I. Office 365 - Update (Dave Moss)

II. Zero-Based Budget - Update (Brad Englert)

III. Casper System - Update (James Lewis)

IV. IAM Committee - Update (C.W. Belcher)
1. On premises migrations

On premises migrations to Office 365 completed since last Information Technology Architecture & Infrastructure Committee (AIC) update in May 2015:

<table>
<thead>
<tr>
<th>Migration Date</th>
<th>CSU</th>
<th># of Mailboxes</th>
</tr>
</thead>
<tbody>
<tr>
<td>15-Jun-15</td>
<td>Harry Ransom Center</td>
<td>61</td>
</tr>
<tr>
<td>18-Jun-15</td>
<td>CAMH (Briscoe Center)</td>
<td>71</td>
</tr>
<tr>
<td>22-Jun-15</td>
<td>Center for Identity</td>
<td>30</td>
</tr>
<tr>
<td>29-Jun-15</td>
<td>Blanton</td>
<td>89</td>
</tr>
<tr>
<td>20-Jul-15</td>
<td>Office of Graduate Studies</td>
<td>27</td>
</tr>
<tr>
<td>23-Jul-15</td>
<td>Legal Affairs</td>
<td>14</td>
</tr>
<tr>
<td>04-Aug-15</td>
<td>Registrar</td>
<td>78</td>
</tr>
<tr>
<td>04-Aug-15</td>
<td>Wildflower Center</td>
<td>101</td>
</tr>
<tr>
<td>20-Oct-15</td>
<td>Anthropology</td>
<td>43</td>
</tr>
<tr>
<td>20-Oct-15</td>
<td>Rhetoric and Writing</td>
<td>16</td>
</tr>
<tr>
<td>10-Nov-15</td>
<td>IC2 Institute</td>
<td>61</td>
</tr>
<tr>
<td>10-Nov-15</td>
<td>Vice-President for Research</td>
<td>46</td>
</tr>
<tr>
<td></td>
<td>Total Migrations</td>
<td>637</td>
</tr>
<tr>
<td></td>
<td>Error Rate</td>
<td>0.38%</td>
</tr>
</tbody>
</table>

Total on premises mailboxes remaining: **1775**

Top five largest remaining colleges, schools, units:

- Department of Chemistry (189)
- University Charter School (117)
- University Interscholastic League (83)
- Counseling and Mental Health Center (76)
- Center for Electromechanics (56)

2. Locally hosted migrations

Locally hosted migrations to Office 365 since last AIC update in May 2015:

<table>
<thead>
<tr>
<th>Migration Date</th>
<th>CSU</th>
<th># of Mailboxes</th>
</tr>
</thead>
<tbody>
<tr>
<td>04-Sep-15</td>
<td>Bureau of Economic Geology</td>
<td>219</td>
</tr>
<tr>
<td>10-Nov-15</td>
<td>Center for Space Research</td>
<td>54</td>
</tr>
</tbody>
</table>
Office 365 Toolset Project Update

- **Number of participants** (as of 10/29): 416

- **Services enabled:**
  - Office Online for Education:
  - Skype for Business Online (Plan 2)
  - SharePoint Plan 1 for EDU
  - OneDrive for Business (Plan 1) – under the ProPlus licensing

- **Number of 3rd-level tickets** (10/16-10/29): 6
Zero-Based Budget Changes Since FY09-10

In 2009, the Strategic IT Advisory Committee asked ITS to develop a zero-based budget. The SITAC report also recommended we update the zero-based budget every five fiscal years, which was recently completed. The goal of the zero-based budget process is to evaluate and prioritize ITS projects and services and be more transparent and accountable to campus. Before any service is added or retired, that service is evaluated in terms of the services currently offered and the resources available. Aging, underutilized or not-secure services are retired and funds are reallocated to higher value IT services. Rates for ITS services are also reviewed every two years to verify that the actual costs are offered at fair and competitive rates–set by the Chief Financial Officer’s rate setting team–that are easily accessible on the ITS website. ITS focuses on continual improvement and have conversations with the campus community via IT governance to understand which IT services could be delivered better, more cost effectively, and faster.

Over the past five fiscal years, ITS added new services, addressed growth, and increased value in the face of a constant-level budget. From fiscal years 2010 to 2015, 44 new ITS services have been introduced and more than 30 services have been retired. Examples of new services are UT Login, UTmail, Canvas, Box, Qualtrics, and VoIP. Examples of retired services are University Mail Box Service, Fat Cookie, laptop check-out, printer repair, and Blackboard.

Applications ZBB Changes Since FY09-10

Applications is responsible for identity and access management, websites and the underlying applications infrastructure, Drupal and WordPress coding, contract application services, Enterprise Resource Planning systems support including middleware and common applications, the application development suite, the identification center and photo systems, wikis and blogs, and group email. In the past five years, the most significant service retirements in Apps include the retirement of the outdated website infrastructure and a revamping of identity and access management. The most significant growth areas include developing the architecture for the new Enterprise Resource Planning systems, implementing a new access and identity management system, and redesigning the campus web infrastructure.

The most significant retirements in Apps include:

- Central Web Authentication / Fat Cookie: The replacement of the CWA/Fat Cookie system by UTLogin provided an improved user experience (extended session timeouts, improved experience on wireless networks, mobile device friendly user interface) and addressed security vulnerabilities in the old system.
- Legacy Group E-mail: The replacement of the legacy group e-mail system with Regroup was a good example of a customer-focused service modernization effort and one of our first that leveraged a cloud-based solution, a common part of our technical architecture today.
- Web Central (in progress): The aging and difficult-to-maintain legacy Web Central web publishing platform is being replaced by UT Web and other web content management services (such as the Managed Drupal CMS below), improving the web publishing functionality available to campus units while reducing the complexity of managing campus web sites.

Growth areas that hold the most excitement for Apps in the next five years include:
o SailPoint Group & Role Management: Group and role management services will enable automated provisioning of system authorizations and access entitlements, improving the efficiency of the on-boarding process. It will also bolster security by avoiding the over-provisioning of system access and automatically removing authorizations that are no longer needed as people change roles or leave the University.

o Managed Drupal Content Management System: The Managed Drupal CMS platform will allow web site owners across campus to focus on creating web site content rather than worrying about web site maintenance and technical support.

o New Application Development Operations (“DevOps”) Toolkit: The new ASMP 2.0 technical architecture will include a robust application development toolkit for campus administrative developers, providing continuous integration/delivery and automation of many routine developer tasks, allowing developers to focus on solving business problems rather than dealing with mundane application build tasks.

o The Enterprise Service Bus (ESB): The ESB will allow for communication across between mutually interacting software applications in a service-oriented architecture (SOA).

New Services (Implemented):

• Authentication
  o UTLogin – Provides a modern, secure single sign-on authentication service for campus
  o Multi-Factor Authentication – Provides a higher level of security for sensitive online services to help combat online fraud

• E-Communications
  o Group E-mail – The new group e-mail service, based on Regroup, replaced the homegrown legacy group e-mail service
  o Urgent E-mail – Allows urgent messages to be sent quickly to specific groups in the university community

• Enterprise Resource Planning (ERP) Support
  o ERP User Interface (UI) – Provides a UI framework for legacy ERP applications
  o Enterprise Integration – Provides support for integration between campus applications and the ERP

• Web Publishing
  o Offsite Emergency Website – Provides a remotely hosted main university web site that can be activated if the normal site is unavailable
  o UT Content Management Service (CMS) – Provides web content management services for many parts of the university’s official web presence

New Services (In Process):

• Authorization
  o SailPoint Group & Role Management – Will provide enterprise group and role management services for campus, improving the efficiency of provisioning and deprovisioning of authorizations
  o SailPoint Authorization Review and Recertification – Will provide robust authorization reporting, review, and recertification capabilities to ensure that the right people have access to the right systems as their roles change over time

• Identity Administration
SailPoint Identity Administration & Provisioning – Will replace the uTexas Identity Manager (TIM) system with a modern, flexible identity administration and provisioning tool

Web Publishing
- Managed CMS and CMS Hosting Platform – Will provide centrally funded Drupal templates as well as for-fee Drupal support services

Administrative Systems Master Program (ASMP) 2.0 New Services (In Process):
  - DevOps
    - Continuous Integration/Delivery – Will automate the regular merging of developer working copies of code with a shared mainline
    - Static Code Quality Analysis – Will automatically check source code for compliance with a predefined set of rules or best practices set by the organization
    - Build Automation – Will automate day-to-day developer tasks, including compiling source code into binary code, packaging binary code, and running automated tests
    - Load Generation – Will provide tools to test application performance by mimicking heavy application use
    - Quality Assurance – Will support automated testing of applications
    - Application Development Lifecycle Management – Will provide a tool for managing application development throughout the Software Development Life Cycle

  - Technology Integration
    - Enterprise Service Bus (ESB) – Will facilitate integration between systems by means of loosely coupled web services
    - Application Programming Interface (API) Repository/Registry – Will allow developers to discover web services at design time
    - Messaging Service – Will provide a common platform for applications to send and receive messages supporting multiple messaging protocols

  - Portal Services
    - University Portal – Will provide access to online services at the university through a single user interface, customized based on the individual’s status as student, faculty, staff, or researcher

  - Document Management Services
    - Electronic Content Management – Will facilitate document management, storage, search, collaboration, records management, digital asset management (DAM), and workflow management
    - Document Capture – Will facilitate electronic capture of documents and physical scanning of documents for storage
    - Document Generation – Will automate the generation of documents from multiple source files

  - Security and Resiliency
    - Security Vulnerability Scanning – Will analyze source code to identify and track application layer security vulnerabilities

  - Education Program
    - Redesigned Software Developer Training Program (SDTP) – Will redesign the software training program to support and reflect the new Administrative Systems Technical Architecture
Growth of Services:

- **Education Program** – The current Education Program/SDTP focusing on mainframe Natural/Adabas and Python development has a current backlog of 15 trainee requests from the community. Backlog has grown in past two years.

- **Shibboleth/Security Assertion Markup Language (SAML) Authentication** – The number of cloud-based solutions being adopted by campus units is accelerating, driving growth in demand for SAML-based authentication.

- **Contract Services** – Contracts Services provides software and web development and support for many campus departments, including the Center for Teaching and Learning and the Provost’s Office.

Retired Services:

- **Fat Cookie/Central Web Authentication** – The Fat Cookie system was retired and replaced by UTLogin to address a number of security issues.

- **Legacy Group E-mail** – The legacy Group E-mail system was replaced by Regroup.

- **Oracle University Content Management** – This service was retired from use and replaced with modern content management services.

- **Urchin Web Analytics** – This end-of-life web analytics tool has been retired from use.

- **Lansa** – This virtual machine infrastructure was replaced by the UT-V service.

Opportunities to Retire Services (Future):

- **Authorization**
  - **Apollo** – Apollo is used to manage authorizations in mainframe systems and will be largely replaced by SailPoint Group & Role Management.
  - **DPUSER** – DPUSER is used to manage mainframe login accounts and authorizations and will be retired when the mainframe is decommissioned.
  - **Organizational Hierarchy System Contacts** – The OHS Contacts system will be replaced by SailPoint Group & Role Management.

- **IT Service Provisioning**
  - **TRAC** – The TRAC IT Service Provisioning system will be replaced by ServiceNow.

- **DevOps**
  - **jWebAgent** – The WebAgent environment will be retired when the mainframe is decommissioned.
  - **DMG** – The DMG tool will be retired when the mainframe is decommissioned.
  - **Desktop Upload (DUFF)** – This desktop-to-mainframe upload service will be retired when the mainframe is decommissioned.
  - **jEdit** – Support for jEdit WebAgent development will be retired when the mainframe is decommissioned.
  - **PDF Generator** – The PDF Generator will be retired when the mainframe is decommissioned.
  - **Integrated Development Environments (IDEs) for Natural Development** – Support for Natural IDEs will be retired when the mainframe is decommissioned.
- **E-Communications**
  - **Javamail** – This service that forwards email from the mainframe will be retired when the mainframe is decommissioned
  - **TXMAIL** – This mainframe-based email service will be retired when the mainframe is decommissioned

- **ERP Support**
  - **All My Addresses** – This service will be replaced as the source systems for student, employee, and other information are replaced
  - **DEFINE Internals** – DEFINE will be replaced by Workday and other new ERP applications
  - **Departmental Open Records Request (DORR)** – DORR will be retired when the mainframe is decommissioned

- **Technology Integration**
  - **XML Gateway** – XML Gateway services will be retired when alternative integration services are implemented via ESB

- **Portal Services**
  - **UT Direct** – The UT Direct portal will be replaced as part of the Administrative Systems Modernization Program

- **Document Management Services**
  - **DocRepo** – This mainframe-based document management service will be retired when the mainframe is decommissioned

- **Web Publishing**
  - **Web Central** – The Web Central Platform is being replaced by UTWeb and other web content management services
  - **Helix Streaming Media** – This streaming media service will be retired when the Web Central platform is retired

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**Information Security Office (ISO) ZBB Changes Since FY09-10**

The Information Security Office monitors the Universities network for vulnerabilities, attacks, and intrusions. We also conduct forensic investigations of nefarious activity on our network infrastructure and protect the networks of the University. Major retirements in the past five years include retiring propriety systems and moving to an open-source suite and moving disaster services to a cloud-based infrastructure. Major growth will be seen in the areas of extending individual researcher and unit-wide protections, developing more systematic reviews, detecting and responding to intrusion incidences, and managing risk of the activity on the network infrastructure.

**New Services:**

- **FireAMP** – Campus-wide malware protection service (~18,000 clients deployed and is making a tremendous difference in the number of breaches on campus in the last three years)

- **Senf (Sensitive Number Finder) Scanning of Austin Disk and Major File Services** – ISO has identified millions of SSNs through this service and has been able to eliminate major risks to the campus
• **Sponsored Project Security Reviews** – ISO began to formally review all high-risk sponsored projects out of the Office of Special Projects in 2010. This is roughly 15% of the risk management work volume

• **Stache Password Escrow** – Stache was added in 2010 and has grown considerably on campus. ISO has added high-availability, two-factor authentication, and more collaboration to this service to better serve campus

• **Digital Certificates** – Usage (personal and server) has grown by over 580% since being deployed and the service has resulted in a significant savings as compared to the previous Verisign offering

• **Application Registry** – Introduced in 2010 to help manage several gaps in application security stewardship. This tool has also been Shibbolized and is used by UT System

**Growth/Continuing:**

• **Incident Response** – Numerous high-risk factors and incidents have impacted the campus in the last several years (a greater occurrence with respect to volume and complexity when compared to the last decade)

• **Intrusion Detection** – As campus networks and bandwidth have grown, so too has the scale and complexity of the ISO’s security monitoring infrastructure
  
  o University Data Center (UDC) – Traffic aggregation and monitoring of 40Gbps networks
  
  o UTnet – Traffic aggregation and monitoring of 40Gbps networks

• **Risk Management Services**
  
  o This proactive line of work increased across campus in the last several years due to the fact that the campus is outsourcing a tremendous number of functions and services to third parties
  
  o Mobile app security reviews
  
  o ASMP – ISO is spending many more resources than initially planned to accommodate the various service assessments and contract reviews
  
  o Dell Medical School – ISO is spending new time assessing products and business processes for this unit. This activity is expected to grow considerably in the next two years

• **Splunk** – Log consumption, review and correlation has grown exponentially since 2009. Splunk (and collecting log data from various campus sources) has become an integral security tool for the ISO that is resulting in many positive risk reducing outcomes

• **Forensic Investigations** – These investigations have grown by ~45% since 2009

• **Security Awareness Initiatives**
  
  o The ISO has developed a new social media based security awareness initiative to address a training gap with UT students
  
  o The ISO has also created a new series of events surrounding Cyber Security Awareness during the month of October
Retired:
- **Cenzic Hailstorm** – Elected to recommend a small suite of open source application security scanning products to campus developers, hosted FYIs for training, and moved ISO staff to less expensive more powerful toolset resulting in a savings of ~$45K/year

- **Disaster Recovery Planning** – Retired locally hosted service and migrated to cloud-based offering hosted by Kuali

**ITS Data Center ZBB Changes Since FY09-10**

The Data Centers are primarily responsible for the functions of data storage, co-location, migration services, rack and stack, and twenty-four by seven total data security and monitoring. In 2011, ITS realized that computer/printer warranty and repair services were being performed in three different departments within ITS. The decision was made to consolidate services in the most logical business unit performing that service. University Data Centers retired a computer repair service and transferred existing customers to the Campus Computer Store. In 2012, a student and department lab printer service was shuttered and the customers were migrated to the Customer Support Services department for support. This allowed the UDC to focus solely on our core business – data center co-location and services.

In 2010, University Data Centers opened a new $35M dollar production data center facility. With that opening, the UDC has been able to offer a highly reliably and resilient Tier 3 class facility. With this opening, the UDC has expanded service offerings in several key areas and supports customers in a manner that allows us to focus on our core mission – systems management and administration.

The UDC is now able to offer server/system co-location services to customers beyond ITS. Today, we support 51 Campus Academic Departments, Business Units, and the University of Texas System, and currently houses in excess of 1000 systems within our data halls. The UDC also expanded service capability to include: Migration and installation, Tier I and II hardware repair, replacement, media exchange, and inventory management; Console and event management; and Incident communications and coordination.

In addition to these services, the UDC has stretched to take over operations of the Network Operating Centers, and is partnering with the Networking and OTS organizations to design and construct a new $16.5M Network Center to be housed in the Engineering Education and Research Center. It is scheduled to come on line in the fall of 2017.

**New Services:**

- **New - 10,000 Square Foot Tier 3, Production Data Center**
  - Operational - October 2010
  - $35M construction Project
  - Fully redundant – Concurrently maintainable
  - Fully built out 5,000 sq. ft. West Hall – Electrical, Mechanical, and Network
  - Capacity: 90 data center racks and one mainframe row capacity

- **New – East Hall Completion**
  - Fully built out 5,000 sq. ft. East Hall – Electrical and Mechanical infrastructure
  - $2M construction Project
  - 30 data center racks completed
  - 90 data center rack future capacity
Operational – May 2013

- Data Center Co-Location Services
  - Providing data center services to Central ITS Organization
  - Providing fee based data center services to Campus Departments and Business Units
  - UT System co-location

- Data Center Service Additions or Expansion
  - Hosting Services
  - Systems & Infrastructure Monitoring 24x7x365
    - WAN/Local Network
    - Systems
    - Power/Cooling/Heating
    - Security
  - Tier I & II System hardware repair, replacement, media exchange and inventory management
  - System Move/Migration – Program management & physical relocation capability
  - Enterprise Systems Mainframe console monitoring
  - Incident Communications & Coordinating – After hour support

- Disaster Recovery (DR) Capability Improvement – COM and NOC-B Data Center
  - 2009 – 2012: $200K upgrade to improve resiliency/capability
  - 2,500 sq. ft. of raised floor capacity, engineered for DR/backup capacity

- NOC-A Mechanical HVAC Improvement Project
  - $600K construction project to upgrade NOC air conditioning to computer room grade equipment

Service Growth:
- Data Center Co-Location Growth
  - 2009 – Two campus units served – 2015 – 51 campus units served
  - 2009 – Annual Revenue = $36K – 2015 Revenue = $343K

- Data Center Systems Installation Growth

- Data Center Support Services Growth
  - 2009 – Zero Tier I & II support tickets closed – 2015 – 4,000 Tier I & II support tickets closed

Service Changes/Retirements:
- Data Center Services – 5,000 sq. ft. legacy production data center – Retired
- Computer/Equipment Warranty & Repair Service – Retired
• Lab Printer/Equipment Warranty & Repair Service – Retired

New and Future Services:

• New 5,000 Sq. Ft. Data Center Class Network Operations Center (NOC – Primary)
  o $16.5M project – Currently under construction
  o Contained within footprint of Engineering Education & Research Center (EERC)
  o Online – fall of 2017

Network and Telecommunications ZBB Changes Since FY09-10

The network, voice services, network and telephony cabling and construction, facility network systems design, and facility security fall under the auspices of Networking and Communications. The past five years have seen the transition of physical telephony to a campus-wide VoIP system. The $8 million VoIP Project, transitioning 23,000 legacy phones to Voice Over IP marked the most significant retirement for Networking and Communications. It is not often that every office at the University is visited by Networking staff and 30 years of history is undone to return over $2 million annually to department budgets.

The most exciting future projects for Networking and Telecommunications will be the increased speed and capacity of the network. In the past five years, over 60,000 additional wired ports were added and 3,700 additional wireless access points. Wireless bandwidth consumption grew nearly 1,700%. The future will only be bigger, faster, better wireless service that supports the move of campus to the cloud infrastructure of the future.

New Services:

• Voice
  o VoIP (Voice Over Internet Protocol) – Converting 23,000 phone lines to new system, to be completed 8/31/2015
    ▪ Governance (2010-2012)
    ▪ $2M system (2012-2013)
    ▪ $2M deployment contractor (2013-2015)
    ▪ $4M in building infrastructure (2013-2015)
    ▪ Dramatic rate reductions ($21/month --> $7/month)
    ▪ Re-route analog cable center from SER to six other locations to prepare for demolition of SER
    ▪ Institutional lines funded as common good ($300K/year)
    ▪ Cloud-based Automatic Call Distribution (ACD) system
  o Reverse 9-1-1 system (automatic dialer)

• Networking
  o Data Center Networks ($3.5M)
    ▪ Highly resilient network new UDC-C Data Center
    ▪ Extension row to UDC-B
    ▪ East Hall UDC-C expansion
    ▪ UDC-B network upgrade
  o Internet Protocol Address Management (IPAM) – In process of deploying new self-service system for TSCs
  o AT&T Wi-Fi (third party provided wireless network for visitors)
  o Extensive network port tapping system for ISO monitoring
• Building Access Control and Security (BACS)
  o **Moved to fee for service** – From voice rate subsidized model (~$1M/year)
  o **External doors support** – Funded as common good ($300K/year)
  o **Video Security Service** – With 565 cameras deployed to date

• Facilities Design
  o **803,926 square feet of new space on campus ($1.8B)** – For which N&T provided design, construction and installation services

• Distributed Antenna System (DAS, cellular)
  o **Internal DAS installed in DKR, DFF, ERC, WEL** (carriers have invested $10M-$20M)

• **Longhorn Network** – Installed 127,633 feet of fiber cabling (over 9,000 splice points)

**Growth in Services:**

• Networking
  o **Wired**
    ▪ 60,940 wired Ethernet ports added
    ▪ 1,223 Ethernet switches added
    ▪ 29,953 more end user devices added (87,500 total -- there are more our monitors cannot see)
  o **Wireless Networks**
    ▪ 3,704 wireless access points added (over 3,000 also upgraded)
    ▪ 123,723 more end user devices added (197,344 total)
    ▪ 1,688% growth in bandwidth consumption

• Building Access Control and Security (BACS)
  o **1,057 card reader doors added** (2,189 total)
  o **4,633 alarm points added** (20,691 total). Most alarms have multiple points.
  o **120 panic buttons** (1,705 total)

• Distributed Antenna System
  o **Outdoor DAS upgraded to support 4G/LTE for AT&T and Verizon**

• Cabling and Construction
  o **5,837,902 feet (>40,000 cables) of copper cable installed**

**Changes and Retirements:**

• Voice
  o **Legacy (digital/analog/VoIP) phone system retirement in process**
    ▪ $1.8M in rates subsidizing other services
    ▪ Phone set rental (~$700K)
    ▪ SmartVoice voice mail (~$300K)
    ▪ Domestic long distance (~$75K)
- Work order for simple moves
- Byzantine billing options
- Premise based Automatic Call Distribution (ACD) system
  - **Voice line count reduced by 25% during VoIP project**

**Networking**
- **Public Network Authentication (PNA) wired ports retired**
- **guest.utexas.edu (web redirect mediated guest access)**
- **Legacy DNS system** – In process, the retirement of the manual system of editing text files with over 650,000 Domain Name System records

**Building Access Control and Security (BACS)**
- **BACS Remediation** – In process, is projected to remove ~50% of devices over the next 24 months ($3M anticipated project cost)
- **Campus Siren system support outsourced** (under CS&S contract)

**Cabling and Construction**
- **Removal of 1,028,954 feet of copper cabling**

**Satellite Uplink/Downlink Facility** – Converted to DAS site

**Changes and Retirements (Future):**
- **Networking**
  - **Architecture changes to support increased security needs in general and Dell Medical School** (MPLS – Multi Protocol Labeled Switching)
  - **Reducing Costs**
    - Consolidation of small sites to core distribution routers and leasing service
    - Auto configuration of wired ports (wired 802.1x), so more like wireless
    - ITS support for moves/adds/changes within units – “Site Networking”
    - Shift more administrative computers to wireless connectivity
  - **Cable Television (CATV)**
  - **ASMP (Administrative Master Plan)** – TBD
  - **Dell Medical School** – TBD

**Systems ZBB Changes Since FY09-10**
Infrastructure services, virtual machines, database administration, Enterprise Systems management, load balancing, shared computing services, email and web services, managed server support, and the mainframe fall under the responsibility of Systems. The biggest changes seen over the last five years include the retirement of the on premise email systems and the move to cloud email systems, the retirement of the Blackboard Learning Management System, and the retirement of the virtual machine infrastructure. The next five years will see major growth in the retirement of the mainframe and a move to a cloud infrastructure, the development of the virtual infrastructure, database services, and the expansion of the application development, deployment, and execution environment.
New Services:

- **Data Protection**
  - UT Backup (Crashplan/Code42)
    - 5000+ clients
    - >206TB of data stored
  - Veeam – Virtual machine backups
    - Improved recovery point and recovery time objectives for virtual servers
    - Consistency across Virtual environment

- **Email Services**
  - Office 365 launched (20,000 mailboxes)
  - UT Mail (Google) launched (171,000 mailboxes)

- **Learning Management System – Canvas**
  - 92% of faculty who use centrally funded learning management systems used Canvas during the spring 2015 semester
  - 4,915 courses
  - 76% of faculty and 81% of students satisfied or extremely satisfied with Canvas during the fall 2014 semester

- **Systems Management**
  - Centrally funded RedHat Linux Satellite patching service
  - 1,500 university systems

- **Virtual Infrastructure**
  - VMware Site Recovery Manager (SRM) – Virtual infrastructure for Disaster Recovery and Business Continuity of critical virtualized central services

- **Web Services**
  - UT Web - October 2014
    - Approximately 200 sites provisioned
    - 14 of the 18 colleges and schools
    - Dozens of departments and units

- **Monitoring**
  - Splunk (logfile) data mining
  - 11 billion events indexed
  - 860 client hosts
  - 300GB per day of new logfiles

Growth/Continuing:

- Application Development, Deployment, and Execution Environment
  - PyPE has grown to provide application development, deployment, and execution environment
Over 69 departments
1,000 projects
1.5M hits per week
2009 portfolio
- 32 departments
- 350 projects

Virtual Infrastructure
- UT-Virtual (UT-V) - UT Central Virtual Machine
  - Over 1,600 virtual machines
  - Over 125 departments
- 2009 Portfolio (estimate)
  - 450 virtual machines
  - 50 departments
- UT-Virtual Machine Gateway (UT-VMG) – VM self-provisioning and self-management of virtual infrastructure

Database Services
- Central ITS Database Services - Oracle, MySQL, and MSSQL
  - 130 unique departments
  - 2,000 databases hosted
- 2009 Portfolio (estimated)
  - 90 departments
  - 800 databases

File Services
- Central file services (Austin Disk, commodity storage)
  - 1.6 petabytes
  - 200 departmental
  - 12,000 individual subscriptions
- 2009 Portfolio (estimate)
  - 800 gigabytes
  - 120 departments

Monitoring
- Proactive monitoring has been put in place to identify service degradation and provide better response times for critical central services. This service has grown from on-campus host-based monitoring to include off-campus “cloud” monitoring of service delivery

Austin Active Directory
- 7M objects
- Authentication back-end for an increasing amount of cloud services (Office 365)
- Further resilience of the infrastructure on and off-campus
Retired:

- Legacy Learning Management System – Fall FY15-16
  - Blackboard is being replaced by Canvas
  - <10 classes being hosted in Blackboard during summer FY14-15

- Virtual Desktop Infrastructure
  - Co-op effort between ITS Systems, Engineering, Business, and Communications
  - Retired

- File Services
  - Webspace file service has been replaced in favor of UT Box
  - Consolidation of multiple storage vendors
    - Decreased overall storage footprint and complexity

- Print Services
  - ITS Systems hosted service replaced by UT Print

- Help Desk Ticketing
  - Remedy service replaced by Footprints

- Email Services
  - UMBS (student email) has been replaced by UTMail (Google)
  - Significant retirement of AEMS (staff/faculty email) mailboxes by Office 365

Retirement (Future):

- Administrative Services Platforms
  - Mainframe infrastructure environment will be retired by 2020 (estimate)
    - ASMP initiatives

- Web Services
  - Web Central hosting environment retiring 2016 (estimate)
    - UT Web
  - UT Direct application delivery environment retiring 2020 (estimate)
    - ASMP initiatives

Customer Support Services ZBB Changes Since FY09-10

Customer Support Services include the campus help desk, managed information technology services desktop support, the Identification Center, ITS Admin, and financial analysis and billing. Significant retirements include the retirement of the Footprints service tracking system, computer and laptop repair and support, Remedy and lab support. Major growth areas include working with campus to provide increased and more co-operative help desk and desktop support, the ServiceNow implementation, VoIP support, and administrative and financial support.

New Services:

- Managed IT Support (MITS) and Help Desk
  - VoIP - MITS
- **Basic phone support**
  - Moves, adds, changes, voicemail
  - Troubleshooting from desktop to the switch room staff
  - Updating Emergency Response Location (ERL) – 911 information
  - Network closet port configuration

- **IT Systems Management (tools)**
  - **UT Back-up** – Added 2012
  - **UT Print** – Student printing added in 2012
  - **Campus hardware standards implemented for desktops**
  - **2013 Absolute Manage package sharing for campus**

- **MITS – Additional Services Under Managed Support**
  - **Two Factor Authentication** resets for all campus community on Main campus, PRC and other remote campuses
  - **Project support for UMBS retirement, Office 365, Toopher to supplement local TSCs**
  - **Mobile device support for UT issued tablets for departments**
  - **Test devices <10 in 2009, now support for ~130**

- **ITS Admin** – 2014 transfer of duties and two FTEs from the Central Business Office (CBO) for administrative and HR recruitment support for ITS units.

- **ITS Financial Analyst** – 2015 reduction in force action created funding to hire an analyst to manage ITS service centers and work with CBO finance staff for financial reconciliation.

- **Service Center Billing**
  - In 2009 handled by ITS Business Administration, 2011 returned to ITS IT Managers for Service Centers, no increase in FTE support
  - Collections for service centers returned to ITS staff from CBO in 2014

**Growth in Services:**
- **MITS Growth in Machines Supported**
  - Increased by 2,500 machines, and ~130 tablets
  - **Staff changes**
    - 2009 – Two managers, 10 staff (~1,000 machines), no after hours on-call support
    - 2015 – One manager, 14 staff (~3,500 machines), 5 staff with after hours on-call support
    - Hourly IT support for Provost Office, Pharmacy, Texas Unions

- **Security audits**
  - In 2009, five audits/year
  - In 2015, 15 audits/year

- **IT Systems Management (Customer Support Services tools management)**
o **UT Backup**
  - 2012 – 50 TB of data stored, 2342 devices of which 526 were faculty
  - 2015 – 256 TB of data, 8140 devices of which 2545 are faculty

o **UT Print**
  - 2015 – 3.95 million pages – 69 machines campus wide
  - 2013 – 2.1 million pages – 31 machines campus wide

o **Absolute Manage**
  - Average weekly package downloads – 16
  - Average weekly man-hours saved by using the service – 2 hours for each download
  - Since 2012 1708 packages downloaded, total man-hours saved - 3416

o **Footprints as a Service**
  - 2012 – 131,000 total tickets
  - 2015 (calendar year to date) – 156,897 total tickets

- **Staff changes**
  - **Lab Support** – Five lab support contracts, steady numbers

- **ID Center**
  - Increase in remote sessions for ID credentialing from 5-6/year, 15/year
  - 2014 – Moved from all part-time staff and one manager, to one FTE and one manager
  - Managed largest inbound orientation group – ~8,400 in 2015

- **Help and Service Desk**
  - **Number of customer contacts in 2009** – 79,000
  - **Number of customer contacts in 2015** – 117,000
  - 2011 – Created a formal tier 1 and tier 2 model of support, created six full-time positions from 20
    vacant student worker positions
  - 2012 – Created a new training model, emphasis on professionalism over operational excellence, 1st
    annual report published
  - 2013 – Service goals were changed, KPI metrics improved under scrutiny
  - 2014 – Performance metrics in the areas of customer satisfaction and resolution rates improved
  - **New business services implemented and supported**
    - Docusign
    - Office 365
    - Sharepoint 2013
    - Toopher
    - Gmail – UT Mail student migration
    - VoIP support for basic users
    - Pharmacy Tier 1 support
    - CoFA Tier 1 support
    - MITS – tier 1 desktop support
    - Main UT Operators – call support
• **Service Center Billing**
  o In 2009, handled by ITS Business Administration, currently handled by IT Managers for Service Centers

**Changes and Retirements:**
• **MITS and IT Systems Management**
  o **Server retirement** – data backup
  o **UT back-up**
  o **Remedy retirement in 2010**
  o **Footprints launched in 2010**
  o **Retired MITS Help Desk**
  o **Laptop Rental operation retired in 2013**
  o **FAC SMF lab support retirement 2014** – moved to 24/5 support first floor lab

• **Help and Service Desk**
  o **Hard drive destruction services**
  o **Dean of Students – FAC table check-out for student groups**
  o **FAC lobby proctoring extended hours and printer support**

**Changes and Retirements (Future):**
• **Tools**
  o **Secure Doc retirement evaluation** – Encryption in favor of native encryption (BitLocker and Filevault)
  o **Footprints Retirement**
  o **ServiceNow implementation** – ITSM tracking, billing support,
  o **Increased usage of Bomgar and remote tools for customer support**
  o **Migration to a centralized SCCM tool**
  o **New ACD implementation and integration with ServiceNow**

• **Services**
  o **Faculty laptop check-out**
  o **ASMP – ServiceNow/Workday integration**
  o **ATS Help Desk integration to ITS Help and Service Desk**
Project Charter

JAMF Casper for Mac Systems Management

Executive Summary
This project will evaluate JAMF Casper as a systems management solution for Mac OSX client computers. Current Mac systems management solutions in use on campus, primarily Absolute Manage, have limitations and a more robust solution is needed. JAMF Casper will be evaluated for its potential to either fully replace or provide added value to existing systems management solutions. The project will consist of a limited pilot (500 systems in the College of Liberal Arts) to be completed by the end of the Spring 2016 semester, and any software costs will be borne by Academic Technology Support (ATS). A report on findings and a recommendation will be delivered to the Architecture and Infrastructure Committee (AIC) upon completion of the evaluation.

Business Need and Background
Current Mac OSX systems management solutions do not provide the same level of granular control that can be achieved with Microsoft Windows systems management tools (i.e., System Center Configuration Manager (SCCM)) in conjunction with the existing infrastructure (Microsoft Active Directory) on campus. Absolute Manage, which has wide usage on campus for managing both Windows and Mac OSX clients, provides tools for the management of both operating systems. However, the tools on the Mac OSX side are less featured, not as comprehensive, and more difficult to use. Additionally, the Absolute Manage product has recently been sold to another company, and its future direction is unclear.

We believe there are several benefits a comprehensive Mac OSX management suite like JAMF Casper can provide. The core of our focus will be on **compliance**, balanced with **end user experience**. There are several challenges to achieving both compliance and a satisfactory user experience for faculty and staff using Mac OSX devices. JAMF Casper provides tools that will:

- comprehensively handle and report on encryption
- provide the equivalent of Group Policy management via the Managed Preferences (MCX) tools
• provide security updates for OS and third party software via a centrally managed, easy to configure and use, internal update server
• provide tools that will allow end users to more easily function as a non-privileged user via a self-service software portal and authorized account escalations

In addition to these primary benefits, JAMF Casper has several other functions that will be evaluated, including:

• improved printer management for the end user (silently push and remap printers)
• self-initiated thin imaging (initiated by user through web portal, including base packages and encryption)
• software license tracking and usage
• iOS device support and management

JAMF Casper, if adopted as a wide scale solution for Mac OSX client management, has the potential to become either a replacement or an adjunct to existing tools, most notably Absolute Manage. Depending on the results of the evaluation, it may be recommended to reduce the usage of Absolute Manage on Mac clients, and redirect central funding to JAMF Casper.

**Project Description and Scope**
The project will consist of a pilot limited to approximately 250 Mac OSX systems in the College of Liberal Arts. These clients will consist of a mixture of laptop and desktop devices, and the client base will consist of faculty, staff, and student lab systems. The scope of the project will include:

**Feature Evaluation and Comparison** – the project will evaluate features against both presently in-use tools, such as Absolute Manage, Deploy Studio and LabStats, as well as other available vendor solutions, such as Parallels Mac Management for SCCM. A comparison matrix of features will evaluate these tools based on criteria including the following:

• Security Update Management
• Imaging and Deployment
• Self Service Applications for the end user
• Self Provisioning
• Encryption Management
• Group Policy Management
• Functionality for non-privileged end users
• iOS device management
• Federation features – SSO and granular/inherited permissions
• Client Discovery features

**Abman to Casper Transition Process** – the project will define the steps that would be required for distributed technical support staff to migrate end users from Abman to Casper.
The initial cost for the pilot will be funded by ATS. If it is decided to proceed with a larger scale or campus wide project, an analysis of the cost vs perceived benefit of the product will be provided to Governance.

The initial support will be provided by the ATS Systems Management team. This group will be charged with identifying best practices and policies for the usage of this tool.

If the benefits of the product determine that wide-scale adoption is appropriate, the project would recommend a phased approach to transitioning to the new service. An initial phased roll-out would be to units supported by ATS (~3400 Mac OSX devices) and MITS (~1000 Mac OSX devices). Upon completion of the initial roll-out, the product would be made available to other CSUs, upon determination of service level agreement and standard operating procedures.

It should be noted that the Information Security Office (ISO) has already reviewed an early demo installation of JAMF Casper, and provided ATS and the vendor with a list of their concerns (the concerns were relatively minor, and the vendor indicated they would address them in the next product release). A full review of the product’s security posture will be initiated as part of the pilot.

**Project Goals and Success Criteria**

The success of the project will be measured based on four primary criteria: compliance, systems management, end user experience, and cost per device. The following will be considered criteria for success:

- Delivery of a full matrix of comparison of key features between systems management, imaging and deployment, and software management tools
- Effective implementation of group policies (ie, 15 minute screensaver) to selected computer groups
- Reduction in time spent deploying patches to end user devices by systems management staff compared to Absolute Manage
- Delivery of 100% accurate reports on encryption status for all managed devices
- Delivery of 100% accurate reports on software installations and usage
- Documentation of process for suppressing end user initiated OS and application upgrades
- Produce groups of computers based on multiple Boolean criteria (such as OS, name, patch level, etc)
- Effective implementation of self-service application as defined by 95% positive response from end users
- Documentation of process to migrate Absolute Manage users to JAMF Casper
- Successful review and acceptance of security posture of JAMF Casper by ISO
- Delivery of report on cost per managed device for both current state and potential future state scenarios, with a five-year projection
- Casper application successfully configured with SSO
- Casper application successfully configured to provide limited rights to a specific group of administrative accounts over specific groups of computers
Project Schedule and Staff
The project is expected to kick off in fall 2015 and be completed by May 2016. Phases are defined in the following table.

<table>
<thead>
<tr>
<th>Phase</th>
<th>Fall 2015</th>
<th>Spring 2016</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Sep</td>
<td>Oct</td>
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<tr>
<td>Governance approval</td>
<td></td>
<td></td>
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<tr>
<td>Product acquisition</td>
<td></td>
<td></td>
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<tr>
<td>ISO review</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Server Installation / software Jumpstart</td>
<td></td>
<td></td>
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<tr>
<td>Basic Configuration</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Configuration, evaluation and testing of primary features</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Deployment to client systems</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Configuration, evaluation and testing of other features</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Continuous improvement / feedback from customers</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Report to Governance</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The project is estimated to require approximately 75% to 100% of an FTE (Systems Manager) during the installation and configuration stages. This will be split between two primary FTEs, with assistance from other team members as needed. The roll-out, continuous improvement and feedback phases are expected to require approximately 33% to 50% of an FTE (Systems Manager).

Project Management and Governance
This project shall be governed by the Architecture and Infrastructure Committee (AIC), as it involves the potential selection of a campus-wide systems management tool. The project will be managed by a designated ATS Project Manager using standard practices.
**Project Facilities and Resources**

The server and application (both production and development instances) will be housed on the UT-VMG and MySQL Cat-I Server infrastructure, and funded by ATS (approximate cost is $500 annually). Resources will be required from outside of the project team, to assist with the initial provisioning of the server and database (ITS Systems) and the security review of the product (ISO). Initial costs for the JAMF Casper implementation include the initial ‘JumpStart’ installation with Casper technicians ($6000) and annual license costs for 500 clients for one year ($10/client).

**Impact Analysis**

As previously noted, the wide-scale adoption of JAMF Casper for Mac client management could impact both central and distributed IT units across campus. If a recommendation to adopt the project is warranted upon completion of the project, an analysis of the potential impact to distributed units will be provided, addressing funding, recommendations for usage, tenanting vs stand-alone systems, and other issues as identified.

**Assumptions**

If wide-scale adoption of JAMF Casper is approved, it is recommended that staff with expertise in contract and vendor negotiation be retained for the engagement with the vendor, to ensure best terms and pricing.

If wide-scale adoption is approved, it is expected that management of the core servers will be migrated to ITS Managed Server Support (ITS-MSS) while ownership of the service/application will remain with ATS Systems Management staff.

**Risks**

The project may result in a recommendation to not adopt JAMF Casper for wide-scale campus use. As such, any funds and time dedicated to the project will not be recovered.

JAMF may make changes to the core product, be purchased by another vendor, or have other issues that can result in the product having diminished support or reduced functionality.
### Revision History

<table>
<thead>
<tr>
<th>Version</th>
<th>Date</th>
<th>Updater Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>V 1</td>
<td>2015-10-05</td>
<td>James J Lewis</td>
<td>Initial version completed</td>
</tr>
<tr>
<td>V 1.1</td>
<td>2015-11-09</td>
<td>James J Lewis</td>
<td>Updated Scope and Project Goals and Success Criteria sections, miscellaneous small text changes</td>
</tr>
</tbody>
</table>
## Identity & Access Management Roadmap
### Fall 2015 Status Update

<table>
<thead>
<tr>
<th>Initiative</th>
<th>Status</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>IAM Solution Implementation Planning</td>
<td>In Progress</td>
<td>The SailPoint IdentityIQ integration vendor has been selected and the contract is being finalized.</td>
</tr>
<tr>
<td>IAM Modernization Program (IAMMP) Phase 1</td>
<td>Planned</td>
<td>IAMMP Phase 1 includes implementation of SailPoint technical environments, IAM data and interface transition strategy, and group and role management functionality.</td>
</tr>
<tr>
<td>Strategic Project Integration Support</td>
<td>In Progress</td>
<td>The IAM team has completed or is currently working on identity integration for strategic projects including Workday, TAI, Application Modernization, ServiceNow, etc.</td>
</tr>
<tr>
<td>Identity Assurance Framework Development</td>
<td>In Progress</td>
<td>IAM Committee feedback on the draft Identity Assurance Framework is currently being incorporated.</td>
</tr>
<tr>
<td>Duo Implementation</td>
<td>In Progress</td>
<td>The procurement process for Duo has been completed and implementation is underway. General rollout of Duo to campus is scheduled for March 2016.</td>
</tr>
<tr>
<td>Lightweight Authentication &amp; Bring Your Own Identity</td>
<td>In Progress</td>
<td>Requirements and solution analysis phases complete. RFP currently in development. Vendor selection is scheduled for March 2016. Implementation will follow.</td>
</tr>
<tr>
<td>Centralized Authentication Resiliency Enhancement (CARE)</td>
<td>Solution Analysis Complete</td>
<td>Solution analysis phase complete. Detailed design and implementation phases on hold until next fiscal year due to resource constraints.</td>
</tr>
<tr>
<td>Legacy Authorization Services Roadmap &amp; Campus Communications</td>
<td>In Progress</td>
<td>Transition and retirement roadmaps for Apollo, OHS Contacts, and DPUSER Department Contacts are being defined and will be communicated to campus.</td>
</tr>
<tr>
<td>Directory Services Roadmap</td>
<td>In Progress</td>
<td>Improvements in TED performance and reliability are in progress. Input from campus community on future TED service improvements will be gathered December to March.</td>
</tr>
<tr>
<td>TED via Web Services (ESB)</td>
<td>In Progress</td>
<td>First TED web service via ESB (public data lookup) is in development. Future services will provide secure access to confidential data and group membership lookup.</td>
</tr>
<tr>
<td>TRAC Replacement (ServiceNow)</td>
<td>Planned</td>
<td>TRAC functionality will be replaced by ServiceNow.</td>
</tr>
</tbody>
</table>
IAM Solution Selection (Complete): Select and procure new IAM software to support and enable the roadmap goals.

IAM Solution Implementation Planning: Complete high-level planning for the implementation of the software selected in the IAM Solution Selection project.

IAMMP Phase 1: Establish new technical architecture and environments for SailPoint; Develop data and interface transition strategy; Implement group and role management.

IAMMP Phase 2: Implement identity administration and provisioning, password and credential management, and assurance level management functionality.

IAMMP Phase 3: Implement access request and approval management, access recertification, and enterprise authorization reporting functionality.

Strategic Project Integration Support: Support authentication and identity data integration with University strategic projects, including Workday, TAI, ASMP application modernization, and ServiceNow.

IAM Web Central Migration: Migrate IAM web site content off of the end-of-life Web Central platform.

UTLogin Transition / CWA Retirement (Complete): Transition Central Web Authentication & Fat Cookie customers to UTLogin and retire the CWA/FC authentication system.

UTLogin OpenAM v11 Upgrade (Complete): Upgrade UTLogin to the current version of OpenAM software to address bugs, implement session management enhancements, and stay current with vendor support.

UTLogin Realm Policy Manager Enhancement (Complete): Enhance the UTLogin RPM to allow delegated administration of sites on shared hosting environments like UT Web and Windows Web Hosting.

Identity Assurance Framework Development & Implementation: Implement a framework to assist campus departments in assessing risks and selecting an appropriate level of assurance to mitigate those risks.

Toopher Pre-generated OTP Enhancement (Complete): Add the ability to use pre-generated one-time-passwords (OTPs) with Toopher.

Duo Implementation: Implement two-factor authentication using the Duo Security solution.

Lightweight Authentication & BYOID: Implement a lightweight identifier and authentication service and integrate with external identity providers (Bring Your Own Identity).

Central Authentication Resiliency Enhancement: Improve the resiliency of central authentication services by leveraging off-campus hosting.

Shibboleth v3 Upgrade: Upgrade the Shibboleth federated authentication solution to the currently supported version.

Legacy Authorization Services Roadmap & Campus Communication: Define the transition and retirement roadmaps for Apollo, OHS Contacts, and DPUSER Department Contacts systems and communicate with campus stakeholders.

Legacy Authorization Services Roadmap Implementation: Implement transition and retirement roadmaps for Apollo, OHS Contacts, and DPUSER Department Contacts systems.

TIM Server Refresh & Database Migration (Complete): Retire out-of-warranty servers and migrate to virtual server infrastructure and enterprise Oracle service.

IAM ASMP Integration Strategy (Complete): Define high-level plan for maintaining required integrations while source systems and IAM system are being replaced.

Password Security Enhancement: Improve the security of EID password storage infrastructure.

TED Server Refresh (Complete): Retire out-of-warranty servers.

WHIPS OS Upgrade / VM Refresh (Complete): Migrate to supported OS version and refresh virtual server infrastructure.

Directory Services Roadmap: Document new and evolving TED use cases and requirements and plan approach for addressing

TED via Web Services (ESB) - Phase 1: Implement an initial set of TED services on the ESB (public directory information lookup, group membership lookup, confidential directory information lookup).

ID Photos OS Upgrade / VM Refresh (Complete): Migrate to supported OS version and refresh virtual server infrastructure.

ID Card System Replacement: Modernize ID Card System and remove mainframe dependency.

TRAC Saturn/Gemini Retirement (Complete): Retire use of out-of-warranty servers.

TRAC UTS Retirement (Complete): Migrate TRAC functions off end-of-life UTS service.

SDS UTS Retirement (Complete): Migrate SDS functions off end-of-life UTS service.

TRAC Replacement (ServiceNow): Replace TRAC functionality with ServiceNow.

Apps Build Server Maintenance (Complete FY14-15): Maintenance and enhancements required to support ITS Applications software build and testing infrastructure.