DESIGNING GOVERNMENT SYSTEMS FOR DAY-ONE JOB PERFORMANCE

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Abstract

Government organizations realize that the human element largely determines the success or failure of any system implementation. Unfortunately, nearly all computer systems are designed around the processing of data and devoid of consideration of the user, or how the work really needs to be performed. As a result, training and end-user support services have flourished as a way to help users figure out how to work around these systems.

Performance support is about helping to build knowledge and job competency into the system design to enable users to be proficient on day one. By focusing our attention on the human side of computer-mediated work, we can bring the issue of job performance to the forefront and multiply its benefits throughout the organization. As a result of implementing a performance-centered approach to systems development, government organizations can reduce or eliminate training and help desk support, eliminate errors and costly rework, and institutionalize best practice approaches throughout their organization.

Using the scenario of a hypothetical government system roll-out, this paper will present the problems encountered by workers trying to learn and use the new system. Offered as an alternative to traditional systems design, this paper will present an overview of performance-centered system design, driving factors in government, and benefits that can be achieved through a performance support approach.

Author's Biography

Ms. Janet Cichelli is the Director of Performance Support Systems for WPI, a Rockville, MD-based training and technology consulting firm. Ms. Cichelli orchestrates the design and development of performance-centered systems for a broad range of federal government clients. During the past six years, Ms. Cichelli has directed system design projects for the U.S. General Accounting Office, the Internal Revenue Service, U. S. Air Force, U.S. Department of Education, National Security Agency, Federal Deposit Insurance Corporation, Department of Veterans Affairs, and the U.S. Immigration and Naturalization Service. Ms. Cichelli specializes in performance-centered systems design, performance support architecture and knowledge base design, and innovative approaches in implementation.

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Scenario: A federal agency has just rolled out a brand new computer system to support telephone inquiries from its "800 line." The system is state-of-the-art, and has been in planning and development for several years. If this were a perfect world, the hard work would now be finished. The 800-line workers would be able to turn on the computer the first day it appears on their desktop and immediately and intuitively begin using it to provide exemplary *service to the citizen*. Unfortunately, this simply does not happen.

THE PERFORMANCE CRISIS

Instead, the worker will likely spend the next several weeks or months becoming competent on the system – often at the expense of the callers. First, he'll take time away from his job to participate in extensive training to learn how to navigate the system and perform his necessary work tasks. After that, he'll be on his own. When he has a problem or question, he'll have these choices: 1) pull a coworker away from their work to get an answer; 2) wait for a call back from the help desk; 3) wade through the documentation; or, 4) just muddle through and hope he's correct.

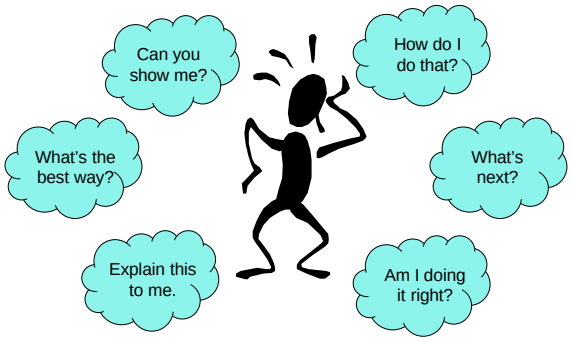

Figure 1 - Typical User in a New System

Whether we like it or not, it's people who ultimately determine the success or failure of any new system. Not the people who program the system, but the people who rely on it to get their work done. The U.S. Government spends upwards of $25 billion annually on information technology[1]. Many millions more are spent training government employees how to use these systems to accomplish their daily work.

Traditional methods of training and support simply are not effective. Training occurs as an *event* to prepare users for future work tasks. After workers have forgotten or can't adapt generic training to actual work scenarios, remedial support is required and workplace productivity and quality suffers.

GETTING TO THE ROOT OF THE PROBLEM

For many years, Government IT organizations have been working to design computer interfaces that work better and are more *user-friendly*. Early character-based systems were strong on computing power, but sorely lacking in their ability to reflect the way that people work. The emergence of the graphical user interface (GUI) provided for the first time the ability to design rich interactions, meaningful feedback, and represent the work context. So, why do we still have systems that require so much training and support?

The answer is simple. Today's systems, to a great degree, are still transaction-driven and data-centric. System design activities focus on designing screens for efficient data entry and information retrieval, with little regard to the job requirements of the worker.

As a result, we are faced with an ongoing need to help workers compensate for a system that is poorly designed and that does not support job performance.

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[1] GAO Report T-OCG-95-2: Government Reform: Using Reengineering and Technology to Improve Government Performance.

WHAT IS PERFORMANCE SUPPORT?

Performance support is an approach to systems design that has emerged over the past ten years. For virtually any system or business process, performance support provides the worker with exactly the right knowledge at the right time in the right way. And performance support isn't just a temporary crutch for the novice user. It provides a system with a low starting point for novice workers, and a high ceiling for experienced users to do the things they want and need to do.

The goal is to design systems that enable optimal human performance, which directly results in achieving the organization's business performance goals. There are two simple principles that embody what performance support is all about:

1. Design a system's GUI around the work and the worker, not just the data
2. Embed links to coaching, advice, job aids, learning, and best practices

EVOLUTION OF PERFORMANCE SUPPORT

Performance support is really the result of a natural evolution from early methods of training support. This evolution has been made possible primarily by the development of new technologies, such as hypertext, multimedia, and object oriented development tools.

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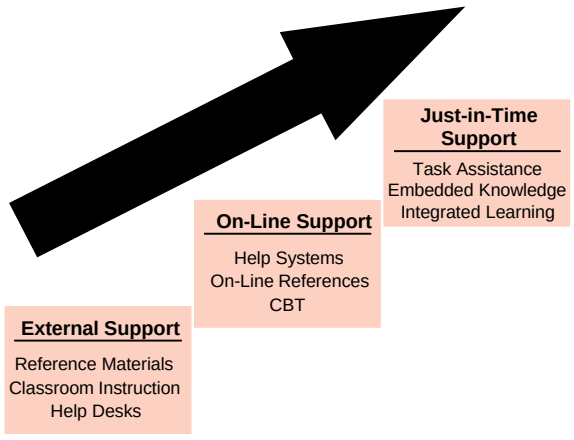

Figure 2 - Evolution of Performance Support

External Support

Before technology was available to support training, traditional methods included instructor-led training, paper-based reference materials, and help desks. Unfortunately, taking advantage of any of these methods required a worker to leave the context of the job. Competency in performing job tasks was largely dependent on "knowledge in the head," and the ability to transfer that knowledge to the "doing" of the job.

Online Support

The emergence of desktop automation and hypertext tools created a new environment for bringing training and support materials online. Few of these materials, however, were ever redesigned to take advantage of the new online medium. Online help/reference systems and computer-based training have become a mainstay in training and support. These systems can provide better accessibility than their paper-based counterparts, but a worker is still required to leave their work context to get the support needed.

Just-in-Time Support

Now, finally, we can leverage today's technologies to provide on-demand access to the necessary tools and information that workers need. Performance-centered systems anticipate a user's questions. Questions like:

- Where do I start?
- What's next?
- What should this look like?

And it delivers the right answer at the right moment. In doing so, we begin to blur the distinction between *learning* and *doing*.

Performance support has its roots in systems and instructional design, knowledge and hypertext engineering, and usability. But it is the integration of all of these disciplines that results in such a powerful, task-oriented framework of knowledge for the worker.

PERFORMANCE SUPPORT COMPONENTS

A performance-centered system has two important components. The first is the task-based, user-focused interface. Not only does this interface present the context and flow of the task to the worker, but it may also monitor their actions in order to:

- modify or adapt the display
- provide advice or guidance
- give positive feedback
- automatically display a coach, help, or tip
- provide remediation and guidance

In addition to the interface, the performance-centered system includes a seamless performance support "layer." This layer includes all of the necessary support tools and just-in-time learning elements. While the specific combination of tools may vary based on the need, Figure 3 illustrates the most common types of tools.

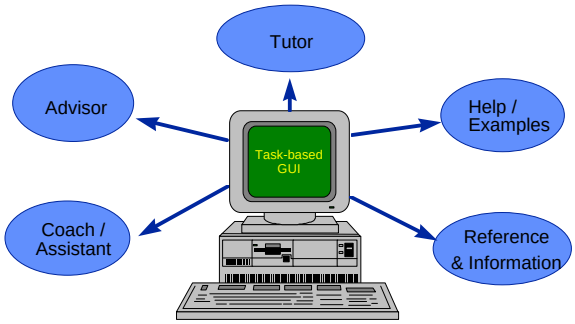

Figure 3 - Typical Performance Support Tools

With this combination of embedded knowledge and tools, the users are empowered to consistently perform at the competency level of an "expert user".

HOW DOES IT REALLY WORK?

Let's look again at our hypothetical 800-line system to see how performance support would make a difference. Sharon, our customer service representative logs onto the system for the first time. Recognized as a first-time user, the system begins an animated "Tour" of the new system. This tour, which only lasts about 4 or 5 minutes, shows Sharon how the new system will benefit her.

Then, the main system screen will display – logically and sequentially organized to represent Sharon's work process:

- preparing for a call
- answering a call
- responding to requests
- closing out the call
- follow up activities

As Sharon takes a call and selects a function in the system, her actions may prompt the display of a reminder to verify the caller's information, or even display a tele-prompter window with scripted text to help her respond to an unfamiliar request.

As she selects the appropriate action to take, the system will alert her to a brand new service that would be valuable to her caller. As she prepares to complete the call, Sharon can view a checklist to verify that she has:

- obtained all of the necessary information,
- provided the caller with the specific follow-up actions that will be taken, and
- remembered to thank the caller.

PERFORMANCE SUPPORT BENEFITS

Taking a performance support approach to complex systems can provide immediate and significant benefits to any organization. However, the benefits are especially pronounced in large government organizations deploying enterprise-wide systems.

Performance support will help bridge the gap between your novice and expert performers, decrease the time it takes a worker to become proficient, and reduce errors and rework associated with poor performance.

Additionally, with the help of performance support, government organizations will be able to:

- Have workers immediately productive on "day one" of a system's deployment
- Virtually eliminate all training that focuses on teaching system skills (often as much as 50% of a training budget)
- Significantly reduce other types of cognitive training and help desk support

- Minimizing disruptions and time scheduled away from work for training
- Improve worker satisfaction with the system
- Improve the overall quality of *service-to-the-citizen* initiatives
- Realize a considerable return on your technology investment

AN INTEGRATED DEVELOPMENT APPROACH

Performance support tools, such as coaches, job aids, tutorials and simulations can be added to a system at any time – even after the system has been put into production. However, the greatest benefits and performance gains are achieved when performance support is employed early in the system design and development process. Then, the tools can be closely integrated and a majority of the task knowledge and information can be directly embedded within the GUI, where it is most apparent and effective.

The methodology employed for a performance-centered system complements any software development life cycle. From analysis, through design and prototyping, and continuing into development and implementation, the activities are very comparable.

So, what is so different about performance-centered systems design? The differences lie in the overall goal of the system and assumptions about the users. For example, establishing a goal of "day-one job performance" will impact the way that analysis activities are conducted with the intended user audience.

To understand their specific performance support requirements, you'll need to clearly identify work processes and tasks that are critical to the job. This can be accomplished by using several different analysis techniques, including contextual inquiry, surveys, scenario-based observation, process walk-throughs, and task and gap analyses. By comparing users' current knowledge and competencies to those that are required, you can design a targeted and effective solution.

One of the primary outcomes of the performance support analysis is the development of a *knowledge map,* which represents the work process and provides a clear picture of the information and knowledge required to perform successfully.

Through performance-based usability testing the design of the system is evaluated. Unlike traditional usability testing, the goal of performance-based usability testing is to ensure that the system can be used by workers to effectively, immediately, and consistently perform their job tasks according to the established performance goals.

IN CONCLUSION

Performance-centered systems design is an innovative and valid approach for government organizations interested in leveraging their investments in information technology.

Performance support has the potential to significantly reduce the cost of training, support, and other implementation costs for large, complex systems. As a result, government agencies can raise quality and performance, while lowering costs at the same time.

To learn more about performance support, visit the industry-sponsored web site, which can be found at http://www.epss.com.