Connecting the IT Dots

December 7, 2016
Gutman Conference Center
Agenda

• Introductions

• Jason Snyder and Erica Bradshaw: Moving Harvard to the Cloud

• Ann Lurie: Enterprise Architecture

• Ellen Gulachenski: ITCRB Update
Agenda

• Why cloud?
• A new vision
• New services and offerings
• How we’ll get there
• Timeline
• Next steps
Current State

Expensive

- High fixed costs, decreasing datacenter revenue, and non-competitive rates create financial pressure.

Non-standardized

- Too many IT solutions, tools and vendors, make it hard to integrate, secure, and operate our applications

Vulnerable

- Lack of disaster recovery for critical applications and the close proximity of our network core create operating risk.
**Why Cloud?**

**Cost Effective**
- High fixed costs, decreasing datacenter revenue, and non-competitive rates create financial pressure.
- Close the data center
- Migrate to the Cloud

**Standardized**
- Too many IT solutions, tools and vendors, makes it hard to integrate, secure, and operate our applications
- Create application patterns & standards
- Offer new services

**Resilient**
- Lack of disaster recovery for critical applications and the close proximity of our network core create operating risk.
- Implement Cloud DR capabilities
- Relocate the network core
Cloud is Already Happening

HUIT Cloud Program

- ~200 Applications Migrated
- Implemented Cloud Shield
- PeopleSoft and Oracle Financials in the cloud application by end of FY17

University

- SaaS is everywhere: SalesForce, ServiceNow, Canvas
- Office365 and my.harvard are in the Cloud
- Departments and schools are expressing interest in migrating their data centers (UHS, HMS)
A New Vision

Enterprise Cloud Program

To make it easy for the Harvard Community to realize the **transformative benefits of the Cloud** through **enabling adoption** and **providing common services** that are secure, cost-effective, and reliable.

<table>
<thead>
<tr>
<th>Strategic Objectives</th>
<th>Guiding Principles</th>
<th>Key Performance Indicators</th>
</tr>
</thead>
<tbody>
<tr>
<td>• <strong>Create a coherent University cloud presence</strong> by using standard architectures, common contracts, and providing expert direction</td>
<td>• We prefer to buy or broker cloud solutions over building our own.</td>
<td>• Reduction in number of disparate IT cloud solutions</td>
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<tr>
<td>• <strong>Improve IT service delivery</strong> by providing new cloud based services that deliver security and value to the University</td>
<td>• We will provide the opportunity to adopt innovative cloud solutions supported by the best positioned School</td>
<td>• % reduction in the number of security findings in annual IT audits</td>
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<tr>
<td>• <strong>Reduce costs</strong> by closing expensive on premise data center and lowering the cost per unit of compute</td>
<td>• We will assess University-wide viability and ascertain clear value for any centralized service prior to implementation efforts</td>
<td>• % increase in the uptime of critical IT services during upgrades, crisis, or maintenance</td>
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<td></td>
<td>• We will actively seek out cost reduction and optimization solutions</td>
<td>• Reduction in service costs over on premise deployed solutions</td>
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<td></td>
<td>• We will manage vendor lock-in and ensure safeguards are in place to prevent unnecessary risk</td>
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New Services and Offerings

<table>
<thead>
<tr>
<th>CURRENT</th>
<th>FUTURE SERVICES</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>End User Computing</strong></td>
<td><strong>End User Computing</strong></td>
</tr>
<tr>
<td>Collaboration Services</td>
<td>Collaboration Services</td>
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<tr>
<td>Email and Calendars</td>
<td>Email and Calendars</td>
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<tr>
<td>Field Support Services</td>
<td>Field Support Services</td>
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<tr>
<td>Network Services</td>
<td>Network Services</td>
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<tr>
<td>Phone Services</td>
<td>Phone Services</td>
</tr>
<tr>
<td><strong>IT Provider Services</strong></td>
<td><strong>IT Provider Services</strong></td>
</tr>
<tr>
<td>Cloud Services</td>
<td>Cloud Services</td>
</tr>
<tr>
<td>HUIT Supporting Tools and Systems</td>
<td>HUIT Supporting Tools and Systems</td>
</tr>
<tr>
<td>Identity and Access Services</td>
<td>Identity and Access Services</td>
</tr>
<tr>
<td>Network Services</td>
<td>Network Services</td>
</tr>
<tr>
<td>Phone Services</td>
<td>Phone Services</td>
</tr>
<tr>
<td><strong>Server Administration</strong></td>
<td><strong>Storage (new)</strong></td>
</tr>
<tr>
<td>Web Hosting</td>
<td><strong>Platform and Tools (new)</strong></td>
</tr>
<tr>
<td><strong>IT Security</strong></td>
<td><strong>Web Hosting</strong></td>
</tr>
<tr>
<td>Information Security Education and Consulting</td>
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</tr>
</tbody>
</table>

**FUTURE SERVICE OFFERINGS**

**Cloud Services**
- **Cloud Foundations Bundle** *(HarvardKey, Cloud Shield, IP, Direct Connect, Integration)*
- **Cost Engineering and Monitoring**
- **Hosting** *(Embedded DevOps)*
- **Consulting**
Two-step Migration Strategy

Today:
Implement “Cloud First”

HUIT Cloud Program Team

Step 1:
Migrate and Consolidate

Application Teams

Step 2:
Optimize and Automate
Timeline

Accelerate

FY17

- Form planning workgroups
- Contract external consulting expertise to assist with migrations
- Develop automation patterns for reuse and standardization

Migrate

FY17

- Pilot embedded DevOps and capture lessons learned
- Aggressively remediate and migrate applications

Launch

FY18

- Launch mandatory foundation services
- Continue the launch of new services and financial models

Relocate

FY19

- Close 60 Oxford St data center
- Relocate network core and on prem systems
- Optimize applications
Next Steps

Executive Committee
Co-Chair: Anne Margulies
Co-Chair: Jason Snyder
Members: Workgroup Chairs, Jason Shaffner, Mike Milligan, Mitch Rogers, Ellen Gulanchenski

Project Coordination Team
Erica Bradshaw, Hellen Zziwa, Xenia Parker, Melissa Lucius, Juliana DiLuca, Matt Mazer
Agile Coach: Tamara Larsen

Workgroups

Cloud Services
Co-Chair: Erica Bradshaw (Cloud Program Director)
Co-Chair: Jefferson Burson (ITS)
Scrum Master: Matt Mazer

Technology and Security
Co-Chair: Jason Snyder (CTO)
Co-Chair: Christian Hamer (Security)
Scrum Master: Xenia Parker

Finance
Chair: Penny Kaligian (Finance)
Scrum Master: Hellen Zziwa

Human Resources
Co-Chair: Karen Pemstein (HR)
Co-Chair: Nicole Breen (HR)
Scrum Master: Melissa Lucius

Communications
Co-Chair: Acacia Matheson (HPAC)
Co-Chair: Stephanie Gumble (Administration)
Scrum Master: Juliana DiLuca

Chair: Serves as product owner (the voice of the customer) add prioritizes orders backlog (work) and accepts complete work
Scrum Master (SM): Removes roadblocks, raises issues, and ensures team is following Scrum
Next Steps

• **Making our work visible to the IT community**
  – Monthly communication and sprint readouts starting in January
  – Common Collaboration space for news and updates

• **Building our services**
  – Publishing a Service Roadmap
  – Prioritizing Cost Engineering and Monitoring, Cloud Backups and the Cloud Foundations Bundle as the first offerings to be defined

• **Continue accelerated migrations**
  – Continue with application remediation and migration to AWS to meet FY18 objective for HUIT managed applications
  – Plan Sungard decommissioning in FY17
Questions or Comments?
Agenda

- Why Enterprise Architecture
- Vision
- Approach
Why Enterprise Architecture

• **Problem Statement:**
  – Too many people doing similar things in different ways creates unsustainable complexity that increases cost and risk over time

• **Goals:**
  – Reduce complexity
  – Lower costs
  – Create standard patterns
  – Define a common artifact to align on
## Enterprise Architecture Vision - Revised

### Our Vision for Harvard’s Enterprise Architecture

Articulate and drive to common solutions, standards, and opportunities for alignment in order to reduce IT complexity and cost across the University and enable local innovation.

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<tr>
<th>Strategic Objectives</th>
<th>Guiding Principles</th>
<th>Key Performance Indicators</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Articulate a set of Principles and Standards aligned to each architecture layer</td>
<td>• Allow real needs of working teams to drive EA focus</td>
<td>• Decrease in project delivery timeframes</td>
</tr>
<tr>
<td>• Organize existing and future reference artifacts and patterns in a library that aligns with the Principles and Standards</td>
<td>• Work across organizational units to find opportunities for alignment</td>
<td>• Increased use of common solutions</td>
</tr>
<tr>
<td>• Engage with University teams strategically to advance and support elements of the Enterprise Architecture</td>
<td>• Evolve architecture with advances in technology</td>
<td>• Increase the number of projects that align to EA Principles</td>
</tr>
<tr>
<td>• Cultivate a Community of Practice for architecture</td>
<td>• Seek feedback broadly from University colleagues and peer institutions</td>
<td>• Use of common data sources and ways of working with data</td>
</tr>
</tbody>
</table>

Articulate and drive to common solutions, standards, and opportunities for alignment in order to reduce IT complexity and cost across the University and enable local innovation.
Meeting with University of Washington EA

- Jason, Ann and EA team met with Jim Phelps, who leads UW’s EA effort and the ITANA group
- “If you only do one thing…”

<table>
<thead>
<tr>
<th>Advice</th>
<th>Action</th>
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<tbody>
<tr>
<td>“Meet with your senior leaders to understand what they need, and what their vision for the future is.”</td>
<td>Meet individually with CIOs to discuss two topics:</td>
</tr>
<tr>
<td></td>
<td>● “What can EA do for you?” (Pain points)</td>
</tr>
<tr>
<td></td>
<td>● “What do you want the future to look like?” (Vision)</td>
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</tbody>
</table>
Approach to Enterprise Architecture

• The vision says what we are hoping to achieve
  – We will be telling people how to implement technology more often, more deliberately

• Translating the vision into concrete action requires answering the question
  – “What should we tell people to do?”

• We will answer this question in two ways
  – Through a framework of Principles and Standards that define the most important architectural considerations for each layer
  – By engaging with teams who have real problems that Enterprise Architecture can solve
Framework Elements

Layers

Security

User Experience
Applications and Software Components
Interoperation
Data
Middleware
Infrastructure and Iaas
Networking

General Principles & Standards

User Experience Principles
Standards
Resources
Security Principles
Standards
Resources
Sample Framework Content

Layer: Interoperation

Principle: Reduce one-off integrations and use common interfaces.

Standard: Write and share MuleSoft-friendly APIs for data exchange.

Library of Resources, Patterns, and Reference Artifacts:
- ETAB Publication: Guidelines for API Development
- DMS program service: MuleSoft
- Code for existing APIs shared in common repo
- Checklist for vendor-managed APIs for COTS and SaaS solutions
- ...
How We Engage and Partner with Teams

**Problem Statement:**
Lack of architectural standards make things harder for delivery teams

**Assessment:**
Would addressing the problem statement accelerate development and adoption of EA standards?

**Outcome for Teams:**
A solution that addresses the need articulated in the problem statement

**Outcome for IT Community:**
- Specific solutions generalized into standards and reference architecture
- Case study describes relationship of new standard to EA goals
How to Get Involved

• Website
  – Currently under construction
  – The eventual home for the Principles, Standards and Resources

• ETAB
  – A group for decision-making and policy-setting
  – Anyone can add to the ETAB backlog
  – Join the group. Contact Ann at: ann_lurie@harvard.edu

• Partner with EA
  – Contact Ann at: ann_lurie@harvard.edu
Questions or Comments?
ITCRB Update

Ellen Gulachenski
## ITCRB Timeline

<table>
<thead>
<tr>
<th>ITCRB/PRC Activity</th>
<th>FY17</th>
</tr>
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<tbody>
<tr>
<td>1. PMs submit “Intent to Submit”</td>
<td></td>
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<tr>
<td>2. List of potential proposals distributed to Fin Deans, CIO Council, ITCRB, Central Finance</td>
<td></td>
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<tr>
<td>3. Strategic IT Goals and Roadmaps due</td>
<td></td>
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<tr>
<td>4. Organizational Impact reviews</td>
<td></td>
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<tr>
<td>5. Tech reviews are completed: Architecture</td>
<td>Security</td>
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<tr>
<td>6. Proposals due to HUIT PMO</td>
<td></td>
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<tr>
<td>7. PRC Review Meetings</td>
<td></td>
</tr>
<tr>
<td>11. ITCRB Review Meetings</td>
<td></td>
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<tr>
<td>12. Memo with funding recommendations sent to EVP</td>
<td></td>
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<tr>
<td>13. EVP allocates funding</td>
<td></td>
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</tbody>
</table>
## Proposals Submitted for FY18

<table>
<thead>
<tr>
<th>Title</th>
<th>Org</th>
<th>Proposed Spend (in 000s)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>FY18</td>
</tr>
<tr>
<td>Active Directory Security Improvements</td>
<td>HUIT</td>
<td>$2,000</td>
</tr>
<tr>
<td>Broadcast Communications</td>
<td>CS</td>
<td>$1,000</td>
</tr>
<tr>
<td>Buy to Pay</td>
<td>FAD</td>
<td>$525</td>
</tr>
<tr>
<td>Centralized Video Storage Service Planning and Start-Up</td>
<td>HUIT</td>
<td>$1,500</td>
</tr>
<tr>
<td>Class Reports Production Platform</td>
<td>AA&amp;D</td>
<td>$310</td>
</tr>
<tr>
<td>Collaboration – Administrative File Sharing</td>
<td>HUIT</td>
<td>$1,500</td>
</tr>
<tr>
<td>Data Management Program</td>
<td>HUIT</td>
<td>$4,996</td>
</tr>
<tr>
<td>Financial Invoicing and Reporting Strategic Transition (FIRST) (fka FRAP)</td>
<td>FAD</td>
<td>$1,322</td>
</tr>
<tr>
<td>Integration of Campus Service Time Tracking Systems with PeopleSoft</td>
<td>HHR</td>
<td>$600</td>
</tr>
<tr>
<td>New CRM for University-Wide AAD</td>
<td>AA&amp;D</td>
<td>$750</td>
</tr>
<tr>
<td>Position Management with Retroactive Salary Distribution</td>
<td>HHR</td>
<td>$500</td>
</tr>
<tr>
<td>Title IX Awareness and Engagement Platform</td>
<td>OPP</td>
<td>$600</td>
</tr>
<tr>
<td><strong>TOTAL:</strong></td>
<td></td>
<td>$15,603</td>
</tr>
</tbody>
</table>
Questions or Comments?
Key Dates

• December 16: Last day to nominate for Dean’s Distinction Award

• December 20: HUIT Holiday Celebration
Thank you!