IT Service Investment Board

January 23, 2015

UNIVERSITY of WASHINGTON

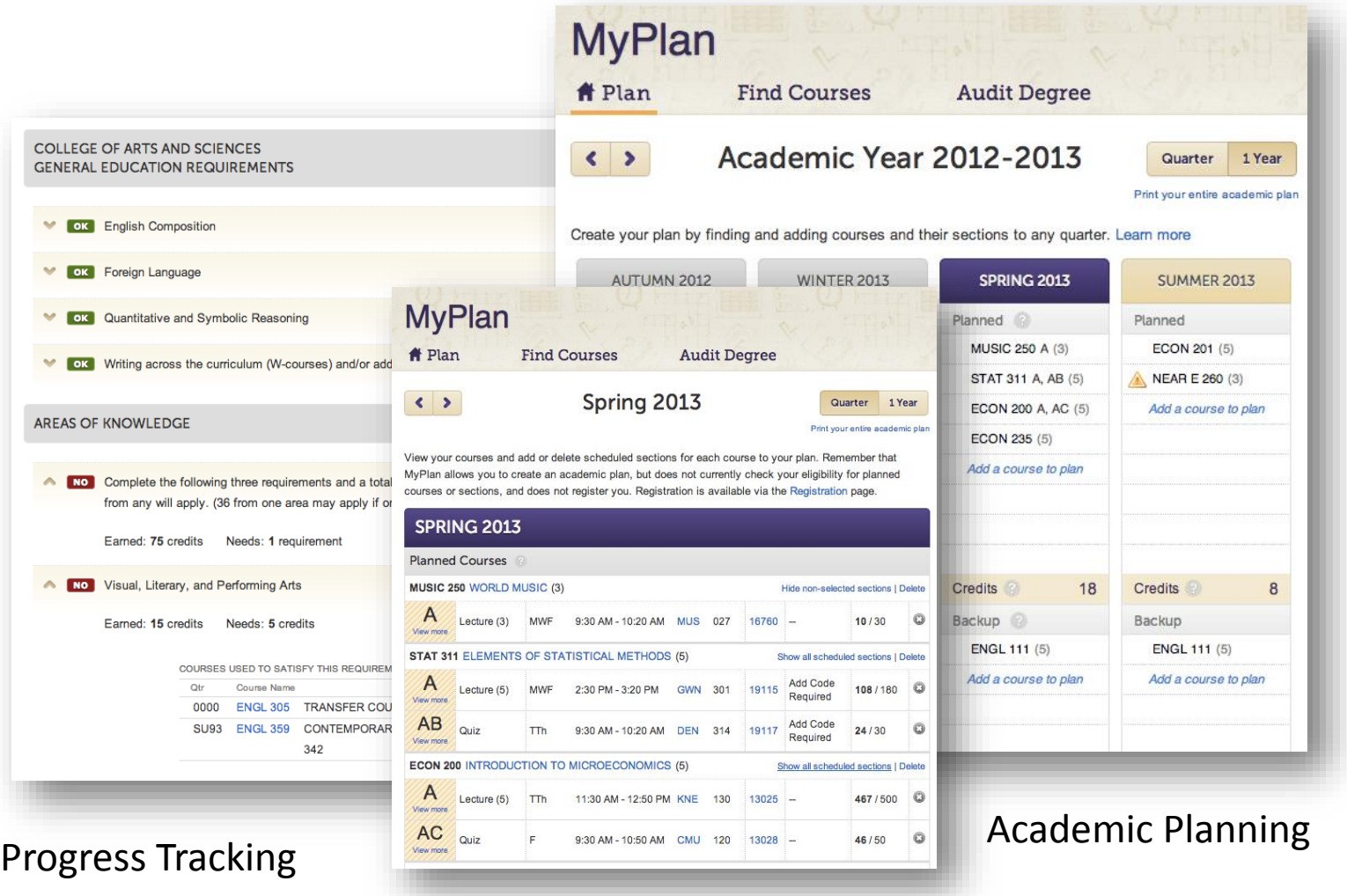
Agenda

- Call to order
- Teaching and Learning Initiatives Update
- IT Research Support
  - Future of networking and Data Center
  - Cyberinfrastructure support
  - Cloud initiatives for researchers
  - Response to Climate Action Plan
- UW-IT Portfolio Review Process FY 2016
- Technology Recharge Fee FY 2016 Update
- Wrap Up

Teaching and Learning Initiatives Update

MyPlan Adoption Metrics

MyPlan – Online Academic Planning



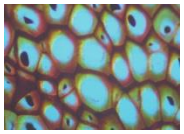
Progress Tracking

Academic Planning

Registration

MyPlan: Metrics

- 37,000+ students have created a plan
- Adoptions Rates
  - 54% Overall
  - 66% for Undergrads
  - 82% for First-year students (!)
- User profile
  - Enrolled at UW Seattle (~87%)
  - Female (~60%)
  - Undergraduate (~88%)
    - Slightly more Pre-Majors than Majors


Biology

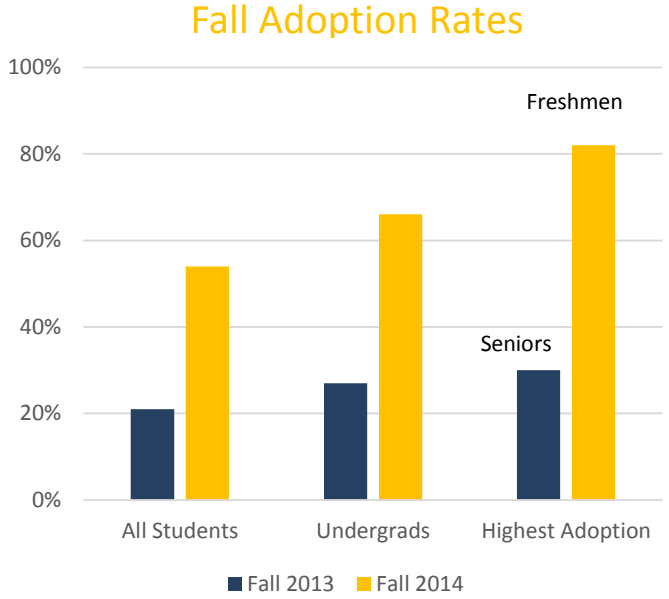

Business

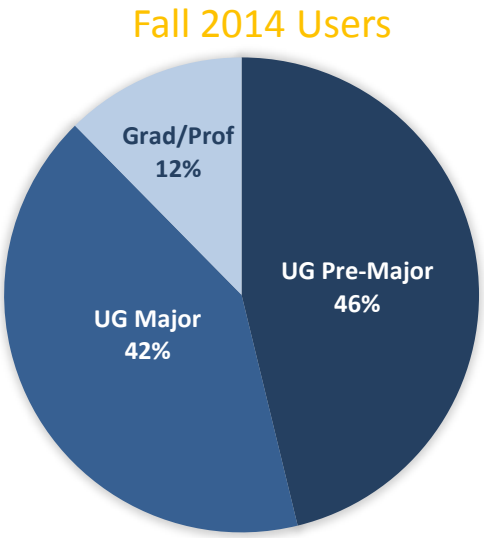

Engineering


Comp Sci


Biochemistry


Psychology





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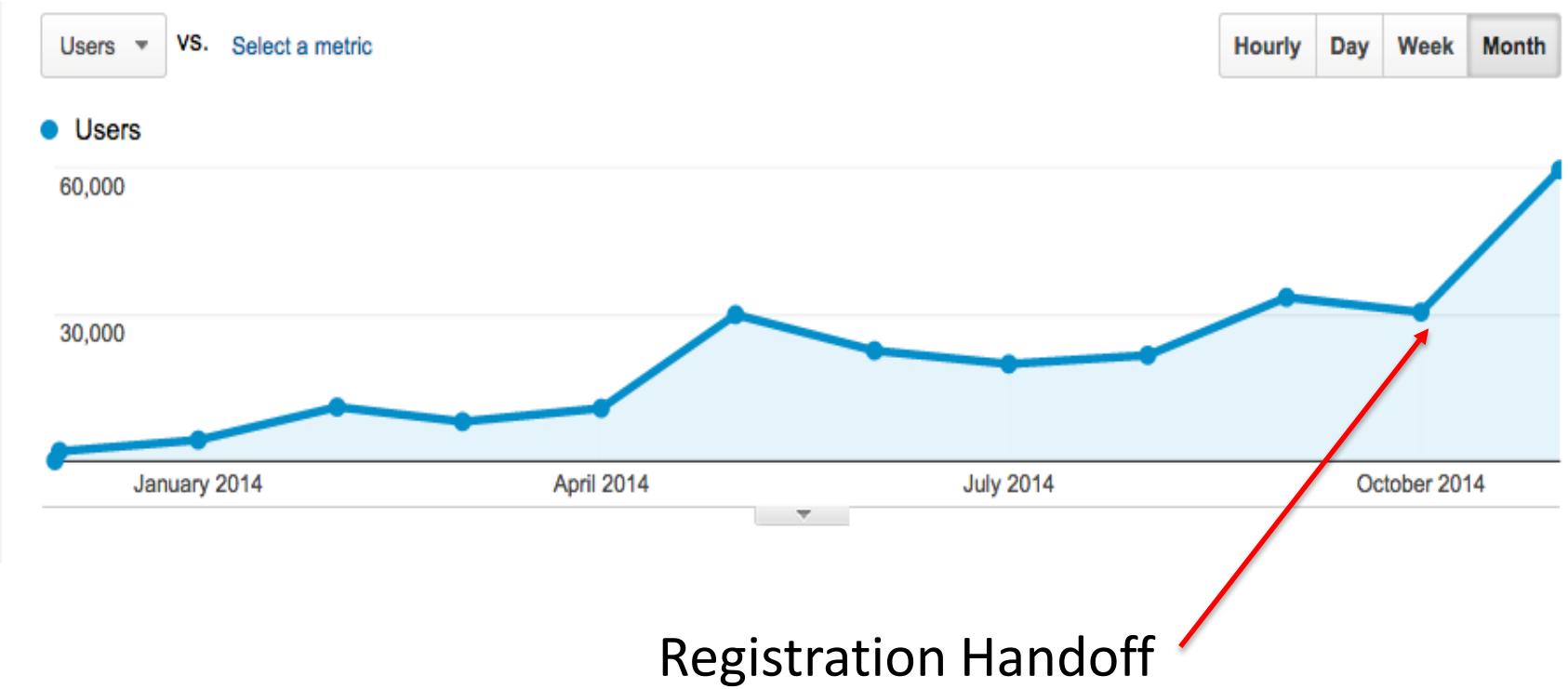
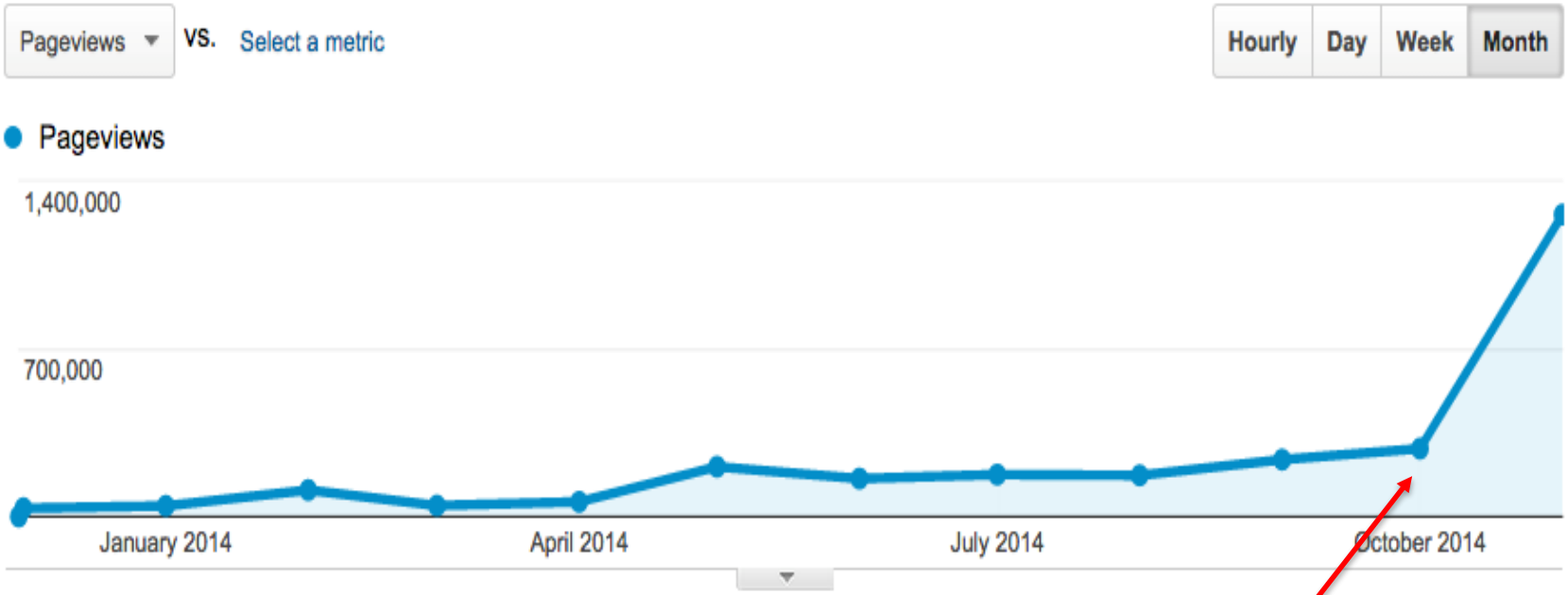
MyPlan Users/Month
Nov 2013 – Nov 2014



Registration Handoff

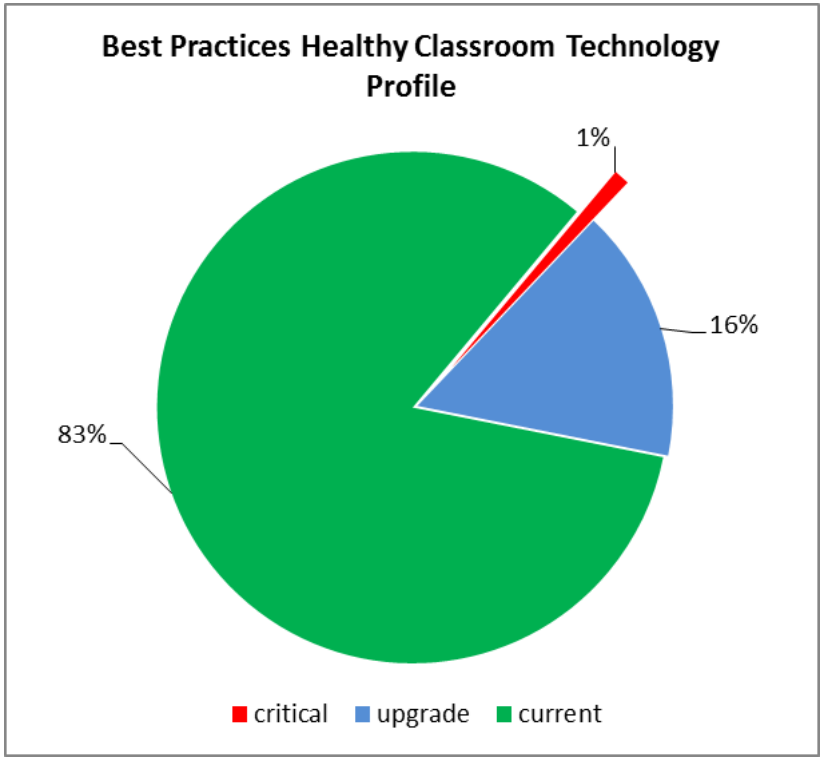
MyPlan page views per month Nov 2013 – Nov 2014

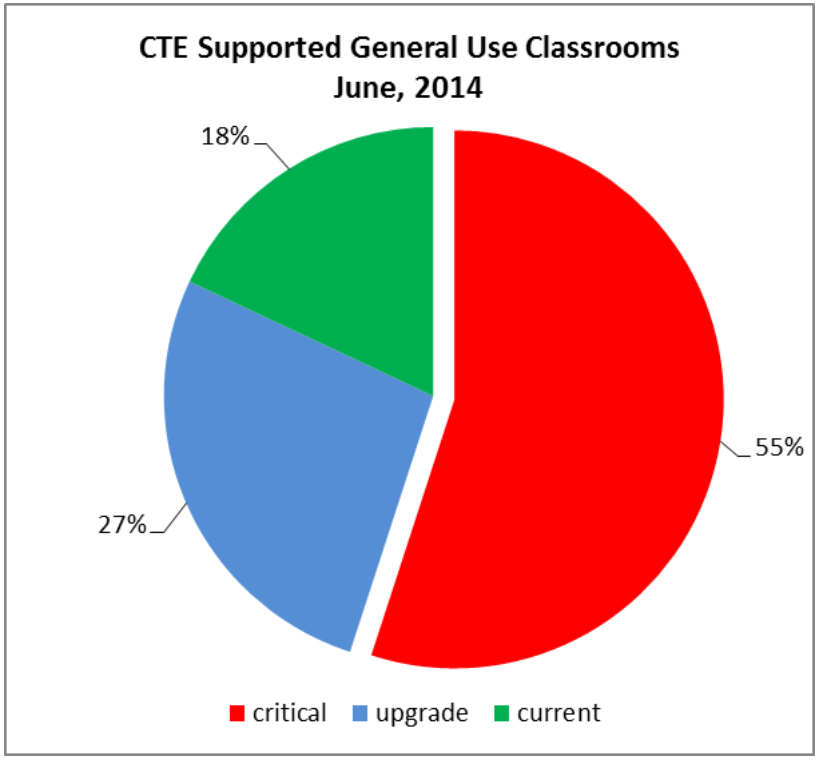


Registration Handoff

Classroom Technology Upgrades

Classroom Upgrades: Initial State



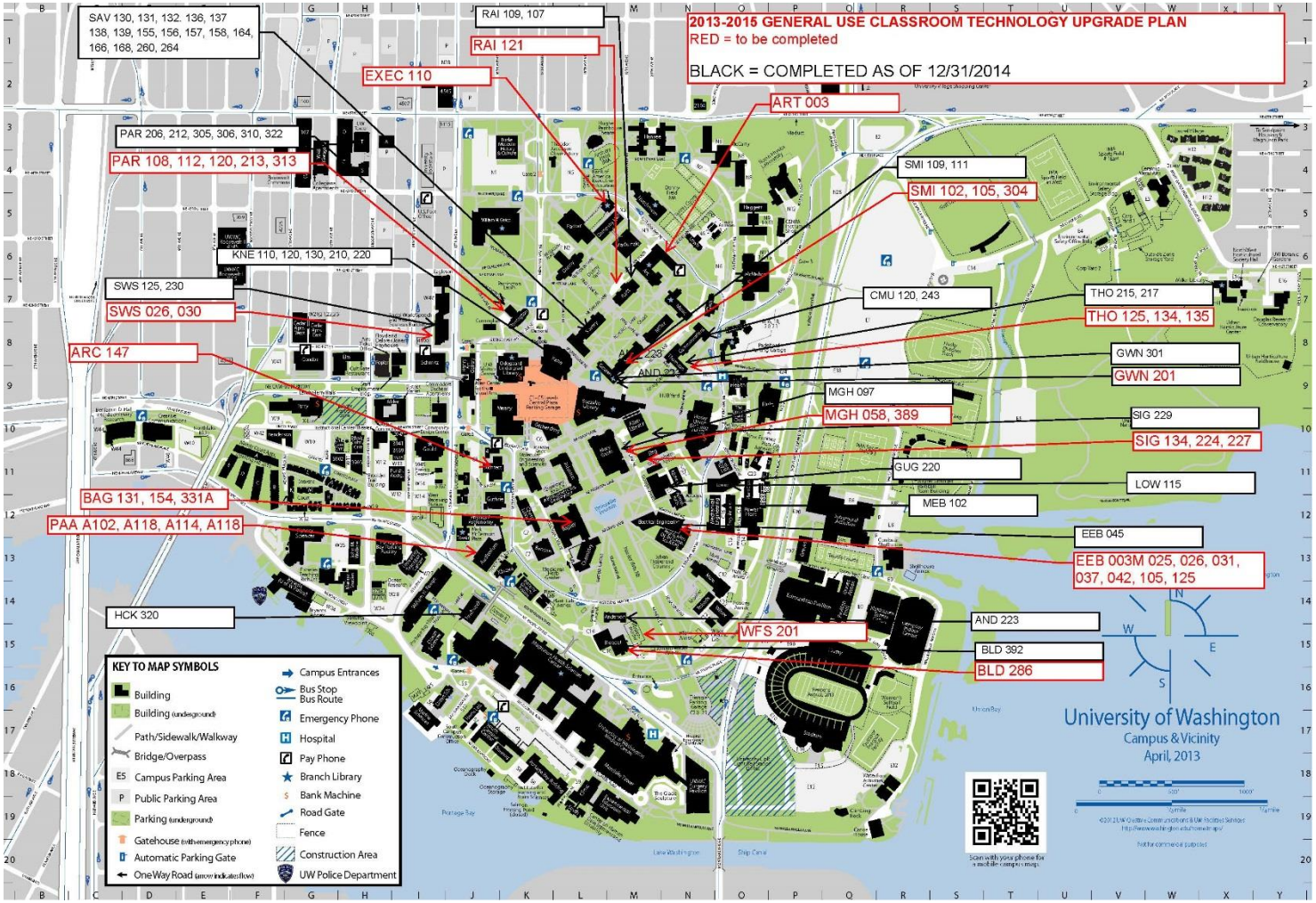


Reflects the previous 22-year technology refresh cycle

Classroom Technology and Events: Leaner and Meaner

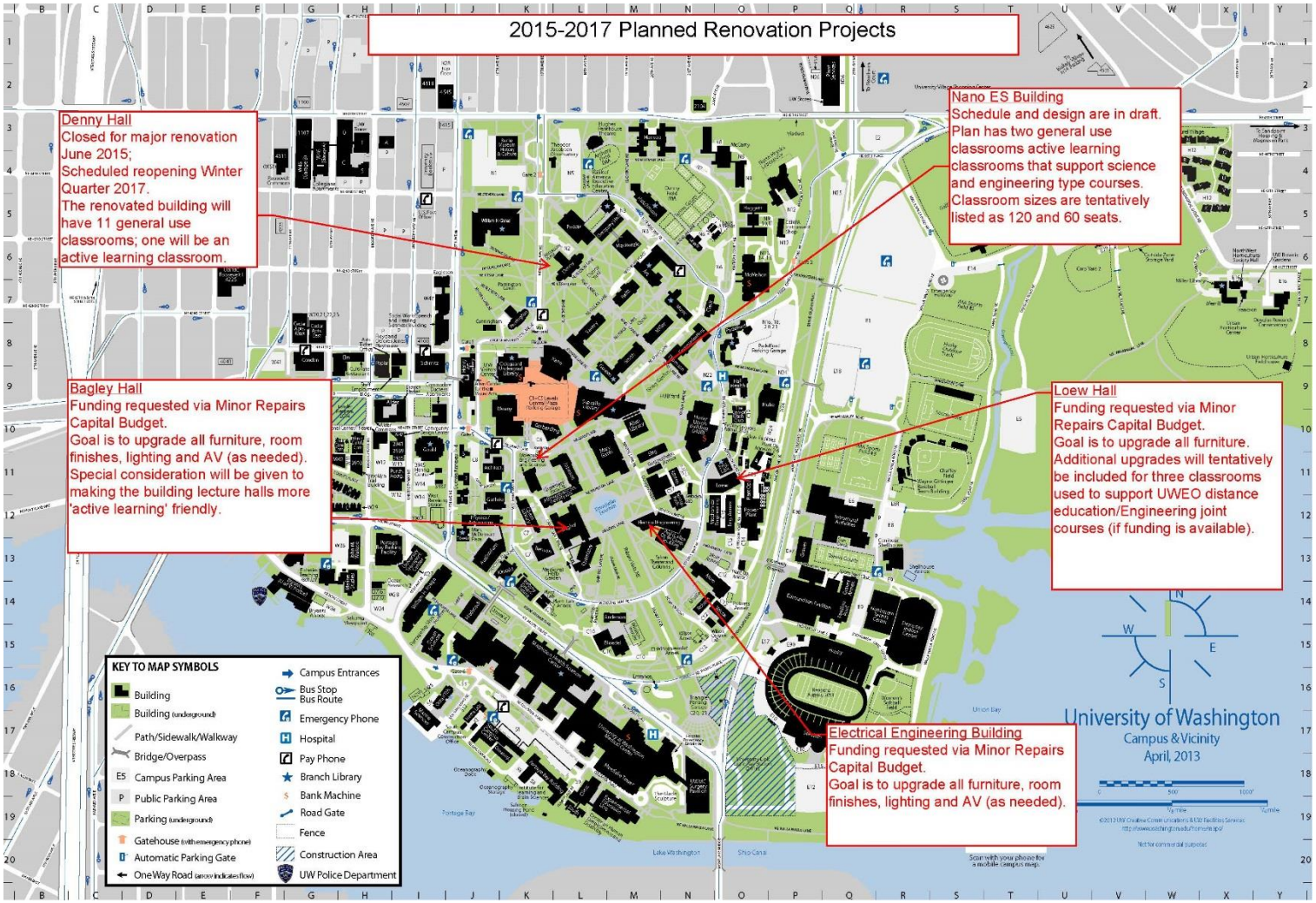
- Reorganized and reprioritized staff to support classroom technology upgrades
  - Added 2 full-time integration and installation professional staff positions
  - Prioritized work of staff to enhance new technology installations
  - Phased out work not central to new CTE Mission
  - Successfully hired outside contractor to work under CTE direction to supplement permanent staff
- Created new Evening Preventative Maintenance team (aka, the “Tiger Team”)
  - Added full-time professional Evening Manager
  - Added 2 full-time maintenance staff for the evening shift (M-F 3pm to midnight)
  - Hired additional student maintenance staff
- Reorganized the CTE Help Desk
  - Hired full-time professional Help Desk Manager
  - Prioritized work of staff to enhance Help Desk
  - Hired additional student Help Desk staff and additional student media assistants staff
- New initiatives
  - Create ‘sandbox’ classroom for experimentation by instructors (MGH 058)
  - Become design consultants and installation subcontractor for Capital Projects Office on major building renovations
  - Draft UW Principles of Design for Learning Spaces

Technology Upgrade: Progress to Date



On pace to have refreshed 84 classrooms in 18 months!

2015-17 Biennium Plan



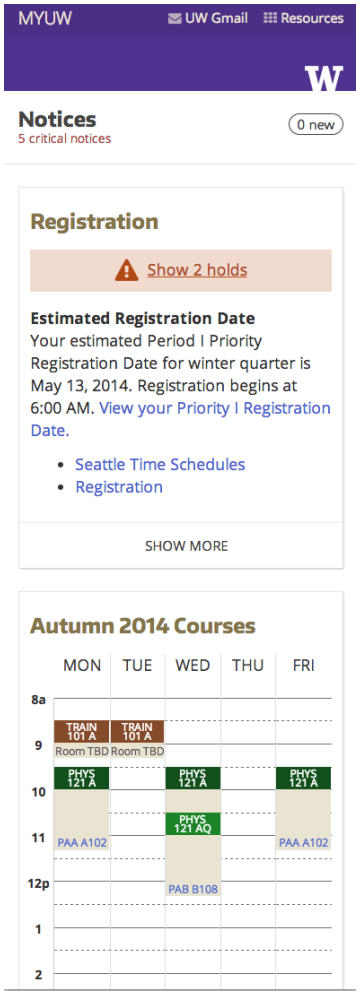
In addition, 47 classrooms will undergo a technology refresh

Tech Upgrade General Costs

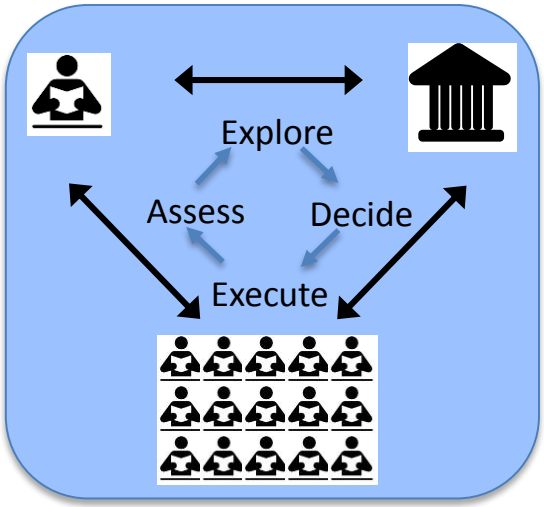
▪ Small Classroom	$4,500 to $7,500
– AV System:	$1,000-$3,000
– Projector:	$3,500
▪ Small to Medium Digital Media Classroom	$14,000 to $16,000
– AV System:	$8,000-$10,000
– Projector:	$3,500
– Optional Podium:	$2,500
▪ Medium Digital Media Classroom	$21,000 to $40,500
– AV System:	$15,000-$25,000
– Projector:	$3,500-$13,000
– Optional Podium:	$2,500
▪ Lecture Hall	$60,500 to $104,500
– AV System:	$45,000-$60,000
– Projector:	$13,000-$30,000
– Split Screen	$12,000
– Optional Podium:	$2,500
▪ Premium Lecture Hall	$70,500 to $107,500
– AV System:	$55,000-$75,000
– Projector:	$13,000-$30,000
– Optional Podium:	$2,500

Civitas: Analytics for Student Success

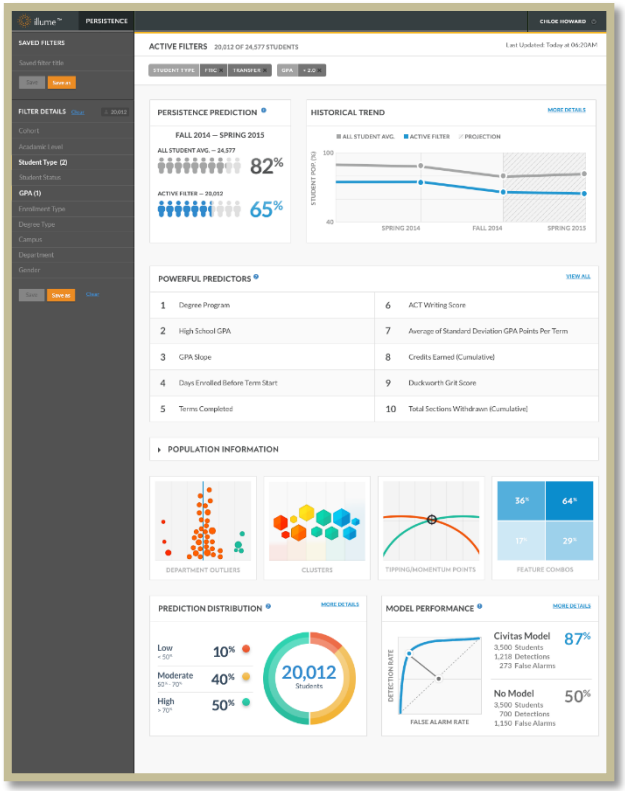
Personalization of the Student Experience



MyUW



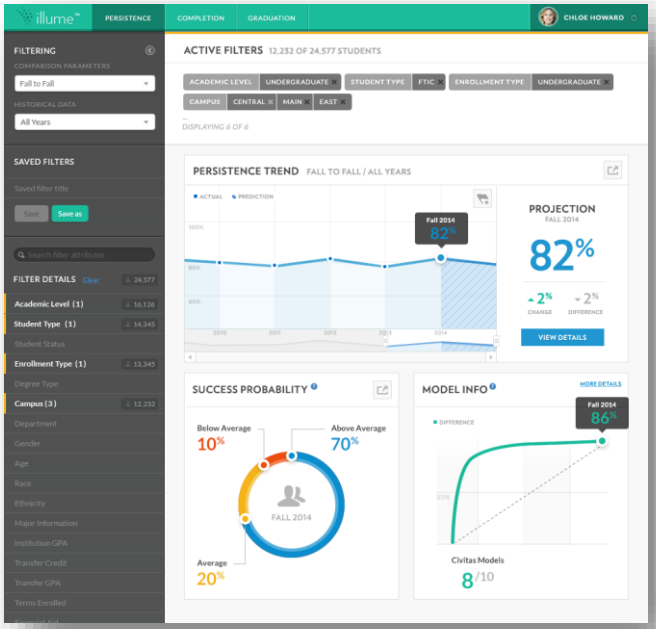
MyPlan/Academic Explorer



Civitas

"Super-Resolution" Services

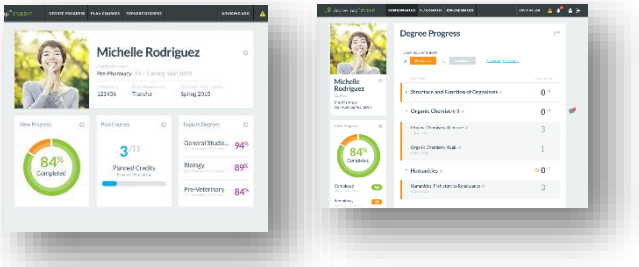
Civitas: Analytics for Student Success



ILLUME

for

INSTITUTIONAL LEADERSHIP & RESEARCH



DEGREE MAP

for

ADVISORS, STUDENTS & FACULTY

INSPIRE

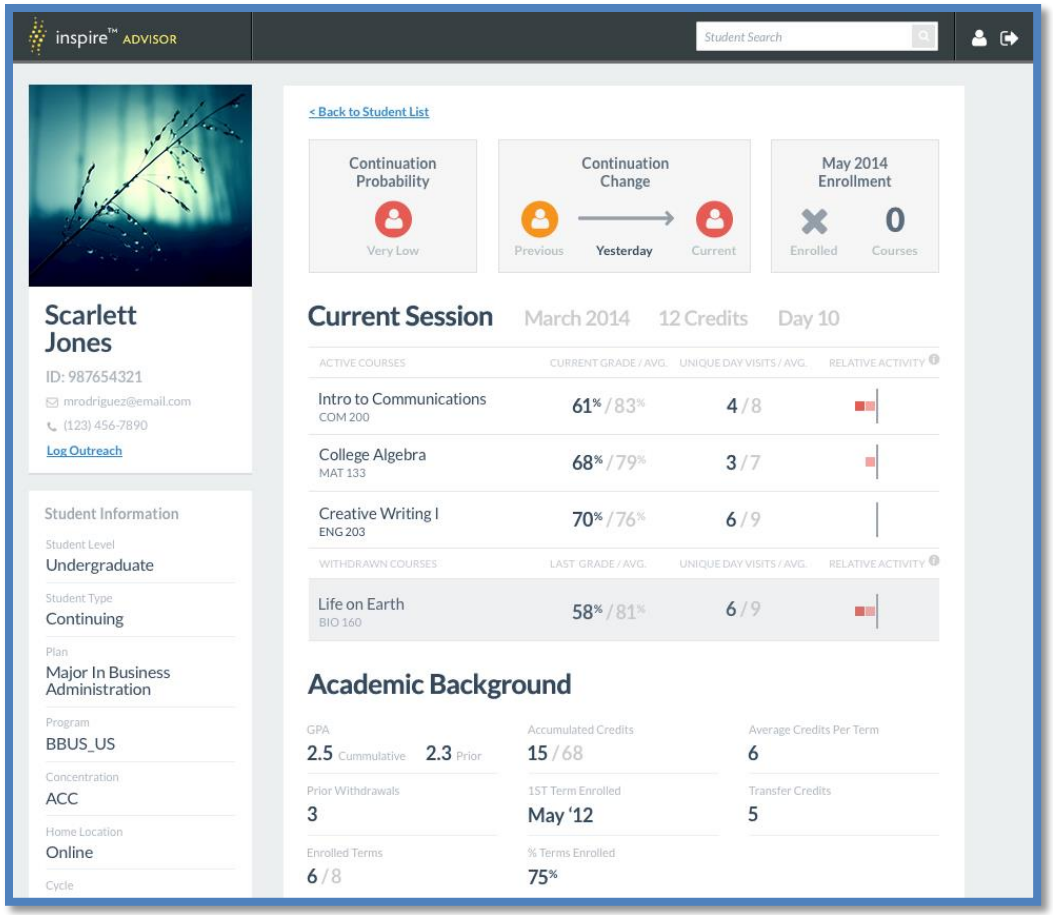
for

ADVISORS, STUDENTS, FACULTY & ADMINISTRATORS

CIVITAS PLATFORM

DATA PROCESSING, DATA VALIDATION, PREDICTIVE MODELING, APP STACK

Modern Advising Tools



- Analytics engine used to define students at risk
- Provides advisors with information needed for effective intervention.
- Tracks interventions and evaluates effectiveness to learn what works and what doesn't — and for which students
- Workflow based tool — can be delivered through integration with existing advisor CRM or through Web interface

IT Research Support:

Future of Networking and Data Center

UW-IT Networks and Data Centers: Recent Major Investments

- Campus network upgrades
  - 40G campus backbone
  - Tech Refresh; WiFi, IPS, Ethernet switches
- Research support
  - 100G connection to Internet2
  - Science DMZ construct
  - Virtualized network overlay
- Consolidated, energy efficient data centers

Campus Network Investments (2 yrs)

- Increased campus backbone capacity from 10G to 40G ($1.2M)
- Tech Refresh
  - WiFi Access Points (APs): replaced 3000, added 3000 for total 9000 APs ($3M + $3.2M Aruba concessions*)
  - Intrusion Protection System upgrade, doubling capacity ($1M)
  - Switches with power resiliency ($1.5M)

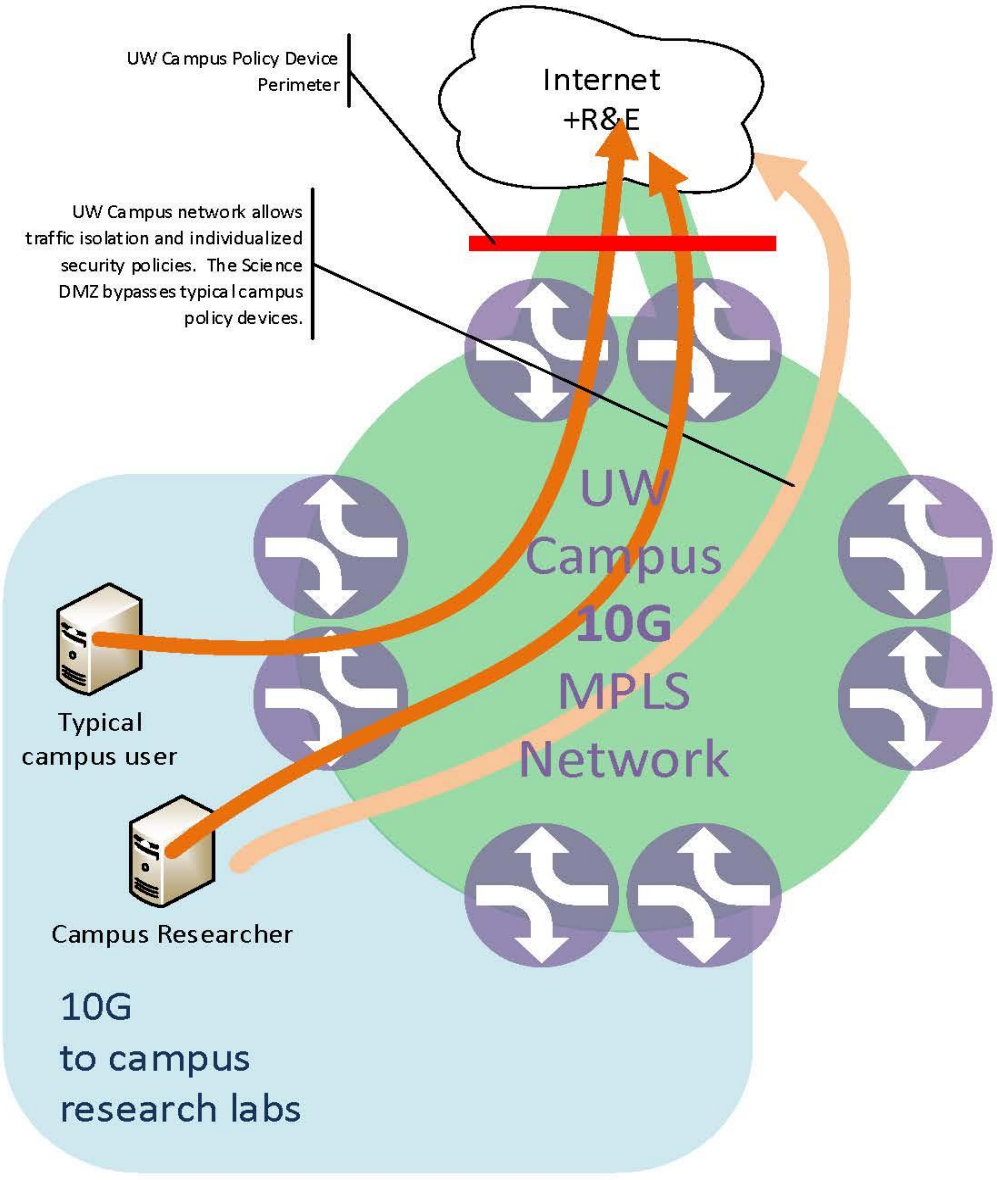
* Aruba CONFIDENTIAL information

Research Networks Support (2 yrs)

- 100G connection to Internet2
- Science DMZ construct
- Virtualized network overlay
- Funding provided by a mix of sources:
  - NSF grants (CC-NIE $460K, EAGER $300K)
  - PNWGP donation of 100G link UW to Internet2 (est. $200K)

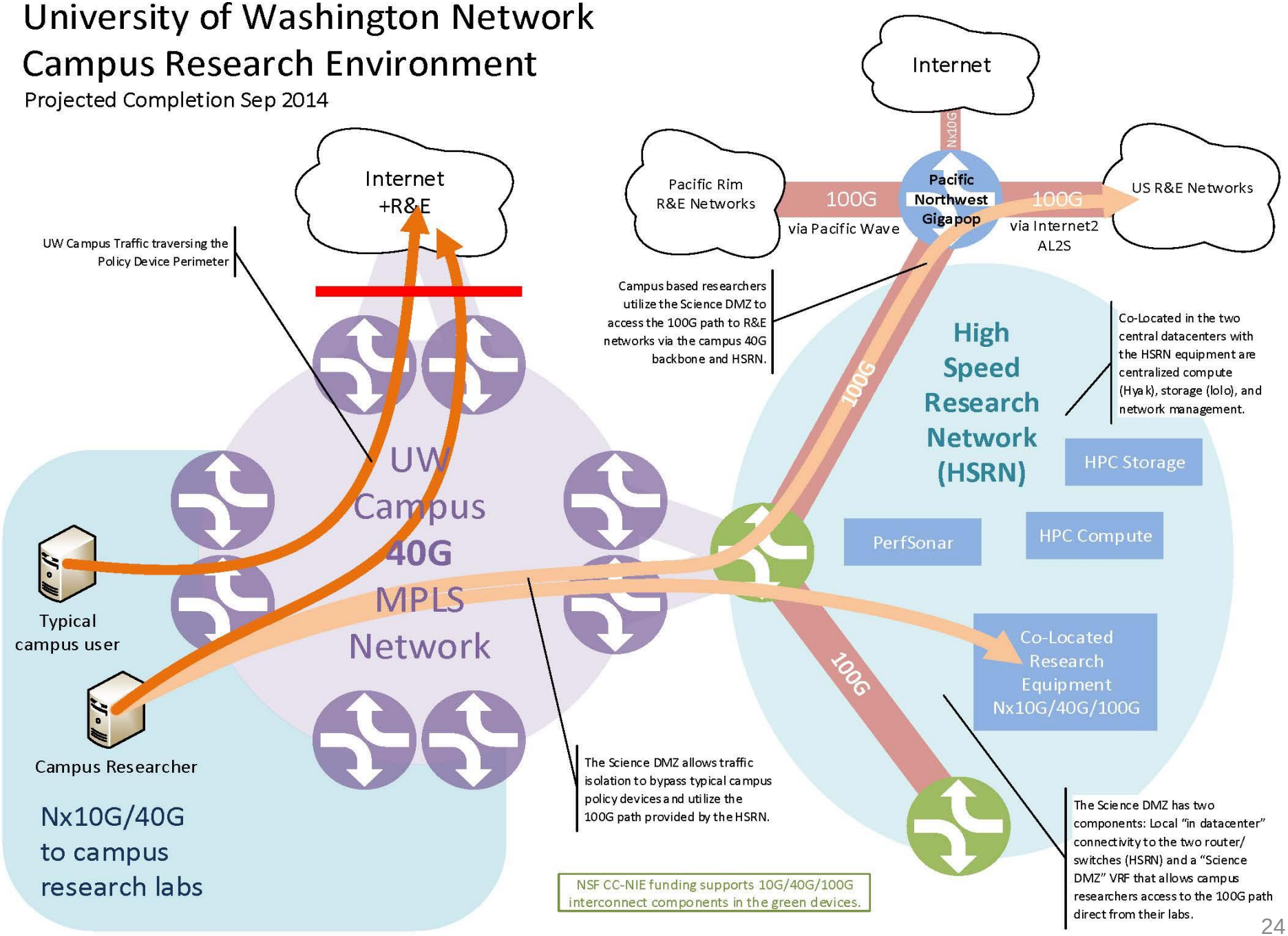
University of Washington Network
Campus Research Environment

Network circa 2012



University of Washington Network
Campus Research Environment

Projected Completion Sep 2014



Internet2 Network Infrastructure Topology

July 2013

Internet2 Network *by the numbers*

- **17 Juniper MX960 routers in support of Advanced Layer 3 IP and Peering Network**
- 21 Brocade and Juniper switches in support of Advanced Layer 2 Service Network
- 49 custom colocation facilities
- 250+ amplification racks
- 15,717 miles of newly acquired dark fiber
- 8.8 Tbps of optical capacity
- 100 Gbps of hybrid Layer 2 and Layer 3 capacity
- 300+ Ciena ActiveFlex 6500 network elements
- 2,400 miles partnered capacity with Zayo Communications in support of the Northern Tier region

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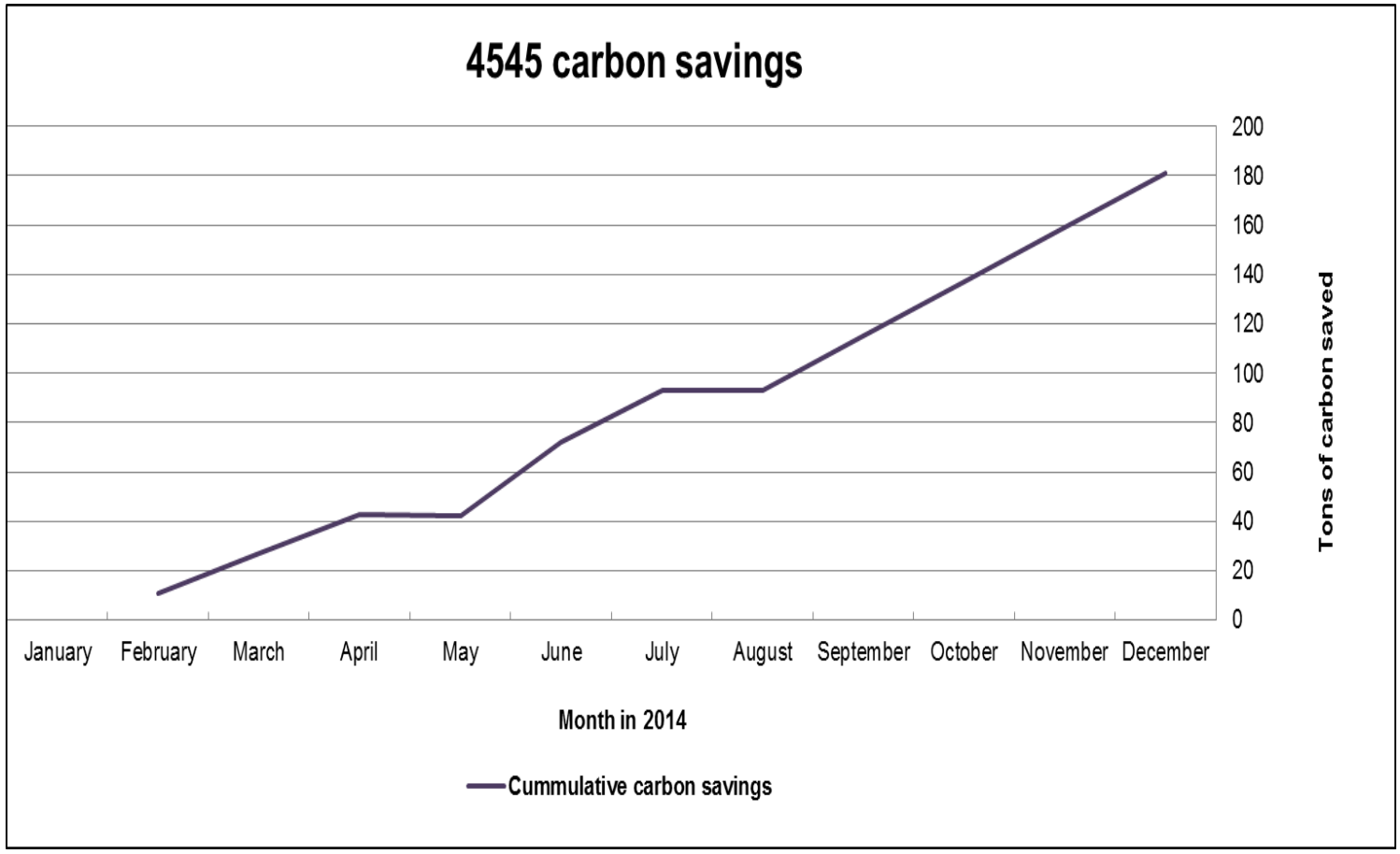
Benefits of Network Virtualization

- Virtual overlay of “research networks” now possible
- Allows for high capacity pathways to support specific research goals
- Developing campus policy regarding level of review and approval over requests for bypassing network security appliances

Data Center changes (3 yrs)

- Consolidated from 5 DCs to 3 (invested less than $100K, realized annual savings of $940K)
- Upgrade of aging UPS and PDUs (invested $2.6M, annual savings $150K/year + 180 tons of carbon/year)
- Increased energy efficiency results in EPA certification

Data Center CO_2 emissions reductions (CY-14)



Energy Star Certification

- 2013 Certification from U.S. Environmental Protection Agency (EPA) for UW Tower data center, renewed again in 2014
- One of two university campus data centers in the country to achieve this certification
- Of 50 data centers with this certification, UW data center rank 5th in EPA scoring (95 out of possible 100)

IT Research Support:
Cyberinfrastructure Support

UW-IT Cyberinfrastructure Strategy

- Enable students, faculty and staff to be more effective
- Help UW researchers manage risks and resources
- Encourage collaboration, creativity, and competitiveness

...by developing UW-IT Services which provide...

- Matchmaking of choices for solutions
- Easy access and elastic growth
- Curated standard toolbox

Continual Improvements

Improving all levels of the infrastructure "stack"

Data Center	Shared Use. Maximum Density Design
Network	High Speed Research Network
Computing	Hyak Refresh and Next Generation
Storage	Large Scale Storage Infrastructure, SAN, Tape Silos
Software and Tools	Matlab, Mathematica, Fluent, Abaqus, SQLShare, etc.
Expert Consultants	Matchmaking, Pipelines, SDN
Service Model	▪ F&A Waiver for Research Services ▪ No Fee for Consulting

Research Business Cases

FY15

- Storage, Consulting and Tools for Researchers
- 40G Campus Upgrade

FY16

- Harnessing Idle Computers Worldwide for Science
- Big Data Web Services for Researchers
- NextGen Hyak - Initial Deployment
- Assist with eScience Incubator (0.5FTE)

Hyak - Full Cost Recovery

	OR/eScience			UWIT			
	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	Total
Office of Research	400,000	-	600,000	-	(2,100)	-	$ 997,900
Arts & Sciences	-	200,000	200,000	200,000	200,000	200,000	$ 1,000,000
College of Engineering	-	200,000	200,000	200,000	200,000	200,000	$ 1,000,000
College of Environment	-	500,000	-	-	-	-	$ 500,000
UW Tower Data Center Capital	-	102,094	295,599	-	-	-	$ 397,693
eScience	295,000	-	275,740	183,000	183,000	82,992	$ 1,019,732
Clean Energy Institute	-	-	-	-	-	100,000	$ 100,000
CoLo Data Center Support	-	55,347	150,000	150,000	150,000	150,000	$ 655,347
CoLo UWIT Subsidy	-	-	-	-	-	*18,623*	$ *18,623*
Sponsorships	-	-	-	-	30,000	90,000	$ 120,000
UFIO (10% Node Tax)	-	-	-	1,580	22,418	22,607	$ 46,604
Total INCOME	**$695,000**	**$1,057,441**	**$1,721,339**	**$734,580**	**$783,318**	**$864,222**	**$ 5,855,899**
OR/VP Loan Repayment	-	-	-	-	400,000	200,000	$ 600,000
eScience (06-3600)	295,000	-	-	-	-	-	$ 295,000
Hyak (65-8007)	211,615	1,943,031	(1,404,281)	308,811	144,870	420,038	$ 1,624,084
Hyak RCR (75-3614)	-	-	500,000	380,000	(2,100)	-	$ 877,900
UW Tower Data Center	-	102,094	295,599	-	-	-	$ 397,693
CoLo Data Center Expense	-	-	127,970	150,000	198,000	198,000	$ 673,970
System Administration	-	-	275,740	183,000	274,603	219,149	$ 952,492
Total EXPENSES	**$506,615**	**$2,045,125**	**($204,973)**	**$1,021,811**	**$1,015,373**	**$1,037,187**	**$ 5,421,139**
Annual Surplus/(Deficit)	**$188,385**	**($987,684)**	**$1,926,312**	**($287,231)**	**($232,056)**	**($172,966)**	
Cumulative Surplus/(Deficit)	**$188,385**	**($799,299)**	**$1,127,013**	**$839,782**	**$607,726**	**$434,760**	

Service Models

F&A Waiver - in approval process. Will allow central research services (including cloud) to have same 'no tax' cost model as locally purchased equipment.

Research Computing Consulting - no fee. Will focus efforts on highest value opportunities.

Discussion Questions

- Are there any questions, concerns or suggested adjustments with the focus of our investments across the research infrastructure stack?
- What metrics would you like to see for measuring performance?
  - —Faculty recruited/retained (>12)?
  - —Academic units participating (>30)?
  - —$$ invested by academic units (>$7M)?
  - —Total use? CPU hours (>150,000 years)?

IT Research Support:
Cloud Initiatives for Researchers

Commercial IaaS Services

- Azure - *contract in place*
  - 30% discount
  - Data egress waiver for research
  - BAA
- Amazon Web Services *- contract coming soon*
  - 7-10% discount
  - UW employees only
  - Data egress waiver for research
  - BAA anticipated

Commercial IaaS Services

- Google - *no contract in place at this point*
  - No discount
  - No data egress waiver
  - No BAA or FERPA
  - But available, and used

Commercial Cloud - Research Support Programs

- AWS
  - Research grant programs - *expansion anticipated*
  - Solutions architect
- Azure
  - Research grant programs - *expansion anticipated*
  - Technical support
- UW
  - F&A waiver – *removes a significant disincentive to utilizing cloud*

eScience Institute

- SQL Share - simplified SQL; spreadsheets to database
- GraphLab - high performance data mining for Big Data
- Myria - support for data mining
- Haloop - “loop-enhanced” Hadoop / Map-Reduce
- workshops - use of AWS, Azure
- consulting - custom assistance

Questions and Discussion

Response to
UW Climate Action Plan
(CAP)

Climate Action Plan Policy Committee – FY14

- Reviewed more than 80 greenhouse gas reduction strategies
- One of top 3 strategies – Server relocation and virtualization
- Why? Local server rooms are not efficient and have significant costs

CAP Draft Recommendation

October 2014 - Climate Action Plan Policy Committee - Draft Policy Statement

- In support of the UW's efforts to meet its climate goals and objectives, **no new server rooms or upgrades are to be designed into new or existing buildings on any of the campuses of the University of Washington.**
  - A server room is defined as a separate or shared space to store, power, and operate computer servers and their associated components in support of business functions. Business functions are all of the activities that support the work of the University, be they academic, administrative, research, or clinical in nature.

A Spectrum of Possible Solutions

- Status Quo – rely on operational life cycle
- Scheduled refresh
- Aggressive virtualization and pooling
- Review purchases to optimize location, density, etc.
- Restrict new hardware purchases – use services only

Strategy Applied to CAP Policy

- Increase Density per Rack
  - — Virtualization and HPC services share infrastructure
  - — Co-location services offer shared rack space
- Increase use of Cloud Services
  - — Admin systems (SaaS)
  - — F&A Waiver to improve cost model
  - — HIPAA BAA agreements with Amazon and Microsoft

Affirmed by IT Strategy Board

Additional Needs for Policy

- Computing as a commodity
- Increasing research computing
  - Big Data
  - Highest network connectivity (HSRN)

Encourage use of CAP-aligned services

- Incentives to take advantage of enterprise virtualization services and co-location?
  - discount for initial period?
  - “cash for clunkers” ?
- *Other ??*

UW-IT Portfolio Review Process
FY 2016

Project Prioritization - Why?

- 58 projects proposed initially
  - 215,000 hours
  - All important
  - And... *far greater than our capacity*
- Abstracts -
  - Held or merged 14 proposals
  - 189,000 hours *(net)*
  - Still far greater than our capacity

FY 2015 Portfolio Review Outcomes

- Decision to hold, or reconsider scope
  - Network-based Collaboration Tools
  - MyHusky Implementation
  - EBS Startup

FY 2015 Portfolio Review Outcomes (cont.)

- Use ranking process priorities to guide project resource allocations when conflicts arise
- Improved transparency and understanding of UW-IT capacity and resource challenges
- Improved ability to identify dependencies and synergies across projects
- **Evaluation informed and influenced the UW-IT budgeting process for FY15, and influenced project initiation**
- Lessons learned have improved and streamlined FY 2016 prioritization process

FY 2016 Portfolio Review Process

- Improved UW-IT internal processes
  - Start in October 2014 to provide more time for business case development
  - Abstracts to help streamline the process
  - New PPM system - Innotas
  - Streamlined proposal intake and workflow
  - Improved portfolio management
  - Refined the “Likelihood of Success” criteria
- Rank by Strategic Categories
  - Strategy Board to identify reallocations at Feb. meeting
- Plan to do “continuous” proposal intake

FY 2015 Portfolio Prioritization Timeline

March 17	meeting	Sponsor presentations
March 9 to March 30	3 weeks	Scoring of 10-12 proposals
March 30	(Monday)	Scoring DUE
April 14	meeting	Review & discussion of scoring results Finalize rankings and make recommendations

Project Proposals - from 30,000 feet

- 44 proposals, after holding 14 in Abstract phase (down from 63 last year ==> 30%)
- 7 Service Categories, aligned with UW-IT goals

Service Category	# proposals
Teaching & Learning	8
Research	4
Administrative	5
Infrastructure	7
Collaboration	2
Enterprise Risk	7
IT Management	11

Scoring Process Overview

- Essentially unchanged
- Presentations before scoring
- 3 weeks to review and score
- Review and prioritization decisions

Strategic Importance Criteria

- Strategic Value
  - Does this project improve the University's academic or research excellence?
  - Does it improve the UW's competitiveness by helping to attract the best students, faculty, and staff or by increasing and diversifying funding?
  - Does it enhance interdisciplinary ...
- Impact
  - Does this project improve the personal productivity or experience of students, faculty, or staff (i.e. individual end user of system or service)?
  - Does it benefit a large number of UW students, faculty, or staff?
  - Does it improve administrative efficiency or reduce overall administrative costs for the University (and not by shifting costs to units)?
- Risk
  - Does this project help sustain and strengthen core IT operations, mitigate operational risk, or ensure key services are resilient?
  - Does this project address compliance, financial, or information security and privacy risk?

Revised Criteria - Likelihood of Success

- Resource Capacity
  - Does the sponsoring division have staff resources available to support this project?
  - Does this project require significant contributed resources from other UW-IT units?
- Vendor and Technical Risks and Alignment
  - Does this project carry significant risks related to a vendor or contractor?
  - Does this project align with UW-IT's enterprise architecture strategy?
- Financial Risks
  - Identify the source(s) of funding for this project (existing UW-IT, UW central, self-sustaining, grant or other)
  - If any new funding is required, has it been committed?

Questions?

Technology Recharge Fee
FY 2016 Update

Technology Recharge Fee – FY 2016

A per capita rate applied to all UW to support a basic bundle of services

IT Service Investment Board Recommendation for FY 2016

- Maintain fundamental cost allocation methodology used for prior TRF
- Increase the TRF by under 2% for FY 2016 to help offset rising cost of operations

TRF Recommendation for FY 2016

Approved by the Provost January 13, 2015

	FY15	FY16	Change
Campus Rate*	$54.50	$55.51	1.9%
Medical Center Rate**	$50.00	$50.91	1.8%

* Supplements existing GOF/DOF resources to provide Basic Services

** Excluded from GOF/DOF Subsidy, Network & Telecom billed separately.
Medical Center - Effective Rate: $83.69

Questions & Discussion