



Research-Based Web Design & Usability Guidelines

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ISBN 0-16-076270-7

Foreword—Secretary Michael O. Leavitt

I am pleased to announce this new edition of the

U.S. Department of Health and Human Services' (HHS) Research-Based Web Design and Usability Guidelines. These Guidelines reflect HHS' commitment to identifying innovative, research-based approaches that result in highly responsive and easy-to-use Web sites for the public.

The Federal government is the largest single producer, collector, consumer, and disseminator of information in the United States. The Internet provides the most efficient and effective way of making this information available to the widest possible audience. Record numbers of citizens are accessing government sites 24 hours a day to find information and services that will improve their daily lives. This makes it all the more essential that the Federal government deliver Web technologies that enable and empower citizens.

These Guidelines help move us in that direction by providing practical, yet authoritative, guidance on a broad range of Web design and communication issues. Having access to the best available research helps to ensure we make the right decisions the first time around and reduces the possibility of errors and costly mistakes.

Since their introduction in 2003, the Guidelines have been widely used by government agencies and the private sector, implemented in academic curriculum, and translated into several foreign languages. I encourage all government agencies to use these Guidelines to harness the Web in support of the President's vision of a Federal government that is citizen-centered and results-oriented.

— **Michael O. Leavitt**
Secretary of Health and Human Services

Foreword—Dr. Ben Shneiderman

Background

These new HHS Web usability Guidelines carry

forward one of the most enduring success stories in user interface design. They continue the noble tradition of thoughtful practitioners who have hacked their way through the unruly design landscape and then distilled their experience into compact and generalizable aphorisms or patterns.

Compilations of such guidelines offer newcomers a clearer roadmap to follow, helping them to avoid some of the swamps and potholes. Guidelines serve experienced experts and busy managers by giving them an overview and reminding them of the wide range of issues. Most importantly, guidelines provoke discussions among designers and researchers about which guidelines are relevant and whether a refined or new guideline should be added.

Guidelines should be more than one person's lightly-considered opinion, but they are not rigid standards that can form the basis of a contract or a lawsuit. Guidelines are not a comprehensive academic theory that has strong predictive value, rather they should be prescriptive, in the sense that they prescribe practice with useful sets of DOs and DON'Ts. Guidelines should be presented with justifications and examples.

Like early mapmakers, the pioneering developers of user interface guidelines labored diligently. Working for IBM in the mid-1970s, Stephen Engel and Richard Granda recorded their insights in an influential document. Similarly, Sid Smith and Jane Mosier in the early 1980s, collected 944 guidelines in a 500-page volume (available online at <http://hcibib.org/sam/contents.html>). The design context in those days included aircraft cockpits, industrial control rooms, and airline reservation systems and the user community emphasized regular professional users. These admirable efforts influenced many designers and contributed to the 1980s corporate design guidelines from Apple, Microsoft, and others covering personal computers, desktop environments, and public access kiosks.

Then, the emergence of the World Wide Web changed everything. The underlying principles were similar, but the specific decisions that designers had to make required new guidelines. The enormously growing community of designers eagerly consulted useful guidelines from sources as diverse as Yale University, Sun Microsystems, the Library of Congress, and Ameritech. Many of these designers had little experience and were desperate for any guidance about screen features and usability processes. Sometimes they misinterpreted or misapplied the guidelines, but at least they could get an overview of the issues that were important.

As Web usability guidelines became more widely used and consulted, discrepancies and contradictions became subjects of lively discussion at usability conferences and human-computer interaction research seminars. For example, many early Web guidelines documents were vague about appropriate numbers of links per page, sometimes falling back to mention George Miller's famous notion of seven plus or minus two. His work dealt with short-term memory capacity, but in studying a Web page, this factor has little bearing. As controversy grew, researchers collected dramatic empirical evidence that broader shallow trees were superior in information presentation websites.

Fortunately, the remarkable growth of the professional community of Web designers was matched by a healthy expansion of the academic community in psychology, computer science, information systems, and related disciplines. The research community went to work on the problems of menu design, navigation, screen layout, response time, and many more. Not every experiment is perfect, but the weight of validated results from multiple studies provides crucial evidence that can be gainfully applied in design.

This newest set of guidelines from the prestigious team assembled by the Department of Health and Human Services makes important contributions that will benefit practitioners and researchers. They have done the meticulous job of scouring the research literature to find support for design guidelines, thereby clarifying the message, resolving inconsistencies, and providing sources for further reading. Researchers will also benefit by this impressive compilation that will help them understand the current state of the art and see what problems are unresolved. Another impact will be on epistemologists and philosophers of science who argue about the relevance of research to practice. It is hard to recall a project that has generated as clear a demonstration of the payoff of research for practice.

The educational benefits for those who read the guidelines will be enormous. Students and newcomers to the field will profit from the good survey of issues that reminds them of the many facets of Web design. Experienced designers will find subtle distinctions and important insights. Managers will appreciate the complexity of the design issues and gain respect for those who produce effective websites.

Enthusiasms and Cautions

My enthusiasms for this HHS guidelines project and its product are great, but they are tempered by several cautions. To put it more positively, the greatest benefits from these research-based guidelines will accrue to those who create effective processes for their implementation. My advice is to recognize the Guidelines as a 'living document' and then apply the four Es: education, enforcement, exemption, and enhancement.

Education: Delivering a document is only the first stage in making an organization's guidelines process effective. Recipients will have to be motivated to read it, think about it, discuss it, and even complain about it. Often a live presentation followed by a discussion can be effective in motivating use of guidelines.

Enforcement: While many designers may be willing to consider and apply the guidelines, they will be more diligent if there is a clear process of interface review that verifies that the guidelines have been applied. This has to be done by a knowledgeable person and time has to be built into the schedule to handle deviations or questions.

Exemption: Creative designers may produce innovative compelling Web page designs that were not anticipated by the Guidelines writers. To support creative work, managers should balance the enforcement process with an exemption process that is simple and rapid.

Enhancement: No document is perfect or complete, especially a guidelines document in a fast changing field like information technology. This principle has two implications. First, it means that HHS or another organization should produce an annual revision that improves the Guidelines and extends them to cover novel topics. Second, it means that adopting organizations should consider adding local guidelines keyed to the needs of their community. This typically includes guidelines for how the organization logo, colors, titles, employee names, contact information, etc. are presented. Other common additions are style guides for terminology, templates for information, universal usability requirements, privacy policies, and legal guidance.

Finally, it is important to remember that as helpful as these research-based guidelines are, that they do not guarantee that every website will be effective. Individual designers make thousands of decisions in crafting websites. They have to be knowledgeable about the content, informed about the user community, in touch with the organizational goals, and aware of the technology implications of design decisions. Design is difficult, but these new research-based guidelines are an important step forward in providing assistance to those who are dedicated to quality.

– Ben Shneiderman, Ph.D.
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