Approach for Enterprise Architecture Executive Committee
Agenda

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# The EA Vision

## Our Vision for Enterprise Architecture

Provide a technology framework and a set of standards to enable acquisition, development, and deployment of IT services that maximize interoperation, minimize duplication, and simplify the IT environment across all of Harvard.

## Strategic Objectives

- Deliver an enterprise architecture framework that drives technology and development standards across Harvard
- Provide common approaches for integration across enterprise applications, processes, and data
- Align and rationalize technology decisions and investments
- Identify redundant or conflicting processes and data across organizations

## Guiding Principles

- Ensure that EA provides active direction and delivers value to the organization
- Counter complexity with common solutions
- Enable sharing of data across organizations
- Preference for open-source, COTS, and programmatic interfaces — both in what we obtain and what is produced
- Encourage, define, and ultimately provide best-practice solutions
- Evolve framework and solutions with advances in technology

## Key Performance Indicators

- Decrease in project delivery timeframes to production
- Increase in the number of integrated applications using programmatic interfaces
- Increase in the number of funded projects that conform to an EA Checklist
- Decrease in ad-hoc data sharing
- Increase in automated data exchange
- Increase in the number of known authoritative data sources
- Decrease in the number of copies of data
# Milestones for EA at Harvard

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<tr>
<th>HUIT Top 40 Goal</th>
<th>EA Milestones</th>
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| 20. Establish an IT enterprise architecture          | *Oct 2014:* Launch EA strategic initiative, including vision and strategic plan  
                                                        | *Dec 2014:* Define a Harvard EA framework to incorporate key elements in principles, data, integration, and technology architecture  
                                                        | *March 2015:* Conduct a current state analysis on integration to identify data passed between enterprise applications and the means of exchange |
| 21. Implement an architecture review process         | *Sept 2014:* Identify a set of technical architects who can undertake architectural reviews  
                                                        | *Oct 2014:* Review and refresh PRC technical review process  
                                                        | *Dec 2014:* Review and refresh ITCRB technical review process |
# Governance

## Enterprise Architecture Executive Committee

IT executives who ensure that the vision and plan are addressed by the working group. Also provides consistent direction and problem-solving approaches for the working group and the EA program at large. Meets monthly.

**Co-Chairs:** Anne Margulies and Stephen Gallagher

**Members:** Scott Bradner, Ben Gaucherin, Stephen Ervin, Gabriele Fariello, Praneeth Machettira, Pratike Patel, Jason Shaffner, Jason Snyder, Jim Waldo, Bob Wittstein

## Enterprise Architecture Working Group

- Technical members of HUIT, Harvard Schools, and other IT departments that meet on a regular basis
- Defines the Enterprise Architecture framework for review by Steering Committee
- Builds and reviews other EA components as per vision
- Publishes a monthly report on enterprise architecture progress, issues, and direction for the organization

**Chair:** Jason Snyder

**Members:** Scott Bradner, Bill Brickman, Dan Kaplan, Arnold Paul, Robert Piscitello, Jon Saperia, Raoul Sevier
## Definition of Terms

<table>
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<tr>
<th>EA Layers</th>
<th>Definition</th>
<th>Examples</th>
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<tr>
<td>User Experience</td>
<td>End-user look-and-feel and navigation style of an application or service.</td>
<td>UX includes the appearance of the Harvard brand, color schemes, use of ‘bread crumbs’, position and appearance of ‘navigation bars’.</td>
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<td>Applications, services, SaaS</td>
<td>Algorithms and code that provide technical or business value.</td>
<td>Large-scale applications such as Student Information Systems (SIS), small applications such as Electronic Submission Tracking and Reporting (ESTR), services such as Informatica for data transfers, and Software-as-a-Service solutions such as Office365.</td>
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<td>Interoperability</td>
<td>Exchanges of information and provisioning of business transactions between different applications and services.</td>
<td>Examples of information exchanges include transfers of student registration from SIS systems to central directories and transfer of account balance values from financial systems to CRM systems. An example of a remote service is the Identity and Access Management service for Authentication.</td>
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<tr>
<td>Data</td>
<td>Information represented in formats that are managed by applications and services.</td>
<td>Data includes structured information such as student records and general ledger financial data. Examples of unstructured data include electronic books, the content of wikis, and most of the information available from the internet.</td>
</tr>
<tr>
<td>Middleware</td>
<td>Common business or technical services that are implemented separately from applications and services.</td>
<td>Database technologies are the most common example of middleware, but this layer can also include reporting ‘engines’, rules ‘engines’, application servers, data transfer applications, and other common shared services.</td>
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<tr>
<td>Infrastructure</td>
<td>Hardware and virtualized platforms that operate applications, services, and their components.</td>
<td>Servers, associated storage components, operating systems, and other computing devices are the common examples of infrastructure, more recently joined by ‘cloud’-based infrastructures of Platform-as-a-Service and Infrastructure-as-a-Service.</td>
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<tr>
<td>Networks</td>
<td>Communications technologies that join infrastructures in disparate locations.</td>
<td>Technologies that allow computing devices to communicate with each other include wired and wireless communications supported by devices such as routers, switches, and naming services.</td>
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<td>Security</td>
<td>Use of resources by authorized individuals and computing services to information, business functions, and computing services.</td>
<td>Examples of security mechanisms include door locks, user IDs and passwords, and intrusion detection/prevention tools. These mechanisms are supported by applications and services that manage user and systemic authentication, authorization, access to functionality, and access to data.</td>
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| EA Processes | Definition                                                                 | Examples                                                                                                                                                                                                 | |
|--------------|---------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Principles   | Foundational elements to drive decision-making and alignment.              | Principles can be applied at many levels, from ‘guiding principles’ that characterize strategic, enterprise-wide systemic behavior, to principles that help explain detailed technical behaviors of applications and services. |
| Methodologies | Methodologies divide IT work into phases containing activities with the intent of better planning and management. They help determine which methods or “best practices” should be applied to specific cases. They may include specific deliverables and artifacts. | Examples of IT methodologies include waterfall, prototyping, iterative and incremental development, spiral development, rapid application development, extreme programming and agile. |
| Advisories   | Recommendations offered as a guide to specific actions or practices         | Common examples of advisories include security notifications of newly discovered vulnerabilities with recommendations for patching systems or changing passwords, and announcements of changes to the features, forms, or functions of applications. |
| Patterns     | Generic models or descriptions from which specific implementations can be based or derived. | In the IT context, patterns include reusable approaches for connecting applications to databases, establishing user security within an application, and implementing user experience in a solution. |
| Reference Architectures | A template solution, using multiple patterns and a vocabulary that promotes commonality, defining an architecture for a particular domain. | Examples of business reference architectures include Insurance Application Architecture for the Insurance domain, and ‘HL7 V2.5’ for the Electronic Health Record domain. An example of a technical reference architecture is the Java Enterprise Edition for IT systems construction. |
| Outreach     | Elevating awareness of programs and initiatives to affected populations.    | Examples of broadly-focused outreach include ABCD meetings on many IT topics, while more narrowly focused outreach include ‘Big Group’ meetings regarding IT skills upgrades. |
| Training     | The acquisition of knowledge and skills as a result of teaching that relates to specific competencies, with the goals of improving an individual’s productivity and performance. | IT training of techniques could include database design, software coding in node.js, and process modeling with BPMN. Examples of vendor tool training could include Oracle Financials, Peoplesoft, and Informatica ETL. |
Architecture Maturity

Focus on Architecture as a Process

Establish the Enterprise Architecture outcomes on a maturity scale in order to deliver value at all stages of the program.

Enterprise Architecture at Harvard - Maturing Architecture Frameworks

DRAFT — For Discussion Only

Informal EA Program
- Enterprise-wide scope of EA agreed, but adoption and implementation is limited.
- Risk assessments drive EA practice.
- Interoperability requirements.
- Architecture contracts in place.
- Metrics are used to measure impact.
- Interoperability requirements.
- Architecture vision inconsistent and difficult to evolve.
- Architecture depends on individual contributors.
- Lack of consistent business, application, and technology architectures across organizations.
- Little communication or sharing across organizations.

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Enterprise Architecture Maturity

Well Defined EA Program
- Governance committees become formal.
- Architecture skills framework in place.
- Organizations use templates to capture information.
- Cross organization reference library in place.
- Standards information base in place.
- Interoperability patterns based on past effective solutions in place.
- EA compliance process is followed consistently, with exception and change processes.
- Interoperability requirements consistent in strategic planning and budgeting processes.

Enterprise Architecture Maturity

Continuously Improved EA Program
- EA culture is well defined.
- Architecture processes and tools used in all solution development.
- Integration and sharing of information.
- Architecture skills framework in place.
- Organizations use templates to capture information.
- Cross organization reference library in place.
- Standards information base in place.
- Interoperability patterns based on past effective solutions in place.
- EA compliance process is followed consistently, with exception and change processes.
- Interoperability requirements consistent in strategic planning and budgeting processes.
Initial EA Next Steps

**Initial Next Steps for Enterprise Architecture**

Establish the Enterprise Architecture Working Group, begin current state assessments, and establish collaboration mechanisms with initial deliverables.

**• EA Working Group**
  - Kick-off Working Group scheduled for December 11
  - Tasked to:
    - Validate maturity metrics
    - Develop Principles
    - Identify layered implementation approaches
    - Develop a schedule for deliverables

**• Working group organization**
  - Hire additional resources including:
    - UX Architect
    - Senior Cloud Engineer
    - EA Program Lead
    - Others as determined by the teams.

**• Current State Work**
  - Analysis on Integration
    - Conduct a current state analysis on integration to identify data passed between enterprise applications and the means of exchange.
Questions or comments?
Thank you!

HARVARD UNIVERSITY

Information Technology