LESSONS LEARNED FROM SGCI’S USABILITY CONSULTING

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February 12, 2020
SGCI Webinar

Supported by NSF Award 1547611
Background
PhD, Computer Science
   Specialty: Human-Computer Interaction (HCI)
BS, Computer Science & Cognitive Science

Teaching
Previous (2011-2014)
   HCI for computer science students
Current
   User Experience (UX) for undergrad and grad
1. ~25 consulting engagements over the past 2.5 years
   - Team: Me + 3 students

2. Gateways across many disciplines and contexts (e.g., chemistry education; hurricane modeling; animal tracking; libraries / nlp)
1. **Common usability issues** and ways to improve them

2. **Challenges** specific to gateways and strategies for handling them

3. SGCI **consulting** and upcoming **focus week**
**Learnability**: How easy is it for users to accomplish basic tasks the first time they encounter the design?

**Efficiency**: Once users have learned the design, how quickly can they perform tasks?

**Memorability**: When users return to the design after a period of not using it, how easily can they re-establish proficiency?

**Errors**: How many errors do users make, how severe are these errors, and how easily can they recover from the errors?

**Satisfaction**: How pleasant is it to use the design?
1. Users are confused about what to look at

2. Users are overwhelmed by content

3. Users are lost in the website
1. Users are confused about what to look at

What we expect users to do
1. Users are confused about what to look at.

What users actually do:

Top News
The latest business and financial headlines from leading publishers to help manage your finances.

Top Headlines
- US district judge expected to rule in favor of merger of Sprint and T-Mobile: sources
- Lyft tops $1 billion quarterly revenue, forecasts slower growth in 2020
- FTC demands data on small buys by Google, Amazon, Apple, Facebook, Microsoft
- Science of preventing dementia
- Financial planning for cognitive decline
- Stocks for the AI Revolution
- 7 auto stocks to watch
- Dividend stocks to watch in 2020

Fidelity Viewpoints
Viewpoints articles provide Fidelity's perspective on personal finance topics.
- Phasing into retirement
- A clearer picture for income investors
arrangement and styling of elements in a way that implies importance

visual hierarchy influences the order in which the human eye perceives what it sees
You Will Read This First

And then you will read this

Then this one
An example of a web server written in Node which responds with "Hello World" for every request.

```javascript
var http = require('http');
http.createServer(function (req, res) {
  res.writeHead(200, {'Content-Type': 'text/plain'});
  res.end('Hello World!');
}).listen(1337, "127.0.0.1");

console.log('Server running at http://127.0.0.1:1337/
```

To run the server, put the code into a file `example.js` and execute it with the `node` program:

```bash
% node example.js
Server running at http://127.0.0.1:1337/
```

Here is an example of a simple TCP server which listens on port 1337 and echoes whatever you send it:

```javascript
var net = require('net');

var server = net.createServer(function (socket) {
  socket.write("Echo server\n\n");
  socket.pipe(socket);
});
```
Node.js® is a JavaScript runtime built on Chrome's V8 JavaScript engine.

**November 2018 security releases available, upgrade now**

**Download for macOS (x64)**

- **10.14.1 LTS** Recommended For Most Users
- **11.4.0 Current** Latest Features

Or have a look at the [Long Term Support (LTS) schedule](#).

Sign up for [Node.js Everywhere](#), the official Node.js Monthly Newsletter.
VISUAL HIERARCHY

CREATE A VISUAL HIERARCHY {5 TOOLS}

SCALE
COLOR & CONTRAST
TYPE
SPACING
COMPOSITION

Image courtesy of Canva
1. Users are confused about what to look at

- Use **visual hierarchy** to tell users where to look

2. Users are overwhelmed by content

3. Users are lost in the website
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3. Users are lost in the website
2. Users are overwhelmed by content
Nebraska is filled with internationally recognized attractions that draw large crowds of people every year, without fail. In 1996, some of the most popular places were Fort Robinson State Park (355,000 visitors), Scotts Bluff National Monument (132,166), Arbor Lodge State Historical Park & Museum (100,000), Carhenge (86,598), Stuhr Museum of the Prairie Pioneer (60,002), and Buffalo Bill Ranch State Historical Park (28,446).

Full details of the study: www.nngroup.com/articles/concise-scannable-and-objective-how-to-write-for-the-web
2. Users are overwhelmed by content

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In 1996, six of the best-attended attractions in Nebraska were Fort Robinson State Park, Scotts Bluff National Monument, Arbor Lodge State Historical Park & Museum, Carhenge, Stuhr Museum of the Prairie Pioneer, and Buffalo Bill Ranch State Historical Park.

50% word count
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**Control**

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**Objective language**

Nebraska has several attractions. In 1996, some of the most-visited places were Fort Robinson State Park (355,000 visitors), Scotts Bluff National Monument (132,166), Arbor Lodge State Historical Park & Museum (100,000), Carhenge (86,598), Stuhr Museum of the Prairie Pioneer (60,002), and Buffalo Bill Ranch State Historical Park (28,446).

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**Scannable text**

50% word count
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2. Users are overwhelmed by content

<table>
<thead>
<tr>
<th>Site Version</th>
<th>Usability Improvement (relative to control condition)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Promotional writing (control condition)</strong></td>
<td>0% (by definition)</td>
</tr>
<tr>
<td>using the &quot;marketese&quot; found on many commercial websites</td>
<td></td>
</tr>
<tr>
<td><strong>Concise text</strong></td>
<td>58%</td>
</tr>
<tr>
<td>with about half the word count as the control condition</td>
<td></td>
</tr>
<tr>
<td><strong>Scannable layout</strong></td>
<td>47%</td>
</tr>
<tr>
<td>using the same text as the control condition in a layout that facilitated scanning</td>
<td></td>
</tr>
<tr>
<td><strong>Objective language</strong></td>
<td>27%</td>
</tr>
<tr>
<td>using neutral rather than subjective, boastful, or exaggerated language (otherwise the same as the control condition)</td>
<td></td>
</tr>
<tr>
<td><strong>Combined version</strong></td>
<td>124%</td>
</tr>
<tr>
<td>using all three improvements in writing style together: concise, scannable, and objective</td>
<td></td>
</tr>
</tbody>
</table>
2. Users are overwhelmed by content

https://www.gkogan.co/blog/usability-testing-case-study
2. Users are overwhelmed by content

+30% Average Time Spent on Features Page

We changed the features description page from a big wall of text into a segmented and more concise list of benefits. Instead of skimming through and missing important details, more visitors are now reading about Scalyr's benefits.
2. Users are overwhelmed by content

Usability Testing is Easier Than You Think

Fast ingest and search

As soon as you start logging to Scalyr, your data is visible in seconds, which means you get real-time visibility and instant alerts. Whether searching, filtering or visualizing your data, you will be surprised at how responsive Scalyr is, even across large data sets. Our unique approach leverages a purpose-built NoSQL columnar database and a massively parallel cloud compute infrastructure, resulting in the industry's fastest log ingestion and search.

See Performance Benchmark

Simple to use

Our customers tell us they love how easy it is to use Scalyr, even for users with no query language expertise. You can search for free text, wildcards or regular expressions in the query bar. Or point and click directly in the log lines or a graph. This makes it incredibly simple for your entire team to adopt Scalyr. You can skip all of the specialized training, certifications and roles that alternatives require.
1. Users are confused about what to look at
   - Use visual hierarchy to tell users where to look

2. Users are overwhelmed by content
   - Avoid large blocks of text, and use visual hierarchy to guide attention to text meaningfully

3. Users are lost in the website
1. Users are confused about what to look at

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3. Users are lost in the website

1. Where *am* I?

2. Where have I *been*?

3. Where can I *go*?

Users should always be able to answer these questions, from anywhere in your site.
1. Where am I?
1. Where am I?
2. Where am I? (sometimes where have I been?)
Where am I? / Where can I go? (especially for pages that have a lot of content)
GUIDELINES

1. Users are confused about what to look at
   - Use **visual hierarchy** to tell users where to look

2. Users are overwhelmed by content
   - **Avoid large blocks of text**, and use **visual hierarchy** to guide attention to text meaningfully

3. Users are lost in the website
   - Provide **clear visual cues** to help users answer *where they are*, *where they have been*, and *where they can go*
1. **Common usability issues** and ways to improve them

2. **Challenges** specific to gateways and strategies for handling them
CHALLENGES

1. No dedicated usability person, and no money to hire one

2. Using 3rd party software

3. Survivorship bias
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SGCI Focus Week

- Columbia University, New York, June 1-5
- Application deadline: March 27

https://sciencegateways.org/engage/focus-week