Best Practices in Usability

Federal Web Content Managers Workshop

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Denver, Colorado

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What Is Usability?

- **Usefulness**
  - Degree to which users can successfully achieve goals/complete tasks
- **Effectiveness**
  - Ability of users to accomplish goals with speed and ease
- **Learnability**
  - Ability to operate the system to some defined level of competence after some predetermined amount of training
- **Satisfaction**
  - Attitude of users, including perceptions, feelings and opinions of the product

.

Booth, Paul. An Introduction to Human-Computer Interaction.
London: Lawrence Erlbaum Associates, 1989

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Why Is Usability Important to Government Online Services?

- The Federal Government is the largest single producer, collector, consumer, and disseminator of information in the United States.

- Government provides critical information…benefits, health info, safety alerts, commerce, education…

- 97 million adult Americans, or 77% of Internet users, took advantage of e-gov in 2003, whether that meant going to government websites or emailing government officials. This represented a growth of 50% from 2002. *(Pew Internet in American Life, 2003)*

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Why Now? Why Me/You?

- Government sites are heavily visited…and will be more visited in the future. More visits = more work, questions, emails, complaints, calls, etc. if the site isn't working.

- Users will begin to see commonality on Federal sites…you will be asked to implement additional policies.

- Federal web developers will be held to higher standards…is the site really better or just different…how can you prove it?

- Resources are diminishing…we're all being asked to more with less.

- You care about your users' experiences on your site.

Federal Efforts In Process

- It is essential that Government minimize the Federal paperwork burden on the public, minimize the cost of its information activities, and maximize the usefulness of government information. *(OMB Circular A-130, Management of Federal Information Resources)*

- Increasing focus on performance, metrics, data to support programs, technology, agency mission. *(Government Performance and Results Act of 1993)*

- The Federal Government is in the process of establishing specific requirements for Internet-based information technology to enhance citizen access to government information and services. *(E-Government Act of 2002)*

  - Interagency Committee on Government Information – establishing policies on web content, search/taxonomy, and electronic record-keeping

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Why We Do It

- 62% of web shoppers gave up looking for an item. *(Zona study)*

- 50% of web sales are lost because visitors can't easily find content. *(Gartner Group)*

- 40% of repeat visitors do not return due to a negative experience. *(Zona study)*

- 85% of visitors abandon a new site due to poor design. *(cPulse)*

- Only 51% of sites complied with simple web usability principles. *(Forrester study of 20 major sites)*

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Why We Do It

Forrester Review of 125 Websites (2003)

- ☐ 78% failed to provide adequate search results.
- ☐ 66% failed to provide in-depth overview of site contents on the home page.
- ☐ 64% ineffectively use of space on page layout.
- ☐ 54% were not accessible.
- ☐ 50% used text that was illegible.

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What Is Usability Engineering?

- An <u>evidence-based</u> methodology that <u>involves end users</u> <u>throughout the development process</u> to produce information systems that are <u>measurably</u> easier to use, learn, and remember
- Usability Engineering involves:
  - ☐ Collecting data about users' needs/wants/behaviors
  - ☐ Developing prototypes
  - ☐ Evaluating the prototypes
  - ☐ Designing and testing iteratively

Usability Engineering is NOT

- Usability testing just before launch
- Simply applying guidelines during design
- An expert review of the site/application
- Conducting evaluations without incorporating recommendations
- Any individual usability method on its own
- A nebulous, vague methodology
- Merely cosmetic graphics
- A property inherent in a product (It depends on the users, tasks, and work environments)

Heuristic Evaluation
(aka Expert Review)

- What is it?
  - Expert review of web site based on established guidelines
- How do you do it?
  - Conducted by usability expert (best to include multiple reviewers)
  - Experts review site for compliance with established principles
- Advantages/Disadvantages?
  - Provides a reference of issues to be tested
  - Subjective, not real users
  - Not always accurate, identifies false positives
- 50% False Alarms, 20% Misses, 50% Hits

  (Catani and Biers, 1998, Rooden, Green and Kanis, 1999, Stanton and Stevenage, 1998, Spencer, 2000, Jacobsen and John, 2000)

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Why We Do It

- **Usability Engineering Works**
  - □ It's user-centric (not developer-centric)
  - □ It's based on data, not opinions
  - □ It's testable and verifiable
  - □ It's performance-driven
  - □ Saves money and time

- **Research-based Information Design Works**
  - □ Removes much of the controversy in opinion
  - □ Performance oriented – measurably better/faster/etc.
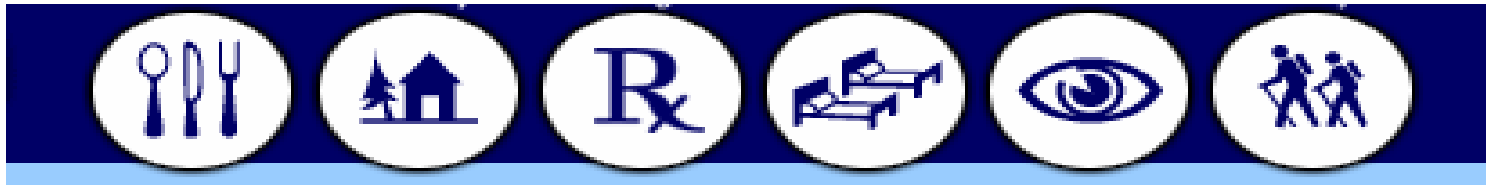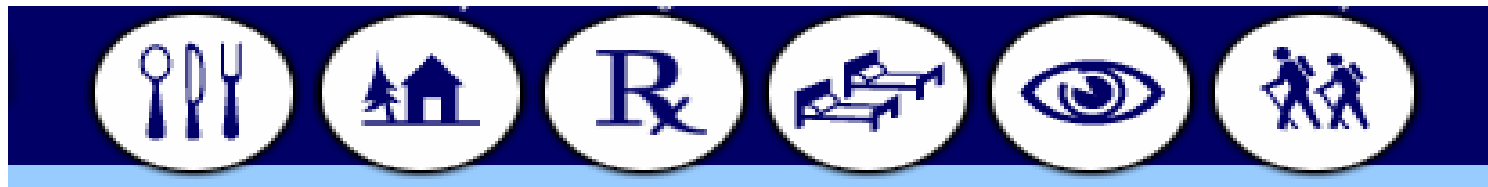 - □ Takes the guesswork out – allows you to focus on what you don't know – to solve problems

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2:1 Display Information in a Directly Usable Format

Sources: 6

2:1 Display Information in a Directly Usable Format
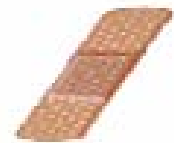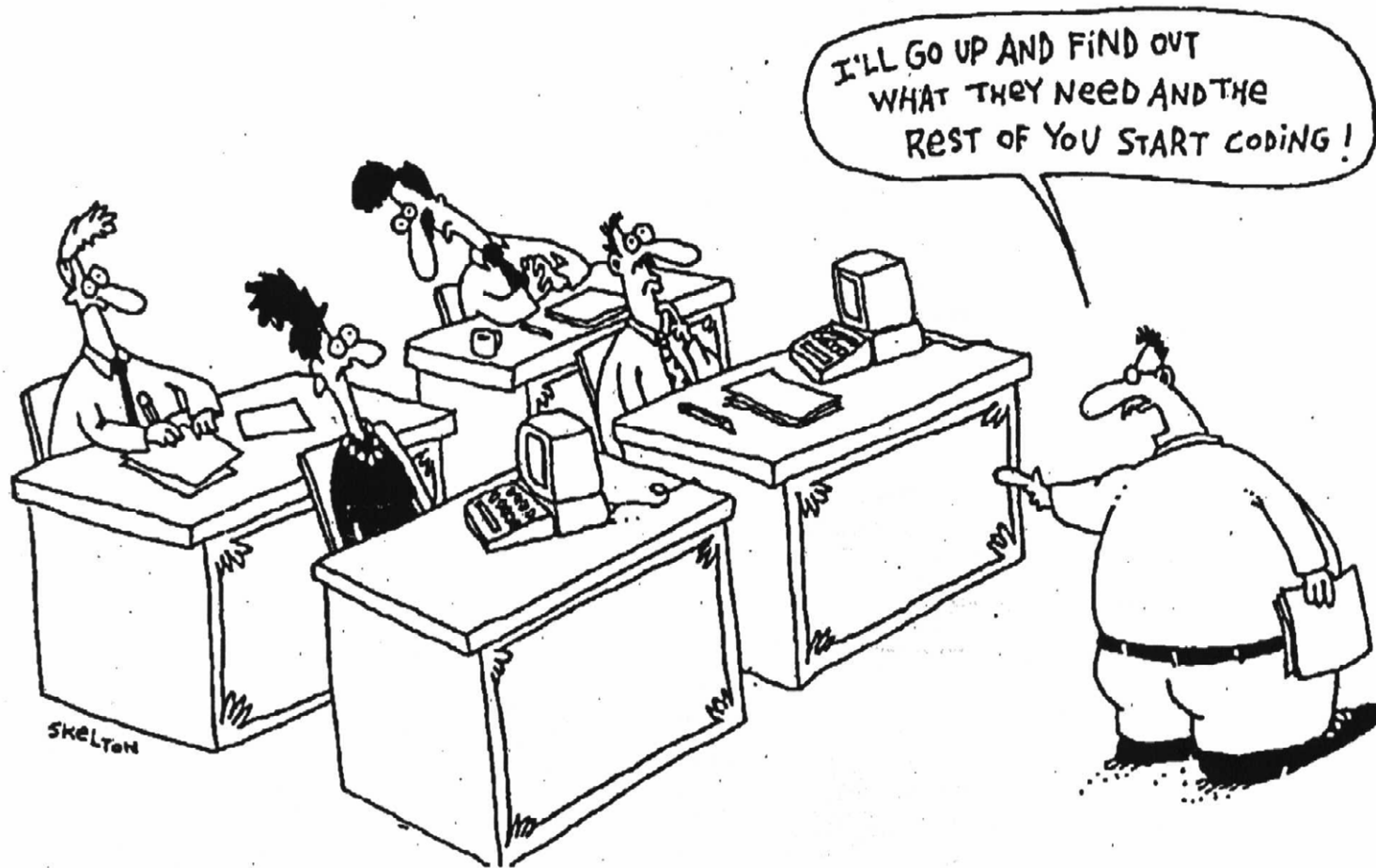
Diet   Family   Drugs   Sex   Mind   Body
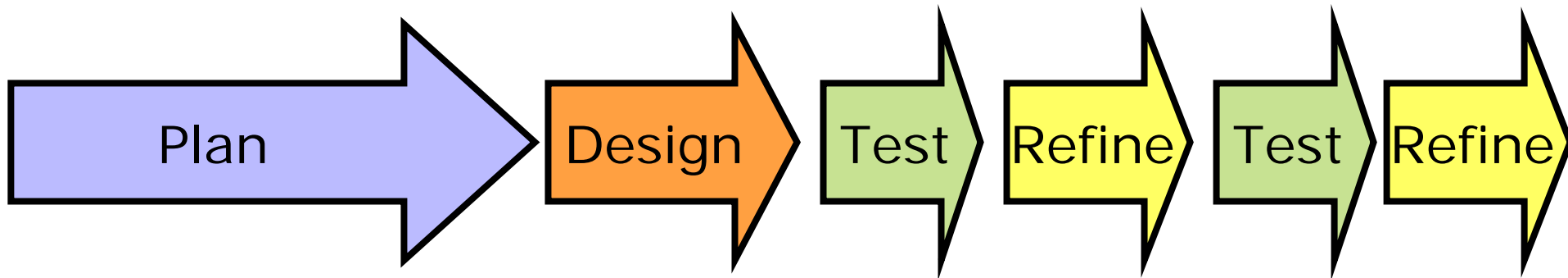
Previous   Next   Home   Search   Help

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Traditional Development Process

User-Centered Design Process

Plan → Design → Test → Refine → Test → Refine

Planning

- Planning Steps
  - Define purpose / vision for the site
  - Develop business objectives
  - Define audiences & goals
  - Conduct task analysis
  - Determine measurable usability objectives
  - Discuss expectations, requirements & preferences
  - Timeline and project plan

Planning: Site Purpose & Goals

"Although the needs of the user and the organization are connected, each has a different point of view. Each point of view must be honored and satisfied."

John Cato

User-Centered Web Design

Two main aspects of a web site

- ☐ What use is it to the organization?
- ☐ What use it is to the user?

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Planning: Site Purpose & Goals

- What is the purpose of the site?
    - Why are we building a site?
    - What are the goals of the site?
- Why are we developing a web site?
    - What does success look like?
    - How will we know when we have been successful?
- How would you describe the site?
    - From an organization's viewpoint?
    - From a user's viewpoint?

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Planning: Site Purpose & Goals

Organization's Purpose	Visitor's Purpose
■To promote awareness. ■To reduce support calls.	■ To get information. ■ To answer a question.
■ To improve employee communication	■ To get work done fast.
■To sell merchandise.	■To learn about products. ■To purchase products. ■To comparison shop.

File   Edit   View   Favorites   Tools   Help

Back   Forward   Stop   Refresh   Home   Search   Favorites   Media   History   Mail   Print   Edit

Address   http://www.state.ny.us/   Go   Links

Google   state of new york   Search Web   Search Site   1171 blocked   AutoFill   Options   state   of   new

New York State

| Governor Pataki | map NY | e-bizNYS | Citizen Guide | Search | Home |

Doing Business in NY
Working in NY
Learning in NY
Outdoors in NY
Living in NY
Government in NY
Healthcare in NY
Visiting in NY
Government Agencies in NY

Welcome to New York

Governor
George E. Pataki

Click here to view the Commission on Education Reform Press Release

Click here to view Commission on Education Reform Report

Featured Links

Click here to view Governor Pataki's 2004 State of the State Address

Click here to view Governor Pataki's 2004 Budget Address

e-file Department of Taxation and Finance - E-file/E-pay

Click here to view Governor Pataki's Address on Rebuilding Lower Manhattan.

Governor George E. Pataki Realizing The Plan Ritz Carlton, Downtown / April 24, 2003

New York State Constitution

NYS Office of Public Security

NYS Health Dept/State Police Bio-Terror Prevention Protocols

Governor's Press Releases

NY Links

STAR - School Tax Relief
High Tech NY

Done   Internet

Start   Google - Microsoft I...   New York Stat...   Cari's Web Pages   Screenshots.doc - ...   2:19 AM

Planning: Site Purpose & Goals

- **Not so good example: New York State Web Site**

Organization's Purpose	Visitor's Purpose
■To promote the governor.	?
?	■To find info about the state.

Back | Forward | Stop | Refresh | Home | Search | Favorites | Media | History | Mail | Print | Edit

Address: http://www.maryland.gov/communities/community.asp?UserID=2&CommunityID=227&Folder=0   Go   Links

Google: state of maryland   Search Web   Search Site   1171 blocked   AutoFill   Options   state   of   maryl

Welcome to Maryland.gov | State Agencies | Visit Maryland | The 5 Pillars | Online Services | Telephone Directory

MARYLAND.GOV

Home Help FAQ   Search

Advanced Search

EDUCATION | **BUSINESS** | **TRAVEL & RECREATION** | **TAXES**

FAMILY, HEALTH & SAFETY | **MOTOR VEHICLES & TRANSPORTATION** | **CAREER OPPORTUNITIES & DEVELOPMENT** | **GOVERNMENT & ELECTIONS**

Quick Links

:: County Information
:: Events
:: Federal Government
:: History & Archives
:: Kid's Pages
:: Telephone Directory
:: Traffic
:: Weather

ELEVATED

Agency Index

Select Agency...

News and Alerts

▸ Governor Ehrlich Highlights 2004 Legislative Victories

▸ New Freight Logistics Office Reflects Administration's Pro-Business Philosophy

▸ Drinking and Driving Consequences The Order of the Day At

Welcome to Maryland

▸ Visit The Governor's Website
❗ Maryland's General Assembly & The 2004 Legislative Session
▸ FY 2005 Budget Highlights

The Maryland Energy Administration

Check out MEA's newly designed website to learn about Alternative Fuel Vehicles (AFV), discover the benefits of Maryland's Energy Star Program, or just have fun with a kid friendly interactive Energy Hog!

Take me there ...

View Montage Gallery

Featured Links

▸ **The Weekly Legislative Wrap Up (pdf)**

▸ Parents & Educators Expected at **Family Involvement**

Online Services by Category

Business

Career Opportunities and Development

Education

Family, Health and Safety

Government and Elections

Motor Vehicles and Transportation

Taxes

Travel and Recreation

View Alphabetical Index

Spotlight on eGov:

Check Your Refund Status Online

Search for Undeliverable Refund Checks

Find A State Job

Real Property Database Search

Maryland E-ZPass - Enroll

File   Edit   View   Favorites   Tools   Help

Back   Forward   Stop   Refresh   Home   Search   Favorites   Media   History   Mail   Print   Edit

Address http://www.virginia.gov/cmsportal/   Go   Links

Google   state of virgina   Search Web   Search Site   1171 blocked   AutoFill   Options   state   of   virgir

Commonwealth of Virginia

virginia.gov

Enter search keyword   Search

- Virginia Communities
- Family & Education
- Business and Employment
- Online Services
- Government
- Visiting Virginia
- Featured Sites
- About VIPNet

Live Help unavailable
leave a message

The Live Help service requires advanced browser features to function. If your browser does not support the Live Help, you may still use our feedback link to contact the Commonwealth of Virginia Portal.

Online Services
Get online, not in line

- Citizen Services
  Virginia government services available to citizens.
- Business Services
  Virginia government services available to businesses.
- PDA/Wireless Services
  Virginia government services available on your PDA/Palm/wireless device.
- Premium Services
  Enhanced access services available to subscribers.

Virginia eGovernment

- Wireless Web Survey
- Tax questions through the the Department of Taxation
- Health Professionals subscription notification service
- Tax Reform Calculator
- Health Professionals Online License Renewals
- Lobbyist-In-A-Box and free Bill Tracking Service
- Virginia Tourism - Virginia's official travel and tourism Web site and Online Store for purchasing Virginia is for Lover's merchandise.
- Buy your hunting and fishing licenses online from the Department of Game and Inland Fisheries

Governor Mark Warner

Governor Warner's Web Site

Emergency Notifications

Emergency information, such as Homeland Security updates, storm warnings, drought information, War on Terrorism information, and other notices.

Personalized My Virginia Page

Create a personalized version of the My Virginia portal, with only the links you use. Or visit your existing page.

A Service of **VIPNet**

Start   Google - Microsoft I...   Virginia.gov - T...   Cari's Web Pages   Screenshots.doc - ...   2:19 AM

File   Edit   View   Favorites   Tools   Help

Back   Forward   Stop   Refresh   Home   Search   Favorites   Media   History   Mail   Print   Edit

Address http://www.myflorida.com   Go   Links

Google   state of flor   Search Web   Search Site   1171 blocked   AutoFill   Options   state   of   flor

MyFlorida.com®

my The Official Portal of The State of Florida

Welcome to Florida

Home | Find an Agency | Contact Us | 411 | Site Map | Help

Enter keywords: [   ] SEARCH   Sun April 18 2004

Visitor
Floridian
Business
Government
Get Answers

Featured e-Government Services

View all e-Government Services

County Official Records Search
Visit MyFlorida communities to do everything from visiting county web sites to finding birth certificates.

Digital Divide Council
Find out what digital divide/technology services are available in your city and around the state of Florida. You can also register your organization, technology center, school, company, or technology/digital divide initiative with us.

Florida Homeland Security
Domestic Security News, Public Safety and Prevention Protocols.

Governor's Initiatives
One Florida, Just Read, A+ Plan and more.

High Tech Job Openings
Looking for a job in the high tech field? View high tech job listings in Florida by region.

e-Gov Shortcuts

Use these shortcuts to get key services and information in one click!

Visitor   GO
Floridian   GO
Government   GO
Business   GO

Get Answers Now

Search by selecting a general topic, specific keywords, or keywords within topic.

All Categories
[   ]
SEARCH

Find Your Legislator

Enter your zip code to find your legislators.

Zip code: [   ]
SEARCH

Senators By County

411 State Employee

Search for a State of Florida Government contact or resources on a specific subject:

Hot Topics

- Florida's Voluntary Universal Prekindergarten Program
- Florida Hospital Services Guide
- Florida Guardsman Online
- Florida Statewide Strategic Plan
- Governors Task Force on Access to

Governor's Office
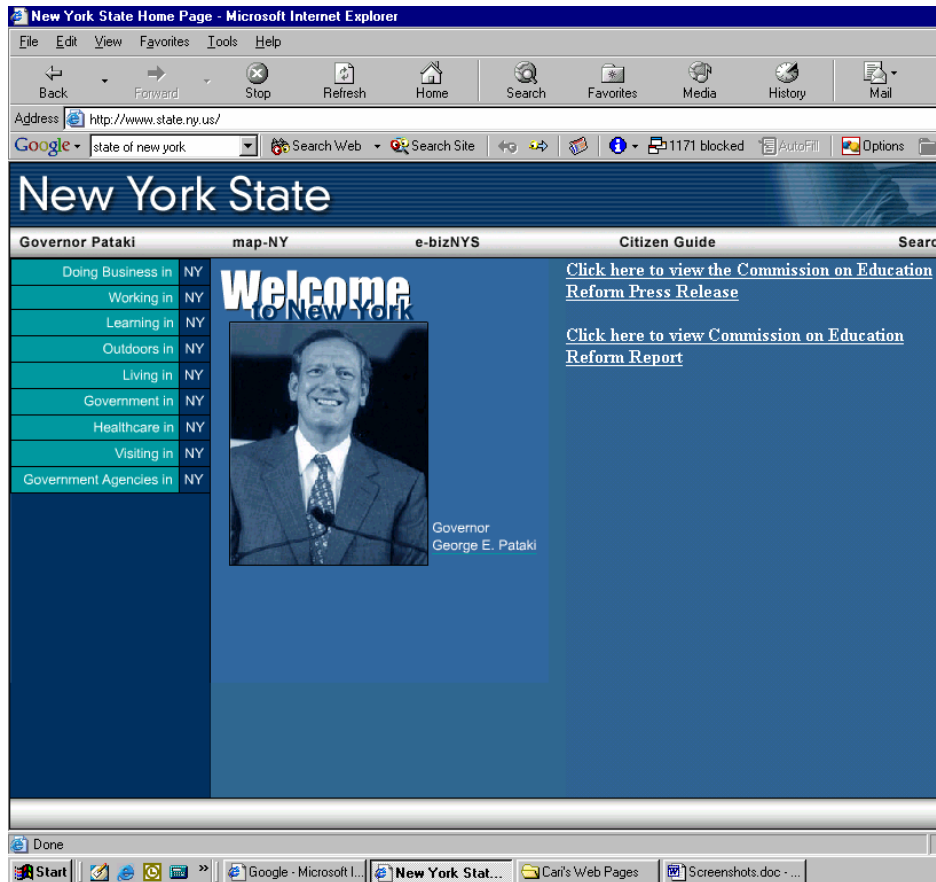
Contact Governor Bush

Done   Internet

Start   Google - Microsoft I...   MyFlorida.com ...   Cari's Web Pages   Screenshots.doc - ...   2:17 AM

Planning: Site Purpose & Goals

- **If it's not useful to users, it will never be used!**

Planning: Defining Users

- Who are we developing the site for?
  - User Characteristics
    - Who is the site for?
    - What are the users like?
  - Environmental Characteristics
    - When/where will they access the site?
  - Goal & Task Characteristics
    - Why will they come to the site?
    - What will they do on the site?

Planning: Defining Users

User Needs, Interests, Goals

- Why will users visit your site?
    - ☐ To find information?
    - ☐ To use functionality? (i.e. mortgage calculator)
    - ☐ To purchase products?

- What will users do on the site?
    - ☐ Which tasks are the most important?
    - ☐ Which tasks will users use the most? (frequency)

Planning: Usability Objectives

"It has long been said you cannot manage what you cannot measure. Nowhere is this more true than on the web – where examining what works and what doesn't directly affects the bottom line." *(Forrester Research)*

Usability objectives must be:

- ☐ Determined at the beginning of the project.
- ☐ Agreed upon by all team members.
- ☐ Written down; Referred to often.
- ☐ Measurable

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User Research:
Gathering & Analyzing Data

- When you sit down at your first planning meeting, you are NOT going to have all the information you need about users, their characteristics and their goals.

- In order to get this information, you will most likely have to do some research.

- There are several types of research. You need to decide what type is best for your project, timeframe, budget, audience, etc.

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User Research:
Gathering & Analyzing Data

- Methods of Data Collection
    - Personal Interviews
    - Contextual Inquiries
    - Focus Groups (for requirements gathering)
    - Support Line/Phone Calls
    - E-mail
    - Web Logs
    - Surveys
    - Usability Testing

User Research:
Gathering & Analyzing Data

"Which of the following best describes you?"	CancerNet			NCI	
	N	%		N	%
Family/Friends	169	28		414	27
Cancer Patients	85	14		266	17
Educators/Students	–	–		155	10
Researchers/Scientist	41	7		97	6
Nurse (non-Oncology)	15	2		42	3
Oncology Nurse	14	2		34	2
Oncologist	60	10		33	2
Physician (non-Oncology)	22	4		32	2
Journalist/Media Professional	–	–		31	2
Librarian	29	5		30	2
Patient Advocate	8	1		26	2
Other	91	15		209	14
Not specified	81	13		157	10
	615			1526	

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User Research:
Gathering & Analyzing Data

"What information are you looking for?"			
__Major Categories__	__CancerNet__		__NCI__
Information on specific type of cancer	23%		25%
Treatment information	19		17
Symptoms, causes, risk factors…..	8		5
Statistics (e.g. incidence rates, survival)	3		5
Clinical Trials	11		5
Access to other resources (e.g. treatment			
facilities, physicians)	3		4
Drug information	3		4
NIH Organization (e.g. mission, employment)	–		3
New treatments	5		3
Ordering NCI publications	2		3
Recent findings	–		2
Type of tumor (not by cancer name)	7		2
Cancer literature	5		1
Patient support	4		2
Side effects	3		2

Design

- Translating Data into Design
  - User profiles
    - List of user characteristics
  - User personas
    - Narrative of user characteristics
  - Task lists
    - Tasks ranked by importance, frequency, and feasibility
  - Task matrix
    - Tasks ordered by users
  - Task flow
    - Diagram of steps in a process

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Translating Data into Design

User Personas

Sarah Parker

Sarah is a Senior Marketing Specialist with seven years of experience planning health campaigns.

She works in a large office where she handles multiple projects. She is constantly busy and struggles with a limited budget.

Sarah can easily identify the steps necessary to carry out each project. She doesn't need help determining how to approach the planning process and mainly uses the various resources available as a reference.

Sarah would appreciate any tool or resource that could help her get her work done faster and more efficiently.

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Translating Data into Design

Task List

- Prioritize list of tasks by:
  - ☐ Importance
  - ☐ Frequency of Use
  - ☐ Feasibility

Online Banking Tasks	Importance	Frequency	Feasibility
■To check account balances.			
■To transfer funds.			
■ To pay bills.			
■ To order checks.			
■To change address.			

Translating Data into Design

Task Matrix

- List of tasks by user

University Tasks	Prospective	Students	Alumni	Faculty
■ To apply for admission.	X			
■ To find a contact number.	X	X	X	X
■ To register for classes.		X		
■ To access course catalog.	X	X	X	X
■ To donate money.			X	
■ To request a transcript.		X	X	

Translating Data into Design

- Use task matrix in conjunction with user profiles

NCI Tasks	Researchers	Physicians	Patients	Family
■ To find health information.	X	X	X	X
■ To apply for a clinical trial.			X	
■ To apply for a grant.	X	X		

- To Find Health Information
  - ☐ Are researchers, physicians, patients, and family members all looking for the same health information?
  - ☐ Need to consider user profile, including:
    - – Relationship to organization
    - – Knowledge level
    - – Familiarity with topic

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Back   Forward   Stop   Refresh   Home   Search   Favorites   Media   History   Mail   Print   Edit

Address http://www.cancer.gov/cancer_information/cancer_type/colon_and_rectal/   Go   Links

Google www.cancer.gov   Search Web   Search Site   1270 blocked   AutoFill   Options   www.cancer.gov

NATIONAL CANCER INSTITUTE

cancer.gov

- dictionary
- site map
- search

home | cancer information | clinical trials | statistics | research programs | research funding | about NCI

Colon and Rectal Cancer Home Page

What You Need To Know About™ Cancer of the Colon and Rectum
Information about detection, symptoms, diagnosis, and treatment of colon and rectal cancer.
NIH Publication No. 03-1552

NIHSeniorHealth: Colorectal Cancer
NIHSeniorHealth is a Web site that features authoritative and up-to-date health information in a format tailored to older adults.

PDQ® - NCI's Comprehensive Cancer Database
Full description of the NCI PDQ database.

Treatment ⇒
Information about treatment, including surgery, chemotherapy, radiation therapy, immunotherapy, and vaccine therapy
- Colon Cancer Treatment
  [patients] [health professionals]
- Rectal Cancer Treatment
  [patients] [health professionals]
- Bevacizumab Improves Survival in Colorectal Cancer
- More Information

Prevention, Genetics, Causes ⇒
Information related to prevention, genetics, and risk factors
- Colorectal Cancer Prevention
  [patients] [health professionals]
- Trials Show Aspirin Reduces Recurrence of Polyps
- Genetics of Colorectal Cancer
- More Information

Clinical Trials
Information and current news about clinical trials and trial-related data
- Colon and Rectal Cancer Trial Results
- Search for Clinical Trials

Cancer Literature
Resources available from the PubMed database
- Cancer Topic Searches: Gastrointestinal Cancers
- Cancer Topic Searches: Cancer Genetics
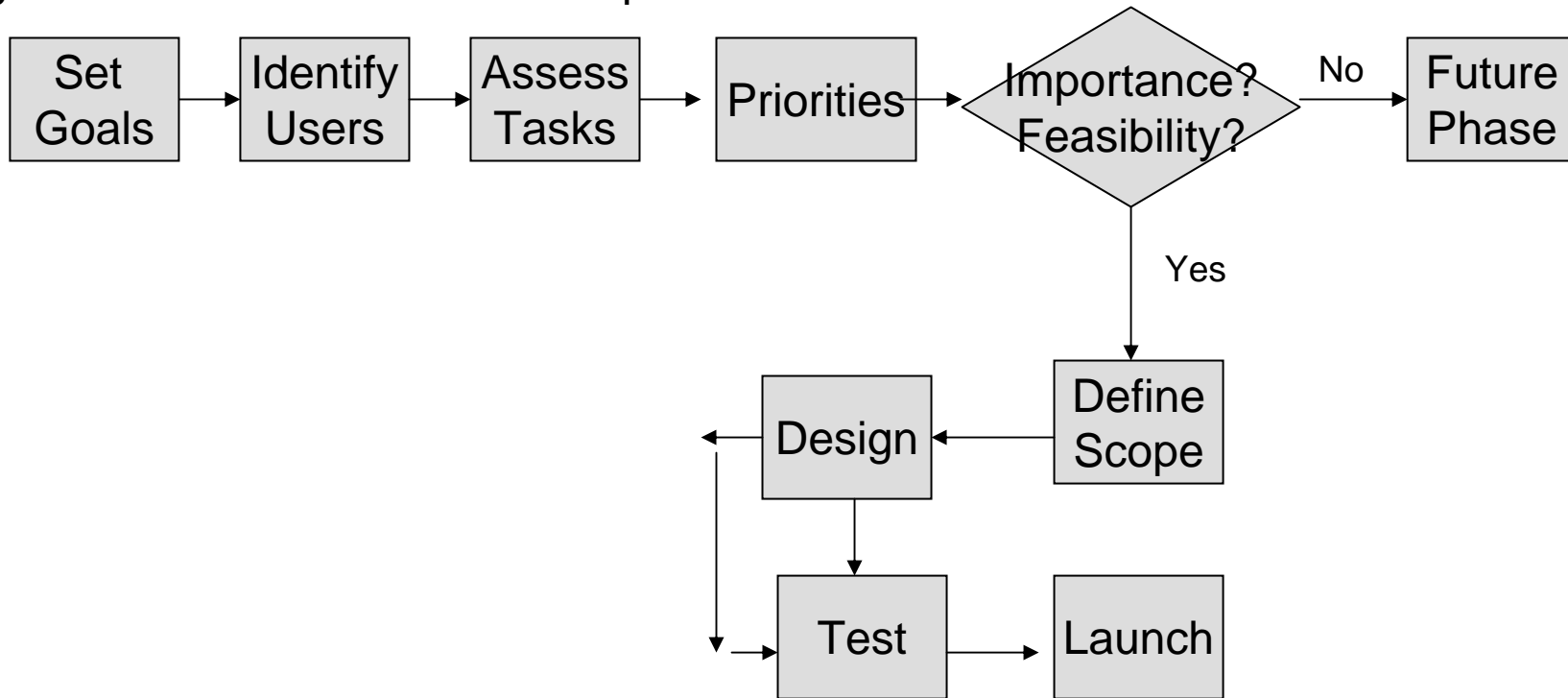- Cancer Literature in PubMed

Research and Related Information
Includes NCI-supported research, funding opportunities, and special reports
- Colorectal Cancer Research Funding Opportunities
- Colon and Rectal Cancer Research Projects
- Gastrointestinal (GI) SPOREs

---

search | Advanced | search

Cancer Progress Report

Past Highlights

Press/NewsCenter

1-800-4-CANCER
Cancer Information Service

NCI Cancer Bulletin
CLICK HERE TO SUBSCRIBE »

DIRECTOR'S CORNER
- Welcome
- Director's Update

help
- Cancer.gov Help
- FAQs
- Index of NCI Sites

Done   Internet

Start   Cancer.gov - Colon a...   8:00 PM

Translating Data into Design

Task Flow

- Diagram that shows tasks in order performed.

```
┌────────┐   ┌────────┐   ┌────────┐                ◇ Importance?  No  ┌────────┐
│  Set   │→  │Identify│→  │ Assess │→ │Priorities│→  │ Feasibility?│ →  │ Future │
│ Goals  │   │ Users  │   │ Tasks  │                                    │ Phase  │
└────────┘   └────────┘   └────────┘                                    └────────┘
                                                          │ Yes
                                                          ↓
                           ┌────────┐   ┌────────┐
                        →  │ Design │ ← │ Define │
                           │        │   │ Scope  │
                           └────────┘   └────────┘
                                │
                                ↓
                           ┌────────┐   ┌────────┐
                        →  │  Test  │ → │ Launch │
                           └────────┘   └────────┘
```

Designing the Initial Prototype

- Designing the Initial Prototype
  - Content
  - Information Architecture
  - Graphic Design
  - Programming & Accessibility

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Designing the Initial Prototype

Writing for the Web

- More info:
    - www.plainlanguage.gov
    - www.useit.com/alertbox/9710a.html
    - www.useit.com/papers/webwriting/rewriting.html
    - www.webpagecontent.com
    - www.usability.gov/guidelines

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Designing the Initial Prototype

- Information Architecture
  - ☐ Defined as the organization of the content and tasks
- How do users search for info?
  - ☐ Known-Item
    - Users know exactly what they are looking for.
    - They know what it is called and that it exists.
    - They just want to find it.
  - ☐ Casual Browsing
    - Users have an idea of what they are looking for.
    - They may not know the right labels or what it is called.
    - They may not know if the info even exists.

Designing the Initial Prototype

Card Sorting

- What is it?
    - ☐ Technique that explores how users group items
    - ☐ Helps develop structures that are logical to users
    - ☐ Maximizes probability of users finding info
- Advantages/Disadvantages?
    - ☐ Easy and inexpensive
    - ☐ Helps to develop categories that are logical to users
    - ☐ Helps to identify items that need to be renamed
    - ☐ Helps with terminology
    - ☐ Sometimes difficult to analyze, tools have limitations

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Designing the Initial Prototype

Card Sorting

- More info on Card Sorting:
    - http://www.stcsig.org/usability/topics/cardsorting.html
    - http://iawiki.net/CardSorting
    - http://www-106.ibm.com/developerworks/edu/wa-dw-uscard-i.html

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Designing the Initial Prototype

Parallel Design

- What is it?
  - Process used to quickly create multiple iterations
  - Incorporate the best elements from several designs
- How to do it?
  - Independently create a schematic of a page and/or function
  - Schematics are displayed for everyone to observe
  - Revise schematic to incorporate best elements from designs
- Advantages/Disadvantages?
  - Great brainstorming technique
  - Ensures team considers multiple designs
  - Can be time-consuming

Designing the Initial Prototype

Paper Prototyping

- What is it?
    - Low-tech method that allows you to test early, before design and development
    - Paper drawings of pages
- How to do it?
    - Participants are shown the paper prototype and given scenarios
    - Participants are asked to point to where they would click
- Advantages/Disadvantages?
    - Helps to find problems early
    - Inexpensive, saves development time
    - Help determine affordance (does it look clickable)

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Designing the Initial Prototype

Graphic Design

- ☐ The graphic design should add a layer of usability, not reduce the usefulness of a solid information architecture.
- ☐ Test design independently of content and navigation.
- ☐ Use guidelines to assist.

Designing the Initial Prototype

- Accessibility
  - Cannot be an afterthought
  - Needs to be considered at the beginning of a project

Usability Testing

- **What is usability?**
  - ☐ Usefulness
    - ■ Degree to which users can successfully achieve goals
  - ☐ Effectiveness (ease of use)
    - ■ Ability of users to accomplish goals with speed & ease
  - ☐ Learnability
    - ■ Ability to operate the system to some defined level of competence after some predetermined amount/period of training
  - ☐ Satisfaction / Likeability
    - ■ Attitude of users, includes perceptions, feelings and opinions of the product

Booth, Paul. An Introduction to Human-Computer Interaction. London: Lawrence Erlbaum Associates, 1989.

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Usability Testing

Measures of Usability

- Effectiveness *(Ability to successfully accomplish tasks)*
  - ☐ Percentage of goals/tasks achieved (success rate)
  - ☐ Number of errors

- Efficiency *(Ability to accomplish tasks with speed and ease)*
  - ☐ Time to complete a task
  - ☐ Frequency of requests for help
  - ☐ Number of times facilitator provides assistance
  - ☐ Number of times user gives up

Usability Testing

Measures of Usability

- **Satisfaction** *(Pleasing to users)*
  - ☐ Positive and negative ratings on a satisfaction scale
  - ☐ Percent of favorable comments to unfavorable comments
  - ☐ Number of good vs. bad features recalled after test
  - ☐ Number of users who would use the system again
  - ☐ Number of times users express dissatisfaction or frustration
- **Learnability** *(Ability to learn how to use site and remember it)*
  - ☐ Ratio of successes to failures
  - ☐ Number of features that can be recalled after the test

Usability Testing

- Planning
  - ☐ Define goals
  - ☐ Determine who will participate
  - ☐ Select appropriate tasks
  - ☐ Plan logistics
- Conducting the test
  - ☐ Assign roles
  - ☐ Conduct test
  - ☐ Collect data
- Analyzing & implementing results
  - ☐ Prioritize findings
  - ☐ Implement and retest

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Usability Testing

Usability objectives should be set at the beginning of the project!

Two types of data…two types of goals:

- Performance
  - What actually happened
- Preference
  - What participants thought

Usability Testing

Examples of Usability Objectives:

- ☐ Two-thirds of test participants (6 of 9) will be able to complete x% of tasks in the time allotted.

- ☐ Participants will be able to complete x% of tasks in 200% of developer's time.

- ☐ Participants will be able to complete x% of tasks with no more than one error per task.

- ☐ Two-thirds of test participants (6 of 9) will rate the system as highly usable on a scale of x to x.

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Usability Testing

- Determine who will participate
  - User profiles
    - Match characteristics from user analysis
    - Select representative group of users
  - Selecting participants
    - Recruiting – recruitment firms, databases, conferences
    - Numbers – target numbers, floaters
    - Schedule – allow recoup time
    - Pre-Questionnaires – profile of participants
    - Incentives – consent & payment form

Usability Testing

Select Appropriate Tasks

- Focus on core tasks, prioritize by
  - ☐ Frequency
  - ☐ Importance
  - ☐ Vulnerability
  - ☐ Readiness
- Ensure each task is measurable. Define success measures for each task.
  - ☐ Include pathway information for observers
  - ☐ List the items that should be recorded for each task so note-takers and observers record the appropriate information
- Conduct a pilot test to look for give-away wording, confusing scenarios and to work on timing

Usability Testing

Collecting data

- **Performance Data**
  - ☐ Objective *(what actually happened)*
  - ☐ Usually Quantitative
    - ■ Time to complete a task
    - ■ Time to recover from an error
    - ■ Number of errors
    - ■ Percentage of tasks completed successfully
    - ■ Number of clicks
    - ■ Pathway information

Usability Testing

Collecting data

- **Preference Data**
  - ☐ Subjective *(what participants thought)*
  - ☐ Usually Qualitative
    - Preference of versions
    - Suggestions and comments
    - Ratings or rankings *(can be quantitative)*

Usability Testing

Collecting data

- **Observation** – What actually happened
- **Inference** – What you think it means
- **User Comments** – What the participants actually says

- Important to distinguish between these

Usability Testing

Analyzing the data

- Quantitative data
  - Statistics (number of clicks, errors rate, time, etc.)
  - Look for trends
- Qualitative data
  - Attitude, comments

Usability Testing

Prioritize findings

- Usability goals met?
    - ☐ Prioritize tasks that performed the worst according to goals
    - ☐ Prioritize findings by frequency / importance
    - ☐ Prioritize recommendations by feasibility

Usability Testing

Report findings and recommendations

- Make report usable for *your* users
- Include quantitative data (success rates, times, etc.)
- Avoid words like "few, many, several". Include counts
- Use quotes
- Use screenshots
- Mention positive findings
- Do not use participant names, use P1, P2, P3, etc.
- Include recommendations
- Make it short

Implement and retest!

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Finding: Participants were not sure where to look first and had trouble identifying the most important aspects of the page.

Navigation that changes with tabs

No obvious order of importance. Participants did not know where to focus their attention.

Colorful Images / Banners

Dark Blue Left Navigation

Large Photo

Lots of Links with Red Headings

Refine

- Most important step is to refine….
    - Test
    - Refine
    - Test
    - Refine….

U.S. DEPARTMENT OF HEALTH & HUMAN SERVICES

WELCOME TEXT VERSION FAQs SITE INFO WHAT'S NEW

No tagline

Help Us Improve This Site

Get Information On: A-Z or [Select a topic ▾] [Go] FIRSTGOV

The A-Z link was overshadowed by the text before it and the drop-down after it.

CLOSING THE Health Gap

Latest Headlines:
➤ **HHS** Awards More Than $8.4 Million in Grants to Address Nation's Nursing Shortage
➤ **HHS** Secretary Thompson Forges Partnership with America's Nurses to Enhance Public Health Preparedness
➤ Secretary Thompson Urges Congress to Pass President's Plan to Assist Uninsured

SPOTLIGHT ON
West Nile Virus Information

Only about 35 topics were available through this drop-down.

the White House
President George W. Bush

DONATE LIFE

USA Freedom Corps

THE CENTER FOR FAITH-BASED & COMMUNITY INITIATIVES

SEARCH
NEWS
AGENCIES
OPPORTUNITIES
ABOUT US
RELATED SITES

1-877-696-6775
200 INDEPENDENCE AVE SW
WASHINGTON DC 20201

DISCLAIMERS PRIVACY NOTICE FOR KIDS FOIA CONTACT US
Last revised: September 30, 2002

Users thought the picture links were sponsors.

Search was a button with no box for typing search terms.

All the content is at agency sites. To get to it, users had to pick the right agency from the descriptions on the page this leads to.

The center of the screen was taken up by news items, not the major topics users were looking for.

United States Department of
Health & Human Services

Leading America to Better Health, Safety and Well-Being

Skip Navigation

- **HHS Home**
- **Questions?**
- **Contact Us**
- **Site Map**

[Search] **Search**

Diseases & Conditions

- Heart Disease, Cancer, HIV/AIDS, Diabetes...
- Mental Health
- Treatment, Prevention, Genetics
- Clinical Trials
- Addictions, Substance Abuse

Safety & Wellness

- Eating right
- Exercise, Fitness
- Safety Tips and Programs
- Smoking, Drinking
- Traveler's Health

Drug & Food Information

- Drugs, Dietary Supplements
- Food Safety

Families & Children

- Medicaid, other health insurance
- Child Support, Child Care, Adoption
- Domestic Violence, Child Abuse
- Vaccines

Aging

- Medicare
- Health Issues
- Coping and Caring

Specific Populations

- Women, Men, Children, Seniors
- Disabilities
- Racial and Ethnic Minorities
- Homeless

Resource Locators

News   3:05 PM Wed, Sept 03

West Nile Virus

- **September 2, 2003** — HHS Provides $1.4 Billion More to States and Hospitals for Terrorism Preparedness
(Full Story)

- **August 28, 2003** — HHS Approves Illinois Plan to Expand Coverage to an Estimated 20,000 Uninsured Children
(Full Story)

All HHS News

Features

- **Privacy of Health Information/HIPAA**
- **Improving Head Start**

Separates and visually distinguishes the search function.

Displays time-critical and/or sensitive information prominently in the right panel.

Displays information topics openly – they are immediately visible and available to the user, not buried in a drop-down list or in an alphabetized resource list as on the original HHS homepage.

Establishes HHS as a 'brand' by presenting the breadth of the Department's activities and products – health AND human services – on the portal pages.

HHS Site:
Baseline vs. Redesign Comparison

Scenario Text	Success Rate	
	Baseline Test	**Final Prototype**
You want to find a nursing home for a relative.	38%	88%
You want to know what diabetes is and how you can prevent it.	73%	94%
You want to know what housing organizations are available to help assist the homeless in your area.	13%	94%
You want to know what the Fiscal Year 2001 budget for HHS was.	71%	94%
Your cousin is considering a career in medical research and asked you if HHS offers financial aid to undergraduate students.	8%	88%
Average success rate	**41%**	**92%**

Federal Usability Resources

- Many usability resources and training are available.
- YOU can add to those resources.

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Usability.gov

- **http://usability.gov**
- **Website to help increase the usability of Federal websites and online applications**
- Includes usability basics, methodology, tools, resources, lessons learned, and more
- Built for Federal web/communication technology developers but available to anyone
- Currently undergoing redesign
- Cosponsored by the U. S. Department of Health and Human Services (HHS) and GSA

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Research-based Web Usability

- **Research-based Web Design and Usability Guidelines (2003)**
- 187 guidelines based on research in usability, user interfaces, human factors
- Peer-reviewed by usability experts, usability researchers, and website developers/designers
- PDF available on http://usability.gov (web version coming soon), Book available on amazon
- Update in process
- Cosponsored by HHS and GSA

Research-Based Web Design & Usability Guidelines

U.S. General Services Administration

Research-Based Web Design & Usability Guidelines

U.S. Department of Health and Human Services

Current Research-Based Guidelines on Web Design and Usability Issues

Note: All files on this website are PDFs. To view or print a PDF you need to download free **Adobe Reader** software.

View and Print Entire Guidelines Book
(128 pages, 39.2 MB)

or

View and Print Guidelines Book by Section

- Introduction and Background
- Guidelines by Chapter
- Sources/Bibliographies
- Glossary, Indices, and Appendices

New Features

- Guidelines Sorting Tool: Sort Guidelines by Title, Importance, Strength of Evidence, and Other Options

Introduction and Background

- Forewords (3 pages, 276 K)
  Tommy G. Thompson, Secretary of Health and Human Services
  Ben Shneiderman, University of Maryland
- Introduction (2 pages, 40 K)
- Background and Methodology (2 pages, 48 K)
  Includes detailed Strength of Evidence scale
- How to Use the Guidelines (2 pages, 44 K)
  Includes important considerations for using the Guidelines
- Contributors (2 pages, 40 K)

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Guideline Categories

- Design Process and Evaluation
- User Friendliness
- Accessibility
- User's Hardware and Software
- The Homepage
- Overall Page Layout
- Navigation
- Scrolling and Paging
- Links

- Headings, Titles, and Labels
- Text Characteristics
- Lists
- Data Entry and Widgets
- Graphics, Images, and Multimedia
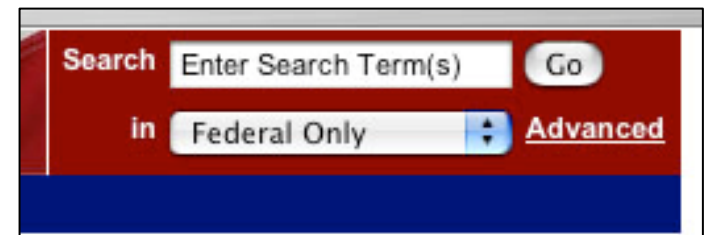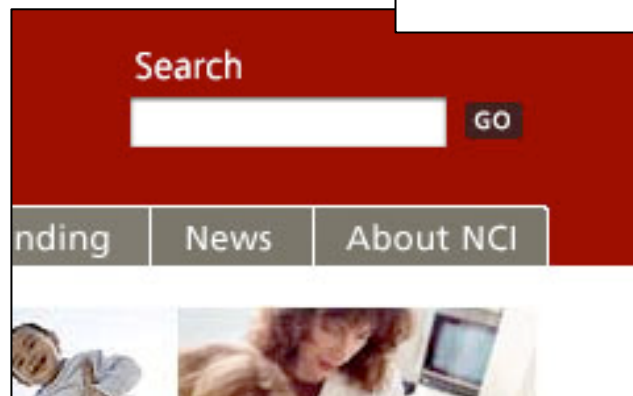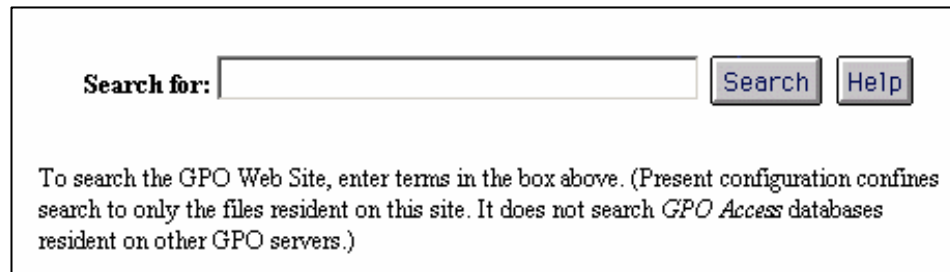- Writing Web Content
- Organizing Content
- Search

GSA **U.S. General Services Administration**

17:3 Allow Simple Searches

Importance ●●●●●
Evidence ●●●●○

Sources: 7

17:3 Allow Simple Searches

Search the Archives

TIP: use quotation marks around proper names and multiple word searches, e.g., "confiscated british property", "John H. Johnson". Remember that proper names can be on the website with or without the middle initial.

(i) **Click on this icon for a description of the search.**

(i) Search the Archives website using Google™	(i) Search the Maryland Manual Online	(i) Search the Archives of Maryland Online	View other Archives' Indexes
(i) Search Special Collections	(i) Search for Biographical Information	(i) Search the Government Publications Database	(i) Search the Archives' Library

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17:3 Allow Simple Searches

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Google Search - Use the Google™ search engine to search the entire Archives' website. USE THIS SEARCH

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Biographical files - Search the Maryland State Archives' web site for biographical information on people who have played a part in Maryland history. See the *Archives of Maryland* Historical & Biographical Series for more information. USE THIS SEARCH

Government Publications - Search the titles of an extensive bibliography of State, county, and municipal publications. See also *Archives of Maryland Online* for online Maryland government publications. USE THIS SEARCH

Library - Search the Archives' Library by author, title, description, subject or family name (for genealogies). These books are only available by request in the Archives' searchroom. USE THIS SEARCH

Usability University

- **Free seminars and low-cost courses on usability topics primarily held in Washington, DC area**
- Spring 04 – 387 Federal staff/contractors representing more than 30 agencies attended
- Cosponsored by GSA & HHS
- **Spring 2005 schedule**

Courses:

http://usability.gov/usabilityuniversity/training.htm

Seminars:

http://usability.gov/usabilityuniversity/seminar.htm

U-Group e-newsletter

- **GSA e-newsletter on usability topics**
- To subscribe:

  Send email to listserv@listserv.gsa.gov and type the following command in the body of message: subscribe u-group
- September, 2004 Issue – Older Users and the Web
- http://www.gsa.gov/u-group

GSA **U.S. General Services Administration**

Usability Testing Environment (UTE) Tool

- **Automated tool that collects quantitative and qualitative data generated in usability testing**
- Will provide easier, more accurate, and quantitative reporting of website usability performance and preference data
- Beta version in testing now, will be available to all Federal web/application developers
- Cosponsored by GSA, IRS, NRC, HHS, NIST IUSR Project

STEP508 Accessibility Tool

- **Accessibility prioritization tool that takes results of accessibility evaluation tools (Bobby, LIFT, WebKing, etc.) and prioritizes the accessibility errors**
- Helps developers assess current state of accessibility of website, prioritize the accessibility problems to fix, and track progress in fixing accessibility errors over time
- Free download from http://section508.gov/step
- Cosponsored by GSA and HHS

GSA **U.S. General Services Administration**

Usability Organizations

- **Usability Professionals Association (UPA)**

  http://usabilityprofessionals.org

- **Society for Technical Communication (STC)**

  http://stc.org

- **Human Factors and Ergonomics Society (HFES)**

  http://hfes.org

- **Association for Computing Machinery/SIGchi**

  http://acm.org

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