



**Division of IT
Budget Hearing**

February 7, 2018

Agenda

• Welcome	Fowler
• Instructional Technology & Desktop Services	Frady
• Applications and Systems	Berk
• Networking	Swartzentruber
• Chief Technologist and Security Office	Hammer
• Coulter Faculty Commons	Diede
• CIO Office	Justice
• Adjourn	Fowler

Agenda

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| • Welcome | Fowler |
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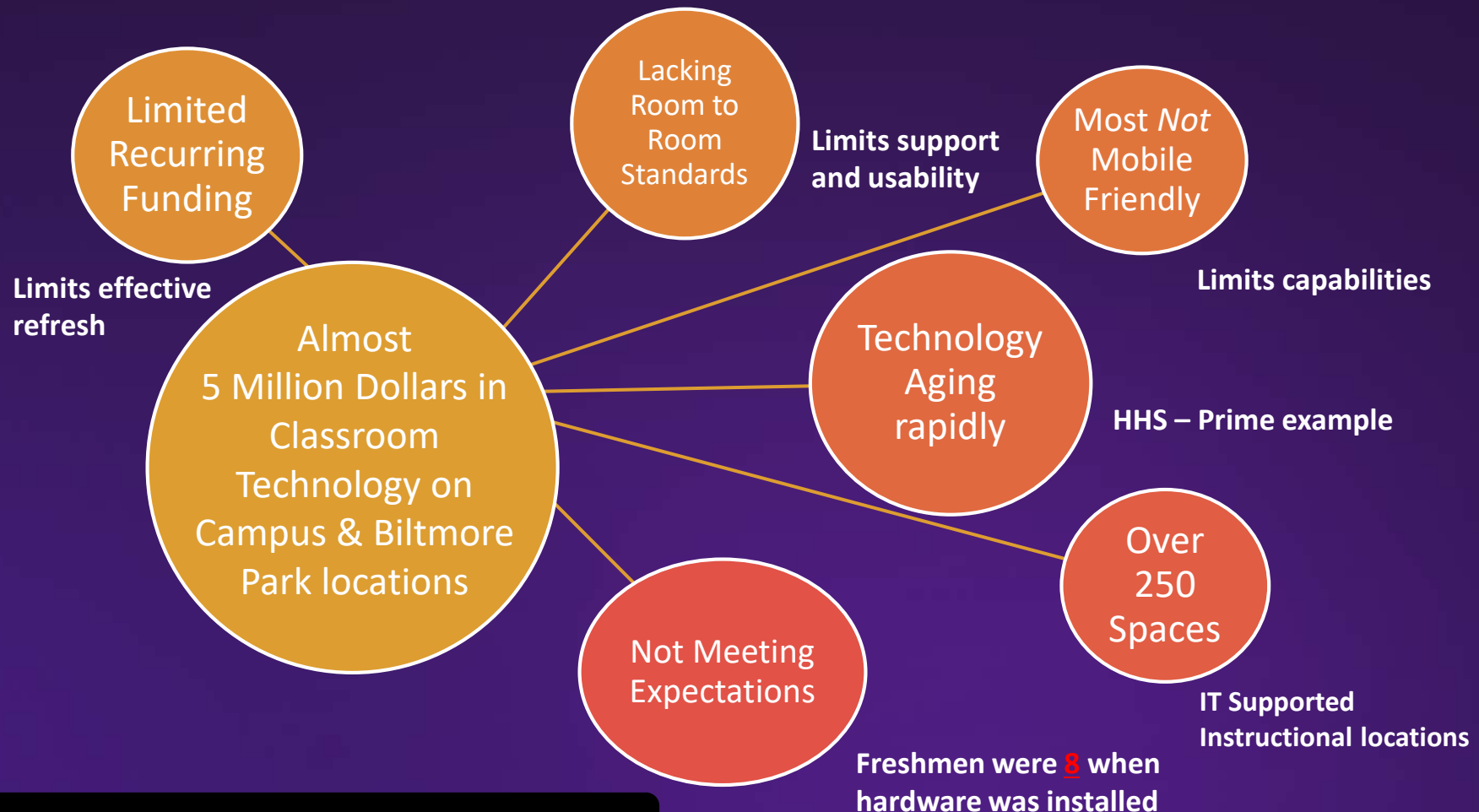
Instructional Technology & Desktop Services

**Budget Request
2018-2019**

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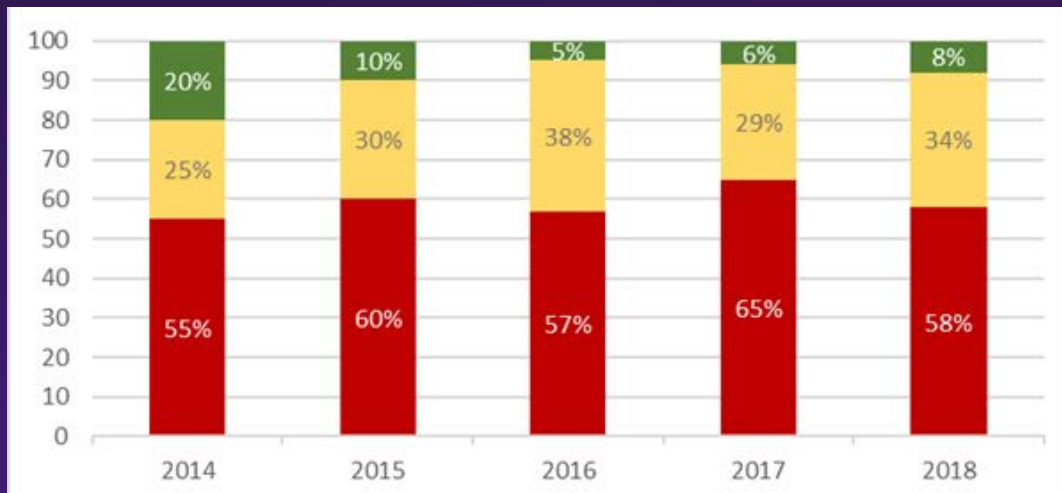
Instructional Funding – *The Why*



Critical to Academic Teaching and Learning

Instructional Roadmap – Equipment Age

Instructional technology is **not keeping pace** with rate of technology change or faculty and student expectations – **recurring and investment funding needed**



Current - Recently Refreshed

Less than 3 years old

Mid Life Cycle

3-7 years old

End of Life Technology

Greater than 7 years old

- Covers numerous areas with direct faculty and student impact

- Larger classrooms
- Mobile Accessibility
- High-end software access
- New instructional delivery methods
- Collaboration
- Global knowledge access
- Multidisciplinary engagements
- Student preparation

- Little recurring funding
- Affects student recruitment and retention

Cost: \$450,000 Recurring \$450,000 One Time

5 year roadmap / plan developed in consultation with members of the Provost Council and IT

HHS Strategic Classroom & Control Repair

- Funding to address broken or functionally compromised HHS classroom spaces
- We have experienced higher than average failure rates on non-standard HHS equipment
- Rework HHS spaces to align with existing campus standards and restore full A/V functionality to classrooms
- Address crucial aging components to maintain continuity of building services



Classroom Fixes Phase 1: \$85,000 One Time
Classroom Fixes Phase 2: \$25,000 One Time
HHS Video Control Upgrades: \$45,000 One Time

Auditorium AV & Projector Upgrades

- Increased demand for larger class sizes and large presentations
- Presentation Technology is lagging behind in key event spaces.
- **Phased Approach for Upgrades**
 - Phase I
 - HHS 209, HFR 101, NS 1
 - Phase II
 - BAC 130, FO 101
 - Phase III
 - BAC 223, CO 260
- Funding for equipment to increase the availability of this technology in these larger classroom spaces
- Support for updated audio/video infrastructure



Phase 1: \$50,000

Phase 2: \$40,000

Phase 3: \$40,000

Campus Conference Room

Standardization Initiative

- Conferencing needs have increased and only a few rooms are equipped correctly on campus
- Requesting recurring funding to begin process upgrading publicly schedulable conference rooms
- Provide a standard, high quality system to space owners
- Goal is to update 2 conference rooms per year



Cost: \$20,000 Recurring

Faculty and Student Support & Needs



Technology Commons Refresh

- Upkeep of lab machines
- Refresh for equipment checkout equipment
- Furniture and space maintenance
- Academic and multimedia software needs
- Licensing and service contract fees

3DU Makerspace Academic Expansion

- Laser Cutter and Engraver & Soldering Station
- HTC Vive – Virtual Reality System
- Expanding Capabilities for 3D printers
- Filament Recycler
- Midi Keyboards and Recording Software

Technology Commons: \$50,000 Recurring
3DU: \$20,000 One Time

Supporting Student Laptop Requirement

- Implementing Laptop Requirement in **Fall of 2018**
- Next step is purchasing tablets to support/supplement Orientation and Advising
- Devices will also be available for students to checkout in the Technology Commons during the rest of the year, as our current inventory is constantly checked out
 - 50 iPads
 - 50 Dell Tablets
 - Tablet Carts
 - Storage Expansion



Cost: \$158,000 One Time \$25,000 Recurring

Device Management

- Support need for the campus as more devices are mobile and BYOD expands
- Management of policies and security for:
 - 5000+ WCU owned devices
 - Student owned devices as they interact with the WCU network and resources
 - Ensure the security of data both on devices and on WCU resources
 - Position will be permanent and ongoing to support evolving technology needs

IC Refresh Installation

- Critical for the growing IT needs in Technology-Enhanced classrooms...
 - Refresh Equipment needs to be installed in order to be useful
 - Increased class utilization decreases access for technicians to work to replace equipment
 - Need for after-hour installation and support
 - IT's support focus is for public classrooms and Open Access labs

Device Management: \$89,000 Recurring
IC Position: \$65,000 Recurring



Personnel Needs – Hourly to FTE Moves

Technology Commons Positions are critical to continue providing:

- High level customer support during nights and weekends
- Priority one and after hours IT support 365 days a year
- Advanced support for walk-up issues outside of Monday-Friday 8am-5pm
- Guidance and work prioritization for Technology Commons student workers during nights and weekends

Desktop Services Positions are critical to continue providing:

- Hardware repair for all student and WCU owned computers
- Quoting and procurement of WCU owned computers and devices
- Initial tagging, imaging, and delivery of faculty/staff computers and devices
- Maintaining IT assets and asset management processes for the IT division and campus
- Pick-up, transportation, and management of the surplus of WCU owned IT assets

 Customer Experience  Services  Support Channels

Cost: \$150,000 Recurring

Personnel Needs - Student Worker Budget

- ITDS has a long tradition of utilizing student workers
- As the campus infrastructure has grown, so have personnel demands for support
- Asking for additional student funding in our Instructional Computing & Embedded College Support team budgets
- This will help with the intake and installation of classroom equipment as well as the upkeep of academic spaces

Denise Calhoun –Student Worker

"I am thankful for the experience of working in IT. It pushed me out of my comfort zone to learn new software and technologies, and it gave me the confidence to help fellow students do the same. I still use these skills on a daily basis. It also prepared me for a professional work environment where timeliness, teamwork, and a positive attitude were highly valued. Of all the jobs I had before starting my career, being a student worker for IT was the most beneficial."



Cost: \$22,500 Recurring

Request Title	Recurring Funds	Non-Recurring Funds	Linkages	Incr Enroll, Reten
Instructional Technology Roadmap	\$450,000	\$450,000	2020: 1.3.1; 5.4.1; 5.1.1; IT Strategic: 1.1.1; 1.1.2.1; 1.1.2.2; 1.1.2.3; 1.1.4; 3.2.2;	Yes
WCU Device Management Position	\$89,000	\$0	2020: 1, 5, 4	Yes
IC Refresh Installation Position	\$65,000	\$0	2020: 1.3.1; 5.4.1; 5.1.1; IT Strategic:1.1.1; 1.1.2.1; 1.1.2.2; 1.1.2.3; 1.1.4; 3.2.2	Yes
Technology Commons After Hours Staff - Moving Hourly to Full-Time	\$80,000	\$0	2020: 1.1.2, 1.1.6, 2.1.1, 2.1.3, 5.4; IT Initiatives: 1.1.2,1.1.3; Program Review: Utilizing the Technology Commons as a centerpiece for recruitment	Yes
Desktop Services Hourly Conversions	\$70,000	\$0	2020: 1, 5, 4	Yes
IC Student Budget Increase	\$10,000	\$0	2020: 1.3.1; 5.4.1; 5.1.1; IT Strategic: 1.1.1; 1.1.2.1; 1.1.2.2; 1.1.2.3; 1.1.4; 3.2.2	Yes
ECSVS Student Worker Funding	\$12,500	\$0	2020: 5.4.1, 5.4.2, 1.1.2; IT Strategic: 1.1.1, 1.1.2.2, 1.1.3,1.1.4, 3.4.2, 3.4.3	Yes

Request Title	Recurring Funds	Non-Recurring Funds	Linkages	Incr Enroll, Reten
HHS Video Control Updates	\$0	\$45,000	2020: 5.4.1, 5.4.2, 1.1.2; IT Strategic: 1.1.1, 1.1.2.2, 1.1.3,1.1.4, 3.4.2, 3.4.3	Yes
HHS Classroom Band Aid Fix Phase 1	\$0	\$85,000	2020: 5.4.1, 5.4.2 1.1.2; IT Strategic: 1.1.1, 1.1.2.2, 1.1.3,1.1.4, 3.4.2, 3.4.3	Yes
HHS Classroom Band Aid Fix Phase 2	\$0	\$20,000	2020: 5.4.1, 5.4.2 1.1.2; IT Strategic: 1.1.1, 1.1.2.2, 1.1.3,1.1.4, 3.4.2, 3.4.3	Yes
Auditorium AV & Projector Upgrades Phase I - HHS 209, HFR 101, NS 1	\$0	\$50,000	2020: 1.3.1, 5.4.1, 5.1.1; IT Strategic: 1.1.1, 1.1.2.1, 1.1.2.2, 1.1.2.3, 1.1.4, 3.2.2	Yes
Auditorium AV & Projector Upgrades Phase II - BAC 130, FO 101	\$0	\$40,000	2020: 1.3.1, 5.4.1, 5.1.1; IT Strategic: 1.1.1, 1.1.2.1, 1.1.2.2, 1.1.2.3, 1.1.4, 3.2.2	Yes
Auditorium AV & Projector Upgrades Phase III - BAC 223, CO 260	\$0	\$40,000	2020: 1.3.1, 5.4.1, 5.1.1; IT Strategic: 1.1.1, 1.1.2.1, 1.1.2.2, 1.1.2.3, 1.1.4, 3.2.2	Yes
Campus Conference Room Standardization Initiative	\$25,000	\$0	2020: 5.4.1, 5.4.2, 1.1.2; IT Strategic: 1.1.1, 1.1.2.2, 1.1.3,1.1.4, 3.4.2, 3.4.3	No
Support for Campus Laptop Requirement	\$25,000	\$158,000	2020 Initiatives: 1.1.2, 1.1.6, 2.1.1, 2.1.3, 5.4; IT Initiatives: 1.1.2,1.1.3, 1.1.5	Yes
Technology Commons Recurring Refresh	\$50,000	\$0	2020: 1.1.2, 1.1.6, 2.1.1, 2.1.3, 5.4; IT Initiatives: 1.1.2,1.1.3; Program Review: Utilizing the Technology Commons as a centerpiece for recruitment	Yes
3DU Makerspace Expansion	\$0	\$20,000	2020: 1.1.2, 1.1.6, 2.1.1, 2.1.3, 5.4; IT Initiatives: 1.1.2,1.1.3; Program Review: Utilizing the Technology Commons as a centerpiece for recruitment	Yes

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The Back Story...

Data Center – always a changing and growing landscape

- Capacity growth
 - Disaster recovery/business continuity
- Security
 - Technology and vendor shifts
 - New technology and capabilities
- Cloud

 **NetApp®**



CISCO™



Drives



vmware



Microsoft

VERITAS™



redhat®
L I N U X



amazon
web services



Microsoft
Azure

Additional Storage Capacity

- Additional storage capacity for one of our data centers (11 Tbytes).
- Free space has dropped to approximately 50% and usage trends continue rising.
- Primary growth areas for this “tier 1” storage is to service -
 - Virtual server environment – runs 85% of actual servers, desktop and classroom environments.

“Primary” Storage Tiers

Tier 1

 NetApp®



Tier 2

 45 Drives



Solid state “drives”	Technology	Spinning drives
High	Speed	Medium
Very low	Latency	Medium
High – failover, phone home,...	Fault tolerance	Low
High	Cost	Low
Virtual environment, VCAT, databases, ...	Usage	File shares, archives

Funding: R: \$0

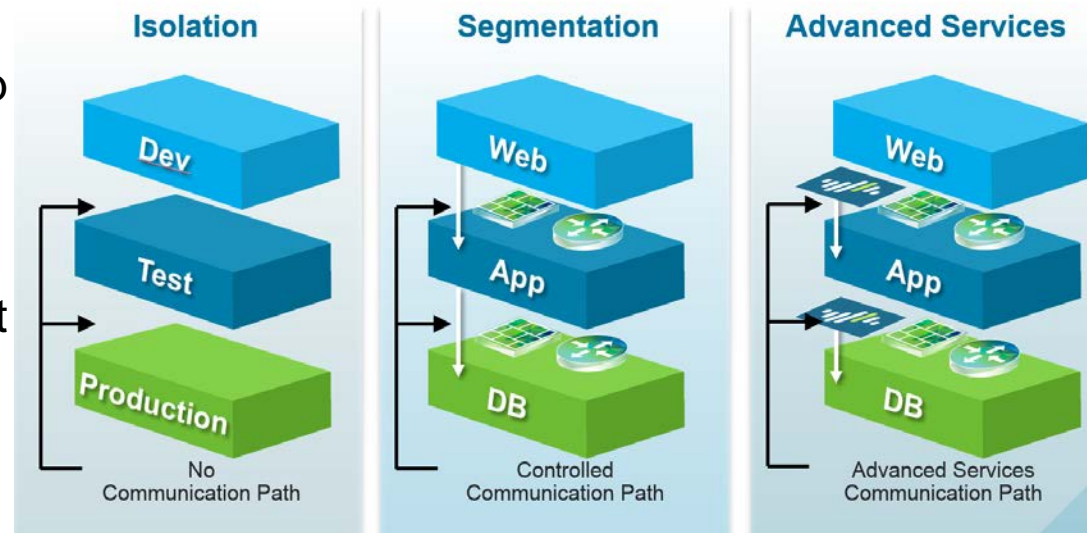
NR: \$31,185

Security and Cloud

“Microsegmentation”: a security technology that breaks the data center into logical elements and manages them with high-level IT security policies.

SDDC is the foundation for Micro-segmentation

- Limits “horizontal” access across servers, creating islands that, if breached, can’t be used to jump to other islands.
- Enables segmenting of security access between servers and provides for eventual movement of individual servers/groups to the “cloud”.



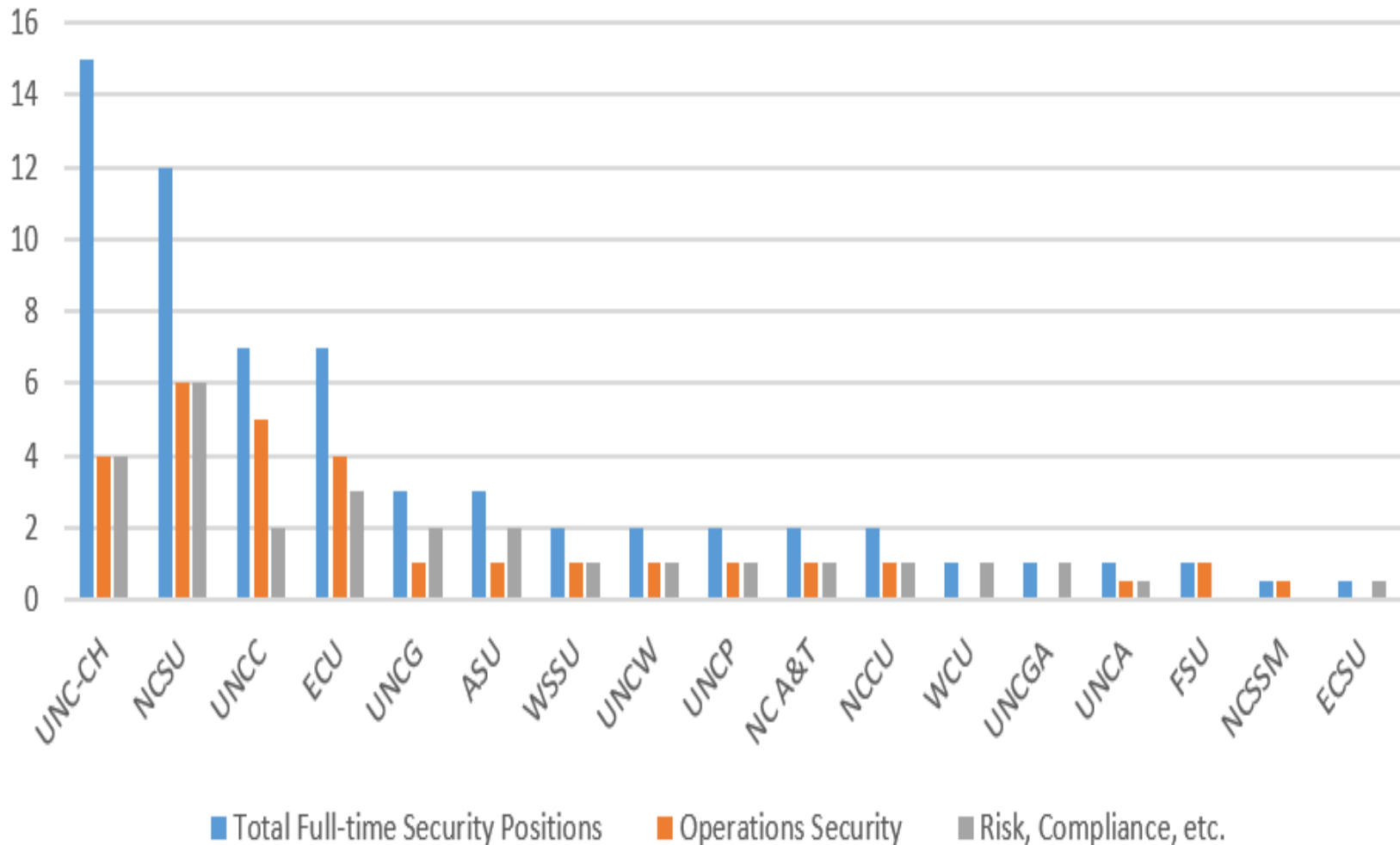
Operational Security Position

- An FTE to
 - Implement and operationalize automated solutions to proactively monitoring for attacks, vulnerabilities, and other threats to infrastructure and data.
 - Manage remediation and responses across IT teams to respond to attacks and build responses to prevent future ones.
- Proactive monitoring significantly increases WCU's security.
- Security best practice, legal compliance, and audit criteria all call for this position and capability.
- Meet PCI and State Audit requirements around the use of a SIEM (Security Incident and Event Management) System.
- UNC system has adopted ISO 27002 security standards and these outline a need for proactively managing server security logs.

Funding: R: \$113, 472

NR: \$6,000

UNC Member Information Security Staffing



The majority of other UNC schools have at least one person in this position

eMail Filtering

- WCU's security/data risks have increased significantly with the continuing (and increasing attempts) to use email as a mechanism to compromise data and access.
- Since January alone we have been targeted 70+ times with phishing attempts, leading to 300+ compromised accounts.
- This leads to potential data loss, public filings, fines, reputational issues, considerable IT resource, user downtime, ...
- IT is leading a 3 pronged attack to limit WCU's exposure, including –
 - Multi-factor implementation from off campus
 - Modern authentication for Outlook
 - email filtering (stopping messages from reaching an inbox)
- Reviewing products from Proofpoint, Barracuda, Microsoft

proofpoint.

 Barracuda

 Microsoft

Funding: R: \$60k-120k

NR: \$0

Banner/Apps Development

- Requests for multiple kinds of work (projects, service requests, ...) have, for several years, not met campus needs as to delivery timeline due to IT resource constraints. Our typical work backlog is 125+ requests.
- This work can be –
 - Custom application development
 - Systems integration
 - Banner development
 - Process automation
- This leads to campus not being able to take advantage of –
 - new technology for improved productivity
 - Visibility to data needed to run operations
 - Eliminate older/riskier technology

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The Perfect Storm!



Networking Perfect Storm

Powerful forces are combining to produce the perfect telecommunications infrastructure storm at WCU!

- **New construction**
 - Apodaca (STEM) Building, Upper and Lower Campus Residence Halls
- **Crumbling existing telecom infrastructure**
 - Collapsed and full conduit systems prevent pulling in new cabling
 - Much of the copper cabling more than 30 years old
 - Frequent failures
 - Direct buried cable combined with poor documentation = Every backhoe on campus is also a cable locator

Networking Perfect Storm

Cont'd

- **WCU Master Plan**
 - 3 new, small buildings to house data and telecom equipment
 - Removes core telecom equipment from academic and administrative buildings
 - All new cables run in well documented, concrete-encased pathways
 - Provides redundant cabling paths to prevent core network outages due to cable cuts
- **Demolition of Scott and Walker Halls**
 - Relocate Frontier Telecom demarcation point to Telco Hut #1 building
 - New 400 pair cable between Frontier CO and Telco Hut #1 building
 - All 3 “Utility Relocation” projects must be built and placed into service before Scott Hall can be torn down
 - Cellular telephone towers on Scott must be replaced
 - Identify location for new ‘Macro’ cell sites for ATT and Verizon
- **Future Campus Growth**
 - Additional conduit and cabling capacity must be provided to accommodate future campus growth

Networking Perfect Storm

Cont'd

- IT Closets on Emergency Generators
 - Campus standard for new buildings
 - Retrofitting 17 buildings in 3 phases
 - Allows VoIP telephones and data networks to continue to work in the event of an extended power outage
- Emerging new minimum signal strength standard for cellular signals inside WCU buildings
 - Telco Hut #2 to be sized to accommodate cell service equipment to provide standard level of service throughout campus.

**Western
Carolina**
UNIVERSITY

[illegible]

IT Networking Requests

- Assume Utility Relocations #1 & #2 are fully funded
 - Per prior agreement with A&F Vice Chancellor
 - At bottom of spreadsheet with no funding requested
- Utility Relocation #3
 - \$100k NR for engineering and design (Stanford White)
 - WCU Master Plan deliverable
 - Construction funds not requested for this budget cycle
 - Could become an issue depending upon schedule of Scott & Walker demolition
- IT Closets on Emergency Generators – Phase 3
 - \$265,000 NR
 - Funding for design already provided by IT
 - Completes prioritized buildings
 - Mitigates risk of VoIP phone system & data network failing during extended power outage

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CTSO Budget Request

2018-2019



Reminder: What is the Sense of Urgency?

- Can't keep up with today's needs
 - Current capabilities are manual or “one-offs” and not sustainable
 - Inefficient due to manual workflows that are dependent on IT
- Can't provide key basic services especially in the growing cloud, consumer identities, and mobile space.
 - Can't support university's growth or adapt to changes in instruction & technologies
- University Risks
 - Failure to thrive and security and business continuity
 - Required to address IT Risk register risks: OA 3 & IT 4
- Recognized University Capability
 - IGA ranked in the top 10 in 2016 Strategic Capabilities needs for the university
- Support for WCU 2020 Plan
 - *Support WCU pedagogical changes, growth, collaboration, engagement, research, and extended constituencies*
 - 1.1.2, 1.1.6, 1.4.1, 1.5.2, 2.1.4, 3.2.6, 4.3.3, 4.4.2, 4.6.2, 5.3.2

CTSO Budget Roadmap

- Our budget request is for university-wide IGA capabilities & security services.
- Our requests address several IT Risk register and failure to thrive items

IGA Journey

2015-2016	2016-2017	2017-2018	2018-2019
1st Year	2nd Year	3rd Year	4th Year
Licenses, basic install, & myWCU support; Self-Service Password Management	Round one of IGA: Automation of applicant and student account lifecycle	Round two of IGA: Automation of employee account creation, automate requests for guest, consultant & vendor accounts	Employee account removal, recurring capacity for adding new systems and modules
\$90K recurring \$250K onetime	\$160K onetime	\$120K onetime	\$50K Recurring + \$110K onetime

IGA - *Identity Governance and Administration* tools establish a life cycle process for business owners of identities to have comprehensive governance of identities and access requests.

Last Year's Budget

- **IGA - One Identity Manager**
 - WCUid Employee Account Activation
 - Student Employee Account Request and Account Activation Process
 - Supplier Guest Account and Account Activation Request Process
 - Pilot of self-service for Catamart and Finance Banner INB access
- **Cyber Insurance**

Client Capabilities	Tech	Function	Category	Budget Dept.
Provides New Client Capabilities	IGA Tools - Quest 1IM	Continue implementation of Dell IGA Authority, Shopping Cart, Provisioning, Audit, Reporting; Employee Account Provisioning	IGA	CTSO \$120K one time consulting
Additional Licenses	Azure AD	Additional licenses for Azure AD due to (1) WCUID policy (stop-out) & (2) NC arboretum, retired faculty, elevated accounts	IGA	CTSO \$5K/Yr recurring
Cyber Insurance	Insurance Coverage	Insurance in the event of a successful cyber breach	Security	CTSO \$55K/Yr recurring

CTSO 2018-2019 Request

Quantifiable Benefit

- ☒ Increased Capacity
- ☒ Future Cost Savings
- ☒ Contributes to Student Success
- ☒ Satisfies Compliance/Mandate Requirements
- ☒ Contributes to Institutional Effectiveness
- ☐ Allocation will not Return a Quantifiable Benefit
- ☒ Future Time Savings

Client Capabilities	Tech	Function	Category	Budget Dept.
Provides New Client Capabilities	IGA Tools - Quest 1IM	Continue implementation of Quest IGA Authority, Shopping Cart, Employee Account Deprovisioning,	IGA	CTSO \$110K one time consulting
Provides New Client Capabilities	IGA Tools - Quest 1IM	Resource/capacity/staff augmentation. Solution architecture, upgrades and knowledge transfer	IGA	CTSO \$50K/Yr recurring
Penetration Testing	External Service	Enhanced vulnerability scanning from external POV	Security	CTSO \$10K Yr recurring

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Coulter Faculty Commons 2017/2018 Budget Request



F/T Blackboard Analyst Programmer

- More faculty, students, and staff are using Blackboard capabilities.
- New faculty and new contracts ask for additional capabilities already built-in to Blackboard
- Stress on Blackboard team increasing.
- Team unable to attend to high-value propositions.

- Actions already taken to increase capacity:
 - Combined LMS and Ed Tech teams
 - Reallocated work and team positions to create capacity
 - Moved significant Tier 1 task load to Help Desk
 - Developed and promoted step-sheets for instructors to help themselves
- Despite these actions, the team needs additional persons.
- \$ 98,302

Blackboard Support Tier 1.5

- When faculty make a request that they can themselves support, step-sheets and self-support resources are sent to faculty to support their own Blackboard work.
- Faculty sometimes use these resources.
- Faculty also rely on trained, practiced peers.

BUT

The task that takes a Blackboard support person **15 minutes** may take a faculty member **8-10 hours**,

AND

Takes the Blackboard support person **6 hours** to repair if/when the faculty member makes a mistake.

Results

- Beginning of semester—to start class—Blackboard team has a 4-6 week wait.
- Wait means that instructors may have the online course fully ready for learner use FOUR to SIX WEEKS into the semester.
- Waits occur from August to October; January to mid-February.

Results in ineffective teaching practices

- Having only the syllabus in the course for day one
- Building the course module by module throughout the semester
- Preventing accommodation of exceptional learners
- Building the gradebook (feedback) later, sometimes much later in the semester.

Results in ineffective institutional practices

- Inability to report fifth-week grades
- Inability to comply with institutional requests for assessment documentation
- Loss of attention to course outcomes
- Initial unsupported attempts at tool use result in refusal to maximize tool use

Other factors to consider:

- UNC-SO metrics
 - Student success
 - Student retention
 - Five-year graduation rate
- 300 student/year increase mandate
- SACSCOC findings

Other factors to consider

- Increasing need for fully online courses
- Increasing need for additional tools
 - Publisher materials
 - Tools such as SCORM
- Findings from 2012 Program Review that LMS support is so woefully deficient that it is in failure to thrive. Next program review is 2019.

Is this who and what



Is going to be?

Agenda

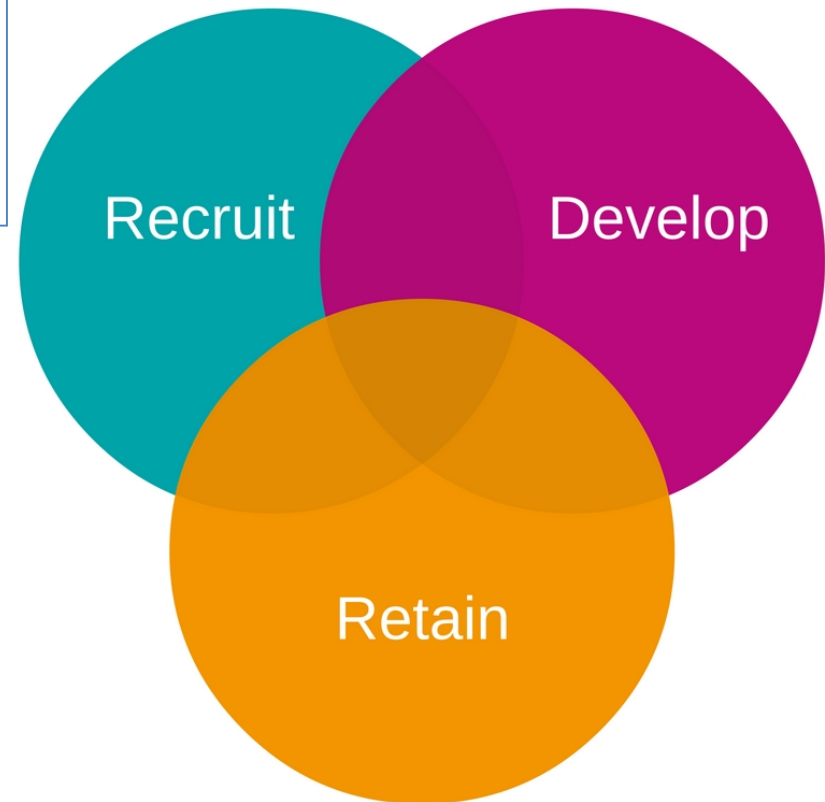
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WCU Competitive Compensation

National IT talent demands and market compensation *dramatically impact WCU's ability to retain and recruit* IT staff critical to achieving WCU's objectives

Salary Adjustment Pool
2% of IT Division Salaries (+Fringe)

\$159,314



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