

Extreme Makeover

UI Edition

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Human Interface Design
Fidelity Investments | Fidelity Center for Applied Technology

June 30, 2005

Introduction

- The goals of this project
 - Create an educational piece that showed the application of “best practices” in interface design.
 - Show the benefits of user-centered design.
- Choosing a Site
 - We received 149 nominations!
 - Our criteria:
 - An intranet site.
 - A site that was informational; not an application.
 - A site that didn't require subject matter expertise.

Introduction

The Site We Chose

- The site provides information about Corporate Security services in the Boston region of our company.



Site was launched in November, 2003. Our project begin in March, 2004.

Introduction

Site Demo

- Let's take a look at the site.
What usability issues do YOU see?



CLIP #1: Homepage



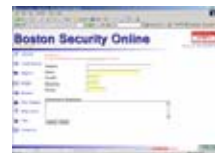
CLIP #2: Overview Page



CLIP #3: Travel Page



CLIP #4: Access Page



CLIP #5: Contact Page



CLIP #6: What to do if Page

Our Approach to the Project

1. Identify problems with the “Before” site.
2. Gather user input to apply to the new design.
3. Design the new site.
4. Evaluate the “After” design.

1. Identifying Problems with the Original Design

- Usability Testing: Round 1
- Expert Reviews

Identifying Problems

Round 1 of Usability Testing

- 16 participants
- 17 tasks
- Some sample tasks
 - “The security guards at the World Trade Center helped save you when you choked on a pretzel in the lobby. Find the name of the security manager so you can send an email to praise the staff.”
 - “Your boss recommended getting a device to secure your laptop to your desk while at work. Obtain such an item.”
 - “Your team on the 8th floor of 82 Devonshire is working on a project that requires you to get into the building late at night for the next month. See about securing this privilege.”

Identifying Problems

Round 1 of Usability Testing, continued.

- Study yielded over 100 usability issues.
- Samples of the issues we uncovered:
 - No way to get back to the home page.
 - Text is not formatted to facilitate scanning.
 - Use of blue for non-clickable text is confusing.
 - Users wanted more info on the “Contact Us” page.
 - No phone number available for non-emergencies.
 - Confusion over “After-hours Access” vs. “Restricted Access.”

Identifying Problems

Round 1 of Usability Testing, continued.

■ Results

- Average Time on Task: 68 seconds
- Average Task Completion Rate: 67%
- Average User Satisfaction Rating: 49%
Using the System Usability Scale (SUS)

These results were the performance benchmarks for our project.

Identifying Problems

Expert Reviews

- Independent of the usability study, 3 UI designers reviewed the site, resulting in a list of 89 issues, such as:

- Global Issues
 - The site was designed as fixed width.
 - Page transitions were inconsistent.
 - Lots of text was implemented with graphics.
- Visual Design Issues
 - Forms design was inconsistent.
 - Multiple page layouts.
 - Two different icon styles.
- Page Design Issues
 - Some pages had frames.
 - Ineffective font hierarchy.
- Navigation Issues
 - Inconsistent navigation methods from page to page.
 - Current selection not highlighted in menu.
 - Order of menus not “most important” to “least important.”
- Home Page Issues
 - Takes too long to load.
 - No important info on the page.
 - Rollover menu not effective.

2. Gathering User Input to Apply to the New Design: Focus Groups

■ Focus Group Goals

- What did users think of existing home page?
- What types of info would users expect to find on a regional security web site?
- What info would users like to see on the home page?

Gathering User Input Focus Groups, continued.

■ Focus Group Structure (1.5 hour sessions)

- 15 minutes: Basic Instructions, background questionnaire
- 30 minutes: Brainstorming
- 25 minutes: Discuss the original (“Before”) home page
- 25 minutes: Discuss Category/Menu names
- 15 minutes: Discuss the original “Overview” page

■ Focus Group Participants

- 10 employees from Boston region from a variety of business areas
- Length of Fidelity employment:
 - 10%: 1 to 3 years
 - 40%: 4 to 7 years
 - 50%: 8+ years
- 80% had **never** been to this web site

Gathering User Input Focus Groups, continued.

■ Results

- Feedback on “Before” home page:
 - “The rollover is a waste of space.”
 - “Looks good, but no content.”
 - “There’s no Emergency info right in your face.”
 - “Why is there so much ‘blue’ on the site?”



Gathering User Input Focus Groups, continued.

■ Results, continued.

- Info they'd like to see on the site:
 - Emergency/What to do if
 - Incident Reporting/Contact
 - Boston-specific Info
 - Information on regional “sites”
 - Travel Security information
 - Special Event information
 - Building Access information

Strongly Disagree - 3 to + 3 Strongly Agree

Gathering User Input

Focus Groups, continued.

- **Results, continued.**
 - Info they'd like to see on the home page:
 - Emergency info!
 - Contact info
 - Security Alerts
 - Travel Security information
 - Special Event information
 - The home page needed a redesign:
 - "I have a good idea what is behind the main menu categories on the home page." **Average: 1.9**
 - "I think there is enough info on the home page." **Average: .8**

Strongly Disagree - 3 to + 3 Strongly Agree

"Use very specific wording. 'In case of emergency.'"

"Don't get fancy. Stay clear."

"Remember who your audience is. Someone may be in a rush or wiggling out...."

"Clearly defined links."

Gathering User Input

Focus Groups, continued.

- **Results**
 - Feedback on "Overview" page:
 - "It isn't an 'overview' of the site, it is an 'About Us' page."
 - "Meet the Staff' on the right is too big."
 - "The center panel has too much text ('Monthly Focus') – good idea but not a great layout."
 - "Wasted space above the text. Did something not load?"



3. Designing the New Site

After reviewing the results of the Usability Testing, the Expert Reviews, and the Focus Groups, we identified 5 “Priority” areas to focus on in the redesign:

- Redesign the Home Page.
- Improve Visual Consistency.
- Improve Navigational Consistency.
- Improve the Usability of Site Forms.
- Improve the Performance & Maintainability of the Site.

Designing the New Site

Redesign the Home Page

- Problems to Address:
 - The home page didn't contain information.
 - Some terminology was vague.
 - Rollover inefficient use of space.

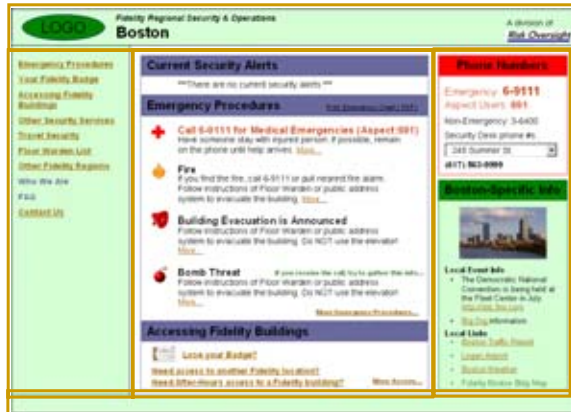


Emergency Phone # only visible in lower right when browser was maximized. When you mouseover a menu item, a description appears.

Designing the New Site Redesign the Home Page, continued.

How we redesigned the home page:

- Using PowerPoint, we created a new page layout with these areas:
 - A site-identifying area at the top.
 - A navigation area.
 - A main content area for info.
 - A “supporting” content area.
 - A page footer.



Designing the New Site Redesign the Home Page, continued.

- A graphic designer took our mock-up and created three potential designs...

Designing the New Site Redesign the Home Page, continued.

Design #1

FIDELITY REGIONAL SECURITY & OPERATIONS
Boston
A Division of **Risk Oversight**

- Emergency Procedures
- Your Fidelity Badge
- Accessing Fidelity Buildings
- Other Security Services
- Travel Security
- Floor Warden List
- Other Fidelity Regions
- Who We Are
- FAQ
- Contact Us

Current Security Alerts

There are currently no alerts.

(Emergency Procedures)

[Print Emergency Chart \(PDF\)](#)

- CALL 6-911 FOR MEDICAL EMERGENCIES (Aspect:691)**
Have someone stay with injured person. If possible, remain on the phone until help arrives. [More...](#)
- FIRE**
If you find the fire, call 6-9111 or pull nearest fire alarm. Follow instructions of Floor Warden or public address system to evacuate the building. [More...](#)
- BUILDING EVACUATION IS ANNOUNCED**
Follow instructions of Floor warden or public address system to evacuate the building. Do NOT use the elevator! [More...](#)
- BOMB THREAT**
Follow instructions of Floor Warden or public address system to evacuate the building. Do NOT use the elevator! [More...](#)

[More Emergency Procedures](#)

(Accessing Fidelity Buildings)

- [Lost your badge?](#)
- [Need access to another Fidelity location?](#)
- [Need after-hours access to a Fidelity building?](#)

[More Access Information](#)

Phone Numbers

- EMERGENCY: 6-9111
- ASPECT USERS: 691
- NON-EMERGENCY: 3-6400

Security Desk phone #s per building

BOSTON-ASPECT SPECIFIC INFO

Local Event Information

- The Democratic National Convention is being held at the Fleet Center in July. <http://www.dnc.com>
- [Bio-Dis information](#)

Local Links

- [Boston Traffic Report](#)
- [Boston Airport](#)
- [Boston Weather](#)
- [Fidelity Boston Bio Map](#)
- [Fidelity Boston Parking Info](#)

Owner: Risk Oversight
Contact: info@riskoversight.com

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Designing the New Site Redesign the Home Page, continued.

Design #2

Boston
FIDELITY REGIONAL SECURITY & OPERATIONS

- Emergency Procedures
- Your Fidelity Badge
- Accessing Fidelity Buildings
- Other Security Services
- Travel Security
- Floor Warden List
- Other Fidelity Regions
- Who We Are
- FAQ
- Contact Us

Current Security Alerts:

There are currently no security alerts.

EMERGENCY PROCEDURES

[Print Emergency Chart \(PDF\)](#)

- CALL 6-911 FOR MEDICAL EMERGENCIES (Aspect:691)**
Have someone stay with injured person. If possible, remain on the phone until help arrives. [More...](#)
- FIRE**
If you find the fire, call 6-9111 or pull nearest fire alarm. Follow instructions of Floor Warden or public address system to evacuate the building. [More...](#)
- BUILDING EVACUATION IS ANNOUNCED**
Follow instructions of Floor Warden or public address system to evacuate the building. Do NOT use the elevator! [More...](#)
- BOMB THREAT**
Follow instructions of Floor Warden or public address system to evacuate the building. Do NOT use the elevator! [More...](#)

[More Emergency Procedures](#)

ACCESSING FIDELITY BUILDINGS

- [Lost your badge?](#)
- [Need access to another Fidelity location?](#)
- [Need after-hours access to a Fidelity building?](#)

[More Access Information](#)

PHONE NUMBERS:

- Emergency: 6-9111
- Aspect Users: 691
- Non-Emergency: 3-6400

Security Desk phone #s per building

BOSTON-SPECIFIC INFO

Local Event Information

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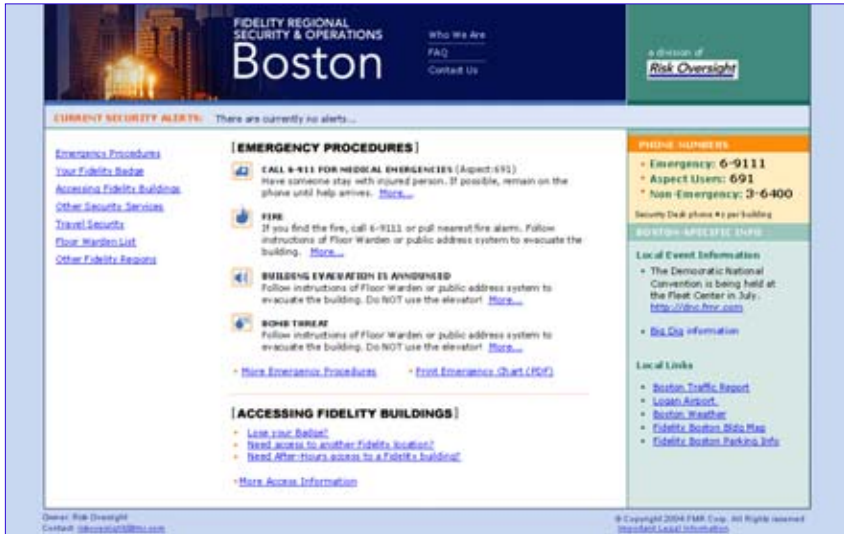
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Designing the New Site
Redesign the Home Page, continued.

Design #3



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Designing the New Site
Redesign the Home Page, continued.

- Our client chose Design #3.



Design #1



Design #2



Design #3

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Designing the New Site Redesign the Home Page, continued.



Design #3: This is the design our client chose.



This is the final prototype design.

Designing the New Site Redesign the Home Page, continued.



Designing the New Site

5 “Priority” areas to focus on in the redesign:

- Redesign the Home Page.
- Improve Visual Consistency.
- Improve Navigational Consistency.
- Improve the Usability of Site Forms.
- Improve the Performance & Maintainability of the Site.

Designing the New Site

Improve Visual Consistency

- Problems to Address:
 - Multiple page layouts.
 - Ineffective font hierarchy.
 - Three sets of icons; two styles of design.

Designing the New Site Improve Visual Consistency, continued.

■ Multiple page layouts



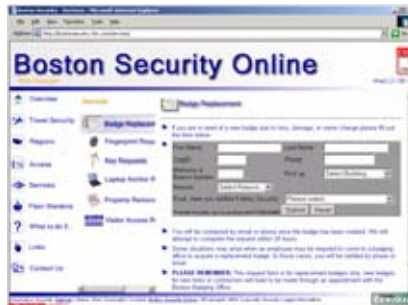
Designing the New Site Improve Visual Consistency, continued.

Page Layouts:

The framed implementation is an issue when the browser window is NOT maximized.



Before a selection is made. The center frame is chopped off and the right frame is empty.



After a selection is made. The center frame is still chopped off.

Designing the New Site Improve Visual Consistency, continued.

How we addressed Multiple Page Layouts:



We stuck to one page layout throughout the site. The banner, site-level info, and navigation are always at the top. Main content is on the left; supporting content is on the right. The footer is at the bottom.



Designing the New Site Improve Visual Consistency, continued.

Page Layout Example:

Before:



After:



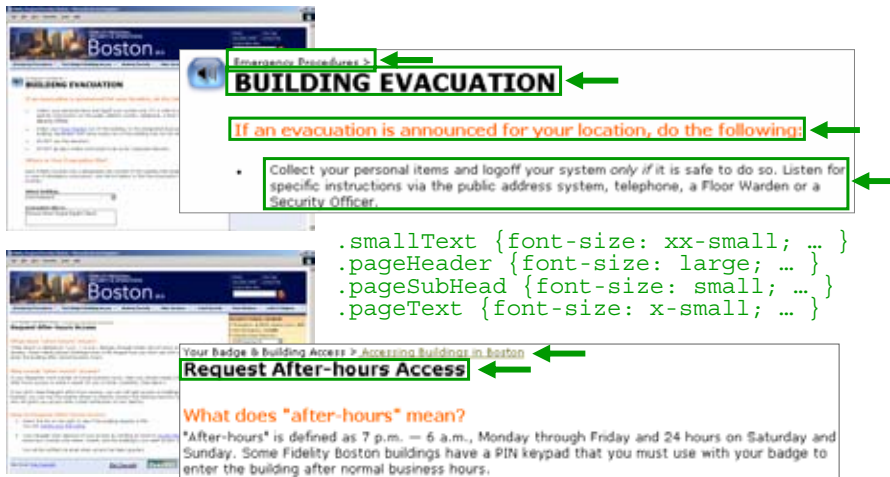
Designing the New Site
Improve Visual Consistency, continued.

- Ineffective font hierarchy.



Designing the New Site
Improve Visual Consistency, continued.

How we addressed the Ineffective Font Hierarchy:

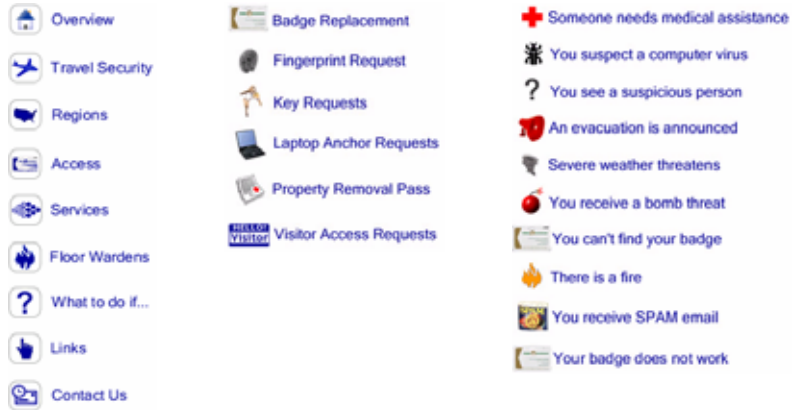


```
.smallText {font-size: xx-small; ... }
.pageHeader {font-size: large; ... }
.pageSubHead {font-size: small; ... }
.pageText {font-size: x-small; ... }

.subPageHead {font-size: medium; ... }
```

Designing the New Site
Improve Visual Consistency, continued.

- Three sets of icons; two styles of design.



Designing the New Site
Improve Visual Consistency, continued.

How we addressed the icons:

We redesigned them and reserved them for “Emergency” information.



The icons are used on the home page to both call out the emergency info as well as to add visual interest.



They also are used on the secondary Emergency pages.

Designing the New Site

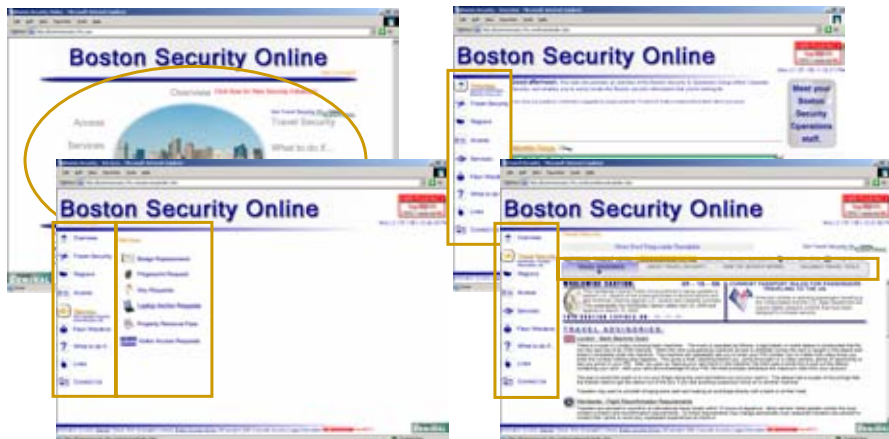
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Designing the New Site

Improve Navigational Consistency

- Problems to Address:
 - The navigation was inconsistent throughout the site.



Designing the New Site

Improve Navigational Consistency, *continued.*

How we addressed the navigation:

- To determine the best way to **organize** the site content, we conducted an online card-sorting study.
- To determine the best way to **access** the content, we conducted an online usability study of several navigation methods.

Designing the New Site

Improve Navigational Consistency, *continued.*

Online Card-Sorting Study

- We used the WebCAT tool from NIST.
- We recruited participants via email.
- 303 participants.



Participants drag items from the left into the Categories on the right.

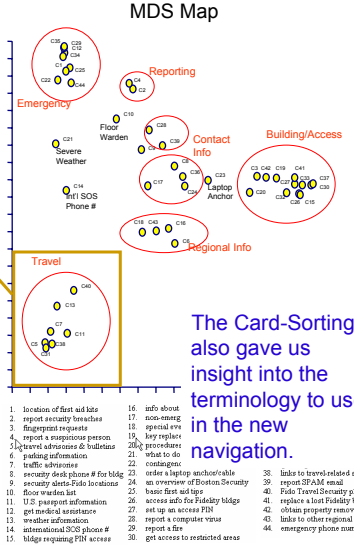
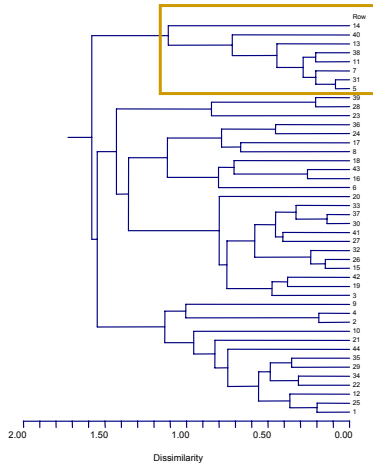
A data entry field enables participants to provide a Name for each Category.

Participants can also create their own Categories.

Designing the New Site
Improve Navigational Consistency, continued.

Online Card-Sorting Study Results

Hierarchical Cluster Analysis



The Card-Sorting also gave us insight into the terminology to use in the new navigation.

Designing the New Site
Improve Navigational Consistency, continued.

Online Navigation Study

- We tested 6 different navigation methods.
- 706 participants.



“Yahoo-style”

- Emergency Procedures
- Your Fidelity Badge
- Accessing Fidelity Buildings
- Other Security Services
- Travel Security
- Floor Wardens
- Links to Other Fidelity Regions

“Expand/Collapse”

- Emergency Procedures
 - Medical Emergencies
 - Fire
 - Bomb Threat
 - Building Evacuation
 - Suspicious Person
 - Severe Weather
- Your Fidelity Badge
- Accessing Fidelity Buildings
 - Request ACCESS
 - Visitor Procedures
- Other Security Services
 - Fingerprint
 - Keys
 - Laptop Anchors
 - Property Removal Pass
 - SPDR Mail
- Travel Security
- Floor Wardens
- Links to Other Fidelity Regions

“Horizontal Drop-down”

- Emergency Procedures
- Your Fidelity Badge
- Accessing Fidelity Buildings
- Other Security Services
- Travel Security
- Floor Wardens
- Other Fidelity Regions

“Flash/Bounce”

- Emergency Procedures
 - Medical Emergencies
 - Fire
 - Bomb Threat
 - Building Evacuation
 - Suspicious Person
 - Severe Weather
- Your Fidelity Badge
- Accessing Fidelity Buildings
- Other Security Services
- Travel Security
- Floor Wardens
- Other Fidelity Regions

“Rollover”

- Emergency Procedures
- Your Fidelity Badge
- Accessing Fidelity Buildings
- Other Security Services
- Travel Security
- Floor Wardens
- Other Fidelity Regions

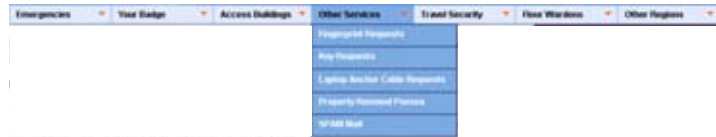
Designing the New Site

Improve Navigational Consistency, continued.

Online Navigation Study Results

- Results were very consistent across Time on Task and overall Subjective Ratings.
- Error Rate yielded most significant difference (15% vs. 23%). Two navigation styles had an Error Rate of 15%: “Yahoo-style” and “Horizontal Drop-down.”
- We chose “Horizontal Drop-down” based on:
 - Low Error Rate
 - Space Considerations...no scrolling required
 - Aesthetic Appeal
 - Potential for Easier Growth

An “error” = Failing to find the correct answer or providing No answer.



Designing the New Site

5 “Priority” areas to focus on in the redesign:

- Redesign the Home Page.
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Designing the New Site

Improve Usability of Site Forms

- Problems to Address:
 - The 5 forms on the original site were implemented inconsistently.
 - Use of background color.
 - Use of font styles for labels.
 - Placement of supporting instructions.
 - Designation of required fields.

Designing the New Site

Improve Usability of Site Forms, continued.

- Once you remove your laptop cable, you can request a Fidelity Security Representative install your laptop cable at your workplace. Please fill out the form below to make that request.

First Name Last Name
CorpID Phone
Building Mailzone
Location for Anchor

- If you are in need of a new badge due to loss, damage, or name change please fill out the form below.

First Name Last Name
CorpID Phone
Mailzone or Search Number Pick up
Reason
If lost, how you notified Fidelity Security:

To request access to a restricted area, complete the request form below. An email will automatically be sent to Badge Access Requestor.

Full Name:
CorpID:
Card Reader #:
Area Name:
Reason:
 * Required Information

Place your mouse over the icon above for more information.

Subject:
Name:
CorpID:
Mailzone:
Phone:
Comments & Questions:

All fields are required except for #10. You will not be able to submit the request form unless all fields are complete.

1. Name of the employee making the request:
2. Requestor's CorpID:
3. Name of visitor / company:
4. Date of visit: From To
5. Time of visit: From To
6. Who they are visiting:
7. Floor the meeting is on:
8. Contact person when visitor arrives:
9. Contact number when visitor arrives:
10. Special instructions / comments:

Designing the New Site Improve Usability of Site Forms, continued.

How we addressed the forms design:

- We started with the form that caused the most problems in usability testing: the Access Form.
- **None** of the 16 participants completed this task!
- This form required subject matter expertise that most casual users don't have.
- We removed the form.

The screenshot shows the 'Boston Security Online' interface. A yellow box highlights a complex 'Access' form with multiple fields and a 'Submit' button. Below it, another yellow box highlights a table titled 'Boston Restricted Areas'.

| Business Line | ISO | Card Number | Area Name | Contact Person 1 | Contact Person 2 | Contact Person 3 |
|---------------|-----------------|--|--------------------------|-------------------|------------------|------------------|
| BCC | PATRICK WHITE | 14008 | BCC ACCESS LEVEL 1 | ELL WALSH | PATRICK WHITE | |
| BCC | PATRICK WHITE | 14008 | BCC ACCESS LEVEL 2 | ELL WALSH | PATRICK WHITE | |
| BCC | PATRICK WHITE | 14008 | BCC ACCESS LEVEL 3 | ELL WALSH | PATRICK WHITE | |
| BCC | PATRICK WHITE | 14008 | BCC COMPUTER ROOM ACCESS | PATRICK WHITE | ELL WALSH | |
| PCHE | WAMPY DUBACK | 14008 | BUS BOMB CAMP | CHRISTINE STROCKY | | |
| OTF | CON HALL | 40001 | BUS BOMB CASE | CON HALL | BOB SARTO | |
| POP | PAULINE HANCOCK | JERRY SCHWAB SCOTT SCHWAB CHRIS SCHWAB | BUS OPS BUS | PAUL SARTO | JAMES HANCOCK | PAULINE SCHWAB |

Designing the New Site Improve Usability of Site Forms, continued.

How we addressed the forms design, continued:

- Next, we learned that the other 4 forms sent email messages. They did not initiate “transactions.”
- Did each of these really need to be a **form**?
- The Contact form sent messages to one mailbox. No special processing.
- We replaced it with a link to an email form.

The screenshot shows an email form interface with fields for Subject, Name, CorpID, Mailing, Phone, and a large text area for the message body. There are 'Submit' and 'Reset' buttons at the bottom.

Designing the New Site

Improve Usability of Site Forms, continued.

How we addressed the forms design, continued:

- The other three forms collected info that was acted upon by the recipient of the email, so we left them as forms and redesigned them.
- Forms now have same colors, fonts, and required field treatment.

The image displays three screenshots of redesigned web forms. The first form is titled 'How do you request installation of the badge?' and includes fields for 'Corp ID', 'First Name', 'Last Name', 'Phone', 'Mailbox', 'Your Location', and 'Location for Badge'. The second form is titled 'Request badge replacement' and includes fields for 'Corp ID', 'First Name', 'Last Name', 'Phone', 'Mailbox', 'Reason for Replacement', 'Where will you pick up your badge?', and 'If you lost your badge, how you notified Security?'. The third form is titled 'Request badge replacement (Special Instructions)' and includes fields for 'Corp ID of Requester', 'First Name', 'Last Name', 'Phone', 'Mailbox', 'Name of Visitor/Company', 'Name of Employee they are visiting', 'Date of Visit', 'Time of Visit', 'Location of the visit', 'Contact Person', and 'Contact Phone'. All forms feature a 'Send This Email to Security' button and a 'Required Field' indicator.

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Designing the New Site

5 "Priority" areas to focus on in the redesign:

- Redesign the Home Page.
- Improve Visual Consistency.
- Improve Navigational Consistency.
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- Improve the Performance & Maintainability of the Site.

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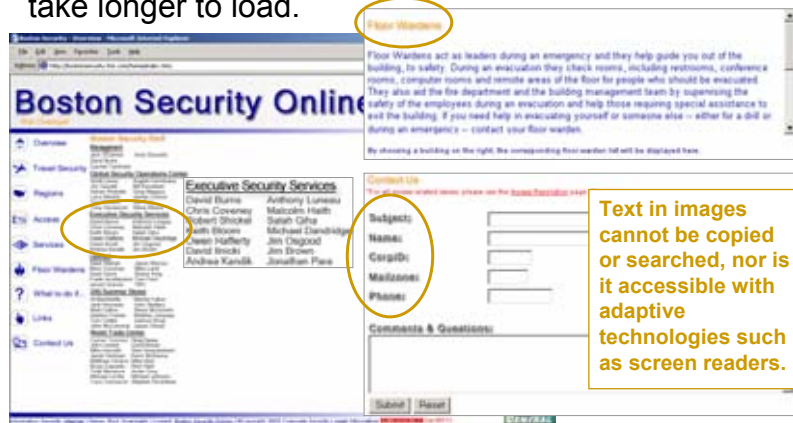
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Designing the New Site

Improve Performance & Maintainability

- Problems to Address:
 - Page elements were implemented as **graphics**, which take longer to load.



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Designing the New Site

Improve Performance and Maintainability, continued.

How we addressed performance and maintenance:

- All page headers and labels are now **text** instead of images.
- Pages now load more quickly and text is easier to maintain, since a graphic doesn't need to be updated each time a change is required.



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Designing the New Site

Improve Performance and Maintainability, *continued.*

□ Unexpected Page Transitions

Some transitions from page to page were “slideshow-like,” which added to page load time.



VIDEO CLIP

How we addressed the page transitions:

We removed them!

Designing the New Site

5 “Priority” areas to focus on in the redesign:

- ☑ Redesign the Home Page.
- ☑ Improve Visual Consistency.
- ☑ Improve Navigational Consistency.
- ☑ Improve the Usability of Site Forms.
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4. Round 2 of Usability Testing: Evaluating the “After” Design

Ellen Mangan

Evaluating the “After” Site

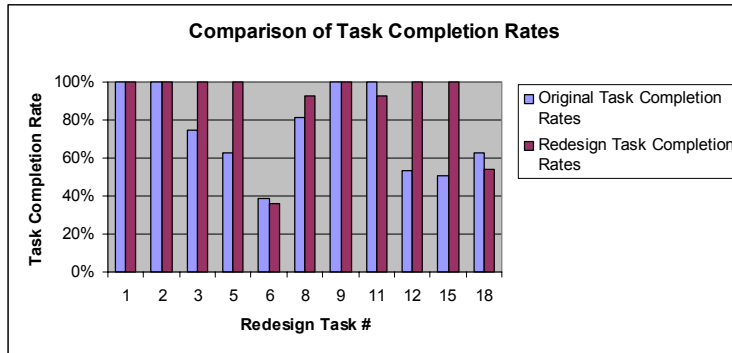
Round 2 of Usability Testing

- 14 participants
- We used 17 of the tasks from Round 1.
- We added 5 new tasks to avoid the possibility that we had redesigned the site around tasks.
- Some sample tasks
 - “Find out what your emergency meeting location is in case of evacuation, and the directions to it.”
 - “You’re traveling to India and have already received your travel briefing via email. However, you have a last minute question. Call Travel Security.”

Evaluating the “After” Design
Round 2 of Usability Testing, continued.

■ Results

- Average Task Completion Rate: 87% vs. 67% in Round 1.

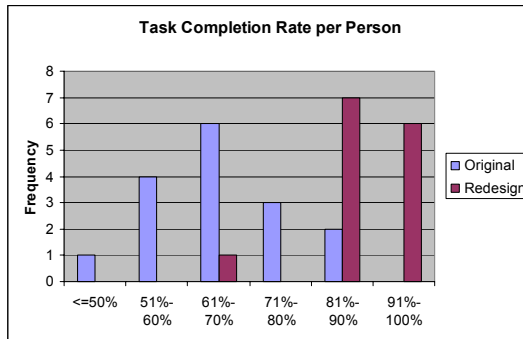


All completion rates either improved or stayed about the same.
("Original" is Round 1; "Redesign" is Round 2.)

Evaluating the “After” Design
Round 2 of Usability Testing, continued.

■ Results, continued.

- In Round 1, only 2 of 16 participants completed more than 81%. But in Round 2, 13 of 14 participants completed at least 81% of their tasks.
- No one in Round 1 completed more than 90% of tasks, yet 6 participants in Round 2 did.

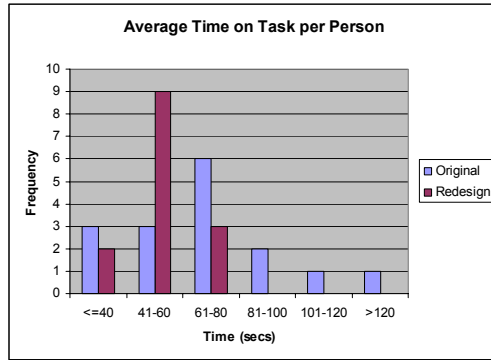


Difference: p<.00001

Evaluating the “After” Design Round 2 of Usability Testing, continued.

■ Results, continued.

- **Average Task Time:**
100% of participants in Round 2 completed the tasks in 80 seconds or less, as opposed to 75% in Round 1.
- The majority completed their tasks in 60 seconds or less.

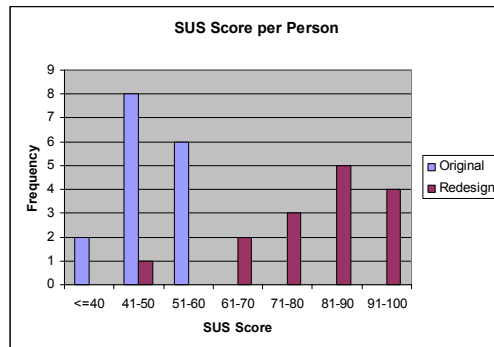


Difference: $p < .05$

Evaluating the “After” Design Round 2 of Usability Testing, continued.

■ Results, continued.

- **SUS Scores** went up dramatically. The score improved 67% between rounds, from 49% to 82%.
- The score distribution shifted decisively to the higher end of the scale.



Difference: $p < .00001$

Evaluating the “After” Design Round 2 of Usability Testing, continued.

■ Results, continued.

“Overall, users reacted very positively to this website. The majority of the following issues did not prevent users from accomplishing their tasks, and didn’t seem to negatively impact participant’s opinions of the website.”

- Study yielded 37 usability issues. For example:
 - About half the users said it would be nice to have contact information for the floor wardens on the Floor Wardens page.
 - The majority of users wanted “action items” on the SPAM page.
 - In the “after-hours” access process, users expressed surprise and displeasure with the fact that they had to get their manager to send an email on their behalf in order to get access.

- Issues were addressed prior to delivering final design to the client.

Evaluating the “After” Design Round 2 of Usability Testing, continued.

■ Results

| | Round #1 | Round #2 | Improvement |
|----------------------------------|------------|------------|-------------|
| Average Time on Task | 68 seconds | 51 seconds | ↑ 25% |
| Average Task Completion | 67% | 87% | ↑ 30% |
| Average User Satisfaction Rating | 49% | 82% | ↑ 67% |

All three measures improved significantly.



- Thank you for your participation today!
- A detailed copy of this presentation is available in the Proceedings.
- For more information, contact:

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Human Interface Design

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