Chapter 2. The ePortfolio Selection Committee—the Quest for the Perfect Platform

Tracey M. Richardson
Kelly Whealan George
Denise Bollenback
EMBRY-RIDDLE AERONAUTICAL UNIVERSITY

The portfolio has been used for decades in the fields of art, architecture, and photography as a *showcase* for a professional's growth and expression. Traditionally, the portfolio was a leather-bound jacket containing hard copies of one's work. Conceptually, the electronic portfolio (ePortfolio) grew out of the need to display one's professional accomplishments in a digital format through a platform that is current, portable, and instantaneously accessible by any reviewer with internet access.

The ePortfolio has been widely implemented in higher education as more institutions have recognized the multidimensional benefits of this *evidence-based* solution for collecting and assessing evidence of student achievement. An ePortfolio system embedded within the curriculum can prove especially helpful when educational programs are delivered in multiple locations across different modalities (see Coleman et al., this collection). Our institution, Embry-Riddle Aeronautical University (ERAU), is a private, not-for-profit university with three campuses: Daytona Beach, FL; Prescott, AZ; and the Worldwide Campus. The Daytona Beach and Prescott campuses are traditional brick and mortar with residential accommodations and nationally ranked engineering programs, whose target populations are full-time students. To the contrary, the Worldwide Campus includes over 120 geographically dispersed teaching sites in the United States, Asia, and Europe, and targets a working adult population.

This chapter chronicles ERAU's quest for the perfect ePortfolio platform and the process we employed for the evaluation and selection of suitable software. We discuss not only the key role of the ePortfolio Selection Committee and its membership, but also our stakeholder analysis, requirements list, and creation of a Platform Selection Scorecard, all of which we used to identify a short-list of suitable vendors. As we describe the process from the planning phase to the final selection, we include a review of the committee's Request for Proposals (RFP) and explain how the committee developed a scorecard to evaluate a series of vendor demonstrations leading to a platform selection. Finally, we reflect on the major lessons learned, from the 20/20 hindsight perspective of an implemented ePortfolio at our university.

Literature Review

While web-based technologies have enabled various forms of collecting and displaying student work in digital form, portfolios are nothing new in the educational industry. Understanding the evolution, use, and stakeholder perspectives within higher education will help develop a basis that informs the needs *assessment* and selection process that ultimately will maximize the portfolio's effectiveness in the institution.

The first use of student-developed portfolios dates back to the 1960s (Ehley, 2006). Up until the 1990s, students were asked to compile physical portfolios primarily for demonstration purposes (Chathan-Carpenter et al., 2009). With the advent and expansion of electronic platforms, the purpose of portfolios expanded from a showcasing tool into an instrument to measure learning and to conduct assessment (Barrett, 2007). Even though the formats and organization may have changed over the past five decades, the primary purpose remains the same: to communicate something about students' performance. The ePortfolio not only leverages technology to organize, showcase, and contain student work (Barrett, 2001; Mehlenbacher & Kelly, 2015), but also allows students to select their ePortfolio *artifacts*, reflect on their work, and share that work with internal and external audiences.

With respect to higher education, many studies that document faculty and students' perspectives on the creation and use of electronic portfolios consistently underscore non-negotiable factors for the success of ePortfolio-based assessment. Like other researchers before us, we assert that communicating the ePortfolio's purpose to all stakeholders is critical to the success of its implementation and ultimately its success in achieving the desired outcome (Barrett, 2001; Barrett & Knezek, 2003; McKenna et al., 2017) (see Dellinger & Hanger, this collection). Secondly, we concur that for optimal use of ePortfolios in an educational setting, the interface difficulty level must not impede creation, *reflection*, or evaluation (Tsai et al., 2004). Fortunately, training can alleviate suboptimal use, especially if the university has already adopted an electronic portfolio system (Herner-Patnode & Lee, 2009; Jun et al., 2007).

In other words, an inaugural adoption of an electronic portfolio system requires much more than evaluating software options. A successful ePortfolio system adoption requires curriculum alignment and standards, faculty buy-in, assessment, evaluation, communication, leadership, implementation plans, and change management procedures before students even begin to create their portfolios (McNeill et al., 2014; Mills, 2013; Wilhelm et al., 2006).

While such faculty and staff considerations are vitally important, consideration of student voices should not be minimized, since they are the ultimate end users of the ePortfolio. For example, Wetzel and Studler (2008) analyzed student perceptions in six programs and concluded that understanding student perceptions of their experiences can lead to improved practices and policies with regard to ePort-

folios (see Dellinger & Hanger, this collection). They specifically found that students' ePortfolio experience benefited from greater opportunities to reflect about the holistic nature of their classes, the organization and architecture of their academic and professional documents, the development of a new technological skill set, and a better understanding of evaluation standards, while students' experience with the ePortfolio was negatively impacted by the costs, reliability, and time and energy the ePortfolio technology demanded (Wetzel & Studler, 2008). Ehley (2006) also collected student criticisms of ePortfolios and identified the difficulty of software functionality, the lack of communication about the ePortfolio's purpose, and a lack of faculty support throughout the curriculum as top frustrations for students. Not surprisingly, students and faculty alike were more apt to use an ePortfolio tool if it was easy to use. Reinforcing Ehley's (2006) conclusions, Javed Yusuf and Pita Tuisawau (2011) also found that a majority of students view ePortfolios as a useful tool and an important method of assessing their performance in a course. Students also believe that the more they use an ePortfolio tool, the more effective the ePortfolio can be for their learning experience (Schuessler, 2010). Therefore, implementing an ePortfolio tool within a curriculum should be complete and inclusive from a "faculty-staff-student" perspective to maximize the tool's effectiveness.

Since the selection and implementation planning process is a critical element to ePortfolio success in a university system (Butler et al., 2006; Slade et al., 2017), stakeholders' needs and engagement commitment levels should be assessed throughout the process of procuring, implementing, and operationalizing the ePortfolio system. Stakeholders include, in no specific order: faculty, institutional technology, the center for teaching and learning, institutional research, and the student body (Barrett, 1998; Reynolds & Pirie, 2016). These stakeholders' power hierarchy can vary from institution to institution depending on the leadership structure, change management culture, controlling bodies, and, ultimately, the initiative's sponsorship (Slade et al., 2017). If the technological stakeholders demonstrate the technical competencies required for implementing and operationalizing ePortfolios, they can amplify their influence in the selection process. As the literature emphasizes, implementing an inclusive approach to identifying ePortfolio stakeholders along with institutional requirements and extramural considerations during the planning stage and committing to a holistic assessment of stakeholders' needs throughout the process will ideally ensure that learning and the assessment of learning drive the technology, not vice-versa.

Embry-Riddle Aeronautical University's Needs Assessment

Institutionally, Embry-Riddle Aeronautical University (ERAU) recognized the value an electronic portfolio would bring to the students' experience. Students were already producing extensive digital collections of assignments, reflections, and other academic artifacts documenting their learning, but we lacked an efficient solution for providing access to multiple reviewers. As an institution, we

knew the platform had to be user-friendly so that students could focus their efforts on framing and reflecting on their growth as learners rather than being hampered by technological barriers, but we also required a detailed reporting function to meet our institutional assessment requirements. In sum, our needs assessment had to take into account the perspectives and realities of all ERAU ePortfolio stakeholders, as described below:

> *Student perspective*: Students sought a single repository to collect and catalog their academic growth by highlighting selected academic assignments as learning evidence. Additionally, students wanted the ePortfolio to help them document their critical reflection, by which they could confirm the integration of their educational journey. The students expected their ePortfolio experience to culminate with a self-selected collection of artifacts to share with professors, peers, and potential employers.

> *Faculty perspective*: Faculty sought a single source to assess a student's application of specific course content related to the student's professional goals, course outcomes, and program of study.

> *Program perspective*: Program directors sought a single source for longitudinal assessment by multiple reviewers. They desired software that included a query schema that could produce reports based on multiple criteria: specific course learning outcomes; specific program outcomes; location-specific results; professor-specific results; and customized reporting, as such reports would help them identify exemplary work as well as areas for improvement.

> *Department perspective*: Department chairs sought a source for evidence-based evaluation that would add another data point to the evaluation of a faculty member's teaching success during the annual appraisal cycle.

> *Institutional perspective*: Institutionally, administrators sought a central source for evidence-based evaluation of academic programs and candidates for promotion and/or tenure and for preparation for visits from external accrediting bodies.

> *Accreditors' perspective:* The accreditors sought a comprehensive source of evidence-based reporting of student learning. They wanted to have a means by which site visit teams could "see" the proof of program goals through a "show and know" by accessing not only the reports, but also the direct student work as evidence.

To tackle the challenge of meeting all of these stakeholders' needs, the chancellor charted a selection committee, chaired by the chief information officer (CIO). The selection committee consisted of ten voting faculty members representing each of the three campuses and a host of non-voting support agencies to critically evaluate the vendors. The committee's non-voting members included representatives from Academic Assessment, Instructional Design and Development, Academic Technology, Information Technology, Educational Technology, and the Center for Teaching and Learning Excellence.

Stakeholder Analysis: The Academic Perspective

Curriculum demands in the Master of Science in Project Management degree originally drove the need for an ePortfolio system at ERAU. However, the thrust behind the project to search for a perfect ePortfolio platform really gained importance when it was connected to the university's Quality Enhancement Plan (QEP) required by our regional accreditor, the Southern Association of Colleges and Schools (SACS).

To support the university's mission and vision, ERAU implemented the Ignite Initiative as its QEP. "Ignite" sought to create an *active learning* environment dedicated to systematic inquiry as a way to solve problems or to advance knowledge. Ignite's goals were two-fold: 1) to ensure faculty and staff were engaging students in scholarly activities and facilitating student research through curricular or co-curricular learning opportunities; and 2) to ensure students were obtaining the skills to investigate hypotheses, solve problems, and advance knowledge utilizing various disciplinary methods. This research-supportive curriculum was designed to provide undergraduates with a learning experience rooted in the process of discovery through research and inquiry. Implementation focused on ensuring that undergraduates followed a tiered plan of activities that first introduced them to research skills, then allowed them to practice and eventually to master those research skills. The enhanced research culture included course-based research and curricular/co-curricular research and academic support services.

Ignite developed six student learning outcomes (SLOs) to encompass the basic principles of research in every discipline. Infusing the SLOs into the curriculum enables students to graduate with a strong foundation in research principles. The Ignite SLOs are:

- Define and/or articulate a research problem;
- Design a course of action to solve a research problem using appropriate multidisciplinary principles;
- Apply ethical principles in research;
- Conduct research independently and/or collaboratively;
- Reach decisions or conclusions based on the analysis and synthesis of evidence; and
- Communicate research results.

As a result of this initiative, the institution needed an ePortfolio platform that would enable students to build a non-discipline-specific portfolio of work that could be archived and, more importantly, assessed by secondary evaluators to build longitudinal data about the trend of competency levels demonstrated in each student's artifacts. With both a program and a broader university need, the selection of and funding for an ePortfolio system that could serve the university and had the promise of growth and evolution was elevated to the university administration's strategic acquisition list.

Stakeholder Analysis: The Institutional Support Perspective

ERAU conducted an internal analysis of the instructional systems previously used for building digital portfolios. The available options had multiple flaws, including invalid files and links, poor arrangement of ePortfolio artifacts, constrained storage, inadequate content editing and spacing preferences, and confusing instructions for both students and faculty. Therefore, students expected a solution that would allow them the flexibility to create their own digital portfolio designs, consistent with various course and assessment requirements. In addition to analyzing current instructional systems, ERAU also looked at the feasibility of building an organic ePortfolio system. Given our limited time and resources, as well as the cost requirements and the middle-ware requirement to integrate with other instructional systems, ERAU's leadership decided the best option would be to search for a third-party vendor. By bridging the university's legacy systems with an improved third-party ePortfolio option, the opportunity to meet every need within a reasonable timeline seemed more likely.

It became apparent that a Software as a Service (SaaS) model would inform several important aspects of the software vendor selection. Using a third-party vendor would provide ERAU with several benefits, including minimizing maintenance costs as well as reducing the need for IT staff, software licensing, and hardware. A SaaS option would also provide a lower total cost of ownership and a smoother conversion of capital expenses to operating expenses, which would allow for an easier implementation. Additionally, third-party partnering would facilitate the ease of upgrading, increased scalability, greater utilization of resources, increased ability to focus on core business, more flexibility for business innovation, and improved communication with all stakeholders and constituents (Hofmann, 2010; Saeed et al., 2012; Salleh et al., 2012). Given our multi-distributed university setting, we needed to focus on each of these elements to provide a robust ePortfolio system that would work within a variety of instructional modalities. In addition, the selection committee wanted to emphasize categories such as user-friendliness, functionality, reporting capabilities, and vendor support and training when evaluating each ePortfolio vendor. At the same time, the committee needed to ensure that faculty-training issues, appropriate buy-in for the program (see Day and Dellinger & Hanger, this collection), and integration with the

learning management system were addressed in drafting the evaluation criteria for selecting an ePortfolio vendor.

Software Vendor Selection

From the IT perspective, software selection begins with the identification of user and system requirements by documenting the functionality of existing systems. With this analysis, the process of business reengineering (which is a catalyst for redesign and improved productivity) can begin (Motiwalla & Thompson, 2012). After studying the existing processes for building digital portfolios and re-designing these processes to create a more efficient approach for students to create their own ePortfolios, we were able to document crucial requirements for determining which ePortfolio system to select. Identifying the requirements provided us with a baseline for understanding how data would flow among cross-functional areas of our university. Understanding the functional requirements of our ePortfolio model allowed the selection committee to best determine which vendors and the products they offered would suit our needs.

After analyzing the current ePortfolio process embedded in the curriculum, we developed a workflow diagram to demonstrate the process of creating and maintaining digital portfolios, then we aligned and mapped the contents of the course- and program-level learning outcomes. The alignment and mapping step allowed us to visualize the impact the ePortfolio would have on the curriculum. In turn, the visualization better prepared us to talk about our ePortfolio model to external vendors.

In our first communication with third-party vendors, we sought information about their organizational maturity and positioning in the market. The initial solicitation, or request for information (RFI), went out to 27 vendors. We created the vendor list through an exploratory internet search and by seeking input from the Association for Authentic, Experiential, and Evidence-Based Learning (AAEEBL) and the Electronic Portfolio Action and Communication (EPAC) Community of Practice. We wanted to understand how each vendor described its situation both from a financial health perspective and its position within the digital community. Twenty vendors responded to the initial RFI (see Appendix A for the technical component of the RFI). After receiving these twenty responses, we began the selection process.

The selection committee conducted a full search for a third-party ePortfolio vendor and sent a request for proposals (RFP) to the 20 vendors who responded to the RFI. We discovered that in order to evaluate the various proposals from these vendors, we needed to add a matrix for comparison of specific requirements. Additionally, we started scanning for "best practices" matching our requirements list. During the selection of the ePortfolio platform, we felt it was imperative to take into account the reputation and integrity of the companies under consideration. By investigating vendors' histories and backgrounds—such

as how long each organization had been in business, customer reviews, customer renewal rates, financials, number of customers, and pricing models—the selection committee could determine critical success factors and potential risks associated with the vendor selection.

After a series of committee meetings and deliberations, we narrowed the list of 20 potential vendors to 12. The selection committee requested sample digital portfolios from these vendors as part of the request for proposals after cross-checking all RFPs against our list of requirements for any "knock-out" items or major areas of concern. The committee eliminated vendors that did not meet non-negotiable requirements, such as security. Through this extensive elimination process, we narrowed the field of possible vendors to five and requested a live web-based demonstration. The live demonstration served two purposes: first, it allowed us to interact with the platform and learn about its features, and second, it allowed us to experience a training session orchestrated by the vendor. One of our long-term requirements included vendor training for all ERAU stakeholders.

Additionally, each vendor provided three customer references. The committee then requested a letter of reference directly from each of these customers (see Appendix B for the questions sent to customer references); we received all but two reference letters back. As well, we eliminated one vendor from the competitive process due to their poor communication responsiveness and the company's general poor attitude toward our requests; this vendor was hard to work with during the selection process, and we did not want to enter into a contract with a difficult company.

Scorecard Criteria

The selection committee met weekly over a period of three months to discuss the stakeholders' wants and needs. We used a Delphi technique (a systematic approach which relies on a panel of experts) to both brainstorm and prioritize our criteria. Several main factors within the vendor selection process included:

- Accessibility to ePortfolios after graduation
- Use of ePortfolios for assessment purposes
- Portability of ePortfolios to external locations for storage
- Security roles and sharing options
- Outcomes assessment features and alignment to course and program outcomes
- *Rubric* development and design capabilities
- Integration with existing university systems
- Training

These user-defined functional requirements are further defined within Appendix C, The ePortfolio System Product Evaluation Scorecard.

The selection committee used the scorecard criteria to conduct the final eval-

uations. The chief information officer (CIO) tallied the scores to provide a final comparison of the top vendors recommended for advancement. At this point in the process, the committee members were given user accounts to fully explore each product. After analyzing collected data from the scorecard, meeting several times to deliberate, and communicating with major stakeholders, we used the priority criteria to compare the final two vendors (Figure 2.1).

The selection committee met to make a final decision based on the analysis of data collected (live demo recordings, responses to RFPs, etc.) and input from committee members, academic programs, support units, the Information Technology security team, and Institutional Effectiveness subject matter experts. Based on the results, the selection committee made a recommendation to all stakeholders and handed the project over to the university contracting office to negotiate a contract with the vendor, including a proposed implementation plan and timeline.
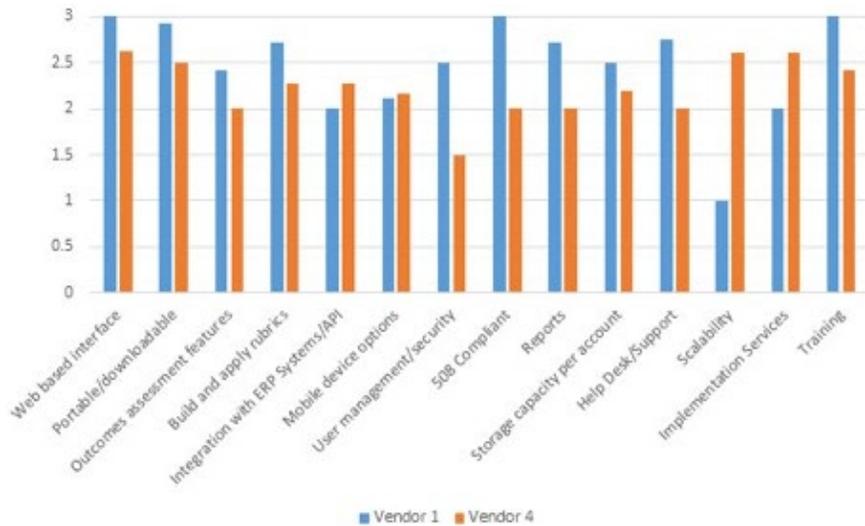

Figure 2.1. ERAU ePortfolio system evaluation results—final round.

Recommendations

First and foremost, we recommend that institutions who undertake a similar process ensure that all stakeholders understand the difference between actual needs and quasi-needs. Ryan Watkins, Maurya West Meiers, and Yusra Visser (2012) define needs as "the differences between your current achievements and your desired accomplishments" (p. 20). Roger Kaufman and Ingrid Guerra-Lopez (2013) would call the differences in "what is needed" and "what is desired" a gap to close. It is important to make this distinction because if you do not clearly define the ends and the means, you could end up with a mismatched platform. When the requirements list is loaded down with too many "wants," the project's complexity

may be falsely inflated and then deemed unaffordable.

We also recommend inviting students to be part of the selection process. When putting together our selection committee, we did not solicit enough input from our student population. Our committee included a staff member who was also pursuing her undergraduate degree, and we relied on her for both perspectives, neglecting to understand the type(s) of training venues from which our student population would best benefit. The committee focused on the result, and we did not put enough thought into the training component at start-up. Providing a menu of options for instruction on the software would have ensured a smoother transition between adoption and implementation and perhaps even thwarted the knee-jerk reaction to change.

Finally, we caution readers not to underestimate resistance to change. Despite the energy behind the project, the strength in curriculum enhancements, and the wow-factor of the platform, the implementation of the new ePortfolio platform proved difficult and frustrating at ERAU. For example, while our Center for Teaching and Learning Excellence (CTLE) offered a series of webinars (e.g., An "Introduction to ePortfolios," "Building Integration Assignments," "Assessment") and sponsored a contest for the best personal ePortfolio and the best assignment for the ePortfolio, the participation in these events proved poor at best.

At the annual faculty meeting, the student ePortfolios were on display, along with testimonials from the students about their heightened learning experience. The few faculty using ePortfolios demonstrated their rich assessment data and spoke about the curriculum improvements that had resulted. Even with these evidence-based conclusions, however, the adoption rate remained minimal.

Looking back, investing in additional ePortfolio champions could have made our launch more successful (see Day, this collection). Such investment could be in opportunities for conference attendance. For example, the Association of American Colleges and Universities has an annual ePortfolio Forum; The Association for Authentic, Experiential, and Evidence-Based Learning (AAEEBL) hosts both an annual conference and regional conferences; and The Online Consortium hosts several conferences focusing in on digital learning. By adding additional ePortfolio champions into the faculty fold, full-scale adoption might have been more successful.

The documented successes of the ePortfolio selection committee were replicated when selecting an institutional-wide assessment platform. The ERAU Assessment Committee used the process described in this chapter to create a scorecard and evaluate third-party vendors. They benefited from our lessons learned and completed the selection process in half the time it took our committee to select an ePortfolio vendor.

In sum, our take-aways as a committee and as an institution do not vary widely from those of other institutions represented in this collection with regard to faculty buy-in and resistance to change. As well, training issues we encountered during the implementation phase might have been avoided by affording ERAU

students a voice equal to that of the other stakeholders during the initial planning stage. If we would have piloted the use of ePortfolios to a few select courses, we could have identified the problem areas and minimized student frustration. Equally, we could have incentivized student champions to adopt the new technology; a small group of eager students could have jump-started the initiative organically. However, our otherwise close attention to needs assessment at the beginning of the software selection process, coupled with the discernment between what we needed and what we wanted in our final requirements list, proved invaluable in the evaluation and ultimate selection of the perfect ePortfolio platform for Embry-Riddle Aeronautical University.

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Appendix A. Request for Information Form

To whom it may concern:[1]

Embry-Riddle Aeronautical University is seeking a partnership with an electronic portfolio vendor to support two residential campuses and one worldwide campus with a student population of over 25,000. Our first step is an official Request For Information (RFI).

To be considered, please respond to this RFI by 1 December.

Years in business	
Years offering ePortfolio	
Parent Company	
Number of customers	
Number of educational customers	
Customer renewal rate	
Financials	
Public or Private	
Number of employees dedicated to portfolio product	
Student license pricing model	
Institutional pricing model	
Post graduate/transfer student pricing model	
Implementation Services	
Understanding of accrediting bodies	
Web based interface for portfolio creation	

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1.   This is representative of the original RFI's data request. The actual RFI contained seven pages of legal declarations.

Long term web access of portfolios for assessment or student use	
Searchable by key words/subjects	
Portable/downloadable	
Supported file formats	
Security and sharing options	
Drag and drop	
Outcomes assessment features	
Schema for aligning program objectives to learning outcomes to artifacts	
Private comments	
Build and apply rubrics	
Integration with existing university Systems/Learning Management Systems/Single sign-on	
Training	
Privacy policy	
LDAP Compliant	
Mobile device options	
User management/security	
508 Compliant	
Web Services Framework	
Multi-language capable	
Reports	
Measure learner growth	
Storage capacity per account	
Hosting	
Scalability	
Help Desk/Support (including online)	
Proprietary products	

Appendix B. Letter of Reference

To whom it may concern:

Embry-Riddle Aeronautical university is seeking a partnership with an electronic portfolio vendor. /// **Vendor's name here** /// suggested we contact you about a reference letter. We are interested in hearing your opinion on the following questions:

- How long have you been using the /// Vendor's name here /// solution?
- Why did you choose /// Vendor's name here /// as your vendor?
- What products and services do you use?
- How long did the implementation take?
- How responsive was /// Vendor's name here /// to your needs?
- How does the system perform for you?
- What impresses you most about the system?
- What are the system limitations?
- Did /// Vendor's name here /// provide you or your team training? If so, was the training adequate?
- How knowledgeable was the support staff?
- What surprises did you encounter during this process?
- What advice do you have as we move forward with our project?
- Would you recommend /// Vendor's name here /// as a vendor?

Appendix C. ePortfolio System Product Evaluation Scorecard

Final ePortfolio System Product Evaluation			
	Assign Y for Yes and N for No	Assign scores for each feature (1 = poor, 2 = basic, 3 = excellent)	
	Feature Available (Yes or No)	Score	Notes
Vendor Name:			
Participant Name (optional):			
Features/ Functionality			
Web based interface for portfolio creation			
Long term web access of portolios for assessment or student use			
Searchable by key words/subjects			
Portable/download-able			
Supported file for-mats			

Features/ Functionality Continued			
	Feature Available (Yes or No)	**Score**	**Notes**
Security and sharing options			
Drag and drop			
Outcomes assessment features			
Schema for aligning program objectives to learning outcomes to artifacts			
Private comments			
Build and apply rubrics			
Integration with ERP Systems/Blackboard and API			
LDAP Compliant			
Mobile device options			
User management/ security			
508 Compliant			
Web Services Framework			
Multi-language capable			
Reports			
Measure learner growth			
Storage capacity per account			
Additional Information			
Hosting			
Help Desk/Support (including online)			
Scalability			
Implementation Services			

Additional Information Continued			
	Feature Available (Yes or No)	Score	Notes
Minimum Hardware/ Software Requirements			
Training			
Proprietary products			
Understanding of accrediting bodies			
Privacy policy			
Total Score		0	
Comments			