	Cash Funds (CF)	$1,474,536	$361,000	**$651,613**	$461,923	$0	$0	$0
(8)	Reappropriated Funds (RF)	$0	$0	**$0**	$0	$0	$0	$0
(9)	Federal Funds (FF)	$0	$0	**$0**	$0	$0	$0	$0
(10)	**Total Funds (TF)**	**$15,627,237**	**$3,454,000**	**$7,091,069**	**$5,082,168**	**$0**	**$0**	**$0**

(1)	**Project Title:**							
(2)	**Brief Description of Project:**							
(3)	**Intercept Program? (Yes/No):**							
(4)	(a) **Priority Number:**		(b) **Project Type:**		(c) **Gross Square Feet:**			
(5)	(a) **Funding Source**	(b) **Total Project Cost**	(c) **Total Prior Appropriation**	(d) **Current Budget Year Request**	(e) **Year Two Request**	(f) **Year Three Request**	(g) **Year Four Request**	(h) **Year Five Request**
(6)	Capital Construction Funds (CCF)	$0	$0	**$0**	$0	$0	$0	$0
(7)	Cash Funds (CF)	$0	$0	**$0**	$0	$0	$0	$0
(8)	Reappropriated Funds (RF)	$0	$0	**$0**	$0	$0	$0	$0
(9)	Federal Funds (FF)	$0	$0	**$0**	$0	$0	$0	$0
(10)	**Total Funds (TF)**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**

(1)	**Project Title & No. of Phases:**							
(2)	**Brief Description of Project:**							
(3)	**Intercept Program? (Yes/No):**							
(4)	(a) **Priority Number:**		(b) **Project Type:**		(c) **Gross Square Feet:**			
(5)	(a) **Funding Source**	(b) **Total Project Cost**	(c) **Total Prior Appropriation**	(d) **Current Budget Year Request**	(e) **Year Two Request**	(f) **Year Three Request**	(g) **Year Four Request**	(h) **Year Five Request**
(6)	Capital Construction Funds (CCF)	$0	$0	**$0**	$0	$0	$0	$0
(7)	Cash Funds (CF)	$0	$0	**$0**	$0	$0	$0	$0
(8)	Reappropriated Funds (RF)	$0	$0	**$0**	$0	$0	$0	$0
(9)	Federal Funds (FF)	$0	$0	**$0**	$0	$0	$0	$0
(10)	**Total Funds (TF)**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**

COLORADO
Department of Higher Education

STATE OF COLORADO
DEPARTMENT OF HIGHER EDUCATION

Print Date: 8/10/2022

FY23-24 CAPITAL INFORMATION TECHNOLOGY PROJECT REQUEST- *COST SUMMARY (CC_IT-C)**

(A)	(1) **Funding Type (Cash, CCF, Cash & CCF):**	**CCF and CF**	(2) **Intercept Program Request? (Yes/No):**	
(B)	(1) **Institution:**	Metropolitan State University of Denver Colorado School of Mines	(2) **Name & Title of Preparer:**	Noelle Sanchez (Controller, Mines) John Obrecht (Snr. Dir, Enterprise Solutions, Mines) Nick Pistentis (Deputy CIO, Metro)
(C)	(1) **Project Title:**	Collaboratively Transforming the ERP/SIS Experience	(2) **E-mail of Preparer:**	jobrecht@mines.edu, nsanchez@mines.edu npistent@msudenver.edu
(D)	(1) **Project Phase (__ of __):**	3 of 4	(2) **State Controller Project # (if continuation):**	
(E)	(1) **Project Type (IT):**	Capital IT	(2) **Institution Signature Approval:**	05/25/22 Date
(F)	(1) **Year First Requested:**	FY 2021 - 2022	(2) **CDHE Signature Approval:**	Date
(G)	(1) **Priority Number (Leave blank for continuation projects):**	_____ of _____	(2) **OSPB Signature Approval**	Date

(1)		(a) **Total Project Costs**	(b) **Total Prior Year Appropriation(s)**	(c) **Current Budget Year Request**	(d) **Year Two Request**	(e) **Year Three Request**	(f) **Year Four Request**	(g) **Year Five Request**
	Land /Building Acquisition							
(2)	Land Acquisition/Disposition	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(3)	Building Acquisition/Disposition	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(4)	***Total Acquisition/Disposition Costs***	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	Professional Services							
(5)	Consultants/Contactors	$ 28,625,604	$ 7,235,350	**$ 11,826,289**	$ 9,563,965	$ -	$ -	$ -
(6)	Quality Assurance	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(7)	Training	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(8)	Leased Space (Temporary)	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(9)	Feasibility Study	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(10)	Other Services/Costs	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(11)	Inflation Cost for Professional Services	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(12)	Inflation Percentage Applied		0.00%	**0.00%**	0.00%	0.00%	0.00%	0.00%
(13)	***Total Professional Services***	$ 28,625,604	**$ 7,235,350**	**$ 11,826,289**	**$ 9,563,965**	**$ -**	$ -	$ -
	Associated Building Construction							
(14)	Cost for New (GSF):	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(15)	New $_____/GSF							
(16)	Cost for Renovate GSF:	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(17)	Renovate $_____/GSF							
(18)	Site Work/Landscaping	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(19)	Other (Specify)	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(20)	Inflation for Construction	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(21)	Inflation Percentage Applied		0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
(22)	***Total Construction Costs***	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	Software Acquisition							
(23)	Software COTS	$ 2,766,633	1,403,650	**$ 674,780**	**$ 688,203**	$ -	$ -	$ -
(24)	Software Built	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(25)	Inflation on Software	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(26)	Inflation Percentage Applied		0.00%	**0.00%**	0.00%	0.00%	0.00%	0.00%
(27)	***Total Software***	**$ 2,766,633**	**$ 1,403,650**	**$ 674,780**	**$ 688,203**	**$ -**	**$ -**	**$ -**
	Equipment							
(28)	Servers	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(29)	PCs, Laptops, Terminals, PDAs	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(30)	Printers, Scanners, Peripherals	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(31)	Network Equipment/Cabling	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(32)	Other (Specify)	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(33)	Miscellaneous	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(34)	***Total Equipment and Miscellaneous Costs***	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	Total Project Costs							$ -
(35)	***Total Project Costs***	**$ 31,392,237**	**$ 8,639,000**	**$ 12,501,069**	**$ 10,252,168**	**$ -**	**$ -**	**$ -**
	Project Contingency							
(36)	5% for New	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(37)	10% for Renovation	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(38)	***Total Contingency***	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	Total Budget Request							
(39)	***Total Budget Request***	**$ 31,392,237**	**$ 8,639,000**	**$ 12,501,069**	**$ 10,252,168**	**$ -**	**$ -**	**$ -**
	Funding Source							
(40)	Capital Construction Fund (CCF)	$ 28,417,701	$ 7,743,000	**$ 11,354,456**	$ 9,320,245	$ -	$ -	$ -
(41)	Cash Funds (CF)	$ 2,974,536	$ 896,000	**$ 1,146,613**	$ 931,923	$ -	$ -	$ -
(42)	Reappropriated Funds (RF)	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(43)	Federal Funds (FF)	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	TOTAL	**31,392,237**	**8,639,000**	**12,501,069**	**10,252,168**	**-**	**-**	**-**

*Sould match CC_IT-N Form

COLORADO
Department of Higher Education

STATE OF COLORADO
DEPARTMENT OF HIGHER EDUCATION

FY 2023-24 CAPITAL IT PROJECT REQUEST- *NARRATIVE (CC_IT-N)*		
Capital Construction Fund Amount (CCF):	**$11,354,456**	
Cash Fund Amount (CF):	**$ 1,146,613**	
Intercept Program Request? (Yes/No):	No	
Institution Name:	Metropolitan State University of Denver & Colorado School of Mines	
Project Title:	Collaboratively Transforming the ERP/SIS Experience	
Project Phase (Phase _of_):	3 of 4	
State Controller Project Number (if continuation):		
Project Type:		Technology Hardware
	X	Technology Software
Year First Requested:	FY 2021 - 2022	
Priority Number (Leave blank for continuation projects):	Continuation	
Name & Title of Preparer:	Nick Pistentis, Deputy CIO, Metropolitan State University of Denver John Obrecht, Sr Director Enterprise Applications, Colorado School of Mines Noelle Sanchez, Controller, Colorado School of Mines	
E-mail of Preparer:	npistent@msudenver.edu jobrecht@mines.edu nsanchez@mines.edu	
Institution Signature Approval:		Date
OSPB Signature Approval:		Date
CDHE Signature Approval:		Date

A. PROJECT SUMMARY/STATUS:

Provide a brief scope description of the project and explain the status of the prior appropriated phases. See instructions for further detail.

Both Metropolitan State University of Denver (MSU Denver) and Colorado School of Mines (Mines) first presented this multi-year initiative in FY 2021-22 and remain grateful for the support that our projects have received. The funds allocated in the past two fiscal years have allowed our institutions to surge toward revitalized core enterprise systems and have demonstrated the state's commitment to driving technological innovation and efficiency within higher education.

At this juncture, our institutions remain on course to launch Workday's Human Capital Management and Financials Enterprise Resource Planning (ERP) platform in January 2023. This solution, which we are deploying in close cooperation with each other and with a shared implementation partner, will immediately deliver dramatic improvements in the employee experience, streamline both schools' financial reporting processes, and deliver improved analytics regarding organizational financial health and employee satisfaction. Further, this system will represent a quantum leap forward in our ability to deliver a diverse, equitable, and inclusive environment by offering more inclusive language for applicants and employees, providing clear metrics regarding campus DEI achievements, and by including a built-in dashboard and

scoring tool known as the VIBE index to visualize progress and identify growth opportunities. These notable system advancements will transform the way our employees spend their time, transitioning work away from manual processes toward more efficient and strategic efforts.

The funding allocated in the preceding two years has been applied primarily toward implementation of the ERP platform, which is a foundational necessity before Student Information System (SIS) transformation may begin. As a summary, we have:

- Engaged an independent third-party consulting firm to analyze our respective environments and recommend a strategic path forward as it relates to ERP/SIS solutions.
- Leveraged the consultants' findings to guide internal discussions with leaders and users at our universities and proceed with a competitive bid process.
- Selected Workday HCM/Fin from a broad field of offerings as our ERP solution of choice.
- Launched the HCM/Fin implementation with Collaborative Solutions, a top Workday implementation partner.
- Maintained momentum and are presently on track for successful delivery of the ERP solution in January 2023.
- Continued to research and evaluate candidate Student Information System solutions and have engaged our student service teams for feedback throughout the process.

Looking forward, the next year will be instrumental in our efforts to find a solution that will transform the student online experience at MSU Denver and Mines:

- Our next step will be finalization of our Student Information System selection, which we aim to complete by December 2022.
- This timeline will put us on course for a 24 - 30 month SIS implementation project, aimed for launch in August 2025 to support the 2025-26 academic year.
- The bulk of funding requested across the remaining two years of the proposed project will be allocated to student information system transformation efforts.

MSU Denver and Mines continue to collaborate closely with Colorado university peers, both formally and informally, to align our ERP/SIS strategies and deliver measurable improvements for students at institutions across the state. Our collaborative approach has yielded a net software licensing savings of over 13%, and we anticipate implementation savings of approximately 20% as a result of our cooperative work. Our total projected efficiencies resulting from this collaboration – with each other and with other schools in the state – are as follows:

Savings Source	Amount	Description
10 year ERP Contract	$977,812	7% savings on extended contract for both schools
Letter of Intent Pricing	$3,000,000	13% savings from initial quoted pricing over 10 years
Aligned Contract Terms	$60,000	estimated 500 hours saved in contract negotiations
Integration Strategy	$3,000,000	20% savings against direct implementation costs for all participating schools.
Long Term Savings - Mines	$1,617,917	anticipated net savings over life of contract versus current system; savings begin to accrue in YR5. Gross savings of $3.3mn+
Long Term Savings – MSU Denver	$2,713,297	anticipated net savings over life of contract versus current system; savings begin to accrue in YR5. Gross savings of $4.4mn+
Total	**$11,369,026**	

B. SUMMARY OF PROJECT FUNDING REQUEST:

Funding Source	Total Project Cost	Total Prior Appropriation (Y1 + Y2)	Current Budget Year Request (Y3)	Year Four Request	Year Five Request
Capital Construction Funds (CCF)	MSU $14,265,000	MSU: $4,650,000	**$11,354,456**	$9,320,245	$0
	Mines $14,152,701	Mines: $3,093,000			
Cash Funds (CF)	MSU $1,515,000	MSU: $535,000	**$1,146,613**	$931,923	$0
	Mines $1,474,536	Mines: $361,000			
Reappropriated Funds (RF)	$0	$0	**$0**	$0	$0
Federal Funds (FF)	$0	$0	**$0**	$0	$0
Total Funds (TF)	**$31,392,237**	**$8,639,000**	**$12,501,069**	**$10,252,168**	**$0**

C. PROJECT DESCRIPTION/SCOPE OF WORK/JUSTIFICATION:

Provide a detailed description of the project, phases, funding and any other information relevant to the project. Include information on best practices. Describe how the project fits in with the Higher Education Master Plan goals.

As noted previously, each school recently completed a comprehensive external analysis of our ERP/SIS landscape, which was based on best practice comparisons, constituent interviews, and a market review of available solutions. While the two reviews occurred independently, the conclusions were remarkably similar, as voiced by Campus Works: "***the overall message is that the current state of Ellucian's Banner system is not meeting the needs of the institution***." Further, each school evaluated the campus climate and appetite for comprehensive change; roughly two-thirds of MSU Denver survey respondents favored replacing or re-implementing Banner, and Mines respondents scored highly within the quantitative Awareness, Desire, Knowledge, Ability and Reinforcement (ADKAR) framework.

With this in mind, Mines and MSU Denver are working in close collaboration to advance a comprehensive enterprise system transformation at our respective institutions, leveraging the same ERP product suite, the same implementation partner, and working to align processes wherever practical in an effort to jointly deliver the best outcome to our students, faculty, and staff.

The first phase of this initiative is fully underway, with our Workday Human Capital & Financials implementations moving forward aggressively. At the same time, we are jointly laying the groundwork for the second phase, which will focus on replacing our aging, on-premise Student Information Systems. We anticipate that this high impact initiative will deliver a robust, modern experience for nearly 25,000 students in Colorado, while also facilitating the implementation of streamlined business processes, reductions in third-party systems, improved analytics to facilitate data-driven decision making, and increased reliability and resiliency.

Alignment with the Higher Education Master Plan

By continuing to fund this project, the CDHE and Legislature will be investing in institutions whose missions encompass the four strategic goals outlined in the Higher Education Master Plan in impactful ways, including the following:

- *Strategic Goal 1: Increase Credential Completion – This goal stresses the importance of increasing the number of Coloradans with postsecondary education, including credentials in high-demand areas such as STEM and teacher education.*

    - Investing in this project will support this strategic goal by simplifying the student digital experience, removing barriers to course registration, advising and academic planning tools, and consolidating these critical resources in a single system and view. In particular, MSU Denver excels in educating teachers and Mines in developing STEM practitioners, with Mines standing as one of the premier engineering institutions in the world.

- *Strategic Goal 2: Erase Equity Gaps – The second strategic goal focuses on erasing the current equity gap experienced by Colorado's largest and fastest-growing ethnic group, Hispanic/Latino.*

    - Each institution embraces diversity and codifies diversity as a core value. Mines remains dedicated to increasing underrepresented groups participation in STEM. Nearly 20% of Mines students identify with underrepresented groups and Mines has a goal to double that number by 2024. MSU Denver is a federally designated Hispanic Serving Institution, with over 5,000 enrolled Hispanic and Latino students. Over half of enrolled undergraduates are students of color, and MSU Denver invests heavily in programs to support undocumented, DACA, immigrant, and refugee students, striving to create an inclusive community of learners. Investing in this project will provide better tools to the faculty and staff who deliver the above services, and new technologies will offer improved language customization and accessibility features that expand access to groups beyond ethnic divisions.

- *Strategic Goal 3: Improve Student Success – The third strategic goal supports innovative approaches for improving students' timely education completion.*

    - As innovative institutions, Mines and MSU Denver must continue to take the lead in pursuing advanced technology solutions to solve today's and tomorrow's challenges. Deploying an updated student information system will support student success by improving the digital tools available to students as they plan their degree path, simplify transactions such as registration and tuition payment, and make resources available to students, advisors, and support staff that drastically reduce barriers to success and frustrating interactions between students and their objectives.

- *Strategic Goal 4: Invest in Affordability and Innovation –The fourth goal describes the commitment to maintain affordability through increased state investment in postsecondary education.*

    - Investing in this project would support the Colorado Commission on Higher Education's "urgent call to action": *"If the state of Colorado is to prepare its students for changing workforce demands and maintain its high quality of life and vibrant economy, it must invest more in the educational attainment of all its citizens."* As illustrated in Section G below, pursuing this project yields a positive return on investment, ensuring that each school can allocate more resources where they belong – educating Coloradans, rather than supporting an aging infrastructure

D. PROGRAM INFORMATION:

Provide a description of the programs within the institution that will be impacted by this request.

Transforming the ERP/SIS ecosystem at our schools directly and positively impacts the entire Mines and MSU Denver communities. This initiative presents an opportunity to differentiate ourselves in an increasingly competitive landscape and positions our institutions to adapt with the higher education industry as it shifts over time.

- Our students will enjoy access to a cloud-based, mobile friendly system that increases efficiency and accessibility for course registration, financial aid processing, and potentially academic advising and career counseling.

- Faculty will use the system to perform core administrative functions of their job such as submit student grades, review course rosters and administer grant awards.
- Staff will utilize modern interfaces to perform core business functions, admitting new students, awarding financial aid, processing payments, and recruiting and on-boarding talented faculty, staff and student employees

E. CONSEQUENCES IF NOT FUNDED:

Provide a description of consequences if this project is not funded. See instructions for further detail.

While the higher education technology landscape continues to evolve, our institutions continue to rely on outdated and cumbersome infrastructure, based on technology older than many of the students who we serve. The Ellucian Banner system currently in place was first deployed in 1998 at MSU Denver, and in 2005 at Mines. While we have deployed numerous upgrades over the intervening years, our user populations have come to increasingly rely on third-party systems and cumbersome, manual workarounds to deliver a more modern experience to students accustomed to seamless use of contemporary, mobile technology in their daily lives.

Further, recruiting skilled labor to support the on-premise Ellucian Banner platform is challenging; in the past five years, our institutions have had a combined eleven failed searches to fill open positions for Banner Developer and Banner Administrator roles, leading to an increased reliance on contracted labor at a higher annual cost than in-house resources. As the solution continues to age, this challenge will only increase.

The funding received for the first two years of this project has been hugely valuable, permitting us to transform the systems that our talented faculty and staff use each day and freeing them to focus on delivering services to our students; funding for years three and four of our proposed initiative will permit us to launch the SIS transformation, bringing a modern digital experience directly to Colorado students.

It is important to note that years three and four of this initiative are inextricably linked, as the SIS implementation will take multiple fiscal years to complete. As such, if it is simpler for the State and Committee members, we would be amenable to receiving the two remaining out-year requests this year.

F. ASSUMPTIONS FOR CALCULATIONS:

Describe the basis for how the project costs were estimated. Include inflation assumptions. See instructions for further detail.

As part of our respective ERP assessment engagements and in collaboration with Colorado peers and service providers, we have produced implementation estimates for each institution based on historical trends in this type of project and included a 10% contingency in our estimates to account for unanticipated variations.

G. OPERATING BUDGET IMPACT:

Detail operating budget impacts the project may have. See instructions for further detail.

In total, our two institutions presently devote a total of nearly $6.5 million annually to supporting our on-premise ERP solution, including licensing, infrastructure, staffing, and ancillary systems.

By comparison, following the initial implementation, the annual cost of the proposed alternative solution is projected at less than $5 million in total for both schools, resulting in a gross cost savings of nearly $8

million over the contract term, and a net savings of roughly $4.3 million (see table in section A above for more detail).

In addition, addressing current inefficiencies in our business processes would provide cost avoidance and savings throughout our institutions. Optimizing and automating these processes would allow individual departments to better leverage their existing staff, providing a much higher level of service to the university community without needing additional FTE.

H. PROJECT SCHEDULE:

Identify project schedule by funding phases. Add or delete boxes as required for each phase. See instructions for further detail.

Phase 1 of 4	Start Date	Completion Date
Pre-Design	7/1/2020	10/01/2020
Design	10/02/2020	12/31/2021
Implementation	01/01/2022	06/30/2022

Phase 2 of 4	Start Date	Completion Date
Implementation: ERP	07/01/2022	06/30/2023
Pre-Design: SIS	01/01/2023	06/30/2023

Phase 3 of 4	Start Date	Completion Date
Post Implementation: ERP	07/01/2023	06/30/2024
Design: SIS	06/30/2023	09/30/2023
Implementation: SIS	10/01/2023	06/30/2024

Phase 4 of 4	Start Date	Completion Date
Implementation: SIS	07/01/2024	09/30/2025

I. ADDITIONAL INFORMATION:

Three-year roll forward spending authority is required:	Yes
Request 6-month encumbrance waiver:	Yes
Is this a continuation of a project appropriated in a prior year:	Yes
State Controller Project Number (if continuation):	TBD

J. COST SAVINGS / IMPROVED PERFORMANCE OUTCOMES:

Describe the cost savings or improved performance outcomes as a result of this project. Please clearly identify and quantify anticipated administrative and operating efficiencies or program enhancements and service expansion through cost-benefit analyses and return on investment calculations.

Through a purely financial lens this project will yield measurable cost savings over a ten-year period (as outlined in Section G). These savings are compounded by gains in drastically increased efficiency for all student-facing and administrative departments, which presently rely on cumbersome ERP/SIS solutions for critical business functions. Present estimates indicate that, at MSU Denver alone, realization of equivalent

gains in administrative productivity offered by this project would require the addition of a minimum of 25 additional staff members.

We collectively identified over twenty third-party applications which are used today across MSU Denver and Mines and may be eliminated if a modern system is deployed. This alone will yield significant efficiencies for staff members who today must bounce between disparate interfaces to complete their work; the operating costs of these systems have not yet been included in projected savings pending further investigation but would contribute to further annual savings.

These financial gains are bolstered by a myriad of performance gains, including:

- Agile, innovative solutions that are ready to support a changing higher ed technology landscape
- Technology that meets the expectations of 21st century learners
- Unified, accessible data that can effectively support data informed decisions
- Reduced risk and greater system reliability.
- Ability to transform staff focus from operational to strategy and innovation.

K. SECURITY AND BACKUP / DISASTER RECOVERY:

Describe the data protection and disaster recovery considerations factored into the plan. Indicate any cybersecurity implications if applicable.

While both institutions boast a robust information security program and backup strategy today, migration to a cloud provider would offer increased resiliency. Reasons for this include:

As the present ERP/SIS is hosted on-premise, it is dependent upon campus network services; if internet access to our campuses is disrupted, access to our ERP/SIS environments is interrupted as well. This can be particularly impactful during periods of high demand, such as class registration dates, grade submission deadlines, or financial aid disbursement windows. By contrast, a cloud provider would offer a geographically distributed, fully redundant infrastructure, delivering a level of availability that would be impractical to replicate on campus.

Any provider under consideration has documented alignment with the ISO 27000 Family of Standards and regular completion of Service Organization Controls Type 1 and 2 reports. This level of rigor indicates a prioritization of reliability and availability from any of the candidates.

A move to a modern solution will offer enhanced data encryption protocols that exceed the current security capabilities of Mines or MSU Denver's on-premise solution.

L. BUSINESS PROCESS ANALYSIS:

Describe alternatives analyzed, cost-benefit analysis, and measures in place to prevent time and cost overruns. Articulate how the proposed project fits in with the institution's strategic IT plan.

Alternative Paths Considered

As noted above, each institution began this journey by soliciting an external, independent assessment of current posture and potential paths forward. The consulting teams presented three potential paths:

1. Status quo with minor adjustments (not recommended)
2. Reimplementation of Ellucian Banner
3. Selection and Implementation of new ERP/SIS

The consultants' report outlined pros and cons for three candidate solutions, encompassing points two and three above.

Managing the Change

Guiding a large, diverse organization through a change of this magnitude is never simple, and doing so will require thoughtful, engaged management, inclusive leadership, and strong institutional support. To that end:

- We have chartered cross-functional Steering Committees for this project, ensuring that all constituent voices are heard and included in the planning and implementation phases.
- Each institution has made significant organizational adjustments in preparation for a project of this scale, including augmentation of existing Software Project Management and Business Analysis resources and ongoing revision of internal project and portfolio management practices.
- To prevent time and cost overruns, we have secured experienced project management resources to support the effort and ensure that adequate attention is given to the effort throughout the organization.

Strategic Alignment

Each of our institutions have recently published updated strategic plans to articulate our focus and direction for the coming decade. MSU Denver's Strategic Plan 2030 and Colorado School of Mines Mines@150 emphasize similar objectives, including Student Access, Academic Excellence, Civic Engagement and Partnership, Diversity, Equity and Inclusion, and Being a Great Community.

This project has the opportunity to positively impact all of these objectives by providing an improved student experience, by reducing barriers to academic success, by enhancing our DEI efforts through streamlined analytics, and by providing a stable, scalable, reliable system that supports all University operations.

When evaluating and selecting new solutions, we seek transformative opportunities throughout campus – situations where the right technology can be applied to deliver massive results. This project, if funded, would fit that mold. We look forward to the opportunity to further discuss this proposal with State leaders and hope to proceed with a plan to collaboratively transform the ERP/SIS experience, benefitting Mines & MSU Denver's students and, by proxy, tens of thousands of Coloradans.

Improving Server Room

Community College of Aurora (CCCS)

STATE OF COLORADO
DEPARTMENT OF HIGHER EDUCATION

Print Date: 8/10/2022

FY23-24 CAPITAL INFORMATION TECHNOLOGY PROJECT REQUEST- *COST SUMMARY (CC_IT-C)**

(A)	(1) **Funding Type (Cash, CCF, Cash & CCF):**	**Cash and CCF**	(2) **Intercept Program Request? (Yes/No):**	No
(B)	(1) **Institution:**	Community College of Aurora	(2) **Name & Title of Preparer:**	John Bottelberghe, Associate Vice President of Administrative Services
(C)	(1) **Project Title:**	Improving Server Room	(2) **E-mail of Preparer:**	john.bottelberghe@ccaurora.edu
(D)	(1) **Project Phase (__ of __):**	1 of 1	(2) **State Controller Project # (if continuation):**	
(E)	(1) **Project Type (IT):**	Technology Hardware	(2) **Institution Signature Approval:**	Date
(F)	(1) **Year First Requested:**	FY 2023-2024	(2) **CDHE Signature Approval:**	Date
(G)	(1) **Priority Number (Leave blank for continuation projects):**		(2) **OSPB Signature Approval**	Date

(1)		(a) **Total Project Costs**	(b) **Total Prior Year Appropriation(s)**	(c) **Current Budget Year Request**	(d) **Year Two Request**	(e) **Year Three Request**	(f) **Year Four Request**	(g) **Year Five Request**
	Land /Building Acquisition							
(2)	Land Acquisition/Disposition	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(3)	Building Acquisition/Disposition	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(4)	***Total Acquisition/Disposition Costs***	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	Professional Services							
(5)	Consultants/Contactors	$ 51,020	$ -	$ 51,020	$ -	$ -	$ -	$ -
(6)	Quality Assurance	$ 5,000	$ -	$ 5,000	$ -	$ -	$ -	$ -
(7)	Training	$ 3,000	$ -	$ 3,000	$ -	$ -	$ -	$ -
(8)	Leased Space (Temporary)	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(9)	Feasibility Study	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(10)	Other Services/Costs	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(11)	Inflation Cost for Professional Services	$ 7,082	$ -	$ 7,082	$ -	$ -	$ -	$ -
(12)	Inflation Percentage Applied		0.00%	12.00%	0.00%	0.00%	0.00%	0.00%
(13)	***Total Professional Services***	$ 66,102	$ -	$ 66,102	$ -	$ -	$ -	$ -
	Associated Building Construction							
(14)	Cost for New (GSF):	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(15)	New $_____/GSF							
(16)	Cost for Renovate GSF:	$ 660,000	$ -	$ 660,000	$ -	$ -	$ -	$ -
(17)	Renovate $400/GSF							
(18)	Site Work/Landscaping	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(19)	Other (Specify)	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(20)	Inflation for Construction	$ 79,200	$ -	$ 79,200	$ -	$ -	$ -	$ -
(21)	Inflation Percentage Applied		0.00%	12.00%	0.00%	0.00%	0.00%	0.00%
(22)	***Total Construction Costs***	$ 739,200	$ -	$ 739,200	$ -	$ -	$ -	$ -
	Software Acquisition							
(23)	Software COTS	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(24)	Software Built	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(25)	Inflation on Software	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(26)	Inflation Percentage Applied		0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
(27)	***Total Software***	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	Equipment							
(28)	Servers	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(29)	PCs, Laptops, Terminals, PDAs	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(30)	Printers, Scanners, Peripherals	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(31)	Network Equipment/Cabling	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(32)	Other (Specify)	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(33)	Miscellaneous	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(34)	***Total Equipment and Miscellaneous Costs***	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	Total Project Costs							$ -
(35)	***Total Project Costs***	$ 805,302	$ -	$ 805,302	$ -	$ -	$ -	$ -
	Project Contingency							
(36)	5% for New	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(37)	10% for Renovation	$ 80,530	$ -	$ 80,530	$ -	$ -	$ -	$ -
(38)	***Total Contingency***	$ 80,530	$ -	$ 80,530	$ -	$ -	$ -	$ -
	Total Budget Request							
(39)	***Total Budget Request***	$ 885,833	$ -	$ 885,833	$ -	$ -	$ -	$ -
	Funding Source							
(40)	Capital Construction Fund (CCF)	$ 814,740	$ -	$ 814,740	$ -	$ -	$ -	$ -
(41)	Cash Funds (CF)	$ 71,093	$ -	$ 71,093	$ -	$ -	$ -	$ -
(42)	Reappropriated Funds (RF)	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(43)	Federal Funds (FF)	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	TOTAL	885,833	-	885,833	-	-	-	-

*Sould match CC_IT-N Form

COLORADO
Department of Higher Education

STATE OF COLORADO
DEPARTMENT OF HIGHER EDUCATION

FY 2023-24 CAPITAL IT PROJECT REQUEST- *NARRATIVE (CC_IT-N)*		
Capital Construction Fund Amount (CCF):	**$814,740**	
Cash Fund Amount (CF):	**$71,093**	
Intercept Program Request? (Yes/No):	No	
Institution Name:	Community College of Aurora	
Project Title:	Improving Server Room, 1 phase	
Project Phase (Phase _of_):	1 of 1	
State Controller Project Number (if continuation):		
Project Type:	X	Technology Hardware
		Technology Software
Year First Requested:	FY 2023 - 2024	
Priority Number (Leave blank for continuation projects):	1 OF 1	
Name & Title of Preparer:	John Bottelberghe, Associate Vice President of Administrative Services	
E-mail of Preparer:	John.bottelberghe@ccaurora.edu	
Institution Signature Approval:		Date
OSPB Signature Approval:		Date
CDHE Signature Approval:		Date

A. PROJECT SUMMARY/STATUS:

The Community College of Aurora's IT infrastructure is the core of the college's ability to deliver instruction, intake registration of new students, and other mission critical operations of the College.

The current state of our IT infrastructure is functionally obsolete. This project focuses on the core element of IT infrastructure starting from the server room, the support infrastructure and core servers and switches co-located in a single room of the Administration Building of CCA.

We are looking at five critical areas for remediation;

- Life Safety
- Power
- Environmental Controls
- Remediation and elimination of redundant or technical obsolescence
- Technology

B. SUMMARY OF PROJECT FUNDING REQUEST:

Funding Source	Total Project Cost	Total Prior Appropriation	Current Budget Year Request	Year Two Request	Year Three Request	Year Four Request	Year Five Request
Capital Construction Funds (CCF)	$0	$0	**$814,740**	$0	$0	$0	$0
Cash Funds (CF)	$0	$0	**$71,093**	$0	$0	$0	$0
Reappropriated Funds (RF)	$0	$0	**$0**	$0	$0	$0	$0
Federal Funds (FF)	$0	$0	**$0**	$0	$0	$0	$0
Total Funds (TF)	**$0**	**$0**	**$885,833**	**$0**	**$0**	**$0**	**$0**

C. PROJECT DESCRIPTION/SCOPE OF WORK/JUSTIFICATION:

We are looking at five critical areas for remediation;

- Life Safety – evaluate the current conditions and develop a plan to move to current standards and codes for data center safety.
    - NFPA 75 standard and codes for data center
- Power – asses the status of redundant, multipath power sources, capabilities of UPS systems, power conditioning, and generator backup.
- Environmental Controls - HVAC design team will need to review the building conditioned air currently supplying hot and cold building air to the space and determine best practices to re-duct and balance removal of supplied air. Once complete, data center HVAC design unique to the needs of the data center equipment needs to be evaluated, planed, and implemented to include heating, cooling, and humidity control.
- Remediation and elimination of redundant or technical obsolescence
    - Wiring cleanup
    - Pipe remediation
    - HVAC remediation and right-sizing
- Technology
    - Server Replacements. Servers are, at a minimum, six years old and the system is not at industry standard average of less than 4 years.
    - Ladder racks, over racks, and cable and fiber management
    - Training for staff on new equipment

This project will require bringing expert contractors in to assess and build a plan for the five critical areas and implement the plan. Systems already upgraded such as door access controls, duress button tie-ins, security video storage, elevator room emergency phone line, and some switch gear must remain in the server room, and will not be replaced.

See Exhibit A for images of current condition.

D. PROGRAM INFORMATION:

All CCA full-time, part-time, and adjunct employees will directly benefit from this project, but more importantly, all our students will benefit from this project.

The Strategic Plan for CCA outlines multiple commitments to excellence and success (Commitment 1) in an inclusive college culture (Commitment 3). To support the College's Strategic Plan, IT needs to successfully operate, support academics and the institution, and be prepared for Institutional Growth (Commitment 5). Improving the Server Room indirectly supports the College's commitment, but is vital to Commitment 5 for growth in the institution.

The Colorado Higher Education Master Plan, Colorado Rises, identifies four strategic goals; Increase Credential Completion, Erase Equity Gaps, Improve Student Success, and Invest in Affordability and Innovation. This project addresses the strategic goal of improving student success by ensuring a removal of barriers to our online learning and classroom interruptions.

> Interruptions and barriers to online learning negatively affect student success and lowers motivation which could prevent any student from being successful in class. Administrator/instructor issues such as online availability was identified as a major barrier to online leaning success. Please see https://www.cu.edu/doc/student-barriers-online-learning.pdf for more information on the affects of technical issues to online learning success.

Utilizing State Resources addresses Colorado Master Plan, Colorado Rises goal four by preventing the need for College cash funds or Student Technology fees on infrastructure and capital needs of the server room.

E. CONSEQUENCES IF NOT FUNDED:

Students are at risk because of periodic system failures and instability resulting in a student's inability to access class materials in a timely fashion. Since the vast majority of our instructors are on campus, and part time; they rely heavily on the same system as the students and face the same challenges to deliver high quality educational experiences.

CCA will have to divert any funding available, potentially including student technology fee and general operating fund money of $200,000 – $250,000 per year for several years. More funding may be required if catastrophic failure occurs in vital infrastructure such as the server room.

Life Safety systems rely heavily on the uninterrupted functionality of the server room. A loss of communication, power loss, or truncated or loss of function of the server room and equipment within will result in a loss of E911 capabilities and could hinder emergency response.

Duress buttons located in multiple areas of campus rely on the network connected to our security system all relay through this server room. A failure in the server room would result in a loss of Duress Button support from campus Security and would increase response time greatly.

A loss of the server room would result in the loss of classroom usability and network connectivity. The classroom teaching environment relies heavily on access to files stored in the server room and the connection to the internet through the server room and network. Inability to teach in a classroom negatively impacts a student's success. Inability to teach in a classroom prevents concurrent hybrid teaching as no one online could connect with their teacher during class time.

F. ASSUMPTIONS FOR CALCULATIONS:

CCA consulted with vendors to properly size the requested hardware and space improvements for each IT space, to allow for future growth and expansion in our environment. Once the pre-design is complete, CCA will request updated competitive quotes for all of the hardware and space improvement specified for the environment.

The IT systems identified match with current new CCA equipment standards and is readily available in today's market and will come with warranty for both labor and materials. The Associated IT systems in the proposed project are fully supported by CCA's current vendors, Cisco, AMN, and APC.

G. OPERATING BUDGET IMPACT:

This project will not have a significant impact to our operating budget. Historically, CCA relied heavily on internal funding for improvements and prevention projects for IT. This has caused CCA to fall behind all peers and industry standards as funding has fluctuated over the years. This project upgrades spaces CCA already maintains through support/maintenance agreements to rely on if systems fail. The opportunity to secure state funding for this project will allow CCA to catch up to business practices and industry standards from an information technology perspective much faster and help us continue to provide outstanding information technology experiences for all of our constituents.

H. PROJECT SCHEDULE:

Phase _1_of_1_	Start Date	Completion Date
Pre-Design	**September 2023**	**November 2023**
Design	**December 2023**	**December 2023**
Construction	**January 2024**	**April 2024**
FF&E /Other	**January 2024**	**January 2024**
Occupancy	**January 2024**	**January 2024**

I. ADDITIONAL INFORMATION:

Three-year roll forward spending authority is required:	❑ Yes	☒ No
Request 6-month encumbrance waiver:	❑ Yes	☒ No
Is this a continuation of a project appropriated in a prior year:	❑ Yes	☒ No
State Controller Project Number (if continuation):		

J. COST SAVINGS / IMPROVED PERFORMANCE OUTCOMES:

CCA does not anticipate any cost savings with this project, but CCA is at serious risk of not maintaining appropriate performance to meet the needs of students, staff and, faculty.

K. SECURITY AND BACKUP / DISASTER RECOVERY:

This project improves the Return to Operation (RTO) posture. This will mitigate the risk of service interruption.

Any service interruption to the server room could result in a loss of E911 services, functionality of duress buttons, lockdown/lockout functions for door access controls.

A loss in the access control system would prevent automated lockdown/lockout procedures, leaving the campus vulnerable in a high-risk situation.

A failure in the video servers stored in the server room would result in a loss of stored video of crimes in progress, vandalism, or unwanted visitors. Loss of video surveillance would greatly reduce the College's ability to respond to crimes on campus.

Physical access to server room will be improved and digital access will continue to utilize systems already in place such as two-factor authentication for access to systems when not physically in the server room.

L. BUSINESS PROCESS ANALYSIS:

This project is designed to address functional obsolescence in the IT areas. Once complete, the staffing hours required to maintain the system uptime and availability will be greatly reduced. Labor hours saved will be allocated to student and staff facing functions of the college which will improve turn around times on tickets submitted to IT.

Given the scope described, the opportunity for cost overruns are limited. Equipment count and room needs are known and the scope well defined.

ALTERNATIVES CONSIDERED

1. Do Nothing

   With the obsolescence and inadequate space of the server room, doing nothing puts CCA at a great risk of catastrophic failure in life safety systems, security systems, student support, and classroom support.

2. Move Server Room

   There is a large space deficit at the College. Allocating office space for a new server room is not available as there is not enough space of office personnel, storage, or support functions. Moving the fiber and network would be cost prohibitive. Other spaces available are not fire rated, secure, and upgrades would also be cost prohibitive in comparison to other alternatives considered.

3. Install prefabricated modular data center – External to Admin Building

   A prefabricated IT space added as an additional building to campus is one that would house only IT equipment and supporting infrastructure such as power, HVAC, and UPS. This alternative is cost prohibitive as it would require construction costs, the modular costs itself, rewiring fiber, power, generator, and networking equipment.

4. Install prefabricated modular data center – Internal to Admin Building

   Same as number 3 above, but would bring in a prefabricated "room". To bring in a "room with in a room" would require more physical space than is available and is not feasible in the current building.

5. Move Datacenter to Cloud

   Virtualizing data storage does not fully solve the issues of communication, protection of life safety systems and network communication. This alternative also increases cybersecurity risk and a loss of control of CCA data. This alternative was not fully vetted.

Results of the alternatives analysis all point to remediation of the current server room as the best option for benefit/cost. While some alternates could be implemented more quickly, all alternates listed above either increase risk or increase cost significantly.

Exhibit A

Image 1 - Server Room Entry

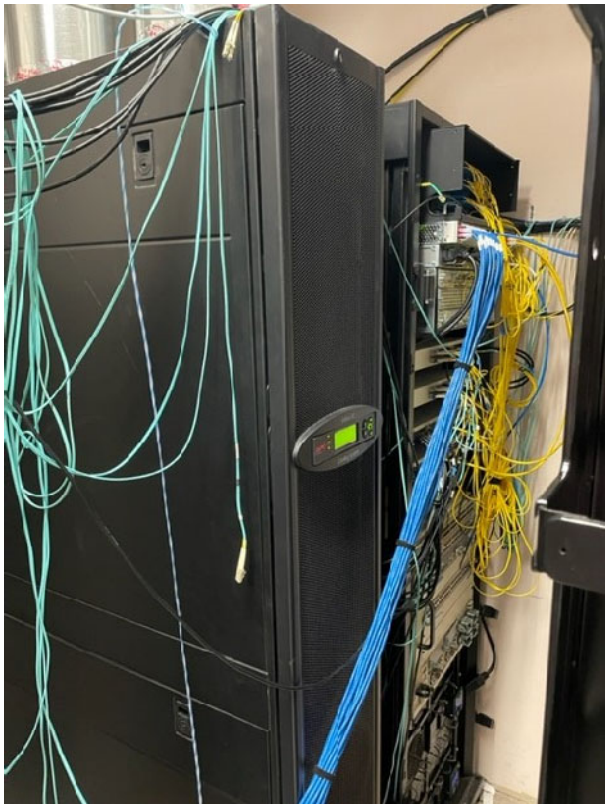

Image 3- Rack Cooling

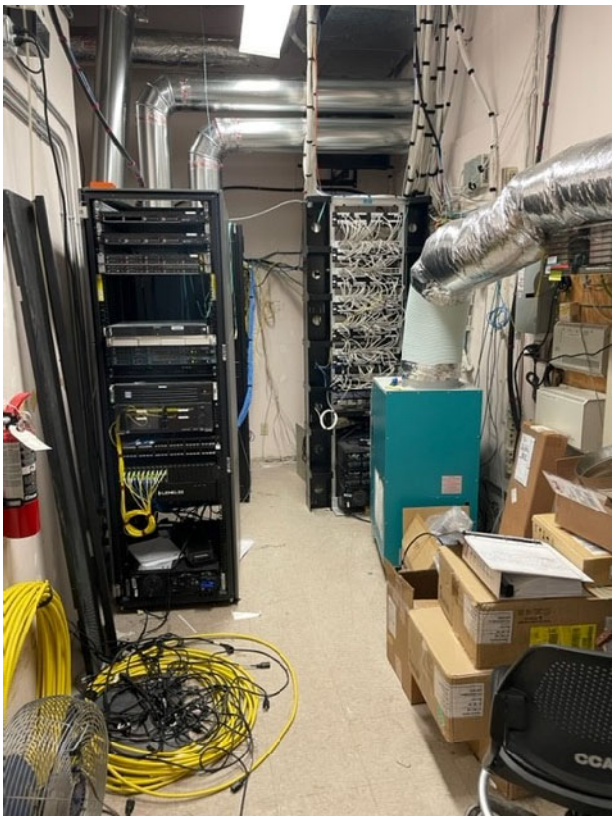

Image 2- View of Server Room

Image 4 - Supplemental Cooling Exhaust and Wall Mounted Abandoned Systems

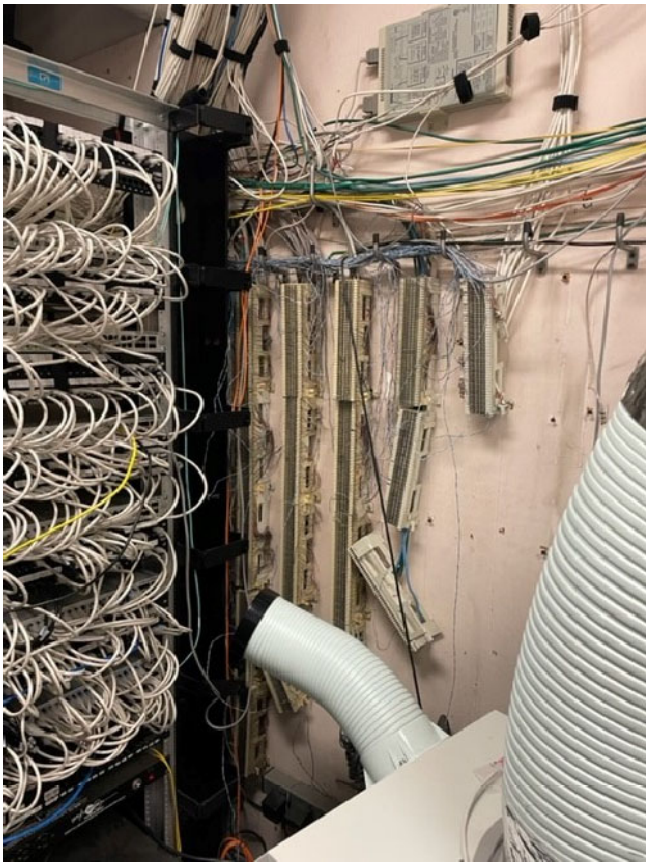

Image 5 - Abandoned Phone System

Image 7 - Abandoned TV Station and Current Wire Management

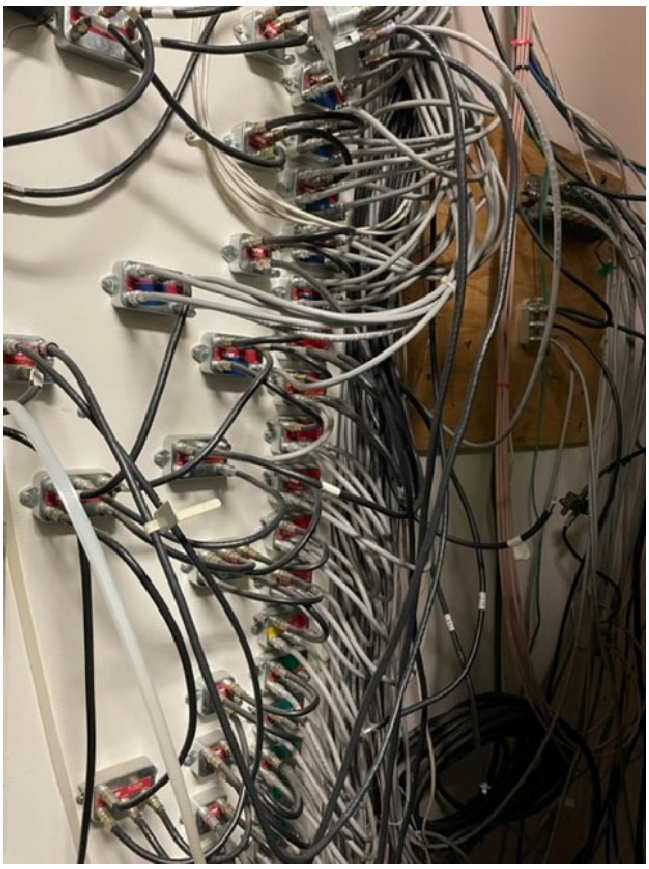

Image 6 - Abandoned Coaxial

Image 8 - Cooling Exhaust and Power Supply Panel

ERP Modernization and Cloud Migration

University of Northern Colorado

STATE OF COLORADO
DEPARTMENT OF HIGHER EDUCATION

Print Date: 8/10/2022

FY23-24 CAPITAL INFORMATION TECHNOLOGY PROJECT REQUEST- *COST SUMMARY (CC_IT-C)**

(A)	(1) **Funding Type (Cash, CCF, Cash & CCF):**	**CCF**	(2) **Intercept Program Request? (Yes/No):**	No
(B)	(1) **Institution:**	University of Northern Colorado	(2) **Name & Title of Preparer:**	Brad Sharp, Interim CIO
(C)	(1) **Project Title:**	ERP Modernization and Cloud Transistion	(2) **E-mail of Preparer:**	Brad.Sharp@unco.edu
(D)	(1) **Project Phase (__ of __):**	1 of 1	(2) **State Controller Project # (if continuation):**	
(E)	(1) **Project Type (IT):**	Capital IT	(2) **Institution Signature Approval:**	Date
(F)	(1) **Year First Requested:**	FY ___23_____	(2) **CDHE Signature Approval:**	Date
(G)	(1) **Priority Number (Leave blank for continuation projects):**	__1___ of ___2___	(2) **OSPB Signature Approval**	Date

(1)		(a) **Total Project Costs**	(b) **Total Prior Year Appropriation(s)**	(c) **Current Budget Year Request**	(d) **Year Two Request**	(e) **Year Three Request**	(f) **Year Four Request**	(g) **Year Five Request**
	Land /Building Acquisition							
(2)	Land Acquisition/Disposition	$ -	$ -	**$ -**	$ -	$ -	$ -	$ -
(3)	Building Acquisition/Disposition	$ -	$ -	**$ -**	$ -	$ -	$ -	$ -
(4)	***Total Acquisition/Disposition Costs***	$ -	$ -	**$ -**	$ -	$ -	$ -	$ -
	Professional Services							
(5)	Consultants/Contactors	$ 543,452	$ -	**$ 543,452**	$ -	$ -	$ -	$ -
(6)	Quality Assurance	$ -	$ -	**$ -**	$ -	$ -	$ -	$ -
(7)	Training	$ -	$ -	**$ -**	$ -	$ -	$ -	$ -
(8)	Leased Space (Temporary)	$ -	$ -	**$ -**	$ -	$ -	$ -	$ -
(9)	Feasibility Study	$ -	$ -	**$ -**	$ -	$ -	$ -	$ -
(10)	Other Services/Costs	$ -	$ -	**$ -**	$ -	$ -	$ -	$ -
(11)	Inflation Cost for Professional Services	$ -	$ -	**$ -**	$ -	$ -	$ -	$ -
(12)	Inflation Percentage Applied		0.00%	**0.00%**	0.00%	0.00%	0.00%	0.00%
(13)	***Total Professional Services***	$ 543,452	$ -	**$ 543,452**	$ -	$ -	$ -	$ -
	Associated Building Construction							
(14)	Cost for New (GSF):	$ -	$ -	**$ -**	$ -	$ -	$ -	$ -
(15)	New $_____/GSF							
(16)	Cost for Renovate GSF:	$ -	$ -	**$ -**	$ -	$ -	$ -	$ -
(17)	Renovate $_____/GSF							
(18)	Site Work/Landscaping	$ -	$ -	**$ -**	$ -	$ -	$ -	$ -
(19)	Other (Specify)	$ -	$ -	**$ -**	$ -	$ -	$ -	$ -
(20)	Inflation for Construction	$ -	$ -	**$ -**	$ -	$ -	$ -	$ -
(21)	Inflation Percentage Applied		0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
(22)	***Total Construction Costs***	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	Software Acquisition							
(23)	Software COTS	$ 739,284	$ -	**$ 739,284**	$ -	$ -	$ -	$ -
(24)	Software Built	$ -	$ -	**$ -**	$ -	$ -	$ -	$ -
(25)	Inflation on Software	$ -	$ -	**$ -**	$ -	$ -	$ -	$ -
(26)	Inflation Percentage Applied		0.00%	**0.00%**	0.00%	0.00%	0.00%	0.00%
(27)	***Total Software***	**$ 739,284**	**$ -**	**$ 739,284**	**$ -**	**$ -**	**$ -**	**$ -**
	Equipment							
(28)	Servers	$ -	$ -	**$ -**	$ -	$ -	$ -	$ -
(29)	PCs, Laptops, Terminals, PDAs	$ -	$ -	**$ -**	$ -	$ -	$ -	$ -
(30)	Printers, Scanners, Peripherals	$ -	$ -	**$ -**	$ -	$ -	$ -	$ -
(31)	Network Equipment/Cabling	$ -	$ -	**$ -**	$ -	$ -	$ -	$ -
(32)	Other (Specify)	$ -	$ -	**$ -**	$ -	$ -	$ -	$ -
(33)	Miscellaneous	$ -	$ -	**$ -**	$ -	$ -	$ -	$ -
(34)	***Total Equipment and Miscellaneous Costs***	$ -	$ -	**$ -**	$ -	$ -	$ -	$ -
	Total Project Costs							$ -
(35)	***Total Project Costs***	**$ 1,282,736**	**$ -**	**$ 1,282,736**	**$ -**	**$ -**	**$ -**	**$ -**
	Project Contingency							
(36)	5% for New	$ 64,137	$ -	**$ 64,137**	$ -	$ -	$ -	$ -
(37)	10% for Renovation	$ -	$ -	**$ -**	$ -	$ -	$ -	$ -
(38)	***Total Contingency***	$ 64,137	$ -	**$ 64,137**	$ -	$ -	$ -	$ -
	Total Budget Request							
(39)	***Total Budget Request***	**$ 1,346,873**	**$ -**	**$ 1,346,873**	**$ -**	**$ -**	**$ -**	**$ -**
	Funding Source							
(40)	Capital Construction Fund (CCF)	$ 1,291,651	$ -	**$ 1,291,651**	$ -	$ -	$ -	$ -
(41)	Cash Funds (CF)	$ 55,222	$ -	**$ 55,222**	$ -	$ -	$ -	$ -
(42)	Reappropriated Funds (RF)	$ -	$ -	**$ -**	$ -	$ -	$ -	$ -
(43)	Federal Funds (FF)	$ -	$ -	**$ -**	$ -	$ -	$ -	$ -
	TOTAL	**1,346,873**	**-**	**1,346,873**	**-**	**-**	**-**	**-**

*Sould match CC_IT-N Form

COLORADO
Department of Higher Education

STATE OF COLORADO
DEPARTMENT OF HIGHER EDUCATION

FY 2023-24 CAPITAL IT PROJECT REQUEST- *NARRATIVE (CC_IT-N)*		
Capital Construction Fund Amount (CCF):	$1,291,651	
Cash Fund Amount (CF):	$55,222	
Intercept Program Request? (Yes/No):	No	
Institution Name:	University of Northern Colorado	
Project Title:	ERP Modernization and Cloud Migration	
Project Phase (Phase _of_):	1 of 1	
State Controller Project Number (if continuation):		
Project Type:		Technology Hardware
	x	Technology Software
Year First Requested:	FY 2021_ - 2022 ___	
Priority Number (Leave blank for continuation projects):	_1__ OF _2__	
Name & Title of Preparer:	Brad Sharp, Interim CIO	
E-mail of Preparer:	Brad.Sharp@unco.edu	
Institution Signature Approval:		Date
OSPB Signature Approval:		Date
CDHE Signature Approval:		Date

A. PROJECT SUMMARY/STATUS:

The University of Northern Colorado requests state funding to implement an Enterprise Resource Planning (ERP) Modernization and Cloud Transition project. Our request will fund a student-first digital transformation that our students expect and demand. UNC's digital transformation aims to directly modernize the student experience, improve data-driven decisions, and improve student experience.

The core of our vision is to transform us away from a legacy on-premises Enterprise Resource Planning (ERP) to a cloud data-centric eco-system. This eco-system will consist of a student-focused modular ERP that puts the student experience first. The various eco-system elements will connect via a modern Data Hub that centralizes the multitude of data elements into a single source for accurate data-driven decisions. UNC's data-centric ERP vision focuses on providing relevant, timely, and accurate data to students and staff in a modern consumable format.

This digital transformation to cloud-based solutions will shift staff from maintaining and securing a legacy ERP from 2005 to delivering modern student-focused solutions. Without funding, UNC will continue to accumulate a significant "technical deficit" by supporting obsolete systems and processes. From an opportunity cost perspective, the sooner we invest in a digital transformation, the quicker UNC can focus on implementing and providing a modern ERP eco-system. The resulting cloud ERP eco-system will provide significant cost savings while drastically improving the student experience and, ultimately, increasing student outcomes.

This project will take 12-24 months to complete.

B. SUMMARY OF PROJECT FUNDING REQUEST:

UNC will be contributing 4.1% to the cost of this project.

Funding Source	Total Project Cost	Total Prior Appropriation	Current Budget Year Request	Year Two Request	Year Three Request	Year Four Request	Year Five Request
Capital Construction Funds (CCF)	$1,291,651	$0	$1,291651	$0	$0	$0	$0
Cash Funds (CF)	$55,222	$0	$55,222	$0	$0	$0	$0
Reappropriated Funds (RF)	$0	$0	$0	$0	$0	$0	$0
Federal Funds (FF)	$0	$0	$0	$0	$0	$0	$0
Total Funds (TF)	**$1,346,873**	**$0**	**$1,346,873**	**$0**	**$0**	**$0**	**$0**

C. PROJECT DESCRIPTION/SCOPE OF WORK/JUSTIFICATION:

The ERP Modernization and Cloud Migration project is a digital transformation that includes a fundamental change in the underlying data exchange process, identity management, and agility of a layered ERP eco-system. This project will also allow the institution to align with other Colorado Higher Education institutions in implementing changes to their ERP systems. The core components of this request are as follows:

Analysis and Reduction of Tech Debt

The proposed digital transformation will require a cost analysis for modernizing UNC's legacy on-premises ERP eco-system. This analysis will focus on the systems with the best ROI and set a prioritization for reducing our technical debt. Funding for this project will eliminate roughly $4 million in ERP tech debt.

An example of this tech debt is our current on-premises ERP vendor requiring us to move from a Microsoft Windows server to a Linux server environment. To accomplish this move, we have to duplicate all fifty-four of our servers, reinstall ERP software, purchase new Linux licensing for ancillary software (e.g., COBOL), update every line of custom code, and alter our security postures. The required move will require time from at least a dozen UNC professionals that could be working towards improving the student experience but instead are working on tech debt that will not go away until we move to the cloud.

As part of this request, we will conduct a modernization assessment. The assessment will include the following:

- Review Assessment of Business Processes
- Gap Analysis of Current ERP system
- Cloud ERP Market and Financial Analyses
- Migration Impact and Consideration
- Stakeholder Readiness Assessment

Data Fabric - Integration Tools

A necessary component of our modular eco-system is creating a modern cloud-based Data Fabric. This Data Fabric incorporates an iPaaS, a Data Hub, and Analytics. Implementing an iPaaS (Integration Platform and a Service) will

centralize and modernize our multitude of data exchanges. As the layers of the ERP have grown, UNC has used various methods to feed data among all those systems. An iPaaS tool will allow major technologies like our SIS, Online Learning Management Software, multiple CRMs, and Business Systems to exchange data accurately and timely. Having all the systems within a single iPaaS will also allow us to decouple from a single ERP vendor. Meaning we will have the flexibility for any future ERP adjustments.

Additionally, we will use the iPaaS to create a data hub to put all relevant data into a single data warehouse. The data hub will allow us to improve our data governance and enhance data accuracy. Thus, we can improve data retention rules within our data warehouse to purge unnecessary data.

The creation of the Data Fabric will improve Student analytics by putting timely and relevant information in front of students and campus leaders. The data elements of what makes up a student are only growing, and increasing the accuracy will only improve student outcomes.

Identity Management

A modern ID management solution will streamline our user account life cycle from creation to deactivation. The tool will provide role-based access rules to eliminate inefficient reactive business processes. A modern ID management tool will also expand our security posture. UNC currently has five different authentication technologies, and this tool can consolidate those into one interface to provide a standard experience across all the software endpoints. This consolidation will expand our multi-factor authentication to nearly all our technologies. This tool will also broaden our security controls to provide advanced analytics to detect potential security events.

Data-Centric Modular ERP Cloud

With funding, UNC will create "the evolved eco-system," with **data** being the center and primary focus. The focus of the ERP will no longer be a single ERP but a collection of modular SaaS solutions that fit UNC best. This modular approach will focus on ROI, with a modern and efficient student experience being the ultimate goal. The Data Fabric will bring all these solutions together and ultimately improve data analytics for our students and strategic leaders to strengthen all the various elements of student success.

Collaborations

We will continue collaborating with several other state institutions completing similar migrations. This project's Data Fabric and the cloud ERP portion is a joint activity with Colorado Mesa University. We will take advantage of vendor pricing, consultant management, functional team expertise, RFP composition, and ultimately selecting vendors. We will also benefit from communications with institutions working through various stages of their ERP transition. In the Spring of 2021, UNC signed a letter of intent with Colorado Mesa University, Colorado School of Mines, and Metro State to work together as the institutions look for opportunities to modernize their ERP environment. UNC meets monthly with Mines, MSU Denver, CMU, Western Colorado University, Fort Lewis College, and Adams State University.

D. PROGRAM INFORMATION:

The entire campus will benefit from migrating its ERP to cloud services and implementing an ERP modernization strategy, enabling the University to be more agile, leverage the latest technology, deliver on enterprise business capabilities, and transform the employee and student experience. Project Alignment with Strategic Goals is as follows:

Higher Education Master Plan Goals

This project aligns with several of the Colorado Higher Education Master Plan Goals. This project has specific ties to Improving Student Success and Investing in Affordability and Innovation. Meeting student technology expectations, including providing a quality end-user experience, is critical to a student's success and attaining a degree. Students continually engage in digital experiences, and by removing unnecessary challenges and barriers with information systems and online services, the University will be able to retain more students through degree completion. This project also supports investments in affordability and innovation. The University understands the importance of affordability of higher education. By expanding its financial planning and analysis capabilities and implementing additional business intelligence tools, the University will be able to transform data much faster. This will help UNC identify efficiencies in delivering courses and supporting students most economically.

Alignment with UNC's Vision for 2030

This project supports several of UNC's visioning initiatives. Below are the key alignments:

Students First: We exist to transform the lives of our students. We focus on all aspects of their success by making intentional decisions to meet their needs and the needs of our community.

- A modern ERP eco-system increases functionality and flexibility to improve the student experience.
- This transformation will lead to efficient processing, better analytics, and increased capability to forecast student outcomes and interventions.
- This project will increase integration between systems and better utilization of data.

Enhance & Invest: Students' success relies on a healthy and strong team. We provide our staff and faculty with the support they need to succeed as professionals, educators, and in life. We foster an environment where their individual well-being and sense of belonging are vital to our collective success.

- The efficiencies gained by faculty and staff will allow for more dedicated resources to student outcomes.
- With state funding, UNC will be able to deliver a modern student experience and provide analytics to strategic leaders.

Innovate & Create: Learning occurs through critical inquiry, discovery, and creation. We leverage technology and capitalize on opportunities to innovate and improve instruction. We anticipate and address societal needs by transforming the campus into a creative laboratory that asks questions, solves problems, and shapes Colorado's future.

- The new ERP strategy will provide streamlined system management and business process redevelopment. Through the implementation, the business processes will be evaluated and re-engineered.

E. CONSEQUENCES IF NOT FUNDED:

If this project is not funded, our significant amount of tech debt will only increase, our student experience will remain obsolete, and our security posture will remain exposed.

UNC's current on-premises ERP and associated systems were implemented in 2005. The cost of trying to refactor modern solutions with legacy technology is preventing investments in innovative solutions. Our on-premises environment requires costly investments in various hardware and software. Funding for this project will drastically reduce our data-center footprint.

Today students demand modern interfaces and business processes. UNC will not be able to advance our student experience without funding. These legacy interfaces directly impact the student experience and can lead to declining numbers in retention, graduation dates, and enrollment.

Our desired cloud vendor can provide a significantly better security posture for our data. Without funding, UNC's security risk will increase through unknown vulnerabilities, the technical complexities of managing highly intricate and vast data environments, and the loss of historical understanding via the retirement or transition of long-time technical and operational staff.

F. ASSUMPTIONS FOR CALCULATIONS:

UNC developed the project's cost using estimates of competing ERP vendors, technology consultant input, and information shared among Colorado schools collaborating on project plans and strategies to modernize ERP systems. Estimates for migrating to cloud services, including implementation services, were provided by two providers.

This project to modernize the University's ERP will significantly enhance the institution's business capabilities and end-user experience and enable business agility. The ongoing cost of leveraging cloud-based ERP solutions will increase the University Information Technology operations annual budget. However, eliminating the expense of supporting on-premise hardware, data storage, data backup systems, and associated data-center infrastructure costs will offset continuing operational expenses.

The roughly $4 million in tech debt figures total the annual expenses for hardware, software, maintenance, and FTE hours (gross salaries) that encompass our on-premises ERP. Or roughly 32% of the IM&T yearly budget.

G. OPERATING BUDGET IMPACT:

To assess the impact on UNC's budget, we conducted an extensive analysis. We have requested state funds to operate the new cloud ERP eco-system in the first year. In FY25, we will assume an increase to our operating budget of roughly $719,790. The new cloud ERP eco-system contracts will likely be for five years. However, reductions in hardware and other software costs will offset a portion of the increase in expense. Reductions in tech debt will be significant once we move to cloud systems. These reductions will be tremendous savings for UNC regarding FTE labor and opportunity costs.

Description	FY 24 - State Funded	FY 25 - UNC Funded
ERP Analysis	$ 75,000	
Data Fabric	$ 150,000	$ 150,000
Data Fabric Implementation	$ 52,500	
ID Management	$ 40,000	$ 42,000
ID Management Implementation	$ 185,000	
Cloud ERP	$ 549,284	$ 527,790
Cloud ERP Implementation	$ 230,952	
Project Total	**$ 1,282,736**	**$ 719,790**
Project and Product Contigency	$ 64,137	
UNC Contribution (Full Points)	$ 55,222	
Total Project	**$ 1,291,651**	

H. PROJECT SCHEDULE:

The University of Northern Colorado employs several project managers, and our Project Management Office (PMO) manages the project portfolio. A project manager will be assigned, and the initial scope will be reviewed and updated. Stakeholders and technical staff will attend a kickoff meeting outlining the various project policies and procedures. One of the main procedures reviewed will be the change management policy that includes communication plans to students, faculty, and staff. UNC has a well-defined maintenance window (Thurs, Sat, and Sun 5 am-7 am). This project will require a phased implementation. The project will take 12-14 months to complete. We will work with and communicate with our IT governance group, including Academic, Student, and Administrative units.

Phase _1_of_1_	Start Date	Completion Date
Pre-Design	**4/1/2023**	**6/1/2023**
Design	**6/1/2023**	**7/1/2023**
Procurement	**6/1/2023**	**8/1/2023**
Implementation	**10/1/2023**	**7/1/2023**
Testing	**4/1/2023**	**7/1/2023**
Go Live	**7/1/2023**	**8/1/2023**

I. ADDITIONAL INFORMATION:

Three-year roll forward spending authority is required:	■ Yes	❑ No
Request a 6-month encumbrance waiver:	❑ Yes	■ No
Is this a continuation of a project appropriated in a prior year:	❑ Yes	■ No
State Controller Project Number (if continuation):		

J. COST SAVINGS / IMPROVED PERFORMANCE OUTCOMES:

The significant amount of tech debt that UNC currently possesses will only grow until we modernize to a cloud-based ERP eco-system. A digital transformation project will eliminate the maintenance, refactoring, and licensing of UNC's legacy ERP. As mentioned in section C, UNC's initial research resulted in an estimated ERP tech debt of

roughly $4 million or 32% of our annual operating budget. Therefore, funding this project will significantly reduce our tech debt and free our staff and budgets to provide a modern student-first experience.

K. SECURITY AND BACKUP / DISASTER RECOVERY:

This project would provide a significant improvement in UNC's Disaster Recovery posture. The use of cloud vendors and SaaS strengthens campus business continuity preparedness. Cloud providers have redundancy and capabilities far exceeding the capabilities of an institution of our size. The cloud-hosted infrastructure offers geographically-distributed and fully redundant infrastructure. Expectations from cloud providers are an uptime of 99.9%. Moving to the cloud will reduce the restoration of systems to minutes or hours instead of days or weeks.

Security benefits would be substantial because the ERP is no longer in our Data Center. Any cloud vendor would be dedicating substantial staffing resources to their security architecture, which an educational institute simply cannot do at that scale. This would allow our security team to focus on other network and cyber security initiatives. Through solid contract language, we believe that we could obtain sufficient commitments from the vendor to protect our institutional data. We would also provide oversight and audit functions with our third-party hosting environment.

L. BUSINESS PROCESS ANALYSIS:

Over the last two years, UNC has consulted with various vendors with extensive experience working with higher education customers. We have required these vendors to review our business needs and processes and demonstrate their ability to provide robust solutions on time and within budget. These vendors include Ellucian, EAB, WorkDay, OKTA, Strata Information Group, and Ferrilli. UNC is meeting monthly with many other higher education institutions that are modernizing their ERPs. Combining our business process analysis efforts with these other institutions will align our processes for specific Colorado data integrations and business practices. The extensive business process analysis resulted in a proposal for a student-first evolved ERP eco-system.

Network and IT Security Upgrade

Front Range Community College (CCCS)

STATE OF COLORADO
DEPARTMENT OF HIGHER EDUCATION

Print Date: 8/10/2022

FY23-24 CAPITAL INFORMATION TECHNOLOGY PROJECT REQUEST- *COST SUMMARY (CC_IT-C)**

(A)	(1) **Funding Type (Cash, CCF, Cash & CCF):**	**Cash & CCF**	(2) **Intercept Program Request? (Yes/No):**	No
(B)	(1) **Institution:**	Front Range Community College	(2) **Name & Title of Preparer:**	Derek Brown, AVP Facilities Planning and Management
(C)	(1) **Project Title:**	CC Network and IT Security Upgrade	(2) **E-mail of Preparer:**	derek.brown@frontrange.edu
(D)	(1) **Project Phase (__ of __):**	Phase 1 of 1	(2) **State Controller Project # (if continuation):**	
(E)	(1) **Project Type (IT):**	Capital IT	(2) **Institution Signature Approval:**	Date
(F)	(1) **Year First Requested:**	FY23-24	(2) **CDHE Signature Approval:**	Date
(G)	(1) **Priority Number (Leave blank for continuation projects):**	1 of 1	(2) **OSPB Signature Approval**	Date

(1)		(a) **Total Project Costs**	(b) **Total Prior Year Appropriation(s)**	(c) **Current Budget Year Request**	(d) **Year Two Request**	(e) **Year Three Request**	(f) **Year Four Request**	(g) **Year Five Request**
	Land /Building Acquisition							
(2)	Land Acquisition/Disposition	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(3)	Building Acquisition/Disposition	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(4)	***Total Acquisition/Disposition Costs***	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	Professional Services							
(5)	Consultants/Contractors	$ 239,970	$ -	$ 239,970	$ -	$ -	$ -	$ -
(6)	Quality Assurance	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(7)	Training	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(8)	Leased Space (Temporary)	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(9)	Feasibility Study	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(10)	Other Services/Costs	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(11)	Inflation Cost for Professional Services	$ 16,798	$ -	$ 16,798	$ -	$ -	$ -	$ -
(12)	Inflation Percentage Applied		0.00%	7.00%	0.00%	0.00%	0.00%	0.00%
(13)	***Total Professional Services***	$ 256,768	$ -	$ 256,768	$ -	$ -	$ -	$ -
	Associated Building Construction							
(14)	Cost for New (GSF):	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(15)	New $_____/GSF							
(16)	Cost for Renovate GSF:	$ 185,183	$ -	$ 185,183	$ -	$ -	$ -	$ -
(17)	Renovate $_____/GSF							
(18)	Site Work/Landscaping	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(19)	Other (Specify)	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(20)	Inflation for Construction	$ 12,963	$ -	$ 12,963	$ -	$ -	$ -	$ -
(21)	Inflation Percentage Applied		0.00%	7.00%	0.00%	0.00%	0.00%	0.00%
(22)	***Total Construction Costs***	$ 198,146	$ -	$ 198,146	$ -	$ -	$ -	$ -
	Software Acquisition							
(23)	Software COTS	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(24)	Software Built	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(25)	Inflation on Software	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(26)	Inflation Percentage Applied		0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
(27)	***Total Software***	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	Equipment							
(28)	Servers	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(29)	PCs, Laptops, Terminals, PDAs	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(30)	Printers, Scanners, Peripherals	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(31)	Network Equipment/Cabling	$ 1,913,478	$ -	$ 1,913,478	$ -	$ -	$ -	$ -
(32)	Other (UPS-Back-up Generator Systems)	$ 1,086,153	$ -	$ 1,086,153	$ -	$ -	$ -	$ -
(33)	Miscellaneous	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(34)	***Total Equipment and Miscellaneous Costs***	$ 2,999,631	$ -	$ 2,999,631	$ -	$ -	$ -	$ -
	Total Project Costs							$ -
(35)	***Total Project Costs***	$ 3,454,545	$ -	$ 3,454,545	$ -	$ -	$ -	$ -
	Project Contingency							
(36)	5% for New	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(37)	10% for Renovation	$ 345,455	$ -	$ 345,455	$ -	$ -	$ -	$ -
(38)	***Total Contingency***	$ 345,455	$ -	$ 345,455	$ -	$ -	$ -	$ -
	Total Budget Request							
(39)	***Total Budget Request***	$ 3,800,000	$ -	$ 3,800,000	$ -	$ -	$ -	$ -
	Funding Source							
(40)	Capital Construction Fund (CCF)	$ 3,420,000	$ -	$ 3,420,000	$ -	$ -	$ -	$ -
(41)	Cash Funds (CF)	$ 380,000	$ -	$ 380,000	$ -	$ -	$ -	$ -
(42)	Reappropriated Funds (RF)	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(43)	Federal Funds (FF)	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	TOTAL	3,800,000	-	3,800,000	-	-	-	-

*Sould match CC_IT-N Form

COLORADO
Department of Higher Education

STATE OF COLORADO
DEPARTMENT OF HIGHER EDUCATION

FY 2023-24 CAPITAL IT PROJECT REQUEST- *NARRATIVE (CC_IT-N)*		
Capital Construction Fund Amount (CCF):	**$3,420,000**	
Cash Fund Amount (CF):	$380,000	
Intercept Program Request? (Yes/No):	No	
Institution Name:	Front Range Community College	
Project Title:	FRCC Network and IT Security Upgrade	
Project Phase (Phase _of_):	Phase 1 of 1	
State Controller Project Number (if continuation):		
Project Type:	X	Technology Hardware
	X	Technology Software
Year First Requested:	FY 2023-2024	
Priority Number (Leave blank for continuation projects):	1 OF 1	
Name & Title of Preparer:	Patti Arroyo, Vice President, Finance and Administration	
E-mail of Preparer:	Patti.arroyo@Frontrange.edu	
Institution Signature Approval:		Date
OSPB Signature Approval:		Date
CDHE Signature Approval:		Date

A. PROJECT SUMMARY/STATUS:

The first objective of the project is to upgrade Front Range Community College's (FRCC) Wireless networking infrastructure, also referred to as WiFi in this document, at our three campuses, located in Fort Collins, Westminster, and Longmont. Upgrading FRCC's wireless network will allow the college to better support students and their increasing demand on the network as they access it for multiple modalities while on campus including traditional on campus classes, online and real-time remote courses.

Since the pandemic, FRCC has moved from a predominantly wired network using traditional desktops to a laptop and mobile device-based environment using Wifi. FRCC removed 40% of the employee desktops and replaced them with approximately 440 laptops operating on WiFi.

A parallel objective is to create an isolated network (a separate SSID, with 802.1x certificate-based authentication) for our Campus Security (CSP-Campus Security and Preparedness) by upgrading security related IT hardware and software and providing emergency backup power to the security cameras, access control and radio systems; this will ensure CSP is able to handle emergency events and coordinate with emergency responders in the most efficient way possible. The physical security network includes all security cameras, speakers, alert beacons, and other hardware that allows the college to warn students and respond in case of emergency.

B. SUMMARY OF PROJECT FUNDING REQUEST:

Funding Source	Total Project Cost	Total Prior Appropriation	Current Budget Year Request	Year Two Request	Year Three Request	Year Four Request	Year Five Request
Capital Construction Funds (CCF)	$3,420,000	$0	**$3,420,000**	$0	$0	$0	$0
Cash Funds (CF)	$380,000	$0	**$380,000**	$0	$0	$0	$0
Reappropriated Funds (RF)	$0	$0	**$0**	$0	$0	$0	$0
Federal Funds (FF)	$0	$0	**$0**	$0	$0	$0	$0
Total Funds (TF)	**$3,800,000**	**$0**	**$3,800,000**	**$0**	**$0**	**$0**	**$0**

C. PROJECT DESCRIPTION/SCOPE OF WORK/JUSTIFICATION:

This project will be completed in one phase.

Funding for this project will be primarily from the CC_IT request and 10% cash funds from FRCC.

This project aligns with the following goal of the Higher Education Master Plan:

- Goal 3 Improve student success

The college made some previous upgrades to the WiFi network but has struggled to keep up with the proliferation of mobile devices. As FRCC adapted to the needs of the pandemic, students have moved from a paper/pencil method of taking notes to their own personal devices further putting stress on the WiFi network.

Furthermore, as the use of technology increases in the classroom, it has become increasingly expensive to add cabling and other infrastructure to wire devices when WiFi could be leveraged and configured in a fraction of the time and cost; as it stands the school is unable to move forward with velocity.

In 2021, the college engaged Advanced Network Management, Inc. (ANM) to provide an inspection and analysis of how to modernize and improve FRCC's IT infrastructure network.
While the project revealed several needs, ranging from cabling and switches to backup power, the two most pressing needs identified were the WIFI upgrade and the improvement of the campus security network. The cost estimates and details below are based on ANM's study. Upgrading the WIFI network will also start to tackle some of the other issues identified by ANM. The WIFI project will include upgrading some cabling to the WIFI hotspots and improving some end of life switches.

Specifically, the WIFI project will:

- Address required IT Infrastructure deficiencies to improve WiFi connectivity, network security, safety systems and back-up systems which will directly benefit the student body with increased IT connectively in classrooms, study areas, meeting rooms and general campus.

- Upgrade associated cabling and fiber to IDF/MDF Rooms, Install new wall and floor network racks in remodeled rooms. New Cat6A cabling, patch panels and removal of old/unused cabling to allow for expansion.

- Upgrade switches, dual power supplies, 10GE Transceivers to enable high bandwidth, WiFi 6 Access Points

- Lithium Ion Universal Power Supply (UPS) for IDFs, Consolidated UPS in MDF, Add new natural gas back-up generator at Westminster Campus for MDF/IDF rooms.

Currently the Campus Security and Preparedness (CSP) network traffic is merged with the main campus data network, which causes technical issues for the entire network and reduced functionality for the CSP devices. The project will separate the two networks and replace existing IT CSP panels and switches which will enable the system to handle camera features such as higher resolution that requires more bandwidth. Just as importantly, using one combined network significantly reduces our ability to implement new security measures, like handgun detection monitoring.

The network currently includes this array of items:

- Individual systems
    - Phone system - VOIP desk phones
    - Security Talk-A-Phones
    - Alertus Beacons
    - Visix Monitors
- CSP servers:
    - Access control system
    - Camera recording storage college-wide
- CSP switches in every closet include:
    - Access control
        - Readers
        - Mag holds
        - Lockdown buttons
    - Camera system
        - Local camera views
    - Intrusion alarm system
        - Also includes the network connection
        - Ties into the access control system
- Radio system
- Emergency speaker system
    - Includes phone tie-in (CCCS Informacast server pushes the information to the speaker components in IDFs)
    - Interior and exterior speakers are hard-wired daisy-chained back to the above IDFs
- Wi-Fi - administrative secured wireless to use laptops and WC/BCC walkaround Cisco phones

The separation of the security and main data networks will improve the stability of both. If one system is compromised through phishing attacks, virus, ransomware, equipment failure or maintenance, it will not impact the other network's ability to maintain functionality. The main data network is required to operate a wide variety of services including email, internet access for large user databases and file sharing. By creating a separate network for CSP devices, security systems would be better protected, and the college would maintain operational status. This will allow campus security to respond and deploy in situations of life-threatening safety alerts, emergency calls, and routine requests for assistance.

Part of the CSP project is to add a backup generator to the support the CSP network. In the event of an on campus active shooter or a lockout/lockdown event due to natural disaster or outside threat, an enhanced CSP security system supported by a generator-supplied unlimited emergency backup power will enable much better command and control compared to the current capabilities of a 30-minute uninterrupted battery power supply.

D. PROGRAM INFORMATION:

The areas that are impacted by this request to improve WiFi and enhance security are all instructional programs, all business and administration, all faculty, staff and all students. With increased WIFI bandwidth, FRCC will be able to increase WiFi access in the classrooms while providing a secure learning environment for faculty and students.

One of the 'lessons learned' from the pandemic was that students that did not have access to wireless systems were challenged to download course materials or streaming content unless they were on campus.

E. CONSEQUENCES IF NOT FUNDED:

If this project is not funded students will continue to experience bandwidth issues and education difficulties due to insufficient infrastructure equipment. The recent pandemic has highlighted the need for a robust WiFi infrastructure to enable students to participate in video streaming and download recorded instructional sessions while on campus for those students that could not attend in person.

A recent assessment of the existing emergency generator by Cator Ruma and Associates (CRA) indicated that there is no further load capacity to sufficiently handle the camera and access control systems should there be a power failure or emergency event at the Westminster Campus. This would result in:

- Potential loss of safety and security and emergency notification capabilities
- Lack of ability to secure the WC building (i.e., doors cannot be locked or unlocked without hard keys)
- Compromised ability to access online services or coordinate with emergency responders
- Potential loss of cameras and camera recordings, leaving the building and people vulnerable in the event of an active shooter or natural disaster

F. ASSUMPTIONS FOR CALCULATIONS:

Project costs were estimated using a national leader in technology solutions (Advanced Network Management, Inc) which provided costs for the equipment and installation needed, as well as having

the College's Managing Architect create the project budget using sufficient contingencies to cover inflation and supply line disruptions.

- Professional Services: $ 256,768
- Associated Building Construction: $ 198,146
- Equipment: $ 2,999,631
- Contingency: $ 345,455

Total: $ 3,800,000

When the funding for the project is approved the college will hire a design team to more thoroughly vet the design solutions and design to the target budget.

G. OPERATING BUDGET IMPACT:

There will be little operating budget impact if project funding is approved. Minor costs associated with migrating the CSP network to a cloud-based platform will be absorbed by the college.

H. PROJECT SCHEDULE:

Phase One of One	Start Date	Completion Date
Project Setup	**July 2023**	**August 2023**
Pre-Design (FRCC IT Internal)	**August 2023**	**November 2023**
Design Procurement	**August 2023**	**November 2023**
Design	**December 2023**	**March 2024**
Construction Procurement	**April 2024**	**June 2024**
Construction	**July 2024**	**June 2025**
Occupancy	**July 2025**	

I. ADDITIONAL INFORMATION:

Three-year roll forward spending authority is required:	Yes	**X No**
Request 6-month encumbrance waiver:	Yes	**X No**
Is this a continuation of a project appropriated in a prior year:	Yes	**X No**
State Controller Project Number (if continuation):		

J. COST SAVINGS / IMPROVED PERFORMANCE OUTCOMES:

There will be nominal yearly cost savings as a result of this project, however the ability to provide better emergency response and critical incident management due to CSP's enhanced network capabilities and sustained dedicated backup power is invaluable.

To achieve the secure separation of the CSP network, additional improvements of sufficient MDF/IDF power, generator backup power and battery backup power to IDFs are required. Improvements to the current wireless system will increase our ability to reach the overall goal of maintaining CSP operational status.

CCCS is exploring a college-wide contract for firearms identification software that will integrate into the camera system. This software will alert our staff should someone walk past one of our cameras with a firearm...hopefully before a shooting incident occurs.

Real time and recorded video will provide critically valuable information and allow first responders to develop strategies and respond directly to the source of trouble whether it is a fire, a structural issue, or an active casualty situation. EMS will be able to quickly identify victims (and where they are) using real-time video.

Continuous video coverage will allow ongoing key mission objectives to be adjusted and provide timely actionable information. For instance, if a perpetrator committed an act of violence but then left the premises, medical first responders will know where to go to attend to the wounded while law enforcement will have a description of the suspect and can focus their efforts on finding the perpetrator off campus. Our staff could assist law enforcement in identifying and finding witnesses.

K. SECURITY AND BACKUP / DISASTER RECOVERY:

Building out a more robust independent security network will address the current needs we have outlined as well as future needs that will help the college respond to emergency situations.

Every data center should have a disaster recovery plan in place that outlines what steps to take and what role each person plays in the event of a power outage. Additionally, a disaster recovery plan should outline the critical systems and the steps or improvements planned to provide the desired level of power redundancy to mitigate the impact of any utility power outage on their ability to complete their overall mission. Providing adequate generator power to all MDFs and IDFs at our WC campus and sufficient uninterruptable power supply battery backup at our LC campus will maintain the communication, observation, and response capabilities of CSP. This will allow the CSP personnel to enact any plans for securing the facility even during a power outage, communicate effectively during an outage, maintain the ability to provide real time monitoring during an outage, and most importantly retain the ability to respond to emergency service calls and end life safety alerts when utility power has been interrupted.

Detection, Response, Prevention, and Isolation should not be considered separately, but rather woven together into a tightly meshed fabric of security. When properly integrated, they reinforce each other, each making the other more effective. They provide strong defense against network and system compromise.

Careful design of network and system security architecture can substantially enhance security. Valuable data which needs to be protected can be kept isolated from web servers and other exposed and vulnerable attack surfaces. Without effective isolation, a breach of the servers can lead directly to complete compromise of the data and critical systems. A reoccurring issue we experience is when configuration changes to the larger network impact the ability of CSP security alerts from being received by alerting endpoints and speakers. The ability to send alerts to the students and staff is critical to FRCC as we are an organization serving a large population. To effectively protect our community, we rely on network services to send information which could be of a potential lifesaving nature. Isolation can prevent damage from attacks on the larger production network from impacting the ability of the security network to operate in two different ways. First, by putting only the isolated application in the isolating network, attackers are prevented from accessing other computer and network resources to penetrate and impact both networks.

L. BUSINESS PROCESS ANALYSIS:

There are currently no other alternatives that have been identified that will result in the same network benefits achieved if funding as requested is approved. The college will engage a designer to prepare a scope that aligns with the budget to ensure there are no cost overruns.

FRCC IT's objective is to provide a secure and reliable IT infrastructure for our students and employees. This includes providing the necessary environment for CSP to keep our campuses safe with reliable access to alerting, monitoring, and response tools.

This project will allow us to significantly improve our environment to meet this objective.

Next Generation Wi-Fi: A network infrastructure collaboration between Fort Lewis College and Western Colorado University

Western Colorado University,
Fort Lewis College

STATE OF COLORADO
DEPARTMENT OF HIGHER EDUCATION

Print Date: 8/10/2022

FY23-24 CAPITAL INFORMATION TECHNOLOGY PROJECT REQUEST- *COST SUMMARY (CC_IT-C)**

(A)	(1) **Funding Type (Cash, CCF, Cash & CCF):**	**Cash & CCF**	(2) **Intercept Program Request? (Yes/No):**	No
(B)	(1) **Institution:**	Fort Lewis College and Western Colorado University	(2) **Name & Title of Preparer:**	Matt McGlamery, CIO Fort Lewis College; Chad Robinson, CIO Western Colorado University
(C)	(1) **Project Title:**	Next Generation Wi-Fi: A network infrastructure collaboration between Fort Lewis College and Western Colorado University.	(2) **E-mail of Preparer:**	McGlamery_m@fortlewis.edu, crobinson@western.edu
(D)	(1) **Project Phase (__ of __):**	1 of 1	(2) **State Controller Project # (if continuation):**	
(E)	(1) **Project Type (IT):**	Capital IT	(2) **Institution Signature Approval:**	Date
(F)	(1) **Year First Requested:**	FY23	(2) **CDHE Signature Approval:**	Date
(G)	(1) **Priority Number (Leave blank for continuation projects):**	___1__ of ___1___	(2) **OSPB Signature Approval**	Date

(1)		(a) **Total Project Costs**	(b) **Total Prior Year Appropriation(s)**	(c) **Current Budget Year Request**	(d) **Year Two Request**	(e) **Year Three Request**	(f) **Year Four Request**	(g) **Year Five Request**
	Land /Building Acquisition							
(2)	Land Acquisition/Disposition	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(3)	Building Acquisition/Disposition	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(4)	***Total Acquisition/Disposition Costs***	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	Professional Services							
(5)	Consultants/Contactors	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(6)	Quality Assurance	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(7)	Training	$ 71,200	$ -	$ 71,200	$ -	$ -	$ -	$ -
(8)	Leased Space (Temporary)	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(9)	Feasibility Study	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(10)	Other Services/Costs	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(11)	Inflation Cost for Professional Services	$ 4,984	$ -	$ 4,984	$ -	$ -	$ -	$ -
(12)	Inflation Percentage Applied		0.00%	7.00%	0.00%	0.00%	0.00%	0.00%
(13)	***Total Professional Services***	$ 76,184	$ -	$ 76,184	$ -	$ -	$ -	$ -
	Associated Building Construction							
(14)	Cost for New (GSF):	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(15)	New $_____/GSF							
(16)	Cost for Renovate GSF:	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(17)	Renovate $_____/GSF							
(18)	Site Work/Landscaping	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(19)	Other (Specify)	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(20)	Inflation for Construction	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(21)	Inflation Percentage Applied		0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
(22)	***Total Construction Costs***	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	Software Acquisition							
(23)	Software COTS	$ 294,461	$ -	$ 294,461	$ -	$ -	$ -	$ -
(24)	Software Built	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(25)	Inflation on Software	$ 29,446	$ -	$ 29,446	$ -	$ -	$ -	$ -
(26)	Inflation Percentage Applied		0.00%	10.00%	0.00%	0.00%	0.00%	0.00%
(27)	***Total Software***	$ 323,907	$ -	$ 323,907	$ -	$ -	$ -	$ -
	Equipment							
(28)	Servers	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(29)	PCs, Laptops, Terminals, PDAs	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(30)	Printers, Scanners, Peripherals	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(31)	Network Equipment/Cabling	$ 1,259,997	$ -	$ 1,259,997	$ -	$ -	$ -	$ -
(32)	Other (Specify) 7% inflation for equipment expected in 2023	$ 88,200	$ -	$ 88,200	$ -	$ -	$ -	$ -
(33)	Miscellaneous	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(34)	***Total Equipment and Miscellaneous Costs***	$ 1,348,197	$ -	$ 1,348,197	$ -	$ -	$ -	$ -
	Total Project Costs							$ -
(35)	***Total Project Costs***	$ 1,748,287	$ -	$ 1,748,287	$ -	$ -	$ -	$ -
	Project Contingency							
(36)	5% for New	$ 87,414	$ -	$ 87,414	$ -	$ -	$ -	$ -
(37)	10% for Renovation	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(38)	***Total Contingency***	$ 87,414	$ -	$ 87,414	$ -	$ -	$ -	$ -
	Total Budget Request							
(39)	***Total Budget Request***	$ 1,835,702	$ -	$ 1,835,702	$ -	$ -	$ -	$ -
	Funding Source							
(40)	Capital Construction Fund (CCF)	$ 1,760,438	$ -	$ 1,760,438	$ -	$ -	$ -	$ -
(41)	Cash Funds (CF)	$ 75,264	$ -	$ 75,264	$ -	$ -	$ -	$ -
(42)	Reappropriated Funds (RF)	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(43)	Federal Funds (FF)	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	TOTAL	**1,835,702**	**-**	**1,835,702**	**-**	**-**	**-**	**-**

*Sould match CC_IT-N Form

COLORADO
Department of Higher Education

STATE OF COLORADO
DEPARTMENT OF HIGHER EDUCATION

FY 2023-24 CAPITAL IT PROJECT REQUEST- *NARRATIVE (CC_IT-N)*		
Capital Construction Fund Amount (CCF):	**$1,760,438**	
Cash Fund Amount (CF):	$75,264	
Intercept Program Request? (Yes/No):	No	
Institution Name:	Fort Lewis College and Western Colorado University	
Project Title:	*Next Generation Wi-Fi:* A network infrastructure collaboration between Fort Lewis College and Western Colorado University.	
Project Phase (Phase _of_):	1 of 1	
State Controller Project Number (if continuation):	n/a	
Project Type:	X	Technology Hardware
	X	Technology Software
Year First Requested:	FY 2023 - 2024	
Priority Number (Leave blank for continuation projects):	__1_ OF _1__	
Name & Title of Preparer:	Matthew McGlamery, FLC-CIO Chad Robinson, Western-CIO	
E-mail of Preparer:	McGlamery_m@fortlewis.edu crobinson@western.edu	
Institution Signature Approval:	Date	
OSPB Signature Approval:	Date	
CDHE Signature Approval:	Date	

A. PROJECT SUMMARY/STATUS:

This *Next Generation Wi-Fi* project will modernize and add capacity to the Fort Lewis College (FLC) and Western Colorado University (Western) campuses to allow us to offer the highest quality wireless networking available to our students, faculty and staff. This project will upgrade the supporting infrastructure of Access Points (APs), network switches, core networking switches and introduce cloud-based controllers to deliver faster, better and ubiquitous Wi-Fi 6 coverage.

Fort Lewis College and Western Colorado University have collaborated to design similar networks allowing us to use the same vendors, equipment and purchasing agreements. In addition to achieving lower costs for equipment, the collaboration will allow for long-term backup staffing and support between institutions.

B. SUMMARY OF PROJECT FUNDING REQUEST:

Funding Source	Total Project Cost	Total Prior Appropriation	Current Budget Year Request	Year Two Request	Year Three Request	Year Four Request	Year Five Request
Capital Construction Funds (CCF)	$1,760,438	$0	**$1,760,438**	$0	$0	$0	$0
Cash Funds (CF)	$75,264	$0	**$75,264**	$0	$0	$0	$0
Reappropriated Funds (RF)	$0	$0	**$0**	$0	$0	$0	$0
Federal Funds (FF)	$0	$0	**$0**	$0	$0	$0	$0
Total Funds (TF)	**$1,835,702**	**$0**	**$1,835,702**	**$0**	**$0**	**$0**	**$0**

C. PROJECT DESCRIPTION/SCOPE OF WORK/JUSTIFICATION:

Problem Statement:

Wi-Fi access on University/College campuses is a critical service which students, faculty, and staff have expectations of high speed, reliability, and ubiquitous access. In addition to the multiple devices which students bring to campus to access internet and network resources, the network supports services such as distance education, remote work, security cameras, door access control, police department vehicles and body cameras, cashiering stations, vending machines, phone systems, HVAC systems, among others.

New Wi-Fi protocols quickly become de-facto standards with new user devices adopting the standards within a year. It is a perennial challenge for campuses to cost effectively stay current with the new protocols, meet student, staff and faculty expectations, and support the growing number of services that rely on modern networking. Over the last 20 years both FLC and WCU have been installing and upgrading equipment piecemeal as funding is available (often one building at a time), resulting in a heterogenous and often difficult to manage environment that provides an uneven level of service throughout campus and is no longer easily upgraded in place. Replacing our network infrastructure wholesale with the most modern devices and introducing cloud-based management will provide advantages for our respective campuses and stakeholders for a decade. However, the cost of doing so is prohibitive for our institutions.

Alignment with 2022 Higher Education Strategic Plan
https://cdhe.colorado.gov/sites/highered/files/Strategic%20Plan%20Update-%20Updated%20May%202022.pdf

Objective - Educational Equity: *An ecosystem designed to meet the needs of all learners with an intentional focus on erasing educational equity gaps among Hispanic, African American and Native American populations.*

Providing ubiquitous high speed Wi-Fi network access directly supports all students in all spaces while on the FLC and Western campuses. Both institutions have programs already in place to provide low cost or loaner equipment to students with a demonstrated need. This combination gives all student populations access to the internet, learning management systems, administrative systems and libraries at any location and at any time.

Objective – Data Informed Decision Making: *A robust data system and a culture of data use throughout the ecosystem lead to data-informed policy making at all levels to best meet the needs of learners.*

The Wi-Fi network has become the standard for accessing data from laptops, tablets, and mobile devices. Analytics systems and dashboards may be accessed at any time for research, data gathering, and informed decision making.

Objective – Return on Investment (ROI): *An ecosystem that provides all learners with improved access to professional opportunities and career mobility, thereby delivering an attractive return on investment.*

The wireless network facilitates all learners access to professional opportunities and career mobility. The campus networks facilitate access to all systems offered by the University/College to facilitate learning, career services, student services, and disability services.

Objective – Lifelong learning: *An ecosystem that supports all learners throughout their lifetimes, enabling seamless progression through a diversity of learning pathways and credentials that help learners advance their career.*

The wireless network has become integral and indispensable in the support of the University/College missions. Included in those missions is the *Student at the Center* focusing on the learning environment for all students, faculty, staff.

Objective – The Public Good: *An ecosystem that drives economic vitality of the state and a healthy democracy by preparing an educated and engaged citizenry.*

By enabling access to the intranet and online resources, the campus network is a tool for the dissemination of knowledge and interaction both in and out of the classroom. Ubiquitous access within the campus environment enables access to resources and student services which our students are using to learn and grow to be engaged citizens. Fort Lewis and Western both host public libraries as well as guests to our campus who will also be able to take advantage of the modern Wi-Fi network.

D. PROGRAM INFORMATION:

This project impacts almost all functions and programs of the campus. The new Wi-Fi service and equipment will be distributed throughout campus in administrative buildings, academic buildings, student spaces, residence halls, libraries, athletic spaces, common areas and outdoor spaces.

Students, as our largest stakeholder group, will realize the greatest benefit from this project. High speed, reliable and ubiquitous Wi-Fi coverage is used by the students to access their academic course

work, learning management systems, library systems, the Internet for research, news and social activities, and the University/College administrative systems.

Faculty and staff benefit from the Wi-Fi system not only to access the same campus systems as our students, but also gain the flexibility of working from laptops and other mobile devices, moving seamlessly from campus to home offices.

Life safety systems are impacted through door access, emergency alerts, building control systems, security cameras and digital campus signage. The Wi-Fi system supports the campus security and police, providing mobile and secure communications and access to the police systems. Additionally, most modern phones can use Wi-Fi calling, allowing cell phones to continue to function in the event of a loss of cellular service.

Guests will also be able to take advantage of the Wi-Fi system, along with contractors and vendors who operate on campus.

The proposed system securely meets current industry standards and regulations including PCI, HIPPA, and FERPA.

E. CONSEQUENCES IF NOT FUNDED:

If the project is not funded, Fort Lewis College and Western Colorado University will not be able to provide the best quality network services to our students, faculty, staff and guests. We will continue to upgrade our networks in a piecemeal fashion with our limited internal funds. The upgrades will occur slowly and will require a mixture of vendors and technology during the ongoing transitions. A mixed vendor/mixed technology environment is more difficult to support, generally less reliable, and more difficult to upgrade and provides lower quality, inconsistent service. We will not be able to move to the new Wi-Fi 6 standard throughout the campus and will have to prioritize areas of coverage. The distribution switches that support the wireless network will continue to age, intermittently fail and will no longer be supported by the vendors. Additionally, the cost of network hardware and support contracts would continue to increase as we slowly build out the network. If funded this project would lock in many costs at current levels for up to seven years avoiding the increased costs of a piecemeal implementation.

F. ASSUMPTIONS FOR CALCULATIONS:

Fort Lewis College and Western Colorado University have been working in concert with a network vendor to design and price the network equipment required for this project. The quotes they provided were used to determine the equipment, software and cloud subscriptions required and their associated costs. By combining the needs of Fort Lewis and Western we can realize discounts considerably better than the standard National Association of State Procurement Officials (NASPO) contracts.

Two assumptions were made in the calculations. 1) The discount percentages offered by the vendor will remain similarly aggressive in 2023 when purchases are actually made. 2) Annual inflation for equipment and professional services is at 7% and software/subscriptions at 10%.

G. OPERATING BUDGET IMPACT:

We anticipate no operating budget impact requiring additional FTE or funds over the existing departmental budgets. The installation and ongoing support of the equipment is within the resources and capabilities of the existing network department staff at both Fort Lewis College and Western. Ongoing maintenance expenses will be fixed for seven years. Minor additional equipment needs in the future should fall withing the reach of current institutional funding.

H. PROJECT SCHEDULE:

Identify project schedule by funding phases. Add or delete boxes as required for each phase. See instructions for further detail.

Due to the large scope of the project with hundreds of components and the limited personnel resources of the institutions, the project will be completed over two years. Fort Lewis College has already completed a portion of the Access Point purchases and Cloud Controller implementation, thus will be able to provide technical assistance to Western during their implementation.

Phase _1_of_1_	**Start Date**	**Completion Date**
Pre-Design	**January 2022**	**May 2022**
Design	**July 2023**	**September 2023**
Construction	**n/a**	**n/a**
FF&E /Other	**Jan 2024**	**June 2025**
Occupancy	**n/a**	**n/a**

I. ADDITIONAL INFORMATION:

Three-year roll forward spending authority is required:	**Yes**
Request 6-month encumbrance waiver:	**No**
Is this a continuation of a project appropriated in a prior year:	**No**
State Controller Project Number (if continuation):	**n/a**

J. COST SAVINGS / IMPROVED PERFORMANCE OUTCOMES:

Describe the cost savings or improved performance outcomes as a result of this project. Please clearly identify and quantify anticipated administrative and operating efficiencies or program enhancements and service expansion through cost-benefit analyses and return on investment calculations.

This project will produce savings for both institutions and will improve our collective operating efficiency. If funded, this project will achieve cost savings in two ways, volume pricing through partnership and up-front bulk purchasing (inflation avoidance).

By partnering, i.e., aligning on network design, standardizing on an equipment manufacturer and purchasing from the same vendor, Fort Lewis and Western are able to realize approximately 17% savings ($338,462) over making the same purchase alone.

By allowing the partnership to purchase equipment in bulk and acquire software/cloud services in advance at a fixed cost, we avoid substantial (and unpredictable) annual increases, allowing us to save an additional $671,794 over seven years (proposed contract term).

Total projected savings by partnering and avoiding annual increases; $1,010,255 or 39%.

I addition to the cost savings, aligning our network design and standardizing on equipment allows ongoing collaboration between the technical staff at Fort Lewis and Western. In particular, by adopting the same cloud-based Wi-Fi management system, our staff are in a position to assist one another with routine configuration and changes, or in the event of a major problem, join forces or even fill in for one another.

K. SECURITY AND BACKUP / DISASTER RECOVERY:

Describe the data protection and disaster recovery considerations factored into the plan. Indicate any cybersecurity implications if applicable.

By moving to a cloud-based management paradigm and by standardizing our equipment, we improve our disaster recovery posture. Even if we were to suffer a catastrophic loss of a large portion of our respective campuses, we could re-establish our networks by simply deploying new hardware and connecting to our cloud controllers. Standardizing equipment between campuses also allows for rapid sharing of equipment in the event of a catastrophic loss. The system is also designed so that in the event we were to lose connection to the internet (and thus the cloud controllers) our campus networks will continue to function.

The network will be on the most current hardware (fully supported by the vendor) and software available, which includes the current state-of-the-art security capabilities. Fort Lewis College and Western Colorado University along with our vendors will work collaboratively to implement the security features and continually improve our security footprint. Converting to the cloud controllers allows for rapid implementation of security releases and features, the vendor will be maintaining and monitoring the cloud controllers.

L. BUSINESS PROCESS ANALYSIS:

Describe alternatives analyzed, cost-benefit analysis, and measures in place to prevent time and cost overruns. Articulate how the proposed project fits in with the institution's strategic IT plan.

Fort Lewis College extensively evaluated three network vendors over six months, including network design sessions, evaluation equipment, compatibility with the existing network, and pricing. At the conclusion of the research process, FLC choose to standardize on Aruba products. Fort Lewis started the network conversion in FY22 by purchasing wireless access points with the intent of upgrading the remaining network infrastructure over the next two years if funding were available.

Leveraging our existing partnership with the *Digital Transformation Project*, Fort Lewis and Western determined our respective campus networks and our desire to improve our wireless service aligned enough it made sense to partner again on this proposal. Western was able to avoid the lengthy evaluation process and utilize the same decisions as Fort Lewis.

Cost benefit was evaluated in two ways. 1) The benefit of bulk pricing combining the equipment purchases of FLC and Western. This is estimated to be a 17% savings over current state pricing agreements. 2) Cost avoidance by purchasing all equipment, software, professional services and

licenses at once for a fixed cost, avoiding inflationary price increases. Over seven years we estimate the cost savings to be 39%.

To avoid time and cost overruns we have already completed the vendor selection, network design and product selection. Fort Lewis and Western have the internal staff to install and support the system. Training and vendor support is included in the requested funding which will ensure a successful project.

Maintaining a secure, reliable, and accessible network infrastructure is core to the institution's strategic IT plans and operation of the enterprise. Almost every business, academic, and student service relies on the network either directly or indirectly. In short, the University or College would not be able to function without a well maintained and secure network.

ERP Modernization

Colorado Mesa University

STATE OF COLORADO
DEPARTMENT OF HIGHER EDUCATION

Print Date: 8/10/2022

FY23-24 CAPITAL INFORMATION TECHNOLOGY PROJECT REQUEST- *COST SUMMARY (CC_IT-C)**

(A)	(1) **Funding Type (Cash, CCF, Cash & CCF):**	**Cash & CCF**	(2) **Intercept Program Request? (Yes/No):**	No
(B)	(1) **Institution:**	Colorado Mesa University	(2) **Name & Title of Preparer:**	Jeremy Brown, VP for Information Technology
(C)	(1) **Project Title:**	ERP Modernization	(2) **E-mail of Preparer:**	jebrown@coloradomesa.edu
(D)	(1) **Project Phase (__ of __):**	1 of 1	(2) **State Controller Project # (if continuation):**	
(E)	(1) **Project Type (IT):**	Capital IT	(2) **Institution Signature Approval:**	Kent Marsh 5/25/2022
(F)	(1) **Year First Requested:**	FY2022-23	(2) **CDHE Signature Approval:**	Date
(G)	(1) **Priority Number (Leave blank for continuation projects):**	___1__ of ____1__	(2) **OSPB Signature Approval**	Date

(1)		(a) **Total Project Costs**	(b) **Total Prior Year Appropriation(s)**	(c) **Current Budget Year Request**	(d) **Year Two Request**	(e) **Year Three Request**	(f) **Year Four Request**	(g) **Year Five Request**
	Land /Building Acquisition							
(2)	Land Acquisition/Disposition	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(3)	Building Acquisition/Disposition	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(4)	***Total Acquisition/Disposition Costs***	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	Professional Services							
(5)	Consultants/Contactors	$ 2,038,024	$ -	$ 2,038,024	$ -	$ -	$ -	$ -
(6)	Quality Assurance	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(7)	Training	$ 80,000	$ -	$ 80,000	$ -	$ -	$ -	$ -
(8)	Leased Space (Temporary)	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(9)	Feasibility Study	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(10)	Other Services/Costs	$ 300,000	$ -	$ 300,000	$ -	$ -	$ -	$ -
(11)	Inflation Cost for Professional Services	$ 171,249	$ -	$ 171,249	$ -	$ -	$ -	$ -
(12)	Inflation Percentage Applied		0.00%	7.00%	0.00%	0.00%	0.00%	0.00%
(13)	***Total Professional Services***	$ 2,589,273	$ -	$ 2,589,273	$ -	$ -	$ -	$ -
	Associated Building Construction							
(14)	Cost for New (GSF):	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(15)	New $_____/GSF							
(16)	Cost for Renovate GSF:	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(17)	Renovate $_____/GSF							
(18)	Site Work/Landscaping	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(19)	Other (Specify)	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(20)	Inflation for Construction	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(21)	Inflation Percentage Applied		0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
(22)	***Total Construction Costs***	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	Software Acquisition							
(23)	Software COTS	$ 686,340	$ -	$ 686,340	$ -	$ -	$ -	$ -
(24)	Software Built	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(25)	Inflation on Software	$ 51,660	$ -	$ 51,660	$ -	$ -	$ -	$ -
(26)	Inflation Percentage Applied		0.00%	7.00%	0.00%	0.00%	0.00%	0.00%
(27)	***Total Software***	$ 738,000	$ -	$ 738,000	$ -	$ -	$ -	$ -
	Equipment							
(28)	Servers	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(29)	PCs, Laptops, Terminals, PDAs	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(30)	Printers, Scanners, Peripherals	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(31)	Network Equipment/Cabling	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(32)	Other (Specify)	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(33)	Miscellaneous	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(34)	***Total Equipment and Miscellaneous Costs***	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	Total Project Costs							$ -
(35)	***Total Project Costs***	$ 3,327,273	$ -	$ 3,327,273	$ -	$ -	$ -	$ -
	Project Contingency							
(36)	5% for New	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(37)	10% for Renovation	$ 332,727	$ -	$ 332,727	$ -	$ -	$ -	$ -
(38)	***Total Contingency***	$ 332,727	$ -	$ 332,727	$ -	$ -	$ -	$ -
	Total Budget Request							
(39)	***Total Budget Request***	$ 3,660,000	$ -	$ 3,660,000	$ -	$ -	$ -	$ -
	Funding Source							
(40)	Capital Construction Fund (CCF)	$ 3,290,340	$ -	$ 3,290,340	$ -	$ -	$ -	$ -
(41)	Cash Funds (CF)	$ 369,660	$ -	$ 369,660	$ -	$ -	$ -	$ -
(42)	Reappropriated Funds (RF)	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(43)	Federal Funds (FF)	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	TOTAL	3,660,000	-	3,660,000	-	-	-	-

*Sould match CC_IT-N Form

COLORADO
Department of Higher Education

STATE OF COLORADO
DEPARTMENT OF HIGHER EDUCATION

FY 2023-24 CAPITAL IT PROJECT REQUEST- *NARRATIVE (CC_IT-N)*		
Capital Construction Fund Amount (CCF):	**$3,290,340**	
Cash Fund Amount (CF):	$369,660	
Intercept Program Request? (Yes/No):	No	
Institution Name:	Colorado Mesa University	
Project Title:	ERP Modernization	
Project Phase (Phase _of_):	1 of 1	
State Controller Project Number (if continuation):		
Project Type:		Technology Hardware
	X	Technology Software
Year First Requested:	FY 2022_ - 23___	
Priority Number (Leave blank for continuation projects):	_1__ OF _1__	
Name & Title of Preparer:	Jeremy Brown, VP for Information Technology	
E-mail of Preparer:	jebrown@coloradomesa.edu	
Institution Signature Approval:	Kent Marsh 5/25/2022	Date
OSPB Signature Approval:		Date
CDHE Signature Approval:		Date

A. PROJECT SUMMARY/STATUS:

Colorado Mesa University is requesting State funding to modernize the University's Enterprise Resource Planning (ERP)/HR and Finance systems. The University is committed not only to upgrading its postmodern ERP/HR and Finance systems, but through the implementation of an ERP modernization strategy, it is committed to identifying and delivering on innovative business practices to best serve students and employees, drive efficiency, and lower the cost of attaining a higher degree.

Colorado Mesa University's ERP modernization strategy must align with its digital business strategy and student and business outcomes. The University's ERP modernization strategy is to develop a composable ERP where applications are configurable and interoperable to meet business agility requirements and keep pace with business change. The University's ERP Modernization project is central to implementing a composable ERP and includes:

- Implementing cloud software-as-a-service HR and Finance systems capable of leveraging the latest, ever-evolving technologies to reimagine and develop business capabilities that deliver on student and business outcomes.
- Developing comprehensive data management and data integration strategies to enable the deployment of more loosely coupled enterprise applications, improving business agility.

B. SUMMARY OF PROJECT FUNDING REQUEST:

Funding Source	Total Project Cost	Total Prior Appropriation	Current Budget Year Request	Year Two Request	Year Three Request	Year Four Request	Year Five Request
Capital Construction Funds (CCF)	$3,290,340	$0	**$3,290,340**	$0	$0	$0	$0
Cash Funds (CF)	$369,660	$0	**$369,660**	$0	$0	$0	$0
Reappropriated Funds (RF)	$0	$0	**$0**	$0	$0	$0	$0
Federal Funds (FF)	$0	$0	**$0**	$0	$0	$0	$0
Total Funds (TF)	**$3,660,000**	**$0**	**$3,660,000**	**$0**	**$0**	**$0**	**$0**

C. PROJECT DESCRIPTION/SCOPE OF WORK/JUSTIFICATION:

Colorado Mesa University (CMU) is requesting State funding to modernize the University's Enterprise Resource Planning (ERP)/HR and Finance systems. For more than a decade the University has been optimizing business processes in an effort to digitally transform. The University's digital transformation journey has been a series of smaller projects to either automate processes or add functionality by adding point solutions to enhance core systems—HR, Finance and Student Information System—and implement a postmodern ERP. However, the University understands that a complete digital transformation is more than digitizing and automating processes and adding point solutions, and that a true digital transformation of its postmodern ERP system will enable the University to continuously evolve and proactively prepare for business disruptors in higher education.

Background

Colorado Mesa began using Ellucian Banner as its ERP in 1990. In 2008, an institution-wide technology initiative to more extensively utilize Banner was adopted as part of its *2008 Technology Master Plan*. Since then, the University has worked to maintain its ERP investment by re-implementing Banner modules and adding solutions to transform its business processes, developing a postmodern ERP. The University currently runs the latest release of Banner HR/Finance, and, over the last decade, the University has invested in point solutions and integrated them with Banner to add functionality and web services for students and employees. The majority of the point solutions implemented and integrated with the ERP have been cloud-based solutions. For instance, in 2017, the University implemented a cloud-based HR employment applicant tracking system that included the development of a custom interface to feed new employee hire data from the applicant tracking system to Banner HR. Maintaining data integrations and ensuring the integrity of the data continues to be a challenge faced by technical staff.

In 2015, with the retirement of CMU's Oracle database administrator (DBA), the University contracted with Ellucian's Application Managed Services (AMS) to provide DBA services plus software maintenance and upgrades for all Ellucian licensed software. Employing qualified Banner technical and DBA staff has

proven challenging in the past. The move to AMS enabled the University to keep its ERP applications up to date and allowed CMU programmers to focus on business initiatives. In 2020, Ellucian informed CMU it would not renew its AMS contract past its end date in 2022 as part of its effort to move support to its cloud services team. In 2022, CMU began the process of migrating its Banner environment to Ellucian's hosted environment running on Amazon Web Services.

This method of transforming business processes and customer experiences as well as augmenting programming staff with contracted services has, to this point, allowed the institution to stay in step with business and student demands, though the University continually faces challenges to deploy new technologies adopted more straightforward by larger universities who have additional resources readily available. The University's ERP modernization project must position the institution to leverage ever-evolving technologies that not just re-implement business processes but re-imagine and deliver on business outcomes.

Scope of Work and Justification

Colorado Mesa University is committed not only to upgrading its postmodern ERP system, but through the implementation of an ERP modernization strategy, it is committed to identifying and delivering on innovative business practices to best serve students and employees, drive efficiency, and lower the cost of attaining a higher degree. The University's ERP modernization strategy must align with its digital business strategy and desired student and business outcomes, and enable the institution to be more agile, responsive to business demands and strategic initiatives, and innovative by leveraging the latest technologies. The University's postmodern ERP system represents all enterprise business capabilities and not only those applications traditionally related to enterprise resource planning. For this reason, CMU's ERP modernization strategy is to develop a composable ERP where applications are configurable and interoperable to meet business agility requirements and keep pace with business change.

The University's ERP modernization project is central to implementing a composable ERP and includes:

- Implementing cloud software-as-a-service HR and Finance systems capable of leveraging the latest, ever-evolving technologies to reimagine and develop business capabilities that deliver on student and business outcomes.

As the University's digital transformation process accelerates, it is becoming increasingly more important that the institution's core HR and Finance systems advance to enable the University to leverage the latest technologies and keep pace with enterprise business capability requirements.

Cloud software-as-a-service ERP vendors release new functionality at a faster pace than upgrades for on-premise solutions. In part, this is due to cloud HR and Finance systems being delivered in a configure-only state allowing revisions to be released more frequently with new technologies and more seamlessly, taking less time and with less disruption, without customer customizations. Migrating core ERP/HR and Finance systems to a cloud software-as-a-service platform positions the University to not only be more agile, but enables the University to leverage a composable business model.

- Developing comprehensive data management and data integration strategies to enable the deployment of more loosely coupled enterprise applications, improving business agility.

Critical to the success of an ERP modernization project is the development of data management and data integration strategies. The University must invest in an integration platform to address the growing challenges of supporting multiple enterprise-level systems and allow systems of record and transformational applications to work seamlessly together. This will enable the University to develop a composable business strategy.

There are three main reasons for the University to deliver on a modern data integration platform. First, for years systems of record have held back innovation, often requiring add-on point solutions to deliver transformative processes or even to meet business requirements and address constituent demands. Second, maintaining application programming interfaces or system integrations between the system of record and the auxiliary application is costly. These integration points are often a point of failure and the cause of data integrity issues. Third, vendor integration capabilities are often lacking real-time data synchronizing, leaving systems out of date, and are often inadequate due to the limited data transferred between the system of record and the auxiliary application. Therefore, the University must invest in an integration platform to address challenges with true digital business transformation.

CMU will begin the project with a consulting engagement to finalize its ERP strategy and change approach with a consulting firm that does not offer implementation services for ERP vendors. The consulting process will allow the University to identify mission-critical business capabilities and system requirements pre-implementation, further develop its project management approach, and help design and educate departments on the institution's overall goals and ERP modernization strategy. Following the ERP consulting engagement, CMU plans to initiate a Request for Information/Proposal process to select the most qualified HR and Finance systems vendor that can deliver on required business capabilities and system requirements and then move directly to implementation. The overall project—ERP consulting, RFP/vendor selection, and implementation—schedule is estimated to take 20 months, with the core ERP/HR and Finance systems implementation anticipated to take 12-14 months.

Critical to the success of CMU's ERP modernization project and composable ERP strategy is the implementation of a data fabric and enterprise integration Platform-as-a-Service (iPaaS) solution. CMU is currently piloting an enterprise iPaaS solution to better understand the capabilities of iPaaS products on the market today to help solidify its data management and data integration strategy. As part of this project, the University plans to purchase the required data fabric and iPaaS licensing, training and professional services to support the implementation of the HR and Finance systems selected. The core training and implementation of an integration solution is expected to take 4-6 months with integrations, or connector development, taking place throughout the entire project. The data fabric and enterprise iPaaS solution selected will be leveraged to integrate the HR and Finance systems with the University's Student Information System and other enterprise software that will be part of its application portfolio moving forward.

This project supports the following Higher Education Master Plan goals:

- Increase Credential Completion and Improve Student Success. The University feels strongly that meeting student technology expectations, including providing a quality end user experience, is critical to a student's success and attaining a degree. Students continually engage in digital experiences, and by removing unnecessary challenges and barriers with information systems and online services, the University will be able to retain and assist more students to degree completion.
- Invest in Affordability and Innovation. The University understands the importance of affordability of higher education. By expanding its financial planning and analysis capabilities and implementing additional business intelligence tools, the University will be able to transform data much faster into actionable information to reduce the University's expenditures by identifying efficiencies, delivering courses and supporting students in the most economical manner that meets the needs of students

D. PROGRAM INFORMATION:

All University constituents and its programs will benefit from the migration of its postmodern ERP/HR and Finance systems to cloud software-as-a-service solutions and the implementation of an ERP modernization strategy to develop a composable ERP where applications are configurable and interoperable to meet business agility requirements and keep pace with business change. This will enable the University to be more agile, leverage the latest technology, deliver on enterprise business capabilities, and transform the employee and student experience.

Overall the University campus community will benefit from:

- Delivering future and current employees and students enhanced online services to assist users with understanding requirements and completing tasks by leveraging the latest technologies in personalized support such as artificial intelligence and conversational interfaces.
- Implementing a full Human Capital Management (HCM) suite to add capabilities for applicant selection, advanced time tracking to include Family Medical Leave (FML) and disability leave, employee performance and position management to include position descriptions and organization charts, professional development and learning platforms, and onboarding with automated benefit enrollment and tracking.
- Expanding recruitment tools to support the University's diversity and inclusion goals by adopting capabilities/technologies such as AI to reduce unconscious bias in job postings and target underrepresented groups in the jobs market, as well as analytics to quantify the impact of diversity and equality/inclusivity in the workforce.
- Advancing embedded workforce reporting and analytics for affirmative action reporting, FML and leave reporting, employee turnover, and compensation and other HR reporting needs. Embedded tools would provide data analysis to users within their natural workflow, without having to bring up another reporting tool.
- Expanding financial planning and analysis capabilities to enable continuous financial forecasting and budget scenario modeling. This project includes streamlining the budget process to move beyond the use of spreadsheets and e-forms to an integrated budget building and approval process.
- Automating travel and expense approvals and expense report submissions. The development of an integrated, streamlined expense submission and approval routing process will ensure user accountability with timely completion of travel and expense reports and supervisor approvals.

- Implementing a Finance system with an embedded reporting, business intelligence, and analytics tool. Delivering intuitive, customizable analytics with relevant data into the business applications will result in a higher rate of adoption and greater productivity by users. Data will transform into information that can be used to make intelligent business decisions.
- Leveraging cloud services, the University will reduce the time necessary to deploy its ERP modernization strategy and deliver on business objectives at start-up and continuously.

The University's Information Technology Department will benefit from the following:

- The University's move to cloud software-as-a-service solutions will enable the institution to maintain its current level of technical positions for supporting its ERP and other enterprise applications.
- Cloud software-as-a-service ERP vendors release new functionality at a faster pace than upgrades for on-premise installations and do not require staff programmers to apply localizations before departments can leverage the latest product advancements.
- The University business continuity plan recovery times for its ERP/HR and Finance systems will be dramatically improved.
- The project will reduce burden on technical staff to meet data security responsibilities under the Gramm-Leach-Bliley Act and upcoming regulatory requirements under 32 C.F.R. Part 2002 to comply with the National Institute of Standards and Technology Special Publication 800-171 Rev. 2, Controlled Unclassified Information in Nonfederal Systems (NIST 800-171 Rev. 2) for protecting personally identifiable information used in administrating federal student aid programs.

IT Health, Security and Industry Standards

IT systems associated with proposed project are fully supported by developer: The ERP systems being evaluated with this project are fully supported by experienced vendors with an extensive list of higher education customers. Cloud ERP solutions leverage leading cloud infrastructure providers for reliable, scalable and secure IT systems that are fully supported by the developer.

Cybersecurity of IT systems/devices associated with project is up to industry standards: Colorado Mesa will evaluate ERP vendors based on a range of important information security considerations. These include mature security practices that adhere to evolving industry standards for cloud-based data protection. In addition, information security and privacy procedures will be expected to comply with federal, state, and local laws and regulations applicable to the data and the vendor's performance under the agreement.

The Cloud Security Alliance (CSA) encourages the use of industry best practices providing the assurance of data security within cloud computing. Vendors having experience with the Consensus Assessments Initiative Questionnaire will be able to indicate their alignment with the best practices encouraged by the alliance. The level of compliance with these best practices will be considered in the evaluation of ERP vendors hence increasing the security stance of the solution once implemented.

The ERP vendor will provide current documentation showing independent verification of compliance with Service Organization Control (SOC) audits. This information will include the financial auditor's assessment

as well as a description of the controls in place. The vendor will also provide their response to any findings of note.

Payment Card Industry Data Security Standard (PCI DSS) compliance as a service provider will be confirmed in order to ensure the proper protection of payment cardholder data. The vendor will provide documentation indicating an engagement with a Qualified Security Assessor confirming compliance.

The University will only evaluate vendors that demonstrate a clear commitment to abide by the limitations of disclosure regarding personally identifiable information from education records set forth in the Family Educational Rights and Privacy Act (20 U.S.C. § 1232g; 34).

Articulates how project fits in with current disaster recovery system: The University's business continuity plan and recovery times for ERP applications and databases will be dramatically improved with the move to cloud software-as-a-service ERP/HR and Finance systems. Among the benefits of running cloud-based services are the inherent capabilities of cloud infrastructure such as scalability, responsive load balancing and redundancy within and between cloud-provider datacenters. Cloud service providers deliver networks, cloud storage, server infrastructure and virtualization for highly scalable and reliable computing environments. Further, system backups for disaster recovery will be handled by the ERP vendor.

ERP vendors using a major cloud service provider are able to take advantage of existing, highly developed continuity and recovery plans offered by high-end cloud infrastructure. These capabilities coupled with the vendor's own business continuity and disaster recovery plans, technical staff, and service level agreements will elevate the University's disaster recovery capabilities.

Other Fund Sources
CMU is able to contribute 10.1% to the cost of the project.

Quality of Planning/Proposal
Cost-benefit analysis performed with positive outcome: Colorado Mesa University developed the cost of the project using estimates of competing ERP vendors, technology consultant input, and information jointly shared among Colorado schools collaborating on project plans and strategies to modernize ERP systems. While the University's ERP modernization project will significantly enhance the institution's business capabilities and user experience as well as enable business agility, the ongoing cost to leverage cloud software-as-a-service ERP/HR and Finance systems will increase the University's annual operating budget. The anticipated increase in annual operating budget will be offset by eliminating third-party licensed applications replaced by the HR and Finance systems. For example, with the implementation of a full Human Capital Management (HCM) cloud suite, CMU will be able to decommission its add-on applicant tracking and onboarding solution.

Further, the University's move to cloud software-as-a-service systems will enable the institution to maintain its current level of technical positions for supporting its ERP and other enterprise applications. CMU's Information Technology staff is lean by most campus standards. This project will not eliminate technical staff, but allow current staff to focus more on strategic and transformational projects for the University.

The University strongly believes the performance outcomes, efficiencies gained and improvements to the institution's business capabilities, user experience and student retention goals as a result of this digital transformation project will by far outweigh the impact to the annual budget.

Proposal articulates how the project fits in the with institution's strategic IT plan: CMU's ERP Modernization project supports its *2020 Strategic Plan* Goal 3, Objective 3: to improve business processes and institutional decision making through the use of technology. This strategic objective is aligned with Goal 3 of the University's *2020 Technology Master Plan* to Implement web-based administrative platforms and modernize the University's Enterprise Resource Planning (ERP) systems to improve services. Modernizing the University's ERP and enterprise systems including the migration to cloud services was identified as a priority for the institution.

Alternatives analyzed: The University will only evaluate vendors that can demonstrate they are innovative and bring additional value to the University's business and can deliver on business agility requirements, drive operational efficiencies, improve student retention and assist students with degree completion, and lower the overall cost of students attaining a higher degree. The University is working with a technology consulting firm to develop an ERP and composable business strategy.

The University went through a strategic alignment process with its current ERP vendor. This process identified several recommendations to assist the University with its digital transformation journey. One recommendation was migrating to the vendor's managed cloud services as part of its ERP modernization initiative. The University has completed the vendor's Cloud Discovery questionnaire and integrations workbook in preparation for migrating to cloud services. An analysis of the University on-premise ERP hardware and software costs and moving to cloud services was performed.

Further, the University has identified a technology consulting firm that has extensive experience working with higher education customers to perform an assessment of existing data structures, establish new data governance models and develop an overall data management strategy for moving enterprise and ERP applications to the cloud. This work is part of CMU's approach to identify the best integration platform for the University's ERP modernization project.

Proper measures in place to prevent time and cost overruns: Colorado Mesa developed the cost of the project using estimates of competing ERP vendors, technology consultant input, and information jointly shared among Colorado schools collaborating on project plans and strategies to modernize ERP systems. Along with pricing, standard implementation timelines have been provided by ERP vendors. However, to protect against project overruns, the University is recommending a 10% project contingency to cover unforeseen project costs that may arise when implementing new systems and developing new system integrations and inflationary costs with software and services; additional time as well has been built into each vendor implementation schedule to protect against project overruns.

Proposed project is cohesive and is not a combination of smaller, unrelated projects: The University plans to implement cloud software-as-a-service HR and Finance systems as part of the proposed ERP modernization project. Critical to the success of an ERP modernization project is the development of data

management and data integration strategies to enable systems of record and transformational applications to work seamlessly together.

Achieves Goals
This project supports the following Higher Education Master Plan goals:

- Increase Credential Completion and Improve Student Success. The University feels strongly that meeting student technology expectations, including providing a quality end user experience, is critical to a student's success and attaining a degree. Students continually engage in digital experiences, and by removing unnecessary challenges and barriers with information systems and online services, the University will be able to retain and assist more students to degree completion.
- Invest in Affordability and Innovation. The University understands the importance of affordability of higher education. By expanding its financial planning and analysis capabilities and implementing additional business intelligence tools, the University will be able to transform data much faster into actionable information to reduce the University's expenditures by identifying efficiencies and delivering courses, and supporting students in the most economical manner that meets the needs of students.

Governing Board Priority
This project is CMU's top IT priority.

All University constituents and its programs will benefit from the migration of its postmodern ERP/HR and Finance systems to cloud Software as a Service solutions and the implementation of an ERP modernization strategy that will enable the University to be more agile, leverage the latest technology, deliver on enterprise business capabilities, and transform the student and employee experience. This project will meaningfully affect anyone using administrative systems— all students, faculty, and staff members, as well as prospective students and employees—applying for work, paying a bill, or applying for financial aid.

Project Involves Multiple Institutions: Colorado Mesa continues to collaborate closely with other Colorado schools to align our ERP and student information system strategies and deliver measurable improvements for students at institutions across the state. CMU continues to meet regularly with Metropolitan State University of Denver, Colorado School of Mines, and University of Northern Colorado. However, CMU's project schedule does not currently align with another peer institution, but the University will continue to collaborate on phases of the project with other Colorado institutions when possible. At a minimum, we will continue to work with other Colorado schools to take advantage of completive pricing and work with other institutions through various stages of ERP migration.

E. CONSEQUENCES IF NOT FUNDED:

CMU's ERP modernization project is critical to identifying and delivering on innovative business practices to best serve students, drive efficiency and lower the cost of attaining a higher degree. Without the requested project funds to modernize its postmodern ERP system, the University's digital transformation progress

would be severely hampered and we risk losing competitive position with other universities across Colorado and the nation.

F. ASSUMPTIONS FOR CALCULATIONS:

Colorado Mesa University developed the cost of the project using estimates of competing ERP vendors, technology consultant input, and information jointly shared among Colorado schools collaborating on project plans and strategies to modernize ERP systems. Estimates for implementing cloud software-as-a-service HR and Finance systems, including implementation services, were provided by two providers. The University has included integration Platform-as-a-Service costs to complete its systems integration strategy.

A financial challenge to migrating ERP/HR and Finance systems to cloud services is the overlap in software maintenance and software-as-a-service subscription cost for the first year. During the migration, the University must maintain two HR and Finance systems. With this project request, the University is asking for financial assistance with the first year of software-as-a-service subscription costs. Annual subscription costs for subsequent years will be covered by the institution.

Another challenge the University will face during the migration of ERP systems to cloud services and the reimplementation of business process is the time commitment by key employees whose main day-to-day duties still need to be performed to run the University. Part of the project funding request is funding for temporary staff positions to take workload off key staff to allow them to focus on the ERP migration process. The University anticipates the need to hire four (4) temporary staff members in the areas of human resources, payroll, accounting, and budgeting during the core implementation stage over 12-14 months.

Although CMU's project schedule does not currently align with another peer institution, the University will continue to collaborate on phases of the project with other Colorado institutions whenever possible to save in the areas of planning to reduce product and implementation oversights; functional and technical team expertise; reducing training time for temporary staff; and sharing application interfaces and integrations to student information system and third-party administrative applications.

G. OPERATING BUDGET IMPACT:

While the University's ERP modernization project will significantly enhance the institution's business capabilities and user experience as well as enable business agility, subscribing to cloud software-as-a-service ERP/HR and Finance systems will increase the University's annual operating budget. The anticipated increase in annual operating budget will be partially offset by eliminating third-party licensed applications such as the applicant tracking and onboarding solution replaced by the implementation of a full Human Capital Management (HCM) cloud suite. The University is taking steps to identify budget to absorb the net increase of the annual software licensing and cloud software-as-a-service subscription costs. However, the University strongly believes the performance outcomes, efficiencies gained and improvements to the institution's business capabilities, user experience and student retention goals as a result of this digital transformation will by far outweigh the impact to the annual budget.

Further, the University's move to cloud software-as-a-service systems will enable the institution to maintain its current level of technical positions for supporting its ERP and other enterprise applications. CMU's Information Technology staff is lean by most campus standards. This project will not eliminate technical staff, but allow current staff to focus more on strategic and transformational projects for the University.

H. PROJECT SCHEDULE:

Phase _1_of_1_	Start Date	Completion Date
Pre-Design		
Design/Implementation	**May 2023**	**December 2024**
Construction		
FF&E /Other		
Occupancy		

I. ADDITIONAL INFORMATION:

Three-year roll forward spending authority is required:	**X** Yes	No
Request 6-month encumbrance waiver:	❑ Yes	**X** No
Is this a continuation of a project appropriated in a prior year:	❑ Yes	**X** No

J. COST SAVINGS / IMPROVED PERFORMANCE OUTCOMES:

Colorado Mesa University developed the cost of the project using estimates of competing ERP vendors, technology consultant input, and information jointly shared among Colorado schools collaborating on project plans and strategies to modernize ERP systems. The University's ERP modernization project will significantly enhance the institution's business capabilities and user experience as well as improve business agility. However, CMU expects that subscribing to cloud software-as-a-service ERP/HR and Finance systems will increase the University's annual operating budget. CMU will partially offset its expected operating budget increase by eliminating add-on, third-party point-solutions integrated with the existing ERP system. The University is taking steps to identify budget to absorb the net increase of the annual software licensing and cloud service costs.

The University's analysis, with input and information from a global IT consulting and advisory company, has identified future cost avoidance in technical programming staff positions. Information Technology staff is lean by most institution standards. This project will not eliminate technical staff, but the University's move to cloud software-as-a-service HR and Finance systems will enable the institution to maintain its current level of technical positions needed to support ERP integrations along with all other enterprise software moving forward. Further, there are growing security requirements on CMU's Information Technology staff. This project will reduce future burden and costs to meet and report on data security responsibilities under the Gramm-Leach-Bliley Act and upcoming regulatory requirements under 32 C.F.R. Part 2002 to comply with the National Institute of Standards and Technology Special Publication 800-171 Rev. 2, Controlled Unclassified Information in Nonfederal Systems (NIST 800-171 Rev. 2) for protecting personally identifiable information used in administrating federal student aid programs.

The University is committed to not only upgrading its postmodern ERP system, but through the implementation of an ERP modernization strategy it will identify and deliver on innovative business practices to best serve students, drive efficiency and lower the cost of attaining a higher degree. The ERP modernization strategy will enable the institution to be more agile, responsive to business demands and strategic initiatives, and innovative by leveraging the latest technologies. Performance outcomes and key business capabilities that the University will gain by implementing its ERP modernization strategy are outlined in the Program Information section and in the statement of work.

K. SECURITY AND BACKUP / DISASTER RECOVERY:

Colorado Mesa will be selecting an ERP vendor based on a range of important information security considerations. These include mature security practices that adhere to evolving industry standards for cloud-based data protection. In addition, information security and privacy procedures will be expected to comply with federal, state, and local laws and regulations applicable to the data and the vendor's performance under the agreement.

The Cloud Security Alliance (CSA) encourages the use of industry best practices providing the assurance of data security within cloud computing. Vendors having experience with the Consensus Assessments Initiative Questionnaire will be able to indicate their alignment with the best practices encouraged by the alliance. The level of compliance with these best practices will be considered in the evaluation of ERP vendors hence increasing the security stance of the solution once implemented.

The ERP vendor will provide current documentation showing independent verification of compliance with Service Organization Control (SOC) audits. This information will include the financial auditor's assessment as well as a description of the controls in place. The vendor will also provide their response to any findings of note.

Payment Card Industry Data Security Standard (PCI DSS) compliance as a service provider will be confirmed in order to ensure the proper protection of payment cardholder data. The vendor will provide documentation indicating an engagement with a Qualified Security Assessor confirming compliance.

The University will only evaluate vendors that demonstrate a clear commitment to abide by the limitations of disclosure regarding personally identifiable information from education records set forth in the Family Educational Rights and Privacy Act (20 U.S.C. § 1232g; 34).

Cloud software-as-a-service ERP vendors leverage their cloud service provider's inherent capabilities of cloud infrastructure such as scalability, responsive load balancing and redundancy within and between cloud-provider datacenters. Cloud service providers deliver networks, cloud storage, server infrastructure and virtualization for highly scalable and reliable computing environments. In addition, system backups for disaster recovery will be handled by the ERP vendor. ERP vendors using a major cloud service provider are able to take advantage of existing, highly developed continuity and recovery plans offered with high-end cloud infrastructure. These capabilities coupled with the vendor's own business continuity and disaster recovery plans, technical staff, and service level agreements will elevate the University's disaster recovery capabilities.

L. BUSINESS PROCESS ANALYSIS:

Colorado Mesa went through a strategic alignment process with its current ERP vendor. This process identified several recommendations to assist the University with its digital transformation journey. One recommendation was migrating to the vendor's managed cloud services as part of its ERP modernization initiative. The University has completed the vendor's Cloud Discovery questionnaire and integrations workbook in preparation for migrating to cloud services. An analysis of the University on-premise ERP hardware and software costs and moving to cloud services was performed.

The University is evaluating only vendors that can demonstrate they are innovative and bring additional value to the University's business and can deliver on business agility requirements, drive operational efficiencies, improve student retention and assist students with degree completion, and lower the overall cost of students attaining a higher degree. The University has engaged an IT consulting and advising firm to conceptualize its ERP and composable business strategy. Further, CMU will begin the project with a consulting engagement to finalize its ERP strategy and change approach. The consulting process will allow the University to identify mission-critical business capabilities and system requirements pre-implementation, further develop its project management approach, and help design and educate departments on the institution's overall goals and ERP modernization strategy.

Further, the University has identified a technology consulting firm that has extensive experience working with higher education customers to perform an assessment of existing data structures, establish new data governance models and develop an overall data management strategy for moving enterprise and ERP applications to the cloud. This work is part of CMU's approach to identify the best integration platform for the University's ERP modernization project.

Last, CMU's ERP Modernization project supports its *2020 Strategic Plan* Goal 3, Objective 3: to improve business processes and institutional decision making through the use of technology. This strategic objective is aligned with Goal 3 of the University's *2020 Technology Master Plan* to Implement web-based administrative platforms and modernize the University's Enterprise Resource Planning (ERP) systems to improve services. Modernizing the University's ERP and enterprise systems including the migration to cloud services was identified as a priority for the institution.

Wireless (Wi-Fi) Technology Infrastructure Upgrade

Colorado State University

COLORADO
Department of Higher Education

STATE OF COLORADO
DEPARTMENT OF HIGHER EDUCATION

Print Date: 5/25/22

FY23-24 CAPITAL INFORMATION TECHNOLOGY PROJECT REQUEST- *COST SUMMARY (CC_IT-C)**

(A)	(1) **Funding Type (Cash, CCF, Cash & CCF):**	**CCF**	(2) **Intercept Program Request? (Yes/No):**	No
(B)	(1) **Institution:**	Colorado State University Pueblo	(2) **Name & Title of Preparer:**	Chris Milliken - Executive Director of Information Technology
(C)	(1) **Project Title:**	Wireless (Wi-Fi) Technology Infrastructure Upgrade	(2) **E-mail of Preparer:**	chris.milliken@csupueblo.edu
(D)	(1) **Project Phase (__ of __):**	1 of 1	(2) **State Controller Project # (if continuation):**	n/a
(E)	(1) **Project Type (IT):**	Capital IT	(2) **Institution Signature Approval:**	25-May-22
(F)	(1) **Year First Requested:**	FY 2023-2024	(2) **CDHE Signature Approval:**	Date
(G)	(1) **Priority Number (Leave blank for continuation projects):**	1 of 1	(2) **OSPB Signature Approval**	Date

(1)		(a) **Total Project Costs**	(b) **Total Prior Year Appropriation(s)**	(c) **Current Budget Year Request**	(d) **Year Two Request**	(e) **Year Three Request**	(f) **Year Four Request**	(g) **Year Five Request**
	Land /Building Acquisition							
(2)	Land Acquisition/Disposition	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(3)	Building Acquisition/Disposition	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(4)	***Total Acquisition/Disposition Costs***	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	Professional Services							
(5)	Consultants/Contactors	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(6)	Quality Assurance	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(7)	Training	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(8)	Leased Space (Temporary)	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(9)	Feasibility Study	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(10)	Other Services/Costs	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(11)	Inflation Cost for Professional Services	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(12)	Inflation Percentage Applied		0.00%	**0.00%**	0.00%	0.00%	0.00%	0.00%
(13)	***Total Professional Services***	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	Associated Building Construction							
(14)	Cost for New (GSF):	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(15)	New $_____/GSF							
(16)	Cost for Renovate GSF:	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(17)	Renovate $_____/GSF							
(18)	Site Work/Landscaping	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(19)	Other (Specify)	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(20)	Inflation for Construction	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(21)	Inflation Percentage Applied		0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
(22)	***Total Construction Costs***	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	Software Acquisition							
(23)	Software COTS	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(24)	Software Built	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(25)	Inflation on Software	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(26)	Inflation Percentage Applied		0.00%	**0.00%**	0.00%	0.00%	0.00%	0.00%
(27)	***Total Software***	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**
	Equipment							
(28)	Servers	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(29)	PCs, Laptops, Terminals, PDAs	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(30)	Printers, Scanners, Peripherals	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(31)	Network Equipment/Cabling	$ 810,550	$ -	**$ 810,550**	$ -	$ -	$ -	$ -
(32)	Other (Specify)	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(33)	Miscellaneous	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(34)	***Total Equipment and Miscellaneous Costs***	$ 810,550	$ -	**$ 810,550**	$ -	$ -	$ -	$ -
	Total Project Costs							$ -
(35)	***Total Project Costs***	**$ 810,550**	**$ -**	**$ 810,550**	**$ -**	**$ -**	**$ -**	**$ -**
	Project Contingency							
(36)	5% for New	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(37)	10% for Renovation	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(38)	***Total Contingency***	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	Total Budget Request							
(39)	***Total Budget Request***	**$ 810,550**	**$ -**	**$ 810,550**	**$ -**	**$ -**	**$ -**	**$ -**
	Funding Source							
(40)	Capital Construction Fund (CCF)	$ 810,550	$ -	**$ 810,550**	$ -	$ -	$ -	$ -
(41)	Cash Funds (CF)	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(42)	Reappropriated Funds (RF)	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(43)	Federal Funds (FF)	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	TOTAL	**810,550**	**-**	**810,550**	**-**	**-**	**-**	**-**

*Sould match CC_IT-N Form

COLORADO
Department of Higher Education

STATE OF COLORADO
DEPARTMENT OF HIGHER EDUCATION

FY 2023-24 CAPITAL IT PROJECT REQUEST- *NARRATIVE (CC_IT-N)*		
Capital Construction Fund Amount (CCF):	**$810,550**	
Cash Fund Amount (CF):		
Intercept Program Request? (Yes/No):	No	
Institution Name:	Colorado State University Pueblo	
Project Title:	Wireless (Wi-Fi) Technology Infrastructure Upgrade	
Project Phase (Phase _of_):	Phase 1 of 1	
State Controller Project Number (if continuation):		
Project Type:	X	Technology Hardware
		Technology Software
Year First Requested:	FY 2023 - 2024	
Priority Number (Leave blank for continuation projects):	___ OF ___	
Name & Title of Preparer:	Chris Milliken	
E-mail of Preparer:	chris.milliken@csupueblo.edu	
Institution Signature Approval:	D Sonder Hodge	May 25, 2022
OSPB Signature Approval:		Date
CDHE Signature Approval:		Date

A. PROJECT SUMMARY/STATUS:

Colorado State University Pueblo (CSUP) is requesting state funds for an upgrade of critical network wireless technology (Wi-Fi) infrastructure that is essential to campus operations in support of teaching and learning for the students being served by CSUP in southern Colorado.

B. SUMMARY OF PROJECT FUNDING REQUEST:

Funding Source	Total Project Cost	Total Prior Appropriation	Current Budget Year Request	Year Two Request	Year Three Request	Year Four Request	Year Five Request
Capital Construction Funds (CCF)	$810,550	$0	**$810,550**	$0	$0	$0	$0
Cash Funds (CF)	$0	$0	**$0**	$0	$0	$0	$0
Reappropriated Funds (RF)	$0	$0	**$0**	$0	$0	$0	$0
Federal Funds (FF)	$0	$0	**$0**	$0	$0	$0	$0
Total Funds (TF)	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**

C. PROJECT DESCRIPTION:

CSUP is requesting state funds to upgrade its aged wireless technology infrastructure. This was the highest priority of the findings of a 3rd party consultant contracted by CSUP's President to assess critical IT needs impacting its mission of service to students in southern Colorado. In addition, at the direction of Chancellor Tony Frank, CSUP and CSU-Fort Collins are in the process of aligning IT operations and services, to provide a much more efficient and effective IT environment. The ultimate goal of this consolidation is both to improve the IT environments at both institutions as well as to reduce administrative costs that will directly lower costs to students. CSUP will partner with Colorado State University Fort Collins in identifying and negotiating best pricing and any-and-all options for implementation efficiencies for this collaborative effort.

JUSTIFICATION

The functionality of CSUP's existing, aged Wi-Fi environment is severely and negatively impacting the student experience due to the unmet ability of the existing Wi-Fi to support newer student devices and inability to support current methods of device authentication necessary to register on the network. The existing wireless access points do not have the capability to transmit on the newer frequencies that current student devices utilize by default. Industry standard is that wired and wireless network equipment has a useable lifespan of, at most, 7 years before it needs to be replaced due, in part, to advances in data transmission standards which is most noticeable in wireless technology. 100% of CSUP's wireless network is now either at or beyond the recommended 7-year mark, and the timeline for funding of this proposal will put all such equipment beyond the seven-year standard for upgrade.

In 2021, CSUP President Dr. Timothy Mottet commissioned a comprehensive analysis of CSU Pueblo's IT infrastructure, IT department operations, budget, skills, staff, support processes, and campus stakeholder experience. Among the many findings of the report provided by consultants Berry Dunn, a primary recommendation that was emphasized was to address the problematic campus wireless (Wi-Fi) experience that was impacting teaching and learning.

In response to the recommendation to address the wireless concerns, President Mottet invested $25,000 in professional service hours with the CSUP's network vendor to analyze and identify needs to re-engineer the authentication methods, SSID strategy, wireless channel planning and engage students in focus groups to gauge progress over outcomes by establishing a current baseline of student experience. As an outcome, this current baseline will be compared to the experience after this proposed upgrade is accomplished. This investment was essential to identify steps needed to be taken in support of this proposal, and it is now necessary to upgrade the outdated physical infrastructure required to significantly improve the student experience on campus. CSUP is requesting the State's assistance to ensure the institution is a place where students can thrive, and have their educational needs of connectivity on campus, and most importantly in the classrooms, met.

In addition to upgrading existing Wi-Fi devices which have exceeded end-of-life timelines, this project will also upgrade wireless access in several identified outdoor areas where students congregate and

study. CSUP's analysis has shown a dramatic increase of student use of Wi-Fi in outdoor areas since the coronavirus pandemic, a pattern which persists to the present.

In summary, current Wi-Fi upgrades in technology have been identified as the highest priority for student needs in support of their educational endeavors, and thus is the thrust of this proposal.

D. PROGRAM INFORMATION:

All areas of campus that utilize wireless network connectivity for activities and functions will be impacted, especially in student learning spaces that rely heavily on mobile device technology and expect flexibility for classroom innovations, student engagement and expanded needs for hybrid and remote teaching necessary to facilitate positive student outcomes.

E. CONSEQUENCES IF NOT FUNDED:

Not funding the wireless upgrade will negatively impact student success due to insufficient connectivity on campus in general and especially in the classroom and study areas. The ability of CSU Pueblo's IT department to meet the needs of campus will continue to be crippled without an upgrade to the wireless infrastructure.

F. ASSUMPTIONS FOR CALCULATIONS:

ITEM	QUANTITY	DESCRIPTION	COST
High Density Wireless Access Points	413	This is the number of wireless access points in all buildings on the CSUP campus.	$396,480
Licenses and Support*	5 years	This cost is the license, maintenance, and support fees for all wireless access devices.	$369,120
Desktop Access Points	10	These portable access points are used to provide temporary and portable wireless access for university events off campus or remote locations.	$2,600
Outdoor Access Points	25	Outdoor-rated wireless access points which will provide signal coverage throughout all high-density traffic areas where students congregate in areas with permanent outdoor seating.	$17,350
Outdoor cabling and installation	25	This cost includes the cabling, construction design, and installation of outdoor access points to locations on buildings or structures as required to provide sufficient outdoor signal coverage on campus.	$25,000
		TOTAL:	**$810,550**

G. OPERATING BUDGET IMPACT:

No operating budget increases are anticipated.

H. PROJECT SCHEDULE:

Identify project schedule by funding phases. Add or delete boxes as required for each phase. See instructions for further detail.

Phase 1 of 1	**Start Date**	**Completion Date**
Pre-Design		
Design		
Construction		
FF&E /Other		
Occupancy		

Phase __of__	**Start Date**	**Completion Date**
Pre-Design		
Design		
Construction		
FF&E /Other		
Occupancy		

I. ADDITIONAL INFORMATION:

Three-year roll forward spending authority is required:	❑ Yes	☑ No
Request 6-month encumbrance waiver:	❑ Yes	☑ No
Is this a continuation of a project appropriated in a prior year:	❑ Yes	☑ No
State Controller Project Number (if continuation):		

J. COST SAVINGS / IMPROVED PERFORMANCE OUTCOMES:

Improved wireless connectivity leads to improved student educational experience, faculty effectiveness, student retention, improved reputation, and increased enrollments.