Charting a Smooth Course for Portal Development

In developing its portal, San Diego State University relied on a rubric to support decision making

By **James P. Frazee**

Before becoming mainstream, the World Wide Web made a big splash in higher education. Similarly, portals sprang up on university campuses before many corporations even saw them as a blip on their radar. Organizations such as the University of California at Los Angeles, University of Washington, and University of Delaware used their portals to promote communication and build community. Today, colleges and universities feel pressured to get a portal up and running — dynamic, individualized Web systems have become essential for institutions of higher education. In the next several years, as customer expectations grow, these organizations must further develop their Web-based technologies to distinguish themselves from their competition.[1]

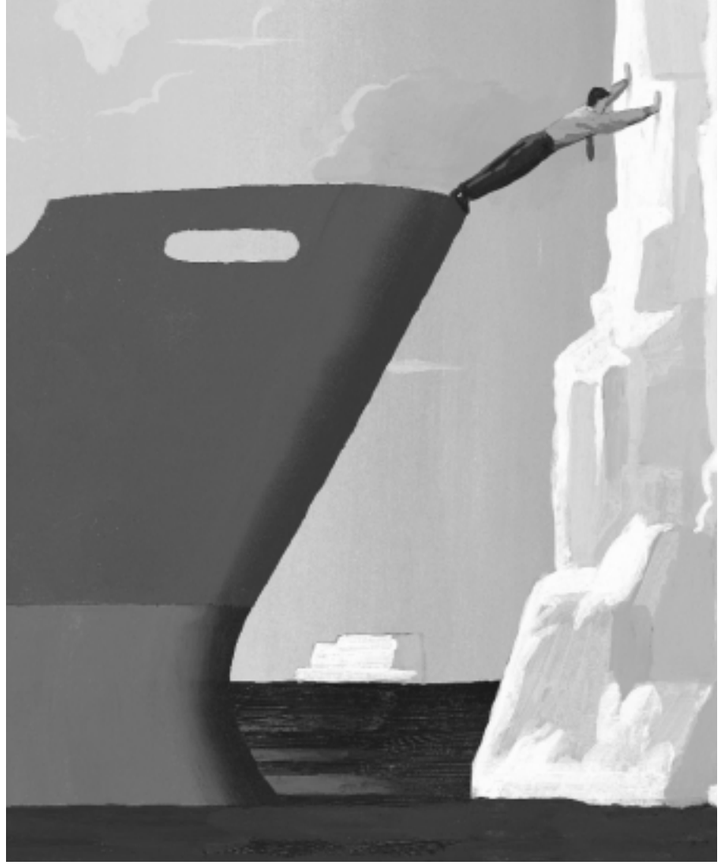
Gilbert[2] suggested that universities racing to create a portal presence first ask themselves tough questions. For example, why do we need a portal? How does it further our strategic goals? How rapidly are our peer-competitor institutions adopting portal systems? What are they gaining? What is the competitive disadvantage of delaying or avoiding such a system, or of trying and failing to implement an effective campus portal system?

Not surprisingly, those are the questions we're asking ourselves at San Diego State University (SDSU). Today, SDSU has a Web site where users cannot personalize the page to meet their individual needs and have few incentives for visiting often. The SDSU administration feels that an integrated portal could bring together current and prospective students, faculty, staff, alumni, and the community in new and customized ways.

Deciding among portal options is difficult. Whichever choice the organization makes, it's critical to use a decision-making process that ensures buy-in from stakeholders and an objective, quantifiable metric to evaluate options.

Portals can be costly. Significant time goes into the process, it can cost a great deal of money, and an organization's reputation is on the line. The organization chooses to invest in a portal instead of new faculty postions, labs, high-tech classrooms, or sports arenas. Failure represents more than a software crash — it raises questions about organizational strategy, decision-making, will, and execution.

This article describes how SDSU created a collaborative, objective, and quantitative metric, or rubric, to support the portal decision process. We used the



rubric to score different portal software systems during demonstrations, and it also served as a checklist and inventory to describe potential options.

What Is a Portal?

The term "portal" describes a variety of Web-based interfaces, everything from a relatively static corporate home page with general product and contact information to a dynamic one-stop home page where users can customize the content to meet their needs. At SDSU, our working definition of a campus portal includes two main characteristics:

1. The portal serves as a central gateway into university database systems, resources, and Web-supported courses using a single user name and password.
2. The portal lets users customize the interface to meet their needs.

Central Gateway

University portals can be described as Web browser–based gateways to information, points of access for constituent groups, and community or learning hubs.[3] At the most basic level, portals gather a variety of useful information resources into a one-stop Web site that helps users avoid becoming overwhelmed by information overload.[4] According to Dictionary.com,[5] a portal is a Web site that aims to be a doorway to the World Wide Web, typically offering a search engine and/or links to useful pages, and possibly news or other services. These services are usually provided free of charge in the hope that users will make the site their default home page or at least visit it often.

User-Defined

There's more to a portal than merely serving as a gateway to university resources. A portal must provide quick, easy, and customizable access to the things that matter most to each visitor, both professionally and personally.[6] Information should be available 24 hours a day, seven days a week; appear only when needed; and vary based on the calendar or season.

Voyage SDSU

Okay, we knew we needed a portal. Then what?

SDSU began the process of deciding on a campus portal system in the summer of 2000. University leadership formed a 16-person ad-hoc committee to make recommendations. The committee includes members from Academic Affairs, Alumni Affairs, Associated Students, Athletics, Aztec Shops (campus bookstore), Business Affairs, the University Foundation, University Relations, and Student Affairs.

Build or Buy?

SDSU's portal committee faced the question of whether to build or to buy. We had three options:

1. Develop the portal in-house.
2. Join other universities in their cooperative development efforts.
3. Purchase an intact turnkey commercial solution.

To choose among the options, we had to consider our situation at SDSU. A senior and influential member of the Faculty Senate remarked, "I have no resistance to the portal concept — better organization, a step up. But, getting out on the cutting edge can cost you. [The ad hoc committee's recommendations] must include an analysis of what we already have, how it relates to the California State University [at large], a timeframe, and fit with other [university] tech issues."

During our discussions we concluded that three limiting factors would heavily influence our final choice. First, we face competing priorities for human resources in IT. Second, time doesn't permit us to develop the portal entirely in-house. Finally, we must account for the decentralized nature of the university's diverse database systems in particular.

Given these factors, the committee felt that a hybrid build-and-buy solution might best meet our needs. Given the tight IT labor market, SDSU simply

doesn't have sufficient talent to get the development job done with internal staff alone. Therefore, the use of in-house development to enhance the off-the-shelf features of a commercial portal product might save the university time and money. However, this synergistic solution won't work well if the desired results aren't clearly defined early in the process.

Mindful of the high stakes riding on our recommendation and wanting to fairly answer the build-versus-buy question, the committee came up with a rubric (detailed later in this article) to evaluate the myriad portal software options.

Security

We placed a priority on data security and privacy. Because personal user information would be available through the portal, we needed a mechanism for authentication and encryption, with a focus on reducing the threat of unauthorized access. At the same time, the committee decided that the need for privacy had to be balanced with ease of use. To minimize security risks, we intend to put strong protocols in place to authenticate the user.

Advertising

Because many commercial portal services will host a campus portal in exchange for advertising space and marketing opportunities, the committee had to determine whether to use a low-cost, ad-sponsored portal or a higher cost, non-ad-sponsored portal. The group strongly agreed that advertising has no place on the main portal page.

The student representative on the committee said that students were concerned about advertising, and faculty also expressed concern about advertising on any SDSU academic pages. However, the alumni and athletics representatives liked the idea of advertising on their pages as a way to raise funds for their programs.

The committee suggested a possible compromise — making advertising optional on nonacademic pages. For instance, a user might turn on advertising in order to receive discounts or other benefits as a result of purchasing the products and services available through vendors advertising on the portal. (One benefit might be having a percentage of the purchase price go to the user's college, department, or program of choice.)

Full Speed Ahead, Please

As one SDSU professor put it, "Move fast centrally, or else." Portal vendors were already approaching SDSU's individual departments and colleges directly. Obviously, this concerned the portal committee. For example, if the College of Education adopts one portal while the College of Engineering adopts another, information sharing and easy, integrated access to data would almost certainly be compromised. Therefore, the committee's timeline calls for a recommendation on a university-wide portal solution for 2001.

Setting the Course

As we began charting our course, we had to consider not just the strategy in planning how to develop a portal but also how to include different decision makers without hampering the process.

Planning Strategically

Strategic planning is essentially a quest for optimals. The process must help an organization envision its dream, while remaining realistic.[7] Successful planning efforts may at first seem time consuming, but they can save time and money in the long run. Obvious as this may seem,

> …in today's frantic business climate it's easy to be stampeded into launching a portal. But before you place the first vendor phone call, much less spend the first dollar, understand the exact business value the portal will deliver.… The company that forces itself to go through a quick but rigorous evaluation process to identify its minimum goals won't have to pay the price later.[8]

At SDSU, the process for developing the portal evaluation rubric pressed us to define and prioritize our goals. The steering committee provided a valuable feedback loop and helped with buy-in. The committee decided on overall priorities and goals for portal development, then assembled, conducted, and documented committee and focus group meetings and vendor demonstrations. The committee also participated in Webcasts about portals and is conducting site visits to other campuses with candidate portal software systems in place.

Share Decision Making

Besides collecting perspectives from various parties throughout the organization, strategic planning leads a decision-making process that facilitates communication and participation, and helps those parties feel involved.[9] Because the portal touches everyone in the organization, the need for shared decision making is strong.

> Many different campus constituencies can contribute to the successful use of the portal and benefit from it. But each will also need to make changes in operations to accommodate and fit into the new system, and to take full advantage of new options for communication and information distribution. Consequently, each group should be engaged as early and effectively as possible in the decision and implementation process.[10]

Portals provide benefits, of course, but they also require that a decentralized organization standardize some aspects of its operations. Surprises wouldn't go over well at SDSU or elsewhere.

We used existing course management software to create a shared workspace for the portal steering committee (see Figure 1). The shared workspace provides links to external Web pages, connects to internal project documents, and can poll participants as issues arise. Using this polling feature (Figure 2), we asked committee members to prioritize the different dimensions within the evaluation rubric. This allowed the group to dis-

Figure 1

Portal Committee Shared Workspace

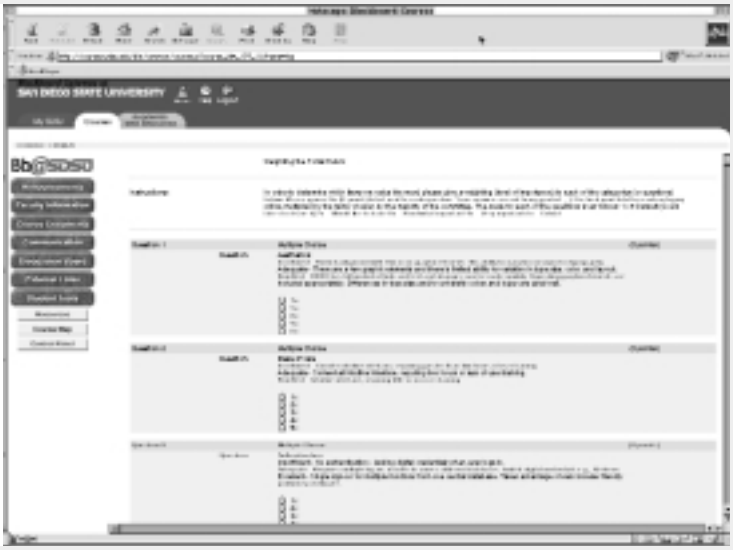


Figure 2

Polling to Define Priorities

play the attributes that people perceived to be most important for a university portal system.

Today's commercial portal vendors make many claims. They claim their portal system will increase communication, build community, and bring buckets of money into the university. Who decides which features are most important? SDSU needed a process for decision making that assured buy-in from all stakeholders. Listing needs began early on in the process. Committee discussions were based on a review of recent literature about portals in higher education and planning for commercial vendor demos. Through these discussions the group created a list of priorities that transformed into broader goals and finally to the formation of the rubric for evaluating portals.

Navigating the Endless Sea: SDSU's Compass

With a multitude of portal software vendors catering to higher education, we needed an instrument to point us in the right direction and guide us on our voyage. Enter the rubric.

What Is a Rubric?

A rubric is a scoring guide that lays out the expected outcomes of a project, defines what constitutes excellence, and determines the range of performance associated with levels of competency. As Schmoker[11] pointed out, "One of the most promising developments in assessment is rubrics, with their capacity to provide useful, quantitative data on clear, carefully selected, qualitative criteria." To him, a rubric simply means a rule or guide.

The Rubric for Evaluating Portal Software at SDSU

At SDSU we created the Rubric for Evaluating Portal Software (available online at http://its.sdsu.edu/portal_rubric.pdf) to provide a set of formal guidelines or dimensions for rating portal software during vendor demonstrations. The criteria used to develop the rubric[12] were organized into 10 main sections, with each section broken into performance components as shown in Table 1. This rubric helps us objectively and quantitatively pinpoint the ways in which different portal software options can or cannot meet SDSU's requirements while taking subjective factors into account.

Keeping Score

Each performance component is rated according to how well it meets our needs: "insufficient" (0), "adequate" (1), or "excellent" (2). Each performance component is listed in the left column, with the rating scale along the top row to create a matrix of cells. The cells detail the criteria required to earn a given score for each performance component.

Table 1

Rubric Sections and Performance Components

Section	Performance Component
1. Look & Feel	• Aesthetics • Ease of Use
2. Security	• Authentication • Access • Hosting
3. Personalization	• Information Push • Information Pull (Portal Editor) • Link to Existing Course Management System
4. Interaction	• E-mail • Chat and Message Boards • Electronic Balloting and Polling • Multimedia
5. Productivity Tools	• Search Engine • Calendar • Meeting Scheduler • To-Do List • Address Book
6. E-Commerce	• Advertising Control • Advertising Revenue • Web-based Transactions
7. Workflow	• Forms Routing
8. Vendor Support	• Integration • Implementation • 24 x 7 Help • Long Term Viability
9. Open Standards	• API (Application Program Interface) • DAP (Lightweight Directory Access Protocol) • ODBC (Open Data Base Connectivity) • ADA (Americans with Disabilities Act)
10. Administration	• Staffing • User Definition • Information Channels • Time to Market • Hardware Resource Requirements • Pricing • Online Help, Documentation & Training • Smart Card

Table 2 shows an example of the rating criteria for the performance components "Aesthetics," "Ease of Use," and "Authentication." An insufficient score indicates that criteria were not met at all. An adequate score is evidence of meeting some of the criteria. An excellent score indicates meeting or exceeding all the criteria.

The committee then collectively weighted each item on the rubric for importance on a scale from 1 to 5, with 5 most important. Therefore, the total score for each item on the rubric equals the item's rating (0–2) multiplied by the item's weight (0–5). For example, if an item was rated excellent (rating = 2) and had a weight of 5, the total score for that item would equal 10.

The strategy of inviting all members of the committee to collectively assign a weight to each category encouraged everyone to reflect and interact. This data gathering process also helped shape decisions as the group moved forward.

The Rubric for Evaluating Portal Software leaves the guesswork out of scoring different portal software options. We've discovered that portal software vendors also perform better at demonstrations (that is, use our time well) when we provide them with the criteria we expect them to meet and give them examples that specify our expectations.

Smooth Sailing

Beyond creating the rubric and using it to evaluate different portal software at SDSU, we found several other factors to be critical in the shared decision-making process.

Take It Slow and Steady

Making a decision on a university-wide portal system, and ensuring the coordinated implementation of such a system, requires early inter-departmental participation and ongoing collaboration. SDSU's committee agreed that the university needed the help of an outside portal software company, and we took our time deciding on the option that would fit best. We witnessed demonstrations from Blackboard, Campus Pipeline, Computer Associates, and Oracle. We had discussions with Campus Cruiser, Mascot, and zUniversity. Some were too expensive. Others weren't sophisticated enough. Still others did not meet our performance criteria. The rubric we developed to facilitate the decision-making process helped highlight vendor shortcomings and saved us time by structuring our conversations with vendors and with each other.

The committee spent six months discovering the possibilities, defining the priorities, and evaluating the options.

Table 2

Example Rubric Criteria for one Performance Component

	Insufficient	Adequate	Excellent	Total
Aesthetics	0 points	1 point	2 points	(rating)
	Static background with few or no graphic elements. No ability for variation in layout or typography.	A few graphic elements and limited ability for variation in type size, color, and layout.	Full control of look and feel, and changes made quickly. Appealing graphic elements included appropriately. Differences in type size and/or university colors and logos used well.	
Ease of Use	0 points	1 point	2 points	(rating)
	Counterintuitive interface, requiring greater than two hours of user training.	Somewhat intuitive interface, requiring two hours or less of user training.	Intuitive interface, requiring little or no user training.	
Authentication	0 points	1 point	2 points	(rating)
	No authentication — lacking digital credentials when user logs in.	Requires multiple log-ins to access different databases — limited digital credentials, such as Kerberos.	Single sign-on for multiple functions from one central database. Takes advantage of Web browser-friendly public key certificates.	

During this long and important first phase, the committee began to create a plan, with five aspects essential to a successful portal: design, usability, training, implementation, and support/maintenance.

Consider Existing Systems

A portal must, by definition, tie together existing information systems. At SDSU, we already use a single vendor's student information and financial systems. Another consideration is the university's Web-based course management system. In our case, despite little internal promotion and after only the second year of availability, 245 faculty members already use our course management system, with almost 8,000 students accessing 475 courses online.

We also believe it essential to focus on our most critical consumers — students. Therefore, the portal must add value to existing systems and take advantage of the users' knowledge and comfort level with these tools. Hence, integration with the university student information system and Web-based course management system are top priorities.

While concentrating on providing information channels into these two mission-critical systems, SDSU plans to grow and link different parts of the portal system over time. By building on successful and familiar systems and relationships, the university hopes to expedite deployment and minimize unanticipated costs.

Ensure Management Commitment

Senior management support is vital, as we need adequate internal and external personnel and systems to support the portal system. Visible evidence of endorsement and continuing support from the university president and provost is usually measured by the perceptions of those affected, rather than public acknowledgement of some portal policy.[13] One of the most effective ways of ensuring that the new system will succeed is to regularly reinforce and recognize development efforts, both publicly and privately.[14] The portal committee will recommend that university leadership devote the financial and human resources necessary to promote the SDSU portal both internally and externally.

Develop an Internal Portal Team and Designate a Leader

A special team must support the portal system by ensuring fresh content and monitoring the efforts of vendors as well as departments and colleges on campus. Once the executive leadership develops, then the project leadership becomes critical.[15] Project management with the authority to get the job done is essential for success and continued support from all the players.

Once a project manager is in place, the organization should devote adequate human resources to the task. For instance, because SDSU has more than

30,000 students, we will recommend at least two database administrators, two Web application programmers, and a small group of Web design assistants for the portal project.

Demonstrate the Benefits

For users to expend the effort to adopt the portal, they must be able to perceive the advantages of this new system versus the status quo. Adopters must realize the portal system can improve their current situation. At SDSU, the committee is developing a plan to make presentations at campus department meetings and new faculty orientations to demonstrate the benefits of the portal system.

Measure Results

Use data to strive for continuous improvement.[16] Continue to collect feedback throughout the portal implementation to allow for course corrections based on evolving needs. Regular monitoring and adjustments will help ensure success. We recommend a systematic process for collecting, analyzing, and using data to inform portal directions. For example, Figure 2 illustrates how we used the Web to poll the committee in order to quantitatively determine their priorities for the portal project.

It is important to provide visible results and valuable information such as the number of users, trends, and requests for assistance, all of which can be automated. Monitoring the flow of data by analyzing portal use (for example, click patterns) may prove especially interesting. Displaying data graphically and disseminating results publicly can reveal underlying problems and tell you how effective the system is.

Once you've implemented a portal, you can continue using the rubric to evaluate the portal's effectiveness as you roll it out in stages. Ongoing measurement can help determine areas that may need improvement and attention from the committee, campus leaders, or commercial partners.

The Rubric's Value

We thought the rubric for evaluating portals would make deciding on a portal system a simple process, but that was not the case. It did help us discuss, debate, and clarify our priorities and match the contenders with those criteria. Certainly, the rubric has helped SDSU narrow the field of potential vendors from seven serious contenders to two finalists. We are currently testing software and evaluating the total cost of ownership for each. Now we're concerned about the number and skill level of personnel required to implement and maintain the portal, interoperability with existing information systems, and hardware and software costs.

While the rubric has lessened the possibilities and raised the level of discussion beyond political, the process has also made it clear that distinct areas of the university have unique requirements. For instance, Alumni Affairs and Athletics have different needs from those of Academic Affairs. Therefore, SDSU will probably embrace a multifaceted strategy that takes advantage of the specialized features of different portal vendors, rather than adopting a single portal solution for the entire university.

SDSU's collaborative portal decision-making process provides some lessons for others grappling with the same issues. The rubric can be used for scoring different portal software systems during demonstrations, and as a checklist and inventory for potential options. More importantly, the rubric can serve as a starting point for discussions that collaboratively involve the entire campus community. *e*

Resources

Blackboard: http://www.blackboard.com/

Oracle: http://www.oracle.com/portals/

Provosts on Portals: http://www.weber.edu/deisler/portals3.htm

Rubric: http://its.sdsu.edu/portal_rubric.pdf

San Diego State University: http://www.sdsu.edu

Acknowledgments

I gratefully acknowledge the help of Rebecca Vaughan Frazee, Allison Rossett, Dave Sharpe, Ethan Singer, and Donna Sneden.

Endnotes

1. C. G. Connolly, "From Web Site to Portal," *EDUCAUSE Quarterly*, 3 (2), 2000, 38–43.
2. S. W. Gilbert, "Portal Decisions Demand Collaboration — Can Portals Support It?" *Syllabus*, 2000, 1–3; <http://www.tltgroup.org/gilbert/SyllabusCol2.htm>.
3. D. Eisler, S. W. Gilbert, and G. Mehaffy, "Provosts on Portals," American Association of State Colleges and Universities, 2000; <http://weber.edu/portals/>. Provosts on Portals is a project designed for AASCU provosts and chief academic officers. It is the result of a partnership between AASCU and the TLT Group to explore just-in-time learning for very busy senior university officials. The topic for the first project is Web portals.
4. M. Looney and P. Lyman, "Portals in Higher Education," *EDUCAUSE Review*, 35 (4), July/August 2000, 28–36.
5. Dictionary.com, Nov. 2000 <http://www.dictionary.com>.
6. C. Jacobson, "Institutional Information Portals," *EDUCAUSE Review*, 35 (4), July/August 2000, 58–59.
7. A. Rossett, *First Things Fast: A Handbook for Performance Analysis* (San Francisco: Jossey-Bass/Pfeiffer, 1999).
8. S. L. Roberts-Witt, "Portal Pitfalls," *Knowledge Management Magazine*, Oct. 2000; <http://destinationcrm.com/km/dcrm_km_article.asp?id=428>.
9. D. P. Ely, "Conditions That Facilitate the Implementation of Educational Technology Innovations," *Journal of Research on Computing in Education,* 23 (2), Winter 1999, 298–305.
10. Gilbert.
11. M. Schmoker, *Results: The Key to Continuous School Improvement*, Alexandria: Association for Supervision and Curriculum Development, 1996 (ISBN: 0-87120-260-3).
12. Rubric criteria based on input from SDSU's ad hoc portal steering committee.
13. Ely.
14. Schmoker.
15. Ely.
16. Schmoker.

James Frazee (jfrazee@mail.sdsu.edu) is Associate Director of Instructional Technology Services at San Diego State University in San Diego, California.