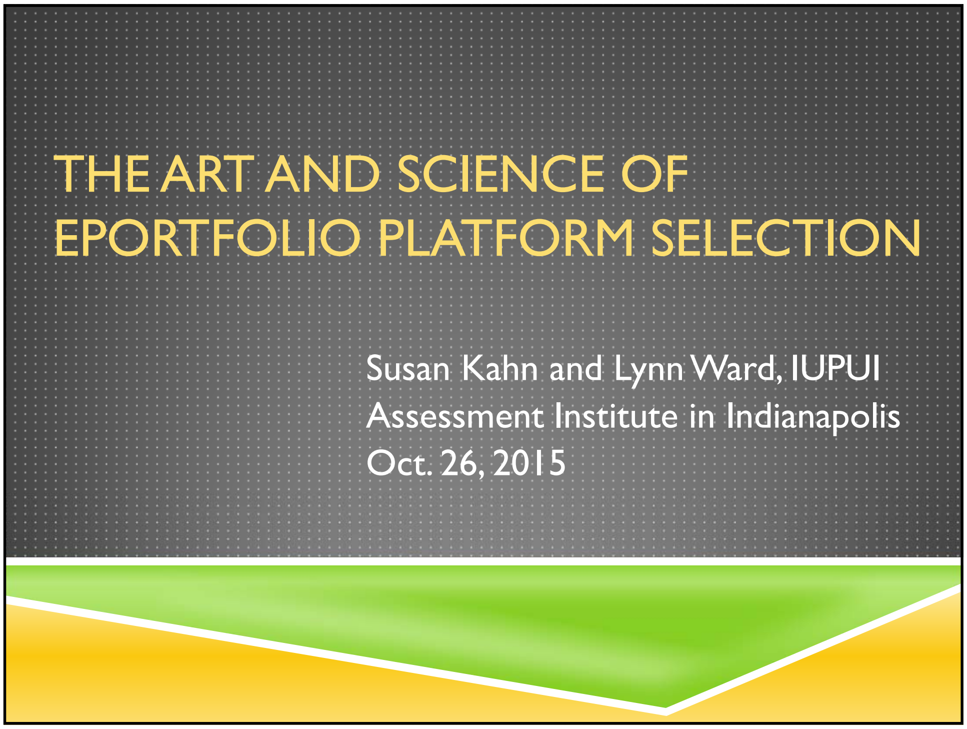


THE ART AND SCIENCE OF EPORTFOLIO PLATFORM SELECTION

Susan Kahn and Lynn Ward, IUPUI

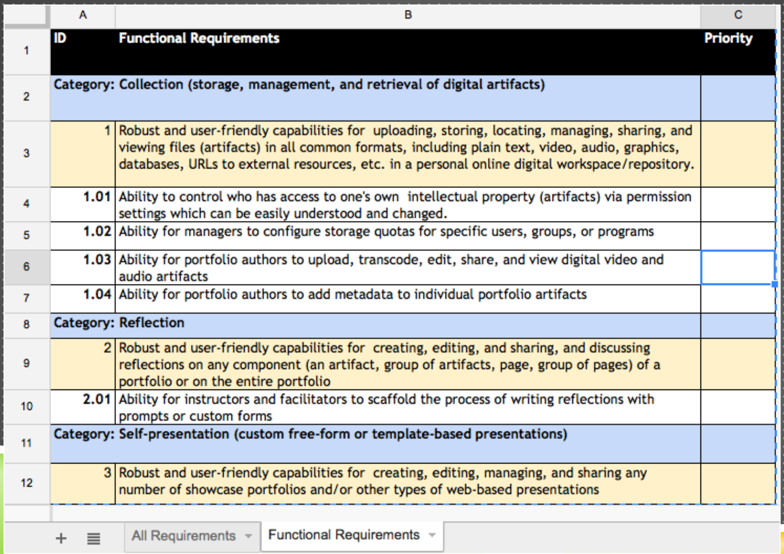
Assessment Institute in Indianapolis
Oct. 26, 2015

PART I:
SELECTION CONSIDERATIONS

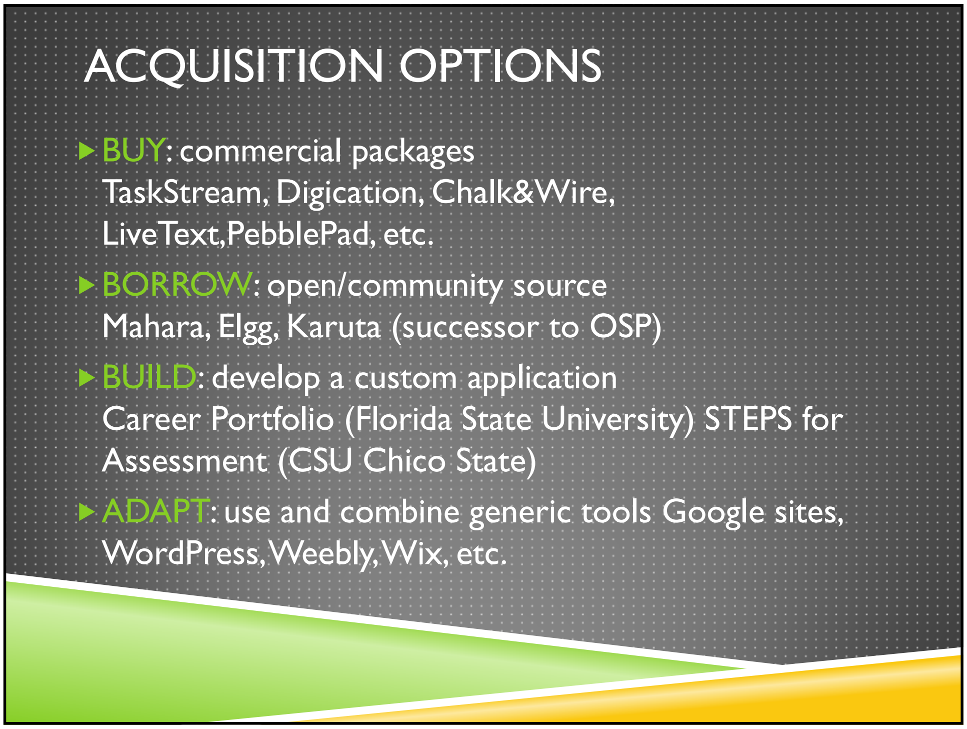
PUT USER NEEDS FIRST

- Who are your users and stakeholders?
- What are their needs and expectations?
- How will the ePortfolio be used and for what purpose?
- Focus on functional needs (what they need to do), not technical (how they need/want to do it)
- Create a needs matrix and prioritize (must have, should have, nice to have) and use it to develop RFI/RFP and evaluate solutions

NEEDS MATRIX

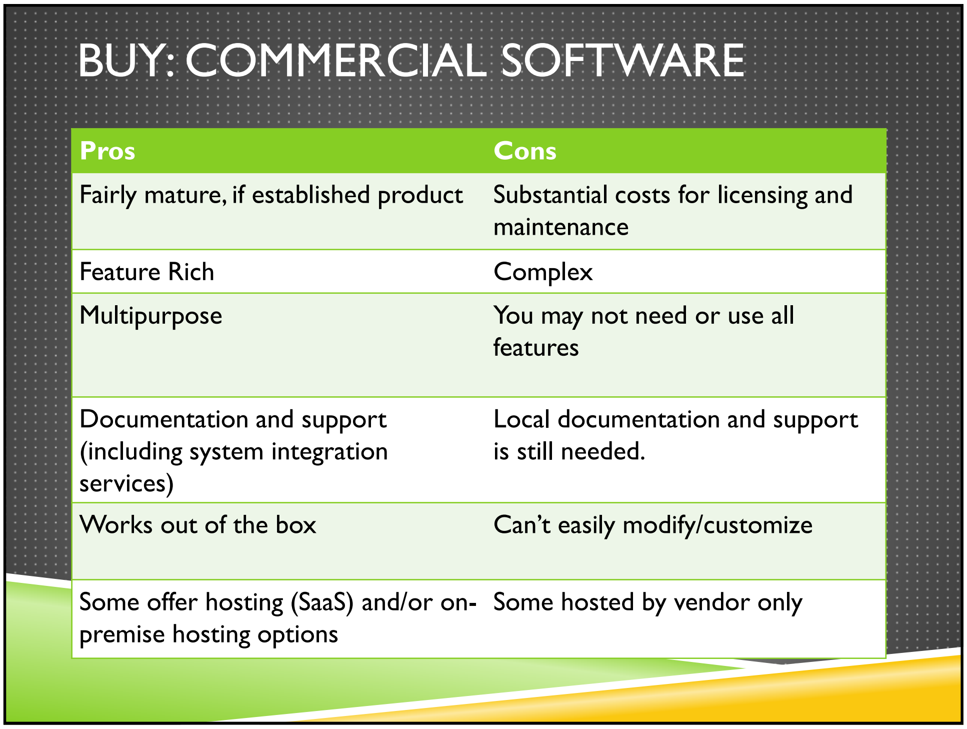


ID	Functional Requirements	Priority
Category:	Collection (storage, management, and retrieval of digital artifacts)	
1	Robust and user-friendly capabilities for uploading, storing, locating, managing, sharing, and viewing files (artifacts) in all common formats, including plain text, video, audio, graphics, databases, URLs to external resources, etc. in a personal online digital workspace/repository.	
1.01	Ability to control who has access to one's own intellectual property (artifacts) via permission settings which can be easily understood and changed.	
1.02	Ability for managers to configure storage quotas for specific users, groups, or programs	
1.03	Ability for portfolio authors to upload, transcode, edit, share, and view digital video and audio artifacts	
1.04	Ability for portfolio authors to add metadata to individual portfolio artifacts	
Category:	Reflection	
2	Robust and user-friendly capabilities for creating, editing, and sharing, and discussing reflections on any component (an artifact, group of artifacts, page, group of pages) of a portfolio or on the entire portfolio	
2.01	Ability for instructors and facilitators to scaffold the process of writing reflections with prompts or custom forms	
Category:	Self-presentation (custom free-form or template-based presentations)	
3	Robust and user-friendly capabilities for creating, editing, managing, and sharing any number of showcase portfolios and/or other types of web-based presentations	



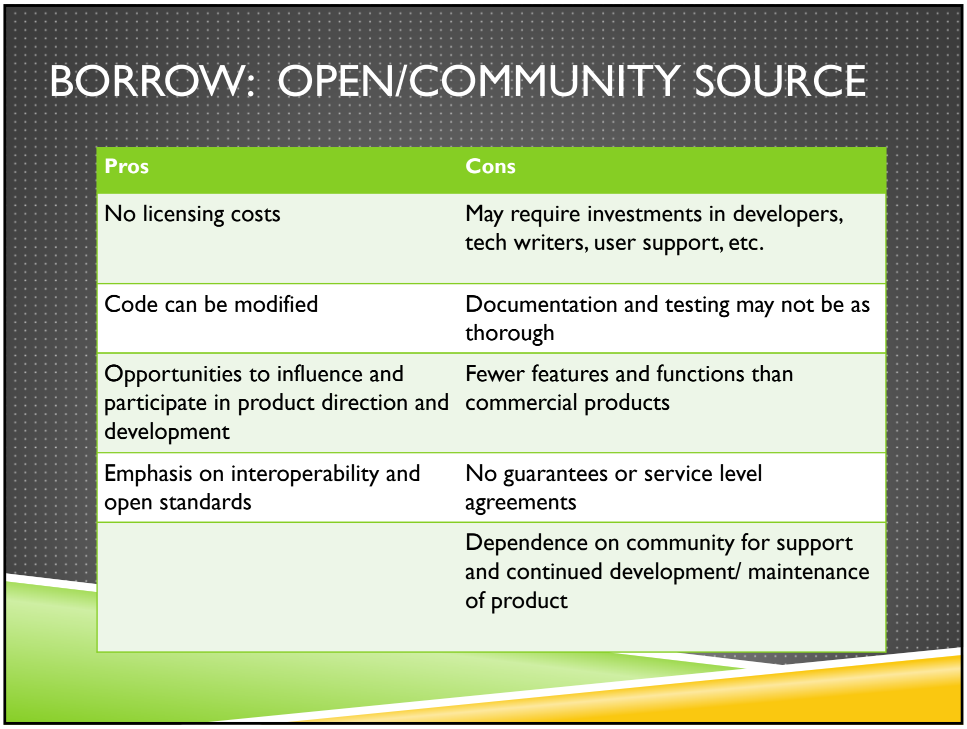
ACQUISITION OPTIONS

- BUY: commercial packages TaskStream, Digication, Chalk&Wire, LiveText,PebblePad, etc.
- BORROW: open/community source Mahara, Elgg, Karuta (successor to OSP)
- BUILD: develop a custom application Career Portfolio (Florida State University) STEPS for Assessment (CSU Chico State)
- ADAPT: use and combine generic tools Google sites, WordPress, Weebly, Wix, etc.



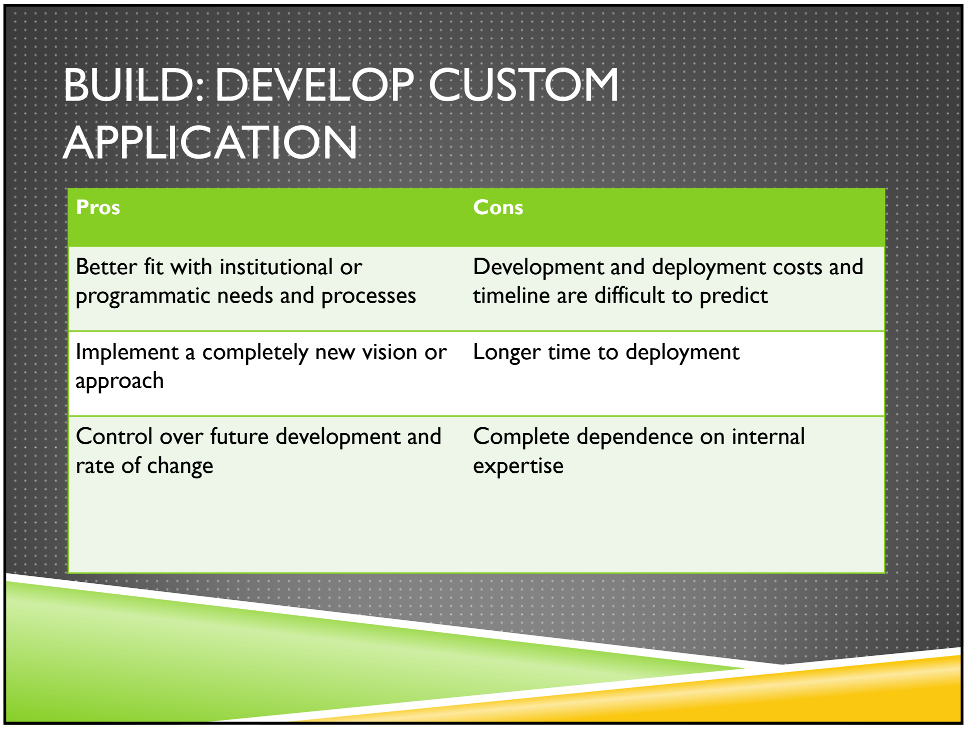
BUY: COMMERCIAL SOFTWARE

Pros	Cons
Fairly mature, if established product	Substantial costs for licensing and maintenance
Feature Rich	Complex
Multipurpose	You may not need or use all features
Documentation and support (including system integration services)	Local documentation and support is still needed.
Works out of the box	Can't easily modify/customize
Some offer hosting (SaaS) and/or on-premise hosting options	Some hosted by vendor only



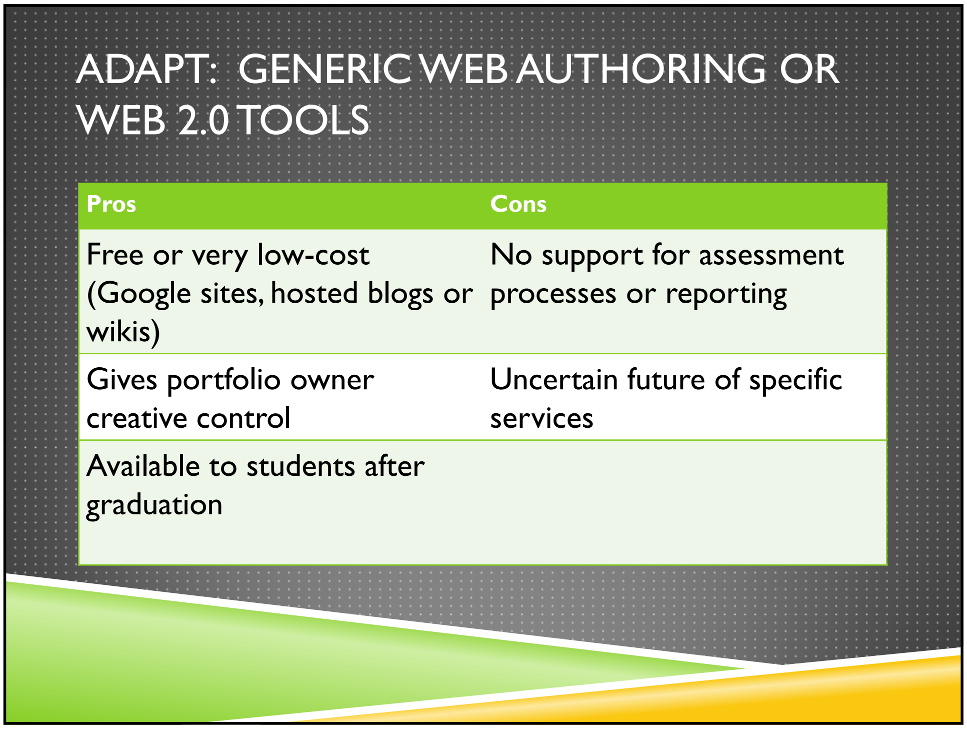
BORROW: OPEN/COMMUNITY SOURCE

Pros	Cons
No licensing costs	May require investments in developers, tech writers, user support, etc.
Code can be modified	Documentation and testing may not be as thorough
Opportunities to influence and participate in product direction and development	Fewer features and functions than commercial products
Emphasis on interoperability and open standards	No guarantees or service level agreements
	Dependence on community for support and continued development/ maintenance of product



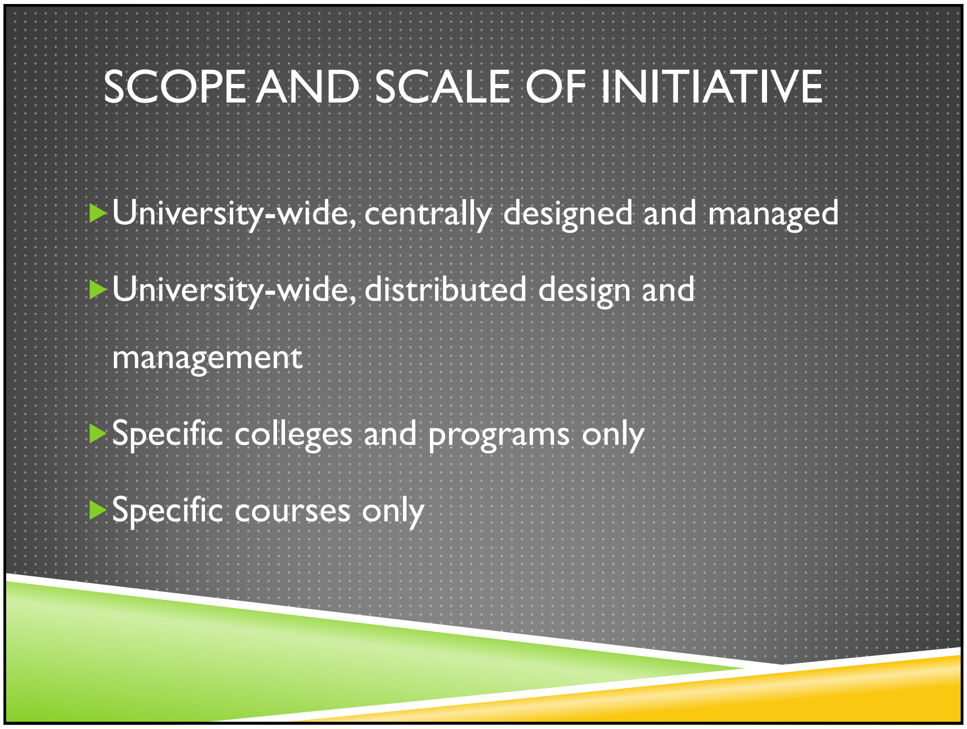
BUILD: DEVELOP CUSTOM APPLICATION

Pros	Cons
Better fit with institutional or programmatic needs and processes	Development and deployment costs and timeline are difficult to predict
Implement a completely new vision or approach	Longer time to deployment
Control over future development and rate of change	Complete dependence on internal expertise



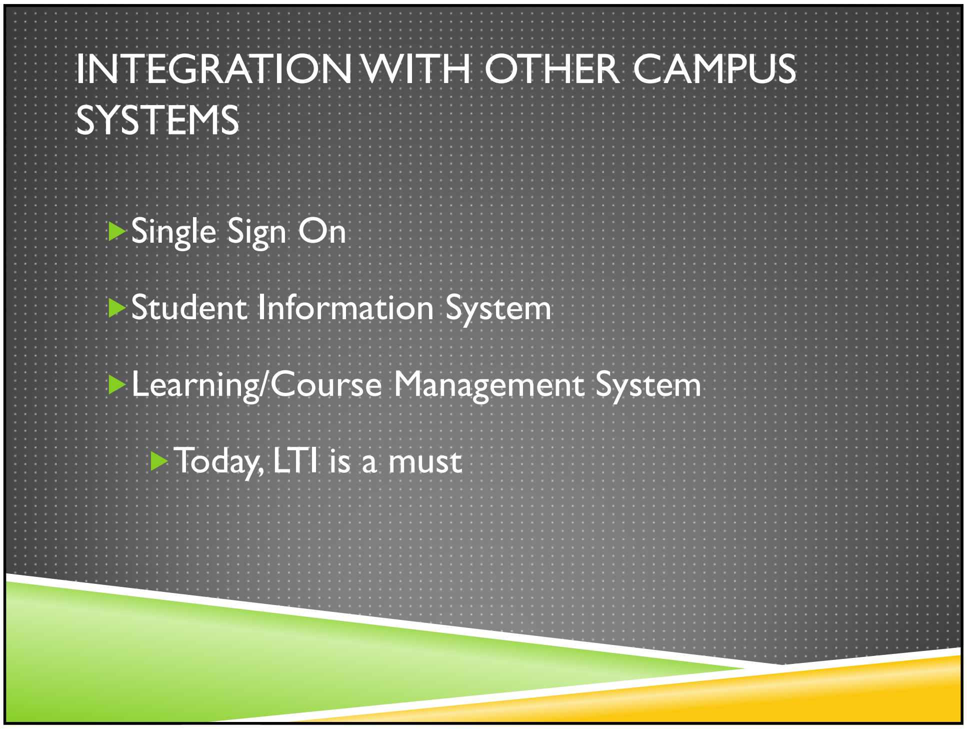
ADAPT: GENERIC WEB AUTHORING OR WEB 2.0 TOOLS

Pros	Cons
Free or very low-cost (Google sites, hosted blogs or wikis)	No support for assessment processes or reporting
Gives portfolio owner creative control	Uncertain future of specific services
Available to students after graduation	



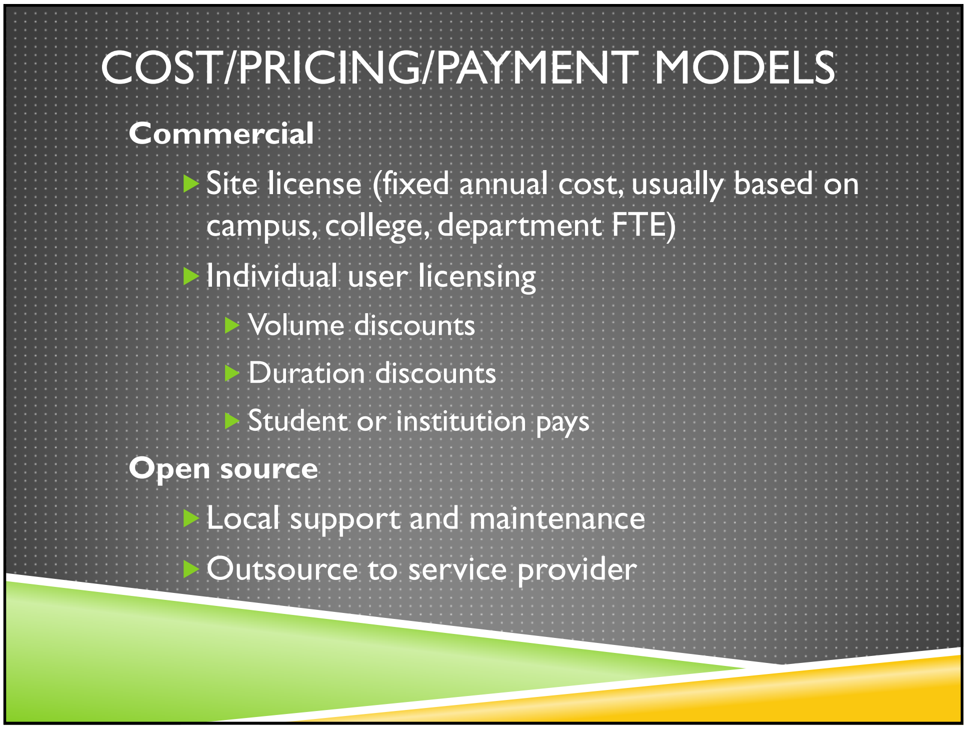
SCOPE AND SCALE OF INITIATIVE

- University-wide, centrally designed and managed
- University-wide, distributed design and management
- Specific colleges and programs only
- Specific courses only



INTEGRATION WITH OTHER CAMPUS SYSTEMS

- Single Sign On
- Student Information System
- Learning/Course Management System
  - Today, LTI is a must



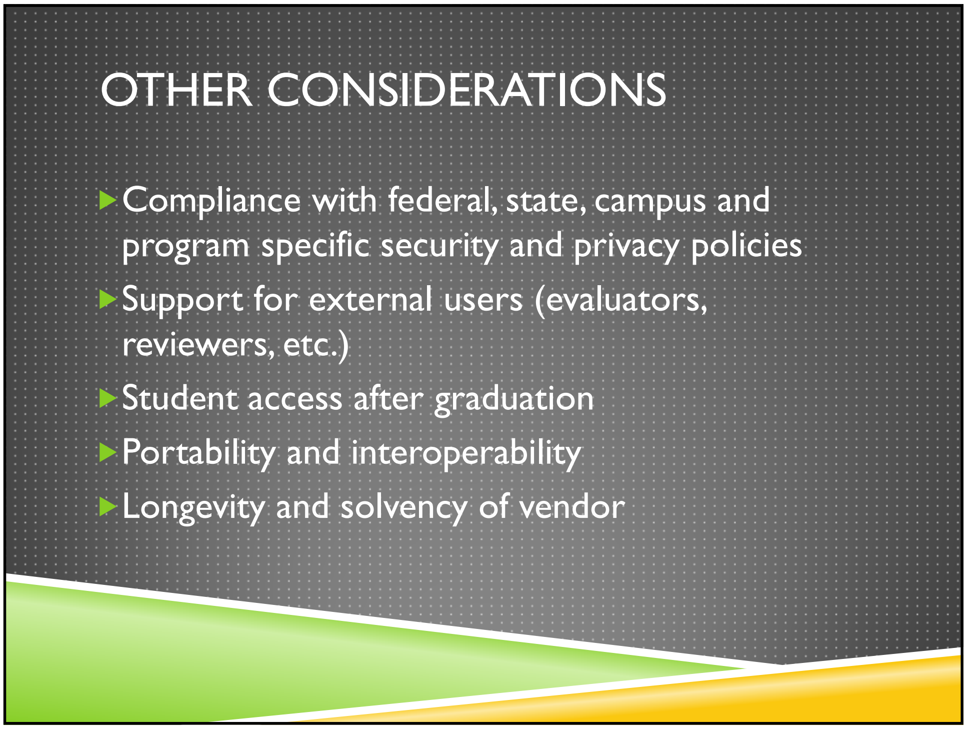
COST/PRICING/PAYMENT MODELS

Commercial

- Site license (fixed annual cost, usually based on campus, college, department FTE)
- Individual user licensing
  - Volume discounts
  - Duration discounts
  - Student or institution pays

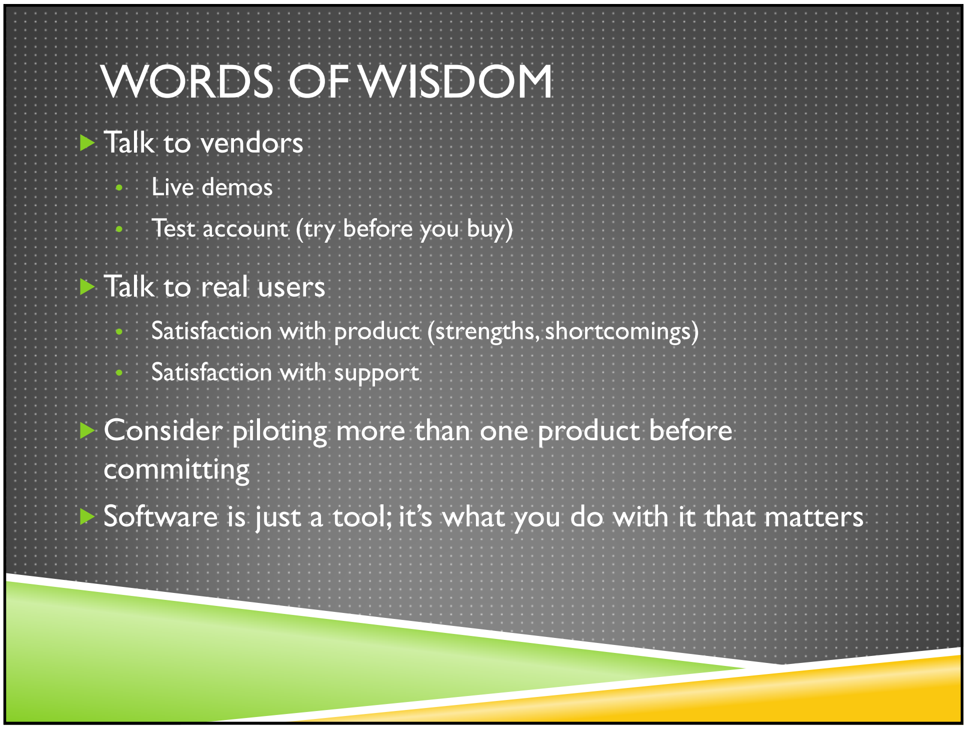
Open source

- Local support and maintenance
- Outsource to service provider



OTHER CONSIDERATIONS

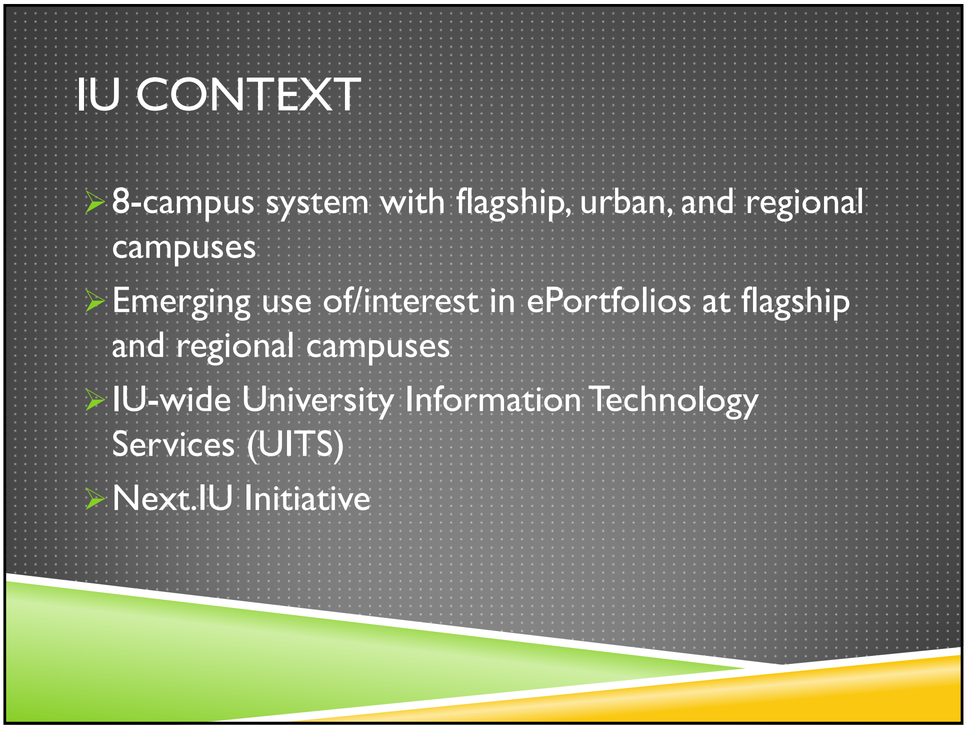
- Compliance with federal, state, campus and program specific security and privacy policies
- Support for external users (evaluators, reviewers, etc.)
- Student access after graduation
- Portability and interoperability
- Longevity and solvency of vendor



WORDS OF WISDOM

- Talk to vendors
  - Live demos
  - Test account (try before you buy)
- Talk to real users
  - Satisfaction with product (strengths, shortcomings)
  - Satisfaction with support
- Consider piloting more than one product before committing
- Software is just a tool; it's what you do with it that matters

PART II:
THE INDIANA UNIVERSITY STORY

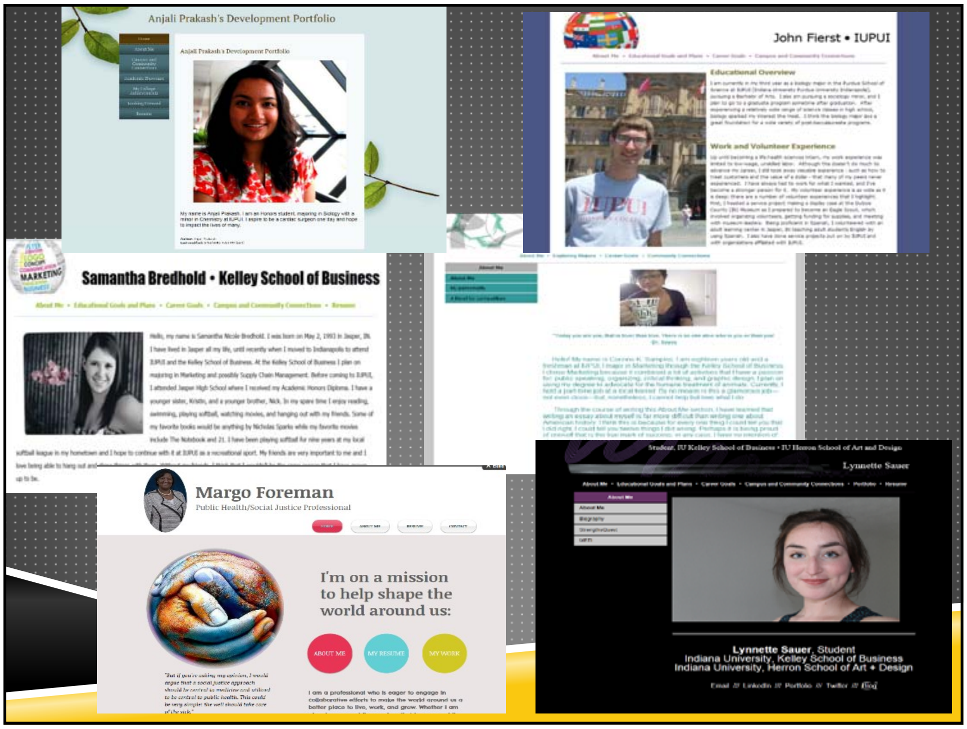


IU CONTEXT

- 8-campus system with flagship, urban, and regional campuses
- Emerging use of/interest in ePortfolios at flagship and regional campuses
- IU-wide University Information Technology Services (UITS)
- Next.IU Initiative

IUPUI CONTEXT

- Large, complex urban research institution
- 20 highly diverse schools
- 40+ campus ePortfolio initiatives, each with its own model
- 10 years of experience with previous platform


Anjali Prakash's Development Portfolio

John Fierst • IUPUI

Educational Overview

Work and Volunteer Experience

Samantha Bredhold • Kelley School of Business

Margo Foreman

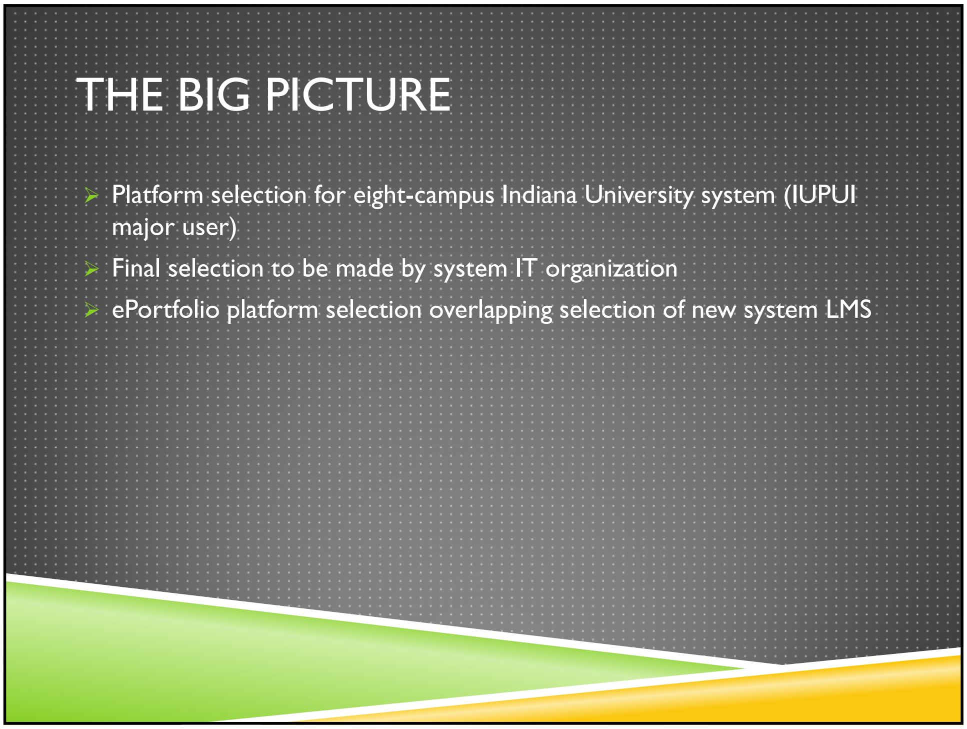
Public Health/Social Justice Professional

I'm on a mission to help shape the world around us:

ABOUT ME MY RESUME MY WORK

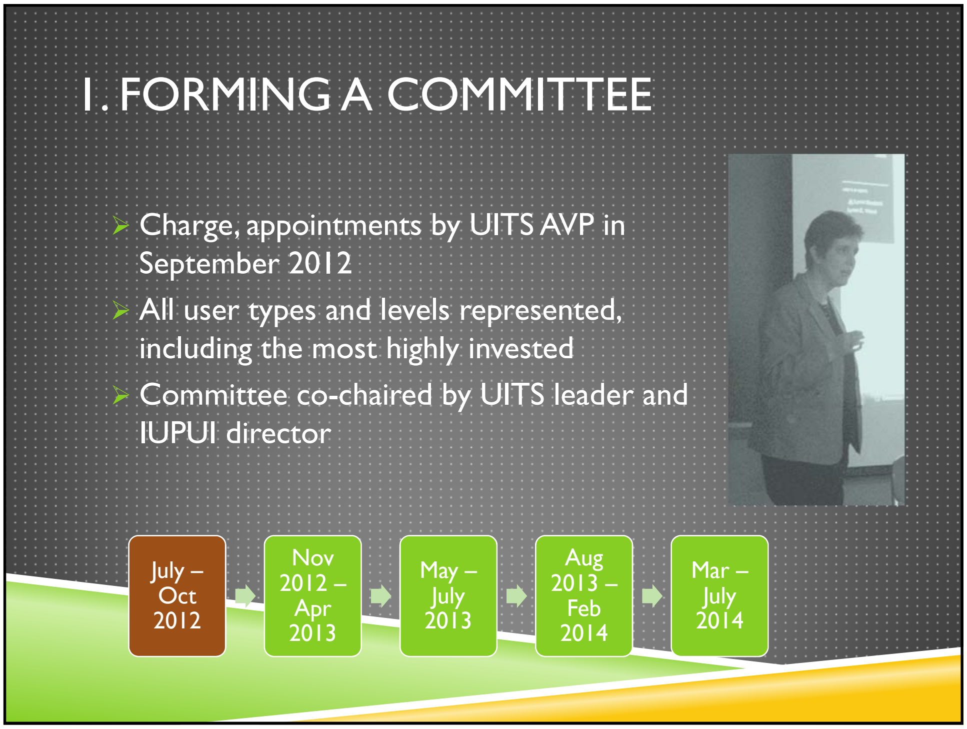
Lynnette Sauer

Lynnette Sauer, Student
Indiana University, Kelley School of Business
Indiana University, Herron School of Art + Design



THE BIG PICTURE

- Platform selection for eight-campus Indiana University system (IUPUI major user)
- Final selection to be made by system IT organization
- ePortfolio platform selection overlapping selection of new system LMS



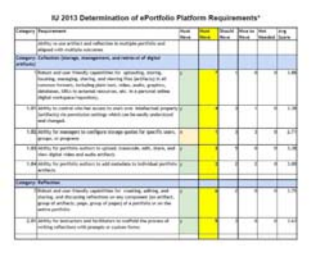
1. FORMING A COMMITTEE

- Charge, appointments by UITS AVP in September 2012
- All user types and levels represented, including the most highly invested
- Committee co-chaired by UITS leader and IUPUI director

July – Oct 2012 → Nov 2012 – Apr 2013 → May – July 2013 → Aug 2013 – Feb 2014 → Mar – July 2014

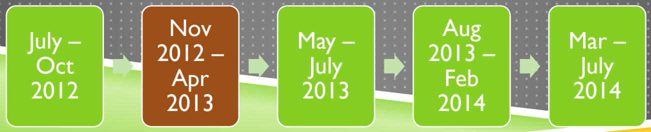
2. AGREEING ON REQUIREMENTS

- ➢ Listed desirable features
- ➢ Voted, discussed, verified, reached consensus on each element
- ➢ Used LMS project site for resource access & archive, videoconference for meetings
- ➢ Homework: AAEEBL and EPAC online demos, LMS pilot vendor demos



IU 2013 Determination of ePortfolio Platform Requirements*

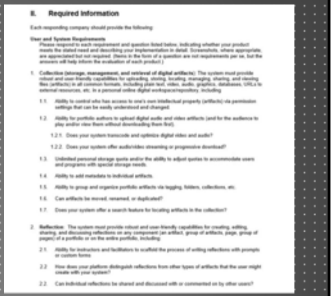
Category	Requirement	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	[illegible]						
Category: Collection (storage, management, and retrieval of digital artifacts)							
1	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
1.01	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
1.02	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
1.03	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
1.04	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Category: Reflection							
2	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
2.01	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]



July – Oct 2012 → Nov 2012 – Apr 2013 → May – July 2013 → Aug 2013 – Feb 2014 → Mar – July 2014

3. PREPARING AN RFI

- ➢ Adapted standard template from Purchasing Office, finalized requirements list, added technical specifications from UITS
- ➢ Issued June 30, responses due July 31



II. Required Information

Each responding company should provide the following:

User and System Requirements

Please respond to each requirement and question listed below, indicating whether your product meets the stated need and describing your implementation in detail. Screenshots, where appropriate, are appreciated but not required. (Items in the form of a question are not requirements per se, but the answers will help inform the evaluation of each product.)

1. **Collection (storage, management, and retrieval of digital artifacts)**: The system must provide robust and user-friendly capabilities for uploading, storing, locating, managing, sharing, and viewing files (artifacts) in all common formats, including plain text, video, audio, graphics, databases, URLs to external resources, etc. in a personal online digital workspace/repository, including

   1.1. Ability to control who has access to one's own intellectual property (artifacts) via permission settings that can be easily understood and changed.

   1.2. Ability for portfolio authors to upload digital audio and video artifacts (and for the audience to play and/or view them without downloading them first).

   1.2.1. Does your system transcode and optimize digital video and audio?

   1.2.2. Does your system offer audio/video streaming or progressive download?

   1.3. Unlimited personal storage quota and/or the ability to adjust quotas to accommodate users and programs with special storage needs.

   1.4. Ability to add metadata to individual artifacts.

   1.5. Ability to group and organize portfolio artifacts via tagging, folders, collections, etc.

   1.6. Can artifacts be moved, renamed, or duplicated?

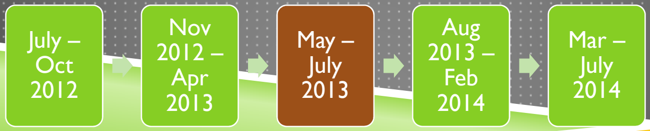
   1.7. Does your system offer a search feature for locating artifacts in the collection?

2. **Reflection**: The system must provide robust and user-friendly capabilities for creating, editing, sharing, and discussing reflections on any component (an artifact, group of artifacts, page, group of page(s)) of a portfolio or on the entire portfolio, including

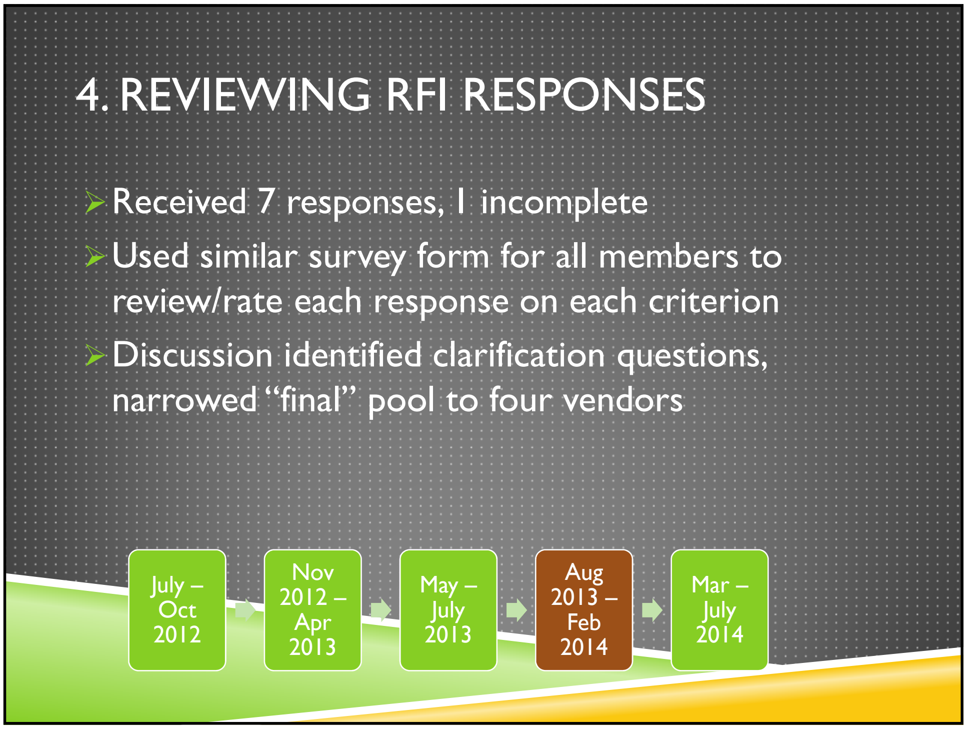
   2.1. Ability for instructors and facilitators to scaffold the process of writing reflections with prompts or custom forms.

   2.2. How does your platform distinguish reflections from other types of artifacts that the user might create with your system?

   2.2. Can individual reflections be shared and discussed with or commented on by other users?



July – Oct 2012 → Nov 2012 – Apr 2013 → May – July 2013 → Aug 2013 – Feb 2014 → Mar – July 2014



4. REVIEWING RFI RESPONSES

- Received 7 responses, 1 incomplete
- Used similar survey form for all members to review/rate each response on each criterion
- Discussion identified clarification questions, narrowed "final" pool to four vendors

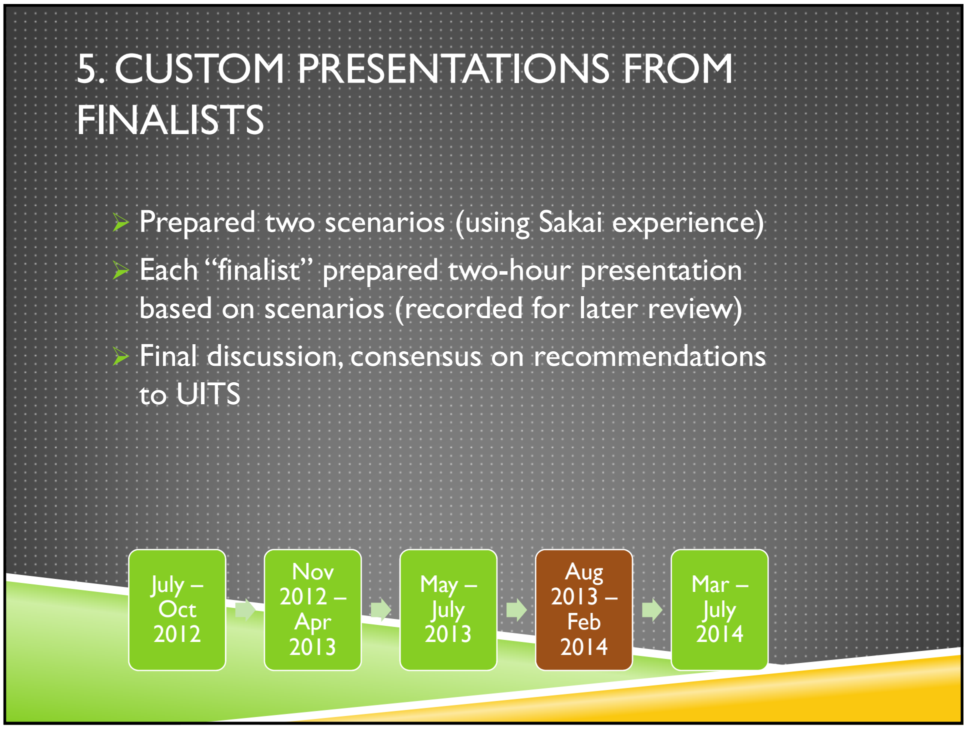
July – Oct 2012

Nov 2012 – Apr 2013

May – July 2013

Aug 2013 – Feb 2014

Mar – July 2014



5. CUSTOM PRESENTATIONS FROM FINALISTS

- Prepared two scenarios (using Sakai experience)
- Each "finalist" prepared two-hour presentation based on scenarios (recorded for later review)
- Final discussion, consensus on recommendations to UITS

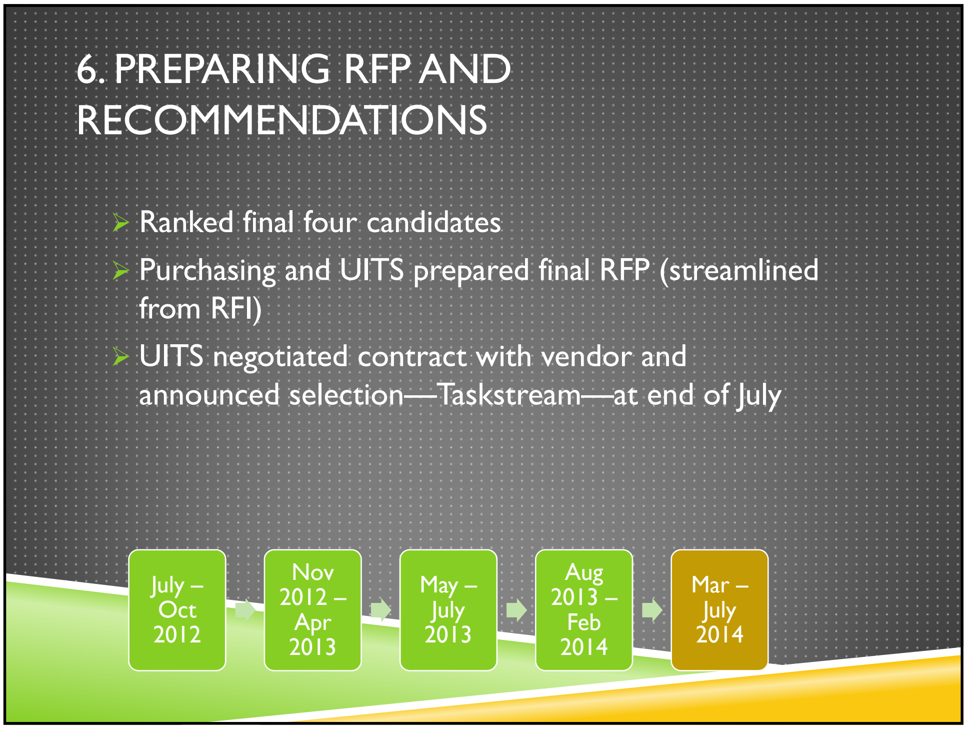
July – Oct 2012

Nov 2012 – Apr 2013

May – July 2013

Aug 2013 – Feb 2014

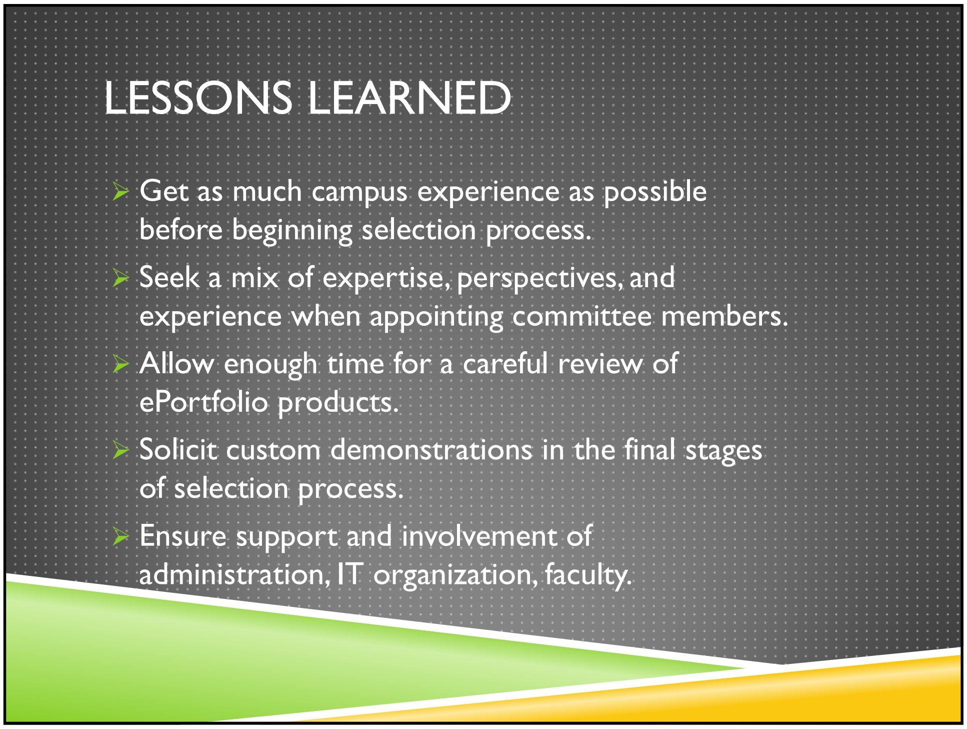
Mar – July 2014



6. PREPARING RFP AND RECOMMENDATIONS

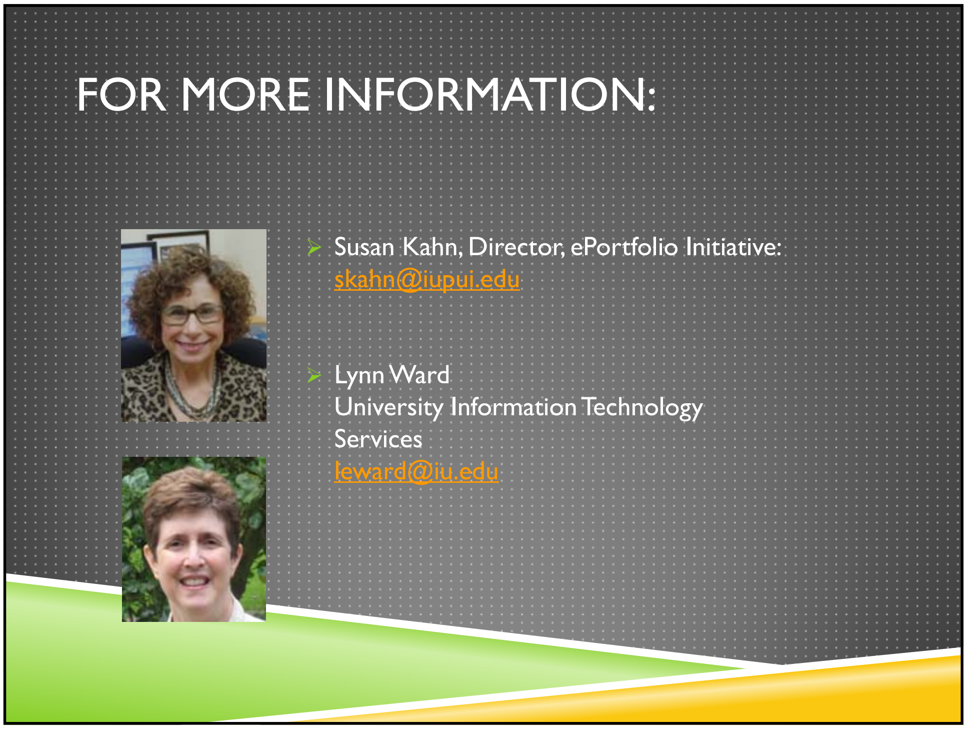
- Ranked final four candidates
- Purchasing and UITS prepared final RFP (streamlined from RFI)
- UITS negotiated contract with vendor and announced selection—Taskstream—at end of July

July – Oct 2012 → Nov 2012 – Apr 2013 → May – July 2013 → Aug 2013 – Feb 2014 → Mar – July 2014



LESSONS LEARNED

- Get as much campus experience as possible before beginning selection process.
- Seek a mix of expertise, perspectives, and experience when appointing committee members.
- Allow enough time for a careful review of ePortfolio products.
- Solicit custom demonstrations in the final stages of selection process.
- Ensure support and involvement of administration, IT organization, faculty.



FOR MORE INFORMATION:

- Susan Kahn, Director, ePortfolio Initiative:
  skahn@iupui.edu

- Lynn Ward
  University Information Technology Services
  leward@iu.edu

APPENDIX D: IU EPORTFOLIO FUNCTIONAL REQUIREMENTS (EXCERPTED FROM REQUEST FOR INFORMATION, ELECTRONIC PORTFOLIO PLATFORM, INDIANA UNIVERSITY, JUNE 26, 2013)

1. **Collection (storage, management, and retrieval of digital artifacts**): The system must provide robust and user-friendly capabilities for uploading, storing, locating, managing, sharing, and viewing files (artifacts) in all common formats, including plain text, video, audio, graphics, databases, URLs to external resources, etc. in a personal online digital workspace/repository, including

1.1. Ability to control who has access to one's own intellectual property (artifacts) via permission settings that can be easily understood and changed.

1.2. Ability for portfolio authors to upload digital audio and video artifacts (and for the audience to play and/or view them without downloading them first).

1.2.1. Does your system transcode and optimize digital video and audio?

1.2.2. Does your system offer audio/video streaming or progressive download?

1.3. Unlimited personal storage quota and/or the ability to adjust quotas to accommodate users and programs with special storage needs.

1.4. Ability to add metadata to individual artifacts.

1.5. Ability to group and organize portfolio artifacts via tagging, folders, collections, etc.

1.6. Can artifacts be moved, renamed, or duplicated?

1.7. Does your system offer a search feature for locating artifacts in the collection?

2. **Reflection**: The system must provide robust and user-friendly capabilities for creating, editing, sharing, and discussing reflections on any component (an artifact, group of artifacts, page, group of pages) of a portfolio or on the entire portfolio, including:

2.1. Ability for instructors and facilitators to scaffold the process of writing reflections with prompts or custom forms

2.2 How does your platform distinguish reflections from other types of artifacts that the user might create with your system?

2.2. Can individual reflections be shared and discussed with or commented on by other users?

3. **Self-presentation (custom free-form or template-based presentations)**: The system must provide robust and user-friendly capabilities for creating, editing, managing, and sharing any number of showcase portfolios and/or other types of web-based presentations, including:

   3.1. Ability to incorporate artifacts and reflections from personal collection/repository into presentations.

   3.2. Ability to share presentations securely with specific individuals or groups within or outside the university, or make the presentation public.

   3.3. Ability to control the look and feel of a presentation by selecting from a collection of professionally-designed visual themes or skins:

      3.3.1. Does your system also allow users to create their own themes/skins by selecting banner, colors, fonts, navigation layout, etc.?

   3.4. Ability to request and receive feedback on an entire presentation or any part of it.

   3.5. Ability to submit a presentation for formal evaluation (and/or evaluate a presentation)

   3.6. Ability for the institution to archive and preserve student presentations that have been formally evaluated.

   3.7. Ability for the owner to delete a presentation.

   3.8. Ability to create a presentation template (with a predefined structure and prompts) or use such a template to create a presentation

   3.9. Ability to access and update one's own presentations over time, across multiple learning experiences and potentially multiple institutions.

   3.10. Ability to save and view prior versions of presentation.

      3.10.1. Does your platform support content versioning and rollback?

      3.10.2. Is it possible to save a snapshot of a presentation at a specific point in time?

   3.11. Ability to add metadata to individual pages or sections or to the entire portfolio

4. **Outcomes/Standards/Competencies/Goals Tracking and Assessment:** The system must provide robust and user-friendly capabilities for creating, publishing, viewing, and aligning items with learning outcomes/standards/competencies at the course, program, school, campus, or institution level, including:

4.1. Ability for instructors, advisors, assessment coordinators, etc. to align course assignments and other forms of student work with one or more outcome or goal.

4.2. Ability for students to select and align their own representative work with one or more outcome or goal.

4.3. Ability to assess student mastery of outcomes/competencies by evaluating student work with rubrics aligned with one or more outcome or goal.

4.4. Ability to easily track one's own progress or the progress of individual students and/or groups of students for whom one is responsible in terms of meeting personal or institutionally defined outcomes or goals.

4.5. Ability to map the curriculum of a course to department-, program-, school-, or campus-level outcomes or goals (i.e., curriculum mapping)

4.6. Does your system allow students to set their own academic, co-curricular, career, and personal goals?

5. **Guided or Directed Portfolios for Learning and Assessment:** The system must provide robust and user-friendly capabilities for designing, facilitating, and/or participating in a series of guided portfolio activities/assignments (artifact collection and selection, reflection, feedback and evaluation) over time within a class or program, including:

5.1. Ability to align one or more parts of the guided portfolio to specific learning outcomes

5.2. Ability to easily create custom forms to guide the processes of reflection, feedback, evaluation, or for ad hoc data collection

5.3. Ability to easily track one's own progress or the progress of individual students and/or groups of students for whom one is responsible in terms of completing or evaluating the activities in the guided portfolio

6. **Feedback (Informal Review)**: The system must provide robust and user-friendly capabilities for requesting, providing, and managing formative feedback on the entire portfolio (guided or presentation) or any part of it (individual artifacts, pages, activities, etc.), including:

6.1. Ability for the portfolio admin/manager to assign reviewers.

6.2. Ability for the portfolio owner to request feedback from assigned reviewers or other users with whom they wish to share their work.

6.2.1. Can the portfolio owner control who can see feedback on their work?

6.3. Ability to provide rich text feedback.

6.4. Ability to provide feedback using a rubric.

6.5. Ability to include attachments with feedback.

6.5.1. Does your platform allow reviewers to annotate and comment on student artifacts without downloading the original and uploading the annotated versions?

6.6. Workflow support and notifications to help users manage feedback activities (i.e., requests for feedback and availability of new feedback),

7. **Evaluation (Formal Review):** The system must provide robust and user-friendly capabilities for assigning, providing, and managing the formal evaluation of an entire portfolio (guided or presentation) or any part of it (individual artifacts, pages, activities, etc.), including:

7.1. Ability to assign specific evaluators to assess specific groups of students and/or specific parts of a portfolio.

7.2. Ability to easily create, share, and use rubrics to guide evaluation (including self-evaluation) of entire portfolio or any part of it (an artifact, collection of artifacts, reflection, etc.).

7.3. Workflow support and notifications to help users manage evaluation activities (i.e., dashboard/notifications of pending evaluation work or availability of new evaluations)

7.4. Ability to view and track the rating status (unrated, in progress, complete) of items or students to which an evaluator has been assigned.

7.5. Ability for external (non-IU) evaluators to participate in the evaluation process.

7.6. For guided and directed portfolios, ability for evaluators to view the guidance (assignment instructions, reflection prompts, supporting materials etc.) that led to the creation of a particular artifact or reflection.

7.7. Ability to lock (or make a snapshot of) student work that has been evaluated so that it can no longer be changed by the student

7.8. Does your platform support blind and double-blind evaluation?

7.9. Does your platform have tools for ensuring inter-rater reliability?

8. **Reporting**: The system must provide robust and user-friendly capabilities for generating predefined and custom reports on portfolio evaluation results and portfolio status, including:

   8.1. Ability to integrate portfolio data seamlessly with data in the Student Information Systems (SIS) via live links or nightly import.

   8.2. Ability to aggregate data relative to outcomes or competencies at the institution, campus, school, program or course level in order to evaluate student learning and program effectiveness.

   8.3. Ability to view summary data for any given population (average, median, mean, standard deviation, counts)

   8.4. Ability to drill down from summary to detailed view of assessment data

   8.5. Ability to view portfolio or merged portfolio/SIS data in a tabular format.

   8.6. Ability to save (as HTML), print and/or export to a delimited format any report

   8.7. Ability to generate status reports of various kinds to assist with managing portfolio process (e.g., how many students completed particular portfolio assignments or submitted work toward a particular outcome; how many portfolio assignments need evaluation; which evaluators are/are not keeping up with evaluation work).

   8.8. Ability to extract representative samples of student work at course, program, institutional levels, sorted by learning outcome, major or school, class level, grades and other categories above.

   8.9. Ability to extract examples that show individual students' progress over time (e.g., by learning outcome, proficiency level, status, etc.)

   8.10. Please provide a descriptive list of the predefined reports available through your platform.

   8.11. Is it possible to generate custom reports via the user interface?

9. **Tracking and Workflow:** The system must provide robust and user-friendly capabilities for tracking one's own tasks and progress as well as for tracking the tasks and progress of the persons (students, evaluators, etc.) for whom one is responsible.

   9.1. Does your system provide dashboard views for each role?

   9.2. Does your system provide email or other types of notifications to help users manage their portfolio work?

10. **Two-way and Multiuser Communication**: The system must provide robust and user-friendly capabilities to facilitate two-way and multiuser communication within and among individuals and groups of users related to portfolio work.

    10.1. Does your platform offer an internal email or messaging service?

    10.2. Does your platform support threaded discussions?

    10.3. Does your platform include the ability to add comments to portfolios that have been shared?

        10.3.1. Can portfolio owners control who can see comments on their work?

    10.4. What other types of communications tools does your platform offer?

11. **Collaboration**: The system should provide robust and user-friendly capabilities for collaborative authoring and editing of an entire portfolio (guided or presentation) or any part of it (individual artifacts, pages, activities, etc.).

    11.1. Does your platform allow the portfolio owner to give permission to others to create or edit specific pages within a portfolio?

    11.2. Does your system allow the portfolio owner to give permission to others to edit the entire portfolio?

12. **Social Networking and Web 2.0 Technologies:** The system should provide robust and user-friendly support for social media and Web 2.0 technologies in ways that support and enhance learning, reflection, and social pedagogies.

    12.1. Does your platform include built-in social networking capabilities? If so, please describe.

    12.2. Does your platform allow users to create and/or join common interest groups in which portfolios are shared and discussed?

    12.3. Does your platform allow users to create and maintain a blog or incorporate an external blog into a portfolio?

    12.4. Does your platform allow users to subscribe to portfolio feeds from other users of the system?

    12.5. Does your platform allow users to incorporate profile data from LinkedIn or other social networking sites into their portfolios?

13. **User Experience:** The system must be accessible by persons with disabilities; extremely easy to use, and offer a clean, modern, and attractive interface:

    13.1. The system must be accessible to persons with disabilities (e.g., section 508 compliant, NFB Gold Certification, etc.).

    13.2. Please provide screenshots and/or other evidence (user testimony, recorded feature demos, awards or certifications) of the usability of your product.

    13.3. Does your solution permit full rebranding of the logo and color schemes?

14. **Text Editor:** The system should provide a robust and user-friendly rich text editor for creating and editing presentations, reflections, feedback, evaluative comments etc., including:

    14.1. The text editor must allow users to easily link to and/or embed rich media files, including images, audio clips, videos, presentations, etc.

    14.2. The editor should provide fine control over page layout (for example, the ability to wrap text around images or videos, the ability to organize content in columns, etc.).

    14.3. The editor must be able to gracefully accept content copied and pasted from Microsoft Word.

    14.4. The editor should allow users to edit the source HTML.

15. Mobile Support: The system should offer all roles, but especially students, a robust mobile experience including the abilities to view, provide feedback, and evaluate portfolios as well as the ability to create and save all types of portfolio artifacts on one's mobile device.

    15.1. Has your platform been optimized for access by mobile phones and tablets?

    15.2. Do you offer mobile apps for your platform? if so, what mobile platforms are supported and features are available? If not, is the development of mobile apps on your roadmap and what is the estimated delivery date?

16. **Documentation**: The system must offer complete online documentation for users in all roles.

    16.1. Describe system level documentation for administration, development, and customization.

    16.2. Describe documentation available to users within the application

        16.2.1. Does your system offer contextual help?

16.2.2. Can the online documentation be customized by the institution?

17. **Access, Roles, Groups, and Permissions:** The system must provide a robust and flexible model for roles, groups, and permissions that allows students, advisors, instructors, mentors, evaluators, etc. to easily locate and access their own portfolios as well as those of the users with whom they are collaborating or for whom they are responsible, including:

    17.1. Ability to assign roles and permissions on per context basis (e.g., a single user can be a student in one context, an evaluator in another, and an instructor or manager in a third)

18. Ability for portfolio owner to control who can see, comment on, discuss, or collaborate on entire portfolio or individual items.

19. **Integration – General:**

    19.1. Identify all third-party integration tools required for your solution, i.e., messaging, EAI. Do any known hardware/software incompatibilities exist?

    19.2. Is your application XML compliant?

    19.3. Does your platform offer native support for ad hoc SQL queries? Describe the method and level.

    19.4. Does your platform include a workflow component? If so, can it be integrated with a homegrown workflow engine (via web services)? i.e. users would see only one Action List for this application along with our other workflow applications?

    19.5. Does your platform include the ability to exchange data with other enterprise systems?

    19.6. Are APIs available to customers who wish to develop custom integrations?

    19.7. Estimate resources needed to integrate with Indiana University systems; can this work be done in-house at IU or does it require 3rd party consultants?

20. LMS Integration: The system must provide robust and seamless integration with the LMS (or an open API for building such an integration) to facilitate real time data sharing and exchange (e.g., the ability for students to locate artifacts created in the LMS and easily incorporate them into their portfolio, the ability for instructors to simultaneously assess and grade portfolio work and push those grades to the LMS gradebook, etc.)

    20.1. Does your product offer standard integrations with Sakai, Canvas, Blackboard, and/or Desire2Learn. If so, please describe in detail the capabilities afforded by each integration.

20.2. Can your platform function as an LTI tool provider? If so, please describe in detail the capabilities afforded by the LTI integration.

20.3. How will users in the LMS be mapped to users in your system?

20.4. Does your LMS integration require the addition or modification of tables in the LMS database?

20.5. Does your application require a synching mechanism for the data in the LMS and the data in your system? How is this accomplished?

20.6. The system should allow users to push or pull artifacts from the LMS into the portfolio or vice versa

20.7. The system should allow instructors to push grades or ratings earned in the portfolio platform to the gradebook in the LMS

20.8. The system should allow users to navigate seamlessly to and from the LMS via single sign-on.

21. **SIS Integration**: The system must provide robust and seamless integration with the Student Information System (or an open API for building such an integration) to facilitate data sharing and exchange for a variety of purposes including: provisioning users and groups (or courses) in the portfolio system, generating portfolio reports filtered by academic and demographic criteria stored in the SIS, monitoring indicators of academic risk in the portfolio system and feed to the early warning system in SIS, etc.

21.1. Does your product offer standard integrations with PeopleSoft or Kuali Student? If so, please describe in detail the capabilities afforded by these integrations?

21.2. Does your system accept automated batch or real-time feeds from the student information system?

21.3. Can your system use data from the SIS or other enterprise systems to provision users, groups, and/or courses?

21.4. Can your system use data from the SIS to generate reports for specific populations of users (for example, all graduating seniors, all first year Hispanic females, all students in the electronic engineering program, etc.?)

22. **Technical Architecture:**

22.1. Is your product licensed as a hosted solution, an on-premise solution, or both?

22.2. What architecture model best describes your system?

22.3. Please provide a diagram(s) that illustrates the architecture of your proposed solution. Please include all environments that will be required including test, development, UAT, etc.

22.4. What database systems does your application support?

22.5. Which versions of the operating system are certified for running the application?

22.6. Which versions of the operating system are supported?

22.7. What languages were used to build the application?

22.8. Which desktop platforms does your application support?

22.9. Which web browsers are certified for your application?

22.10. Are there any additional browser components required for full functionality?

22.11. For on-premise solutions only:

22.11.1. Please provide white papers, architecture diagrams, data flows, or other supporting documentation.

22.11.2. Please provide a data flow diagram detailing network connectivity configurations

22.11.3. What is the preferred combination of hardware, operating systems, web servers (if applicable), and client software used by the majority of your clients (both from the user and administrator perspective)?

22.11.4. Provide a one-page architecture diagram of the preferred architectural design, including information on recommended operating system and web server version combinations for each virtual server.

22.11.5. Is your product fully certified to run in a virtual server environment. Please list certification levels for each major hypervisor (i.e., vSphere, XenServer, HyperV).

22.11.6. What database is used to develop and test in first?

22.11.7. Is the database accessible for use by other applications?

22.11.8. Is the database easy to access directly? (Ex. No proprietary encryption, odd or cryptic table / field names, etc.)

22.11.9. What tools do you provide to help size the system database?

22.11.10. Does your application depend on specified schema-owner or user names/passwords to the database? Does the schema owner need DBA access for the application to function?

22.11.11. What system database functions require DBA access to be performed?

22.11.12. Does the application require a specific operating system for the database server?

22.11.13. Support for latest database server software?

22.11.14. How scalable is the database?

23. Performance

23.1. Identify the maximum number of named users, logged-on users, and concurrent users your solution will accommodate. Include largest implementations.

23.2. Identify the maximum number of concurrent transactions your solution will support.

23.3. Describe any documented stress testing methods / results.

23.4. Describe the bandwidth requirements for the solution from the front end through to the backend interconnections.

24. Security and Access Control

24.1. The system must offer the ability for prospective students who have not been admitted as well as students who have graduated or separated from the university to create and maintain a portfolio.

24.2. Does the application integrate with any services for authentication and group membership?

24.3. Define the user ROLES, GROUPS and POLICIES required for implementation.

24.4. Does your product integrate with any third-party web single sign-on products?

24.4.1. Does your product have the ability to utilize JASIG (Yale) CAS for single sign-on?

24.4.2. Does your product support Shibboleth for federated authentication?

24.4.3. What other single sign-on solutions are supported by your product?

24.5. Is multiple domain, multiple LDAP server authentication supported?

24.6. Does the system integrate with Active Directory groups for access rights?

24.7. Is it possible to change a user’s login name once it has been established?

24.8. Describe how your application utilizes secure protocols. What protocols are supported?

24.9. What ports and services are utilized by the application?

24.10. For on premise implementations, does running the application require root or administrator access? Please specify (workstation, server and DB).

24.11. What modifications to the operating system are required by the application?

24.12. How are access permissions set and modified?

24.13. Describe the administrator role and any multi-tenant options.

24.14. Can the administrator reset a user password?

24.15. Does the application allow the administrator to set security rules and password controls?

24.16. Does the solution enforce password changes? If so, can IU set the length of time a password is valid?

24.17. Does the solution always transmit and store passwords in a one-way encrypted format?

24.18. Can passwords ever be seen, including by administrators?

24.19. What encryption protocol is used to transfer data?

24.20. What encryption level is used to store and transfer data?

24.21. Do end users have a direct connection to the database? If so, how is security through this connection managed?

24.22. How are the data backed up? Are backup/recovery scripts provided? What is the disaster recovery plan/strategy for the product?

24.23. Does your product support the ability to define a custom multilevel organizational hierarchy; custom division levels

24.24. For on-premise solutions only:

24.24.1. Does your product support the ability to interface with vulnerability scanners?

24.24.2. Does your product support the ability to mark vulnerability scan results as false positives?

24.24.3. Does your product support the ability to load from numerous types of security tools; commonly used security tools are DHCP, ADS, IBM Rational Appscan, MS Windows Server Update Service, Red Hat Satellite service, Secunia CSI, PGP server, Kuali READY, etc.

24.24.4. Do you offer free security updates for your product?

25. Upgrades and Releases

25.1. Does periodic maintenance include updates and upgrades to this application? What is the frequency of upgrades?

25.2. How are major releases scheduled (timing and communications methods)? When is your next major release scheduled?

25.3. How are any customizations or configurations rolled forward in an upgrade?

25.4. Can an upgrade or release be skipped?

25.5. How many versions of the product do you support?

25.6. For what length of time are prior releases supported?

25.7. Is a demo instance or environment provided with sample data?

25.8. For on-premise solutions only:

25.8.1. Are test scripts provided to certify proper installation?

25.8.2. Are aggregated bundles of updates, patches, and service packs provided to simplify maintenance?