

Identifying performance and cost measures

Creating an effective Web service requires a significant investment of resources. It's easy to underestimate the costs and overstate the benefits because the technology is so attractive. Once you've investigated the capabilities that the Web provides, and decided that the technology can provide significant benefits to important stakeholders, the next question is "Is it worth it?" In this section, we present a framework for estimating these benefits and expected costs that will help you determine whether you should make the investment.

This exercise serves two purposes. First, it identifies expected costs and benefits that are ingredients in the investment decision. Second, it quantifies these predictions in the form of explicit expectations that will enable an assessment of whether the project has achieved its goals once implemented. Explicit qualitative and quantitative forecasts of costs and performance improvements will help ensure informed decisions about this technology as a form of service delivery.

Performance measures

The benefits of a WWW initiative typically fall into three performance categories: services that are better, cheaper, or faster. WWW technologies can enable all three types of improvements, depending on the specific goals and objectives of the proposed service. The following list of sample performance improvements has been drawn from a number of sources, including the experience of the seven NYS agencies that participated in CTG's Internet Services Testbed.

Cheaper

- Time savings
- Cost savings

Faster

- Response time
- Information distribution time

Better

- Consolidation of services
- Convenience
- Improved accuracy
- Enhanced information (service) quality
- Innovation
- More frequent communication
- Wider communication
- Larger number of inquiries
- Increased use of services
- Revenue generation
- More accountability
- Human resource development
- Greater participation in administrative processes
- Additional visibility

We encourage you to think, as much as possible, in terms of outcomes and results rather than outputs. For example, think in terms of how the agency staff member, business partner, or constituent will have their lives changed, rather than how many hits your WWW pages will receive. While this will often be difficult to quantify, especially in the complex world in which your service will reside, a focus on the end results can help to clarify your

objectives and sharpen your efforts.

Some measures will be relatively easy to describe in quantitative terms, especially those in the cheaper and faster categories. Others will need to be described in more qualitative terms that, nonetheless, can be translated into empirical measures that can be quantified. For example, "increased client satisfaction" can be operationalized by "an increase of at least 25 percentage points in the number of clients who answer 'Satisfied' or 'Highly satisfied' on the customer feedback questionnaire." While collecting this information can often require time-consuming methods such as interviewing and surveying, it can contribute significantly to your ability to assess real impact.

It is important to make your expectations explicit so you can assess whether your expectations were met. Concrete statements of how you will serve citizens can help build realism into your plans. As much as anything else, grappling with the issue of what impact your project will have will help build ownership in the project in the agency, and subject your ideas to additional scrutiny and discussion that will help fine-tune your efforts and clarify your expectations.

Cost categories

Because it is easy to use, people often tend to underestimate the cost of developing an effective WWW service. Many agencies are surprised when they add up the amounts that they have spent in developing their service. The implementing technology is relatively easy to use and inexpensive. The expensive part is coordinating its development and creating or reconstituting all the information that will be provided in the WWW site. In addition, advanced features such as forms access to agency databases require customer support and technical support that may drastically affect the cost of hosting the WWW site and operating the service.

In our experience, personnel and technical infrastructure costs comprise the bulk of expenses. The cost of such items as WWW development tools and WWW servers is usually small compared with the human effort to define and develop the content of the service and the base level of computing and networking that needs to be available in the agency. In addition, such services as database access may require hosting the WWW server in-house raise the cost substantially over applications that can be outsourced.

In general, costs for developing an Internet-based service fall into five categories: resources to get the organization ready to develop the service, Internet access for end-users of the system, training and help desk support for the end-users, resources to develop the content of the service, and computer facilities to host the system. In each of these categories, there may be one-time costs that are necessary to get the project started, as well as annual maintenance and development costs to operate the service and keep it current.

Organizational readiness. Public agencies can vary tremendously in their preparedness to take advantage of this technology. Some have experience with networking and the Internet, either through work assignments or by personal experiences. Others have little experience with Web- based services, and lack the computing infrastructure needed to develop content. Public information officers and other agency staff who are responsible for public outreach in the agency often have not experimented with the variety of services available on the Web. Agency managers in general may not be well-versed in the technology, and need to become educated about the potential costs and benefits of developing these services. Developing an awareness of the technology among all levels of the agency staff may be necessary in order to enable meaningful discussion of the merits of a proposed service.

Access for agency staff and other users. In considering this category of costs, the needs of both information providers and information users need to be addressed. Some staff will provide the technical support for the service, others will participate in the development of content. Access will need to be provided for both. Depending on the goals of the project, it may be necessary for agency staff to be able to browse the WWW, receive and respond to electronic mail, communicate with other staff, and have access to specially developed internal Intranet applications. Agencies may have this infrastructure in place, or it might need to be developed further. While this equipment might also serve other purposes (such as general office automation and communication), if it is necessary for the success of the Web service, its cost must be considered in the cost of the entire project. How much of the cost is charged to the Web project varies depending on circumstances.

In all cases, the agency will need to purchase the services of an "Internet Service Provider" or "ISP" who can provide access to the Internet in a number of ways. Individual accounts with dial- in access to an ISP provides an inexpensive starting approach that grows as the number of users increases. This approach requires modem access, either directly or through a LAN, for each user of the services. Alternatively, the agency's LAN or mainframe computers may be connected to the ISP, either through a dial-up or leased connection, at a higher

cost but with increased flexibility. This method involves security considerations because, depending on the configuration, the agency resources may be available to other Internet users.

End user support. Staff and other users of the system will need training and help-desk support to make effective use of the resources. Studies have indicated that formal training is less costly than self-learning. This training and day-to-day support may be provided in-house, or outsourced to a separate organization. In the latter case, the cost of establishing and monitoring the contract must be included.

Content development and maintenance. Developing a suite of information and services that will be provided on the Web entails, at a minimum, converting existing information into a form that can be delivered by WWW servers. At present, this often requires "mark-up" activities that require special skill and can be time-consuming. This is an area in which the support tools are rapidly changing, and should be assessed based on current technology.

If the intended application involves two-way communication, (via electronic mail, by fill-in forms that users can access via the WWW, or by specialized applications that link agency databases and other applications to the WWW front end,) then the cost of developing the service may be substantial. Customer service staff will need to handle these contacts and specialized programming skills and on-site hosting of the WWW site may be required.

Development of the content, because it is so tightly integrated with agency operations, is usually done completely in-house. However, some specialized applications can be outsourced (Texas, for example, outsources the tourism feature of its statewide Web service). Basic design templates and perhaps the home page might also be contracted out to get a jump-start on developing the service.

Host of site. Once the content is ready to be installed on the Internet, a system containing a WWW server and space to store the information must be available, usually on a 24 hour a day, seven days a week basis. This may be accomplished through outsourcing or connection of the agency's WWW server. While outsourced hosting can support simple informational Web pages and electronic mail, more advanced two-way applications typically require development of a custom WWW server application that may require in-house hosting.

You will find a simple worksheet that encompasses all these on the next page. In this sheet, we assume that the one-time costs for the project will be incurred during the first year, and hence we distinguish the first year cost which may be different than subsequent years. We return to this worksheet again in chapter 4 after suggesting an approach for using it in the next chapter.

Figure 1: Blank Cost Worksheet

Setting and refining service objectives: A framework

Cost Worksheet		
	First Year Cost	Subseq. Annual
Organizational Readiness		
Training for Technology Awareness		
Planning for Internet Presence		
Access for Agency Staff and Other Users		
Hardware for End Users		
Software for End Users		
Network and Internet Access for End Users		
Other Vendor Service		
Human Resources		
Start-up Process for Equipment Procurement		
Establish and Manage Vendor and ISP Contracts		
End User Support		
Vendor Services		
Human Resources		
Establish and Manage Vendor Contractsx		
Development and Delivery of User Training		
User Time in Training		
Help Desk for Users		
Content Development and Maintenance Host of Site-Infrastructure		
Hardware for Content Developers		
Software for Content Developers		
Network and Internet Access for Content Developers		
Other Vendor Services		
Human Resources		
Start-up Process for Equipment Procurement		
Establish and Manage Vendor Contracts		
Development and Delivery of Staff Training		
Staff Time in Training		
Webmaster		
Editorial Review		
Content Creation and Coordination		
Web Site Design and Development		

Setting and refining service objectives: A framework

Staff Support for Service		
Programming Support		
Database Administration		
Other Management Support		
Other Clerical Support		
Content Development and Maintenance Host of Site-Infrastructure		
Hardware		
Software		
Network and Internet Access		
Other Vendor Services		
Human Resources		
Front-end Research and Technical Evaluation		
Start-up Process for Equipment Procurement		
Establish and Manage Vendor and ISP Contracts		
Development and Delivery of Staff Training		
Staff Time in Training		
Network and Systems Administration		
Web Server Management		
Operations Support		
Clerical Support		
INFRASTRUCTURE AND OTHER SUBTOTAL		
HUMAN RESOURCES SUBTOTAL		
TOTAL COSTS		
