

# Developing Electronic Institutional Portfolios for Program and Institutional Assessment

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## Abstract

*This article summarizes the lessons learned by the institutions participating in the Urban Universities Portfolio Project regarding the functional and technological requirements for creating and sustaining Web-based institutional portfolios. It draws extensively from a "functional needs analysis" conducted by project research and technical staff with an external consultant, EduTech, Inc. While the analysis was originally intended to be a technology needs assessment, it became clear during the development of the request for proposals from potential consultants that technology, per se, was not the major issue. The most pressing issues were those of aligning technology resources with analytical, evaluative, academic, and design capacities in ways that most colleges and universities have never done before.*

The Urban Universities Portfolio Project (UUPP) was a pioneering effort in several respects. As Peter Ewell notes elsewhere in this issue, the project opened new frontiers in institutional assessment, public accountability, multi-institutional collaboration, and the idea of the "urban public university" as a non-traditional, but increasingly important, part of the future of higher education. The six UUPP institutions recognized at the outset of this complex project that the quantity and variety of information and evidence needed to describe institutional mission and effectiveness required a multimedia, non-linear platform. World Wide Web and Internet tools and technologies were an obvious platform choice, but this choice introduced yet another frontier into the project landscape.

## The Dynamics of Institutional Portfolio Development

To fully understand the functional issues to be addressed in developing an electronic institutional portfolio, it is first important to understand the dynamics of portfolio development. Whether an electronic portfolio aims to capture the work of an individual, a program, or an institution, its development involves an intricate interplay between the virtual structure and content of the portfolio and the actual structures and processes represented in the portfolio. As participating faculty and staff from the six UUPP institutions outlined what they wanted to include in their institutional portfolios, they quickly realized that their own organizational capacities needed further development if they were to realize their ambitions. For example, one original goal of the project was to formulate and study a set of common college student learning outcomes. But before

this could be done *across* institutions, it had to be done *within* each institution. Only one project institution had such campus-based goals at the start of the project. By the end, all six institutions had adopted or were close to agreement on a set of campus-based learning outcomes for the baccalaureate degree.

Development and adoption of campus-wide statements about student learning goals is one example of organizational change engendered by the UUPP. Together and individually, the six institutions faced a number of other issues requiring some degree of institutional change. These transformations are not unlike those that Gilbert (1995, 1996) and Daniel (1997) describe in their studies of the application of information technologies to the teaching and learning activities of college and university faculty. Gilbert argues that widespread and effective integration of technology into higher education requires a strong institutional commitment in the form of both leadership and resources, as well as the commitment of many individual faculty members to the particular approach that is proposed. Daniel goes even further, suggesting that effective use of information and knowledge technologies for student learning requires that universities take a completely different approach to the teaching and learning enterprise. For the UUPP institutions, the development of electronic institutional portfolios introduced issues with implications for processes like planning, evaluation (assessment), and improvement; resolving these issues required leadership, resources, buy-in from faculty, and, in some cases, altogether new strategies.

Confronted with these issues, the six participating universities contracted a third-party consultant to perform campus-specific functional needs assessments. To make these assessments manageable, the consultant focused primarily on such issues as the relevant components of each campus's current technology infrastructure, the kinds of Web functionality included in campus-based and commercial products, the strengths and gaps in personnel and computer resources available to the project, and the longer-term implications for staffing and resource commitments if development and maintenance of the portfolios were to continue beyond the initial project timeframe. It was clear throughout the process, however, that the capacity for institutional portfolio development, electronic or otherwise, had more to do with the organization's capacity for assessment and improvement than with its capacity to build Web sites.

## **Defining the "Need"**

The original UUPP grant proposal did not oblige participating institutions to develop their portfolios electronically. The electronic option was conceived as a potential second stage of development. But participating campuses recognized very early in the project that the dynamic and hypertextual capabilities of a Web platform would provide an ideal venue for prototyping institutional portfolios. Paper formats would be too inflexible and would quickly become unwieldy, given the range of evidence needed to document institutional effectiveness.

Although all six institutions had well-developed (and rapidly evolving) campus Web sites, the faculty and staff involved in the project brought to the table only a modest range of Web development experience. The campus teams were composed of faculty and staff selected for expertise in such areas as assessment, institutional research, and faculty leadership, all essential components of portfolio development. While the institutional research officers had some experience with Web site development, they were not experts in this area. Moreover, the six institutions had very different information technology (IT) infrastructures and different organizational climates in general.

As the six institutions began to prototype their Web-based portfolios, it became clear that each campus had to face some fundamental issues. Should they hire or train staff in institutional research or in the provost's office to develop the portfolio Web site? Did it make sense to outsource Web development? What kinds of staffing, computing, and financial resources would be needed to continue this project when external funding was depleted?

To address these issues, the research and technology staff of the central coordinating team proposed conducting a technological needs assessment. But discussion with the broader group made it clear that technological needs were only part of larger institutional contexts that needed to be considered. Technological needs could not be meaningfully considered apart from organizational needs (i.e., the types of committee structures and organizational responsibilities needed) and analytical needs (i.e., requirements for synthesizing and interpreting campus assessment results for an external audience). The task was therefore reconceptualized as a functional needs assessment with a combined focus on the technological, organizational, analytical, and resource components required to develop and sustain electronic institutional portfolios.

## **Method**

A Request for Proposals (RFP) was developed and distributed to selected consultants who focused on technology in higher education, assessment, and organizational development. Ultimately, EduTech, Inc. was chosen and contracted to perform the assessments.

The site visits to the six project campuses occurred during the second year of the three-year project and followed a protocol developed by the UUPP project staff and the EduTech consultants. The UUPP Technology Development Associate accompanied the consultants on all site visits. The consultants prepared a site visit report for each campus visit, as well as an overall project report. As the visits proceeded, the campuses were simultaneously continuing to refine their approaches to portfolio development. Given the rapidly evolving nature of the UUPP, some of the issues that were most central when the assessment project was planned had either become less central or had evolved into different issues.

For example, two of the six campuses moved from developing their Web sites using only existing staff to outsourcing the graphical and dynamic interface development. Both had concluded that it was most effective to use existing staff to generate content and not divert their attention to mastering the technological issues. Project staff from these two campuses also realized, however, that outsourcing was effective only if the content developers had constant interaction with the contracted Web developer.

The point of this example is that the campuses were learning lessons about the functional needs of the project even while the assessors were focusing on elements considered important at an earlier point in time. The findings of the functional needs assessment thus derived as much from the campuses' own experiences as from those of the consultants. In many ways, these lessons converged, and it is those lessons in particular that are the major focus of this summary of findings.

## **Findings**

The findings of the functional needs assessment can be summarized into twelve lessons learned across a variety of functional dimensions, which include overall portfolio development strategy, organizational placement of the portfolio project, relevant campus processes, and technology resources, the original intended focus of the assessment.

### **Overall Strategy**

**Lesson One.** It is difficult to establish *a priori* commonalities (e.g., use of common templates or commonly prescribed development methods) in an electronic portfolio development project, given the diverse nature of participants and the novelty of the electronic portfolio concept. Commonalities can emerge, however, from a *post hoc* analysis, especially if the participants share experiences as they proceed.

Faculty and staff from the six participating UUPP institutions noted early in the project that there was less commonality among the campuses than originally anticipated. Participants did not think this was a bad thing, or that it somehow reduced the value of bonding the six campuses together in the overall project. While the project did not yield many solutions that worked for all six campuses, the interchange of ideas stimulated each campus to go in directions that it would not necessarily have gone on its own. One example is the development of designated paths through the portfolio to serve the varied purposes of different constituencies. While no two campuses solved this problem in identical ways, the very recognition that different portfolio visitors would bring with them different questions and priorities and the joint exploring of solutions helped to advance thinking on each campus. On the other hand, several campuses ended up "going the same way," as we saw in the decision by two of the campuses to outsource.

**Lesson Two.** Electronic portfolios have many different potential uses and can be approached with many different strategic focuses. Articulating purpose and strategic approach early in the process is essential to a successful development effort.

The institutional portfolio concept has proven to be very fertile. When planted in quite different campus environments, it has produced a surprising variety of results. In the study of the six UUPP campuses, we found that each local variety represented a blending of the character and needs of the campus within the overarching concept of the portfolio. The UUPP built on the idea that the Internet offers the possibility of creating fresh approaches to internal improvement and to external evaluation of institutional effectiveness. This discovery process took a distinct path at each campus. As a result, the resources needed, and the means for acquiring them, also varied from one campus to another.

For example, one campus approached the project with a focus on collaboration. Early in the project, the institutional research (IR) office established a Faculty Advisory Committee, and involved its members deeply in determining the nature and content of the portfolio. This collaboration established a strong sense of partnership between the faculty and other segments of the campus and established very positive attitudes among faculty toward the portfolio project and the IR office.

In contrast, the project on another campus was tightly focused and controlled by the IR office and its parent office under an Associate Provost for Academic Programs. Working in close alignment with the mission and responsibilities of these two areas, the portfolio project focused on providing data to support decision-making and communicating about the academic program review process. In other areas, such as community involvement, the role of the portfolio project was mostly to assemble links to other campus resources, rather than to influence their development. The newly created decision-support system housed within the portfolio and the academic program review components were very visible on campus; the portfolio itself was less recognized.

On another campus, the success of the portfolio project made it an attractive vehicle to support additional purposes, such as planning and accreditation. While these can be valuable and appropriate functions for the portfolio, their addition may slow the short-term progress of the project and of the portfolio.

## **Organizational Placement and Staffing**

**Lesson Three.** There is no substitute for the strong commitment of campus leadership. This is particularly important for an electronic portfolio project, where the concept is not well known and a significant amount of cooperation is required from other members of the campus community.

Where the Portfolio Project is clearly sponsored by a major office (such as a Provost's or Vice President's office) and is clearly an important priority, resources tend to be

more available. Projects that have been championed mainly by a single department, such as an office of institutional research, may find themselves competing with other campus priorities for additional resources.

The portfolio project on one campus was strongly endorsed by the Provost's Office. This Provost signaled the importance of the project as integral to many of his own goals, but also directed the efforts of his special assistant to the project and indicated strong support for the IR office as the unit to lead and carry out the effort.

**Lesson Four.** Electronic portfolio development efforts that fit well into existing program and administrative unit responsibilities will proceed quickly, but may then be limited by the existing programs' and units' roles in the institution. It is probably best to combine existing operations with some new thinking and staffing arrangements, such as the Project Director/IR office linkage enabled on some campuses by the UUPP.

One campus's project demonstrates the advantages of building the portfolio on the foundation of existing structures and priorities. This strategy made it easy for the existing offices to agree on the nature of the portfolio's contents and to divide the work. Also, because the production of the portfolio was largely based on already-existing efforts, necessary staff resources for generating an initial version of the portfolio were already in place. For example, much of the content was drawn from activities that the IR office was already carrying out as part of its ongoing responsibilities and on academic assessment activities that had already been initiated. As one project participant summed it up, the portfolio has "given us new boxes" in which to put available material.

Four of the six UUPP campus project directors were organizationally affiliated separately from institutional research, which, in most cases, provided the major staffing for the project. The two institutions that had closer organizational linkages between the campus project director and IR office were able to keep the portfolio project identified as mostly independent from mainstream IR work. This approach enabled the project directors to link portfolio development more closely with campus assessment processes involving faculty in the academic units. It also helped to keep the work from being seen as administrative overhead.

## **Campus Processes**

**Lesson Five.** Involving a broad base of campus constituents increases the likelihood that the project will be supported and useful. At the same time, it tends to create burdensome expectations. The best approach may be to incorporate a broad vision, while taking modest, incremental steps in scope and involvement.

Some campuses endeavored to build broad support for the portfolio across the university, involving many groups in its design and maintenance, and achieving a high level of visibility for the project. This kind of broad participation helped to expand the number of potential funding sources on campus and thus to ensure continuation beyond the



grant, but, in some cases, it also led to scope creep, where many more good ideas were generated than could be funded or carried out. Conversely, on other campuses, the portfolios were stealth projects, at least initially, deliberately keeping a low profile. With this strategy, the portfolio project was more easily defined and controlled, but had to be funded and staffed entirely by the entity that nurtured it; in such instances, the project may ultimately prove more difficult to institutionalize.

## **Relationship to Campus Assessment Processes**

**Lesson Six.** Electronic portfolios require substantial assessment capability, but they also help produce that capability. There is a span of capability within which electronic portfolio projects can best operate. If too early, assessment processes may not be sufficient to sustain portfolio development. If too late, the processes may be too entrenched to benefit from the insights that portfolio development provides, especially when it comes to communicating with external audiences.

The power of portfolio assessment emerges from the combination of its formative and evaluative components. That is, the process of constructing portfolios requires the individual or unit to develop new capacities for evaluation as well as to actually conduct evaluation of the current status of its work. The UUPP was initially conceived as both a developmental and an evaluative project. Participating institutions realized from the start that, with these ambitions, the project would not be simply a matter of packaging already available evidence. Rather, it would require the campuses to develop assessment capacities and to conduct assessments that would ultimately yield the contents of the portfolio.

The capacity-building that occurs in the course of developing electronic portfolios is one of the intangible, but beneficial, outcomes of a portfolio effort. As noted earlier, several campuses adopted campus-wide student learning outcomes as a direct result of the project. Even campuses that had relatively well-developed assessment processes discovered through the portfolio ways to enhance those processes and improve their ability to synthesize assessment results for external audiences.

## **The Technology Domain**

**Lesson Seven.** It does not take much hardware to develop a few electronic portfolios (e.g., institutional portfolios) in great depth. It takes a lot, however, to develop many portfolios, even if each one is rather small.

Somewhat to our surprise, the question of processing power was not a significant problem for the UUPP campuses. Most of them developed their portfolios as pilot projects that did not generate much traffic or strain the infrastructure. The projects either used servers and other resources that were already being operated by the sponsoring department or made use of centralized facilities.

On the other hand, one campus that was simultaneously developing electronic student portfolios found that the issue of processing power became significant in the early stages of project development. That is, needs for processing power have far more to do with the number of portfolios than with the size of each portfolio.

**Lesson Eight.** The development of electronic portfolios benefits greatly from ties to the institution's operational information systems, but these ties come at great cost, especially when so many colleges and universities are in the process of migrating their operational information systems. These ties are often best served through secondary data access systems, such as data warehouses.

The development of any type of portfolio—be it an institutional, student, or faculty course portfolio—benefits from the ready availability of institutional data. For example, institutional portfolios are likely to include statistical reports on student progress and performance, while student electronic portfolios can benefit from links to the courses the student takes and to archived samples of the student's course work. Course portfolios benefit from links to information about course enrollments.

Five of the six campuses involved in the UUPP were in the process of moving from a legacy system to a modern, integrated, and accessible institutional information system (SCT Banner, PeopleSoft, or a combination). The sixth already had Banner in operation. Being in transition between systems meant that some campuses had to work through a labor-intensive process to assemble data from the campus information system for either static or dynamic presentation as part of the portfolio. Eventually, though, all of the campuses will have a powerful database to draw on and, in some cases, the development of a data warehouse is also underway. A data warehouse contains data extracted from the operational system and is organized in such a way that it can be used for analysis and longitudinal study.

For institutions that are now providing only static reports in their portfolios, the coming years could bring changes in both possibilities and expectations. Once a modern campus information system is in place, it makes sense to link the portfolio to a data extract, which, in turn, is updated regularly and automatically from the operational information system or from an institution's data warehouse. This feature requires software to generate dynamic pages from the database. (Active Server Pages, Cold Fusion, PHP, and Zope's DTML are examples that are in use or being considered on UUPP campuses.) These links also require a dedicated database (Oracle or SQL Server, for example) and a programming tool to extract data from the campus system to the portfolio's own database. Although these steps become considerably easier with modern campus information system software than they were with legacy systems, matching and interfacing software and tools are still substantial tasks. In one of the most ambitious portfolio software development projects, one campus has created its own software to allow users of the portfolio to design their own queries in a menu environment.



**Lesson Nine.** There is no one right answer about which authoring software to use. The tools selected should be ones that have solid support on the local campus, perhaps those that are established as official standards by the campus IT department or the Web policy committee, or the tools that have become unofficial standards because they are used by the team responsible for creating and maintaining the university's official pages.

A range of software tools is available for designing the individual pages of electronic portfolios and assembling them into a coherent whole. (Macromedia's Dreamweaver and Microsoft FrontPage are examples of products that were in wide use on the six campuses.) Most recent versions of Web page editors are careful not to make proprietary or arbitrary changes to the html code, so the good news is that a number of tools can be used interchangeably to edit basic html on the same page. Most campuses are constructing the pages of their portfolios and the navigational links by hand, rather than through automation. One site, however, is prototyping a more complex system based on Zope, which includes an object database where elements of the pages can be stored and assembled dynamically when the page is called up.

**Lesson Ten.** Electronic portfolio development projects are best approached with independent resources that do not have to rely on central IT time and attention. Outsourcing works if and when you can find a third-party developer who listens well and is prepared to go through many iterations.

For the most part, the six UPPP campuses did *not* involve their central IT shops in the development of their institutional portfolios. Given ongoing systems migrations and other central IT priorities, it was clear in most cases that electronic portfolio development would need to proceed as a somewhat self-supported effort. Two campuses, however, were relatively more reliant on central support: the one mentioned earlier that built a decision-support environment as part of the portfolio, and another that otherwise had very limited support resources for the project. The campus that was simultaneously designing an electronic student portfolio platform also found that it was necessary to tap into central IT support for this more massive venture. A fourth campus placed the Web-development activities within the broader academic affairs division rather than among only project staff. This approach had the advantage of tying portfolio development more directly to academic planning.

Several campuses struggled with the question of outsourcing. The issue was not so much whether to outsource, but rather what aspects of portfolio development could be effectively outsourced while maintaining the level of interaction necessary to ensure that the product served its purpose.

**Lesson Eleven.** It is hard, but necessary, to draw clear distinctions between electronic portfolio projects and other campus technology initiatives, such as the campus Web site, or the migration to a new operational information system. Ultimately these projects may converge, but that determination should be made after the portfolio project has time to take shape in its own right.

The UUPP campus projects were generally *not* led by the people responsible for the university's main Web site. Each campus had to determine the distinctions between the portfolio and the main university site, and decide how closely they should be linked. It seems likely that these questions will continue to be hammered out as the portfolios and their respective campus Web sites evolve. On some campuses, there already existed active Web projects related to portfolio themes, such as community involvement or assessment of learning outcomes. In these cases, portfolio teams usually chose simply to include this existing material by linking to it.

## **Sustaining Project Development**

**Lesson Twelve.** It is difficult, if not impossible, to approach an electronic portfolio as a marginal project, that is, by adding responsibilities to already busy faculty and staff. Resource requirements can be quite variable, however, depending on the portfolio project's scope and ambitiousness and on existing equipment resources and staff expertise.

The UUPP teams were well conceived for the job at hand. Each campus's chief academic officer (i.e., the provost) was a member of the project team and attended the tri-annual project meetings. Several campus project directors were faculty leaders active in assessment, while one was an institutional research director, and two others were vice provosts with administrative responsibility for assessment. Each team had a dedicated institutional research officer (including a second IR staff member for the team where the IR director was the project director).

The involvement of these three individuals was a minimum condition for portfolio development. The functional needs assessment was particularly helpful in articulating the staffing needs necessary to keep the campus projects on track beyond the duration of the funding.

Electronic portfolio projects can vary greatly in their scope and ambition, an important consideration in determining staffing needs. In general, however, they need people in the roles outlined above, plus technical support staff. Technical support is likely to involve a combination of project-dedicated and contracted support and at least some ties to the central IT operation. One campus that used the results of the functional needs assessment to develop a budget request for the year after funding ended included .25 FTE for the project (faculty) leader, .25 FTE for institutional research (analytic) support, .50 FTE for a technical project coordinator, and \$20,000 in Web development funds. This request represents approximately \$100,000 in financial resources. The campus decided to commit \$50,000 to the project, with further investments depending on its success.

## **Discussion**

Developing an electronic institutional portfolio requires fairly substantial technological expertise and resources. But the technological aspects of the development process are not the main consideration in determining a college or university's preparedness or capacity for pursuing this development. The most important requirement for a successful electronic institutional project is sufficient organizational capacity—for planning, evaluating, and improving programs; for monitoring the outcomes of teaching and learning, research and scholarship, and professional service and outreach; and, finally, for weaving this information together into a coherent whole.

Institutional portfolio development also requires organizational capacity for change and development, in much the same manner as effective assessment of student learning outcomes (Banta et al.1988; Ewell 1997), and school improvement in general (Harris 2001; Seller 2001). Information technologies, such as the hypertext and multi-media environment offered by the Internet and the World Wide Web, offer more than just a platform on which to build electronic institutional portfolios. As Ehrmann points out (1999), increasingly sophisticated and accessible information technologies introduce possibilities for change that are only exceeded by the expectations they engender. Technology is a powerful tool for expanding the possibilities for institutional portfolio development. Colleges and universities enticed by these possibilities should review carefully and enhance as necessary their organizational capacities for campus and program planning, assessment, and improvement before investing significantly in the effort.

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