Connecting people and resources to accelerate discovery by empowering the science gateway community

Gateway Usability

SGCI Coding Institute

July 22, 2020

Paul Parsons

Assistant Professor, Purdue University

www.paulcparsons.com

sciencegateways.org

Award Number
ACI-1547611

Session Overview

1. Intro to to Usability	5 min
2. Examples	10 min
3. Group Usability Test	25 min
4. Usability Evaluation Methods	5 min
4. Open Discussion	15 min

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What is Usability?

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Usability Dimensions

- Learnability
- Efficiency
- Memorability
- Errors
- Satisfaction

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Usability Dimensions

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?

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Examples

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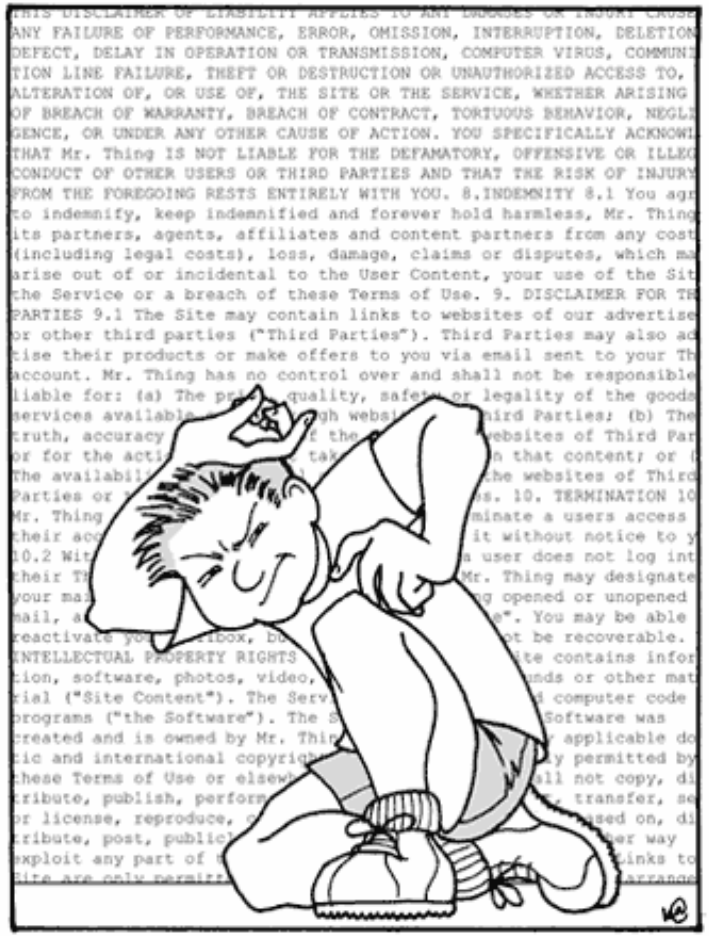
Users are overwhelmed by text



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).

Control

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

In 1996, six of the most-visited places in Nebraska were:

- Fort Robinson State Park
- Scotts Bluff National Monument
- Arbor Lodge State Historical Park & Museum
- Carhenge
- Stuhr Museum of the Prairie Pioneer

Combined

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)

Scannable text

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).

Objective language

Full details of the study: www.nngroup.com/articles/concise-scannable-and-objective-how-to-write-for-the-web

Site Version	Usability Improvement (relative to control condition)
Promotional writing (control condition) using the "marketese" found on many commercial websites	0% (by definition)
Concise text with about half the word count as the control condition	58%
Scannable layout using the same text as the control condition in a layout that facilitated scanning	47%
Objective language using neutral rather than subjective, boastful, or exaggerated language (otherwise the same as the control condition)	27%
Combined version using all three improvements in writing style together: concise, scannable, and objective	124%

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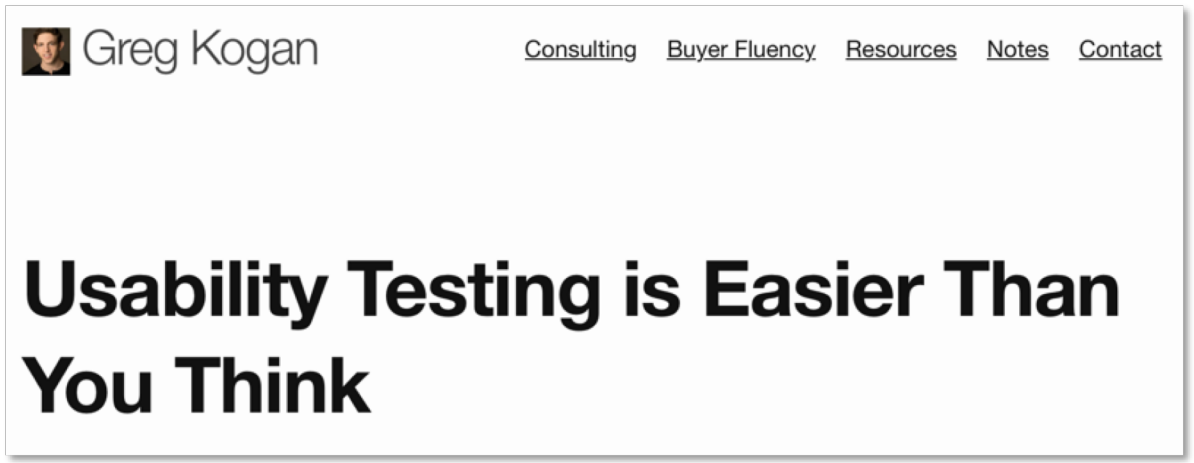
Full details of the study: www.nngroup.com/articles/concise-scannable-and-objective-how-to-write-for-the-web



SCALYR™

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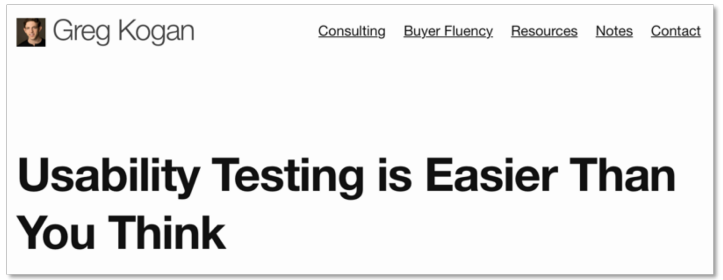
https://www.gkogan.co/blog/usability-testing-case-study



SCALYR™

+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."

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Greg Kogan Consulting Buyer Fluency Resources Notes Contact

Usability Testing is Easier Than You Think

SCALYR™

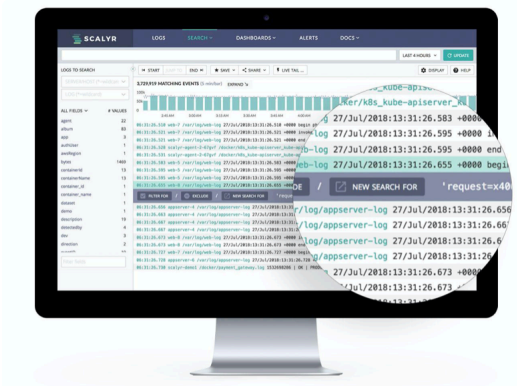
Fast ingest and search

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.



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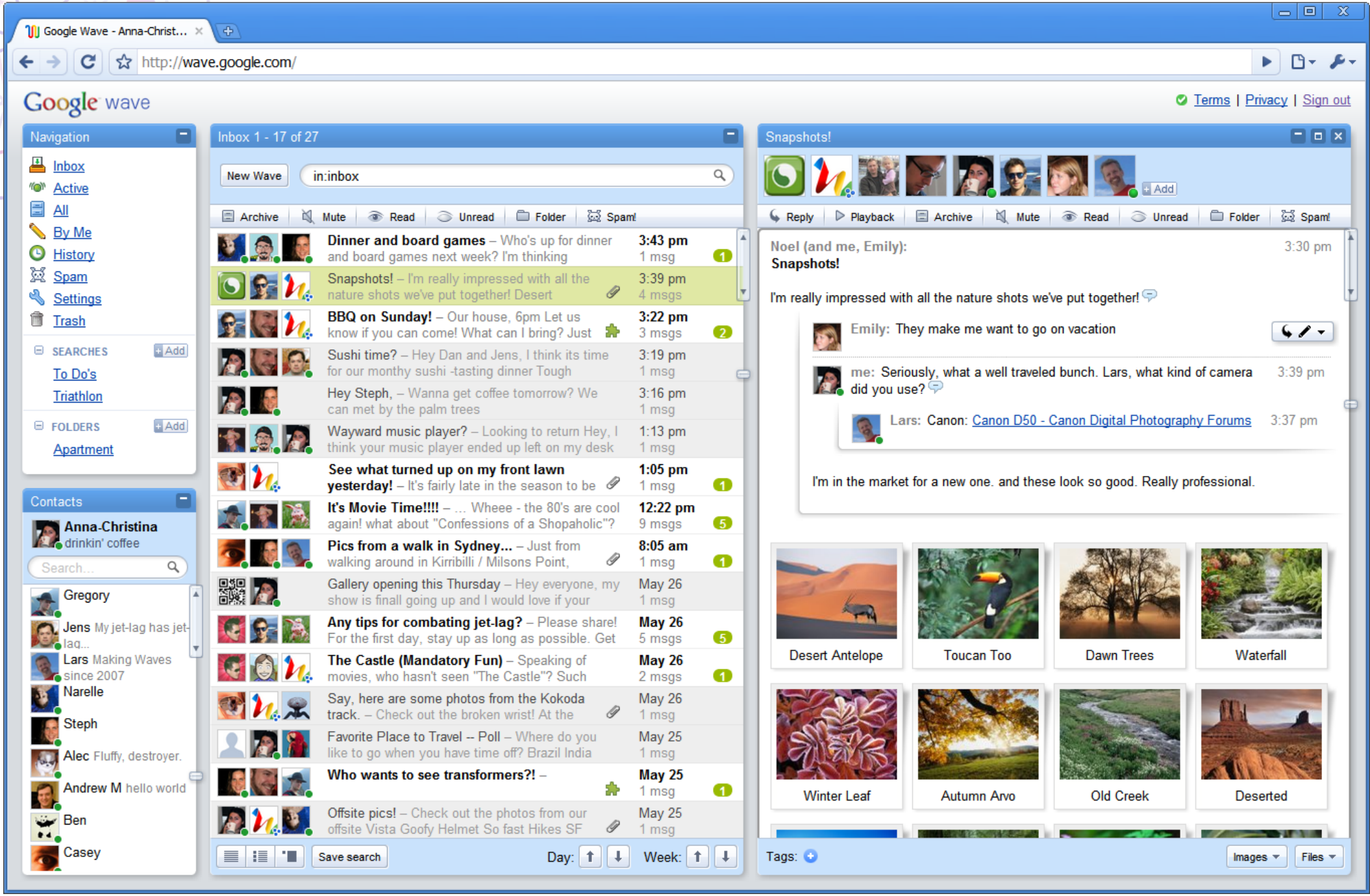
Users are confused about what to look at



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Visual Hierarchy

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

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Visual Hierarchy

And you will read this last

You Will Read This First

And then you will read this

Then this one

Visual Hierarchy

Downl
Chang og
About
v0.4.11 docs
v0.5.5 docs

Wiki
Blog
Community
Demo
Logos
Jobs

- Microsoft Corporation
- Elgato Systems
- AgenciesHQ
- MileWise
- Brass Monkey Inc.
- Bislr, Inc.
- Gamzee, Inc.
- Yahoo Inc.
- Justin.tv
- SnapLogic
- SocialFeet

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

```
var http = require('http');
http.createServer(function (req, res) {
  res.writeHead(200, {'Content-Type': 'text/plain'});
  res.end('Hello World\n');
}).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:

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

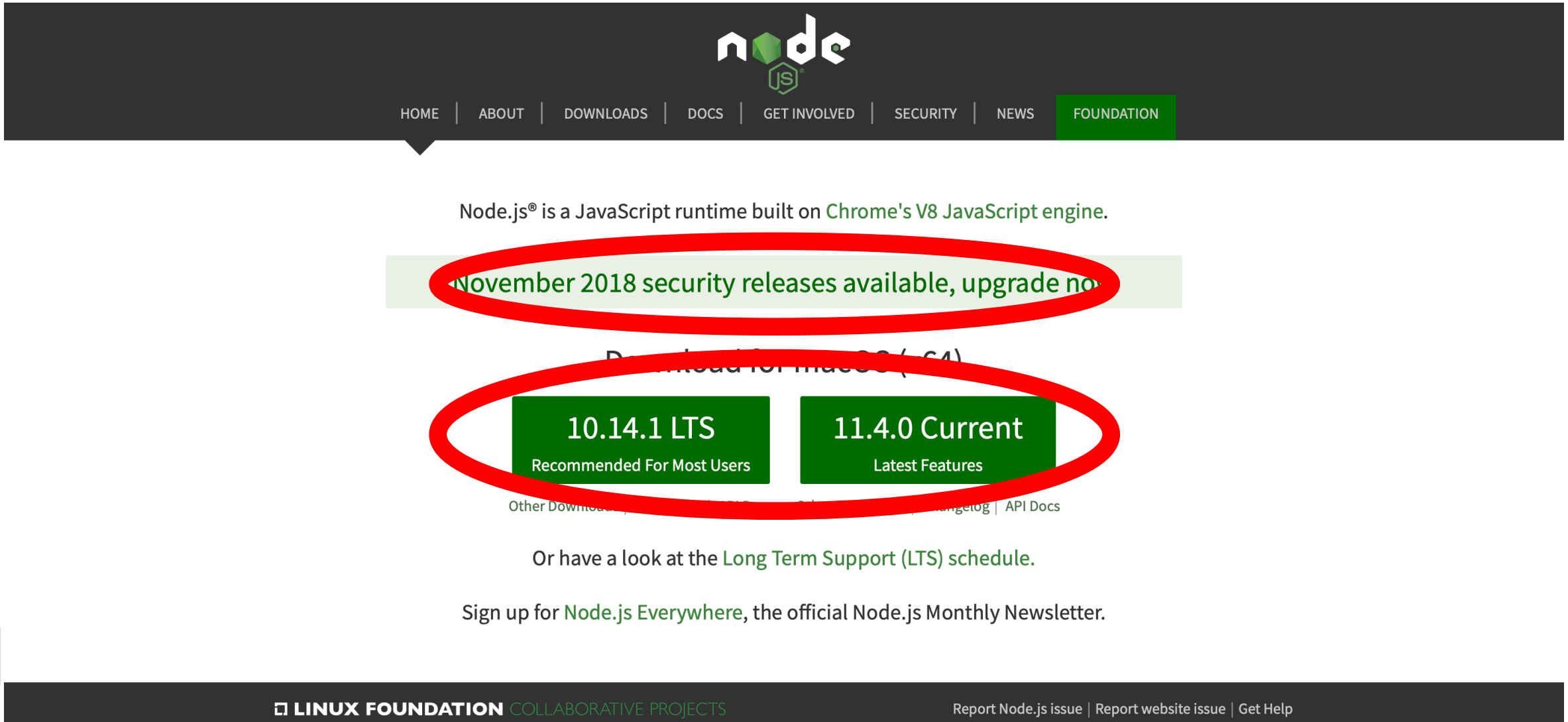
Here is an example of a simple TCP server which listens on port 1337 and echoes whatever you send it:

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

var server = net.createServer(function (socket) {
  socket.write("Echo server\r\n");
  socket.pipe(socket);
});
```

nodejs.org

Visual Hierarchy



Visual Hierarchy

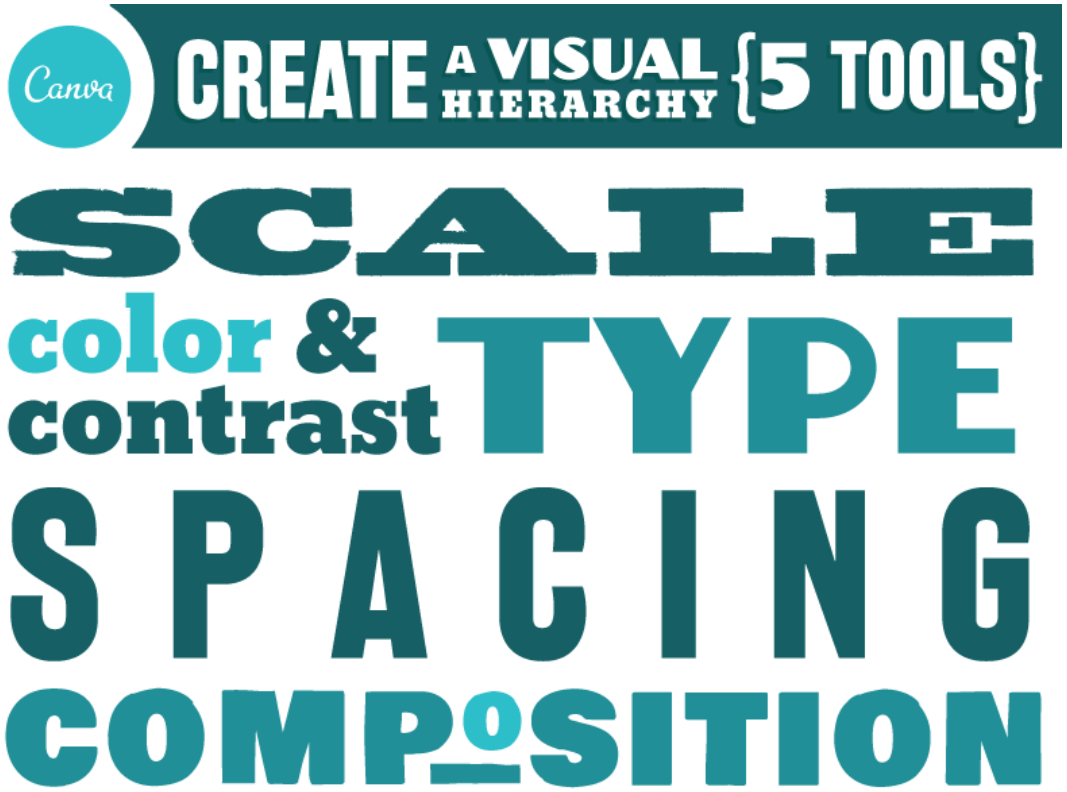
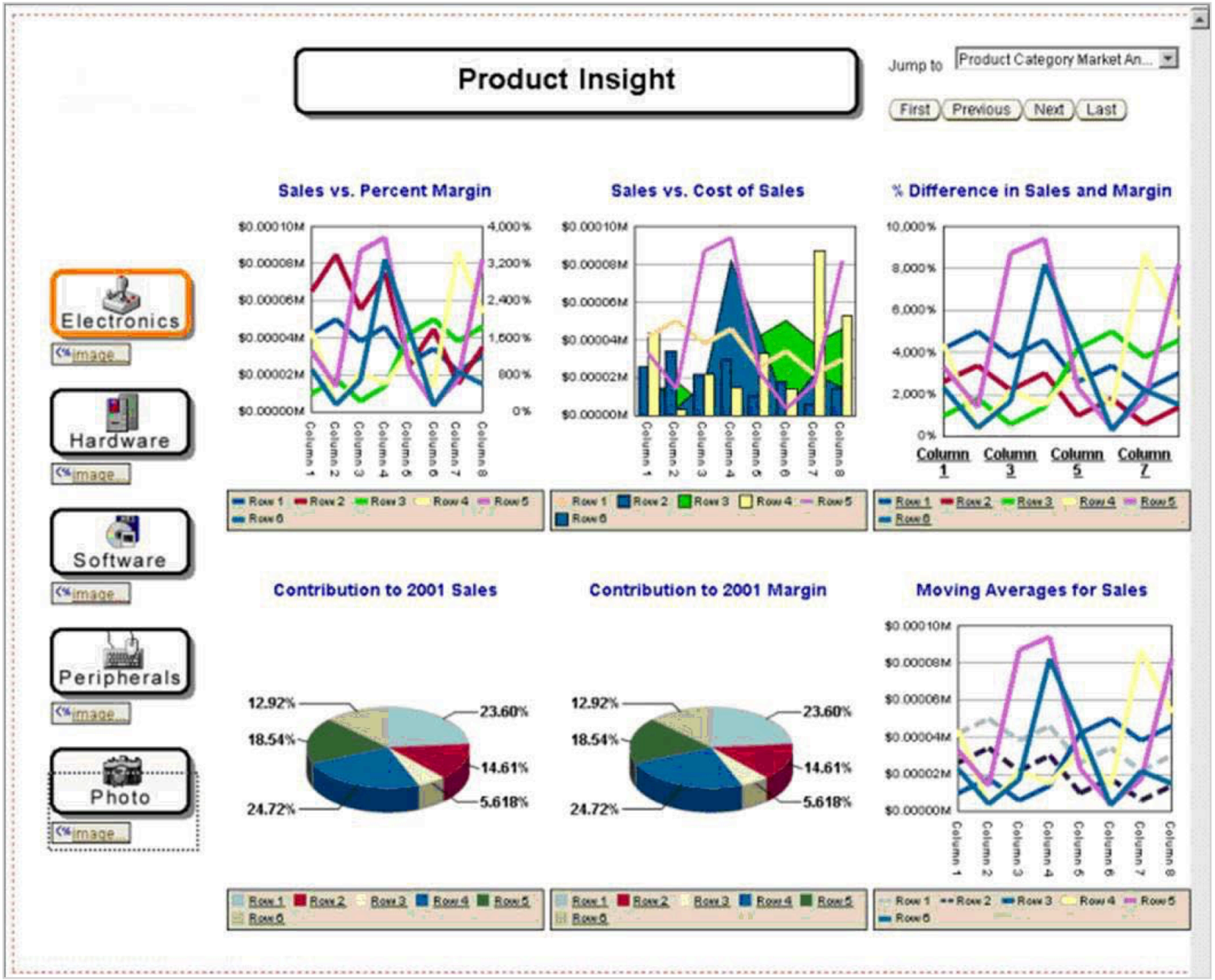


Image courtesy of Canva https://designschool.canva.com/wp-content/uploads/sites/2/2016/04/1-visual-hierarchy.png

What's the problem here?

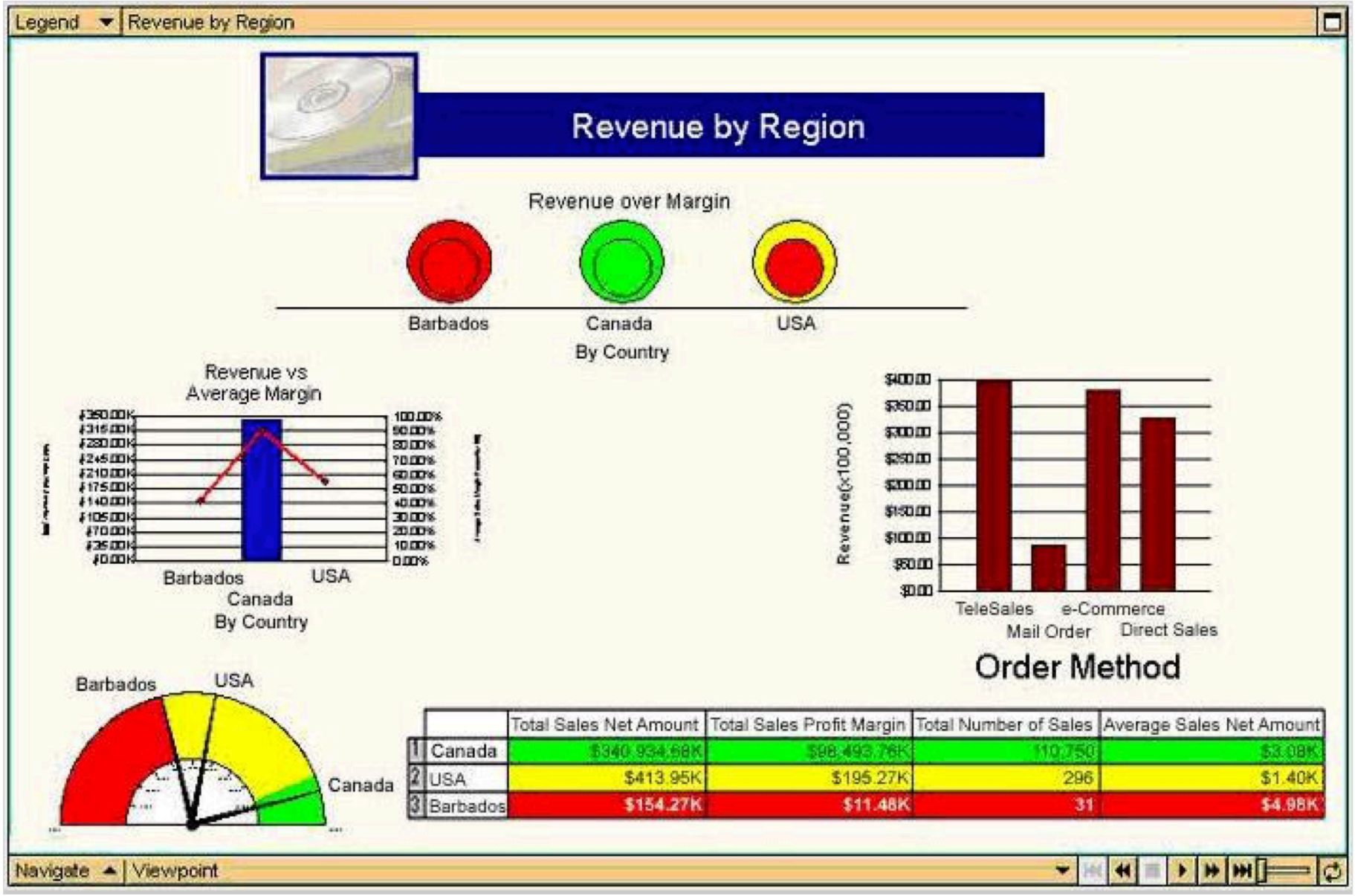
Too much highlighting—nothing stands out



www.perceptualedge.com/articles/Whitepapers/Common_Pitfalls.pdf

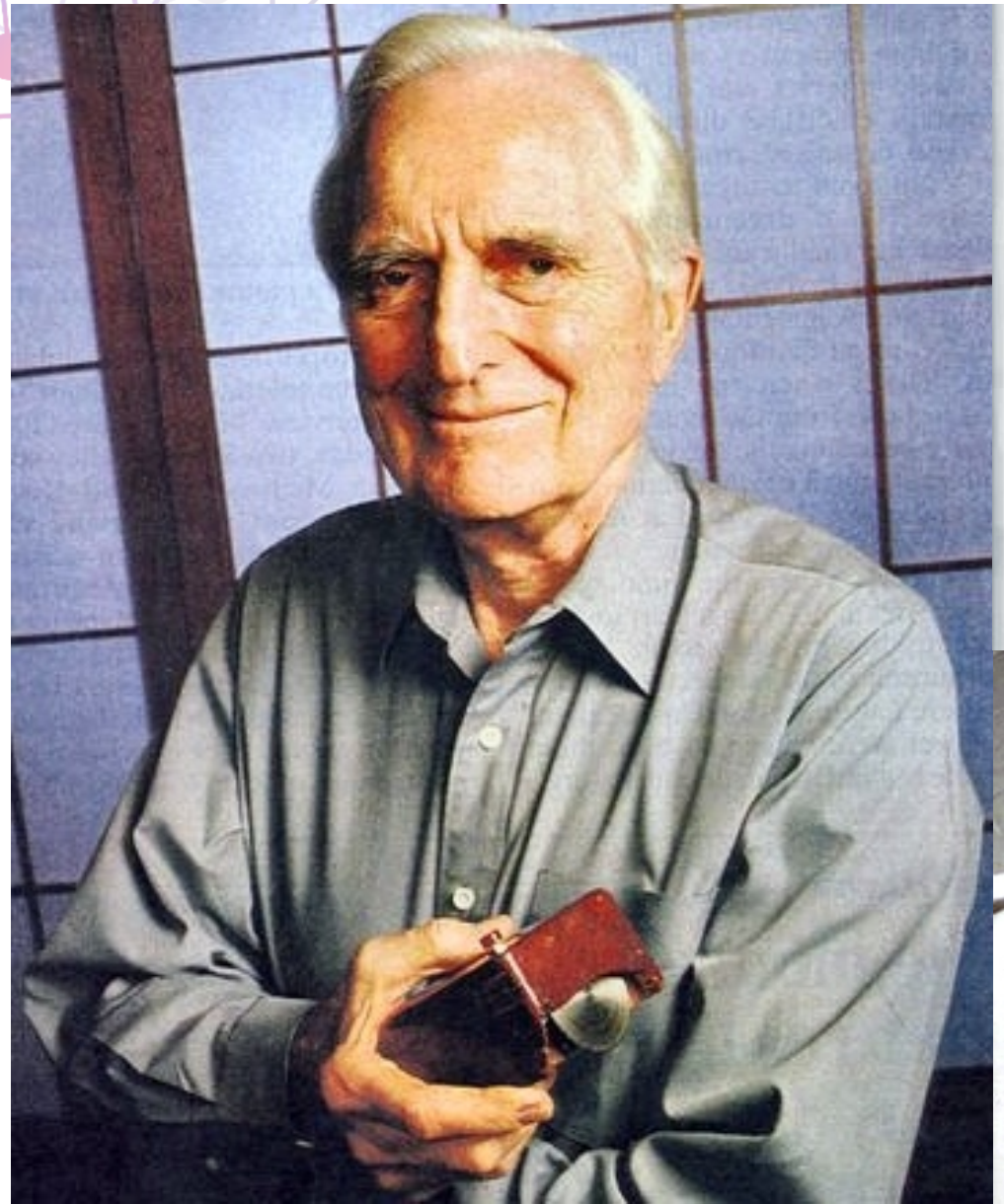
What's the problem here?

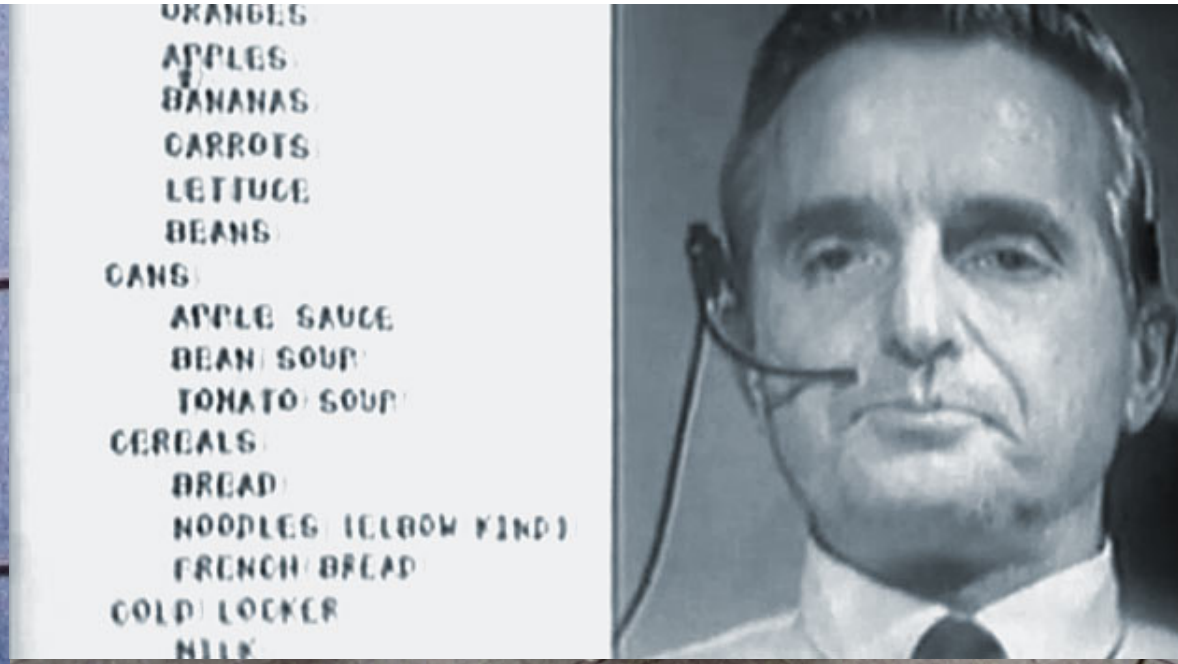
Too much meaningless variety



www.perceptualedge.com/articles/Whitepapers/Common_Pitfalls.pdf

Famous Example





Usability Evaluation

- Many methods
- Does not have to be complicated
- You can do it (and you should!)
- You should test regularly during development (not only at the end!)

Let’s try!

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Group Usability Test

Usability test script

Reprinted from *Rocket Surgery Made Easy*
© 2010 Steve Krug

- ❑ **Web browser should be open to Google or some other "neutral" page**

Hi, _____. My name is _____, and I'm going to be walking you through this session today.

Before we begin, I have some information for you, and I'm going to read it to make sure that I cover everything.

You probably already have a good idea of why we asked you here, but let me go over it again briefly. We're asking people to try using a Web site that we're working on so we can see whether it works as intended. The session should take about an hour.

The first thing I want to make clear right away is that we're testing the *site*, not you. You can't do anything wrong here. In fact, this is probably the one place today where you don't have to worry about making mistakes.

As you use the site, I'm going to ask you as much as possible to try to think out loud: to say what you're looking at, what you're trying to do, and what you're thinking. This will be a big help to us.

Also, please don't worry that you're going to hurt our feelings. We're doing this to improve the site, so we need to hear your honest reactions.

If you have any questions as we go along, just ask them. I may not be able to answer them right away, since we're interested in how people do when they don't have someone sitting next to them to help. But if you still have any questions when we're done I'll try to answer them then. And if you need to take a break at any point, just let me know.

You may have noticed the microphone. With your permission, we're going to record what happens on the screen and our conversation. The recording will only be used to help us figure out how to improve the site, and it won't be seen by anyone except the people working on this project. And it helps me, because I don't have to take as many notes.

Also, there are a few people from the Web design team observing this session in another room. (They can't see us, just the screen.)

If you would, I'm going to ask you to sign a simple permission form for us. It just says that we have your permission to record you, and that the recording will only be seen by the people working on the project.

- ❑ **Give them a recording permission form and a pen**
- ❑ **While they sign it, START the SCREEN RECORDER**

Instructions

Go to https://experience.arcgis.com/experience/96dd742462124fa0b38ddedb9b25e429

Task: Which county had the highest number of cases over the past week

Remember to verbalize your thoughts!

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Debrief

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What does usability testing tell us?

Usability Evaluation Methods

EMPIRICAL → with users
example: usability testing

ANALYTICAL → no users
example: heuristic evaluation

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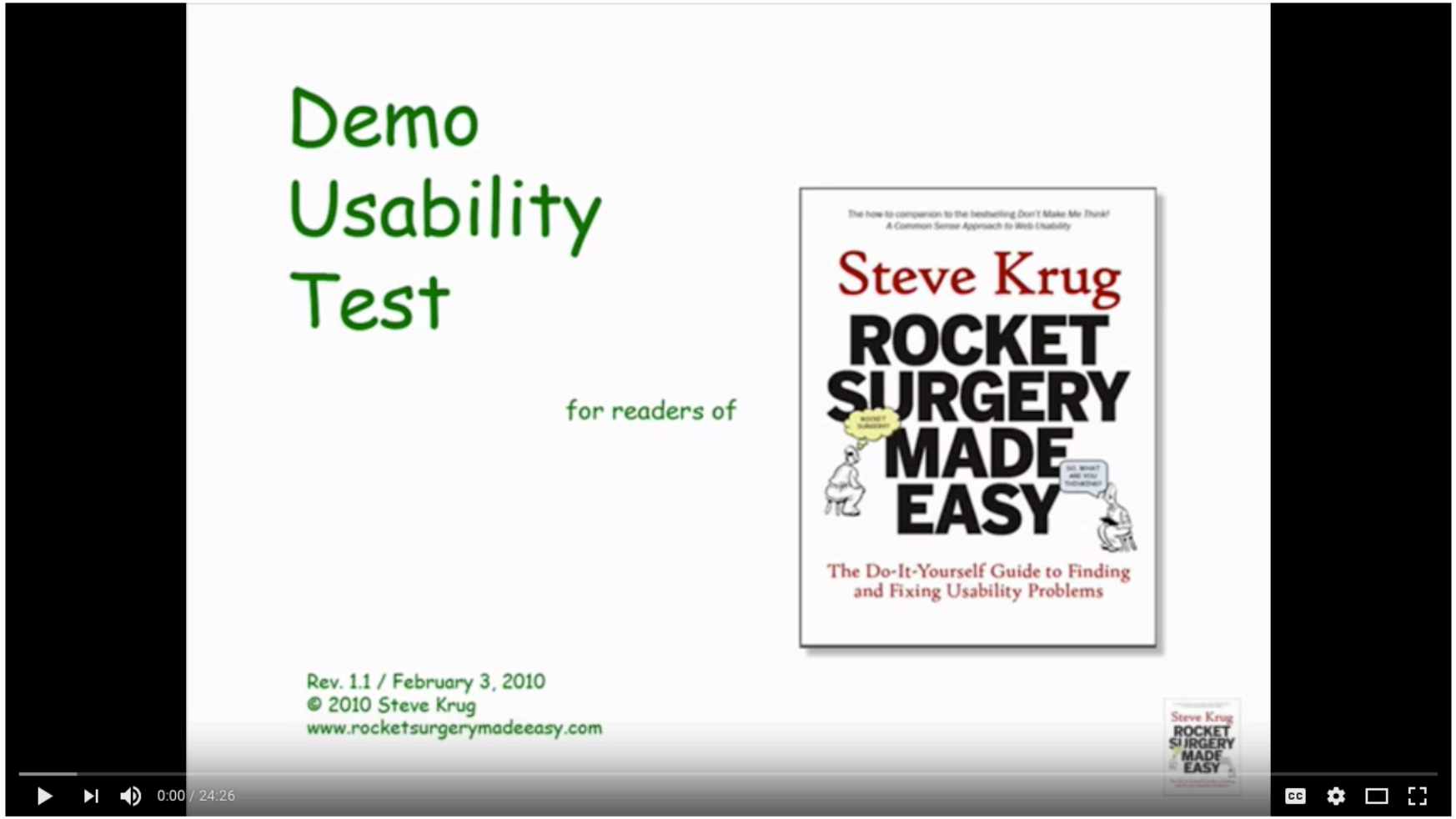
Usability Testing

Image courtesy of Good Work Labs
https://www.goodworklabs.com/the-role-of-usability-testing-in-app-development/

Usability Testing Demo



Rocket Surgery Made Easy by Steve Krug: Usability Demo

156,692 views

703 12 SHARE

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Heuristic Evaluation

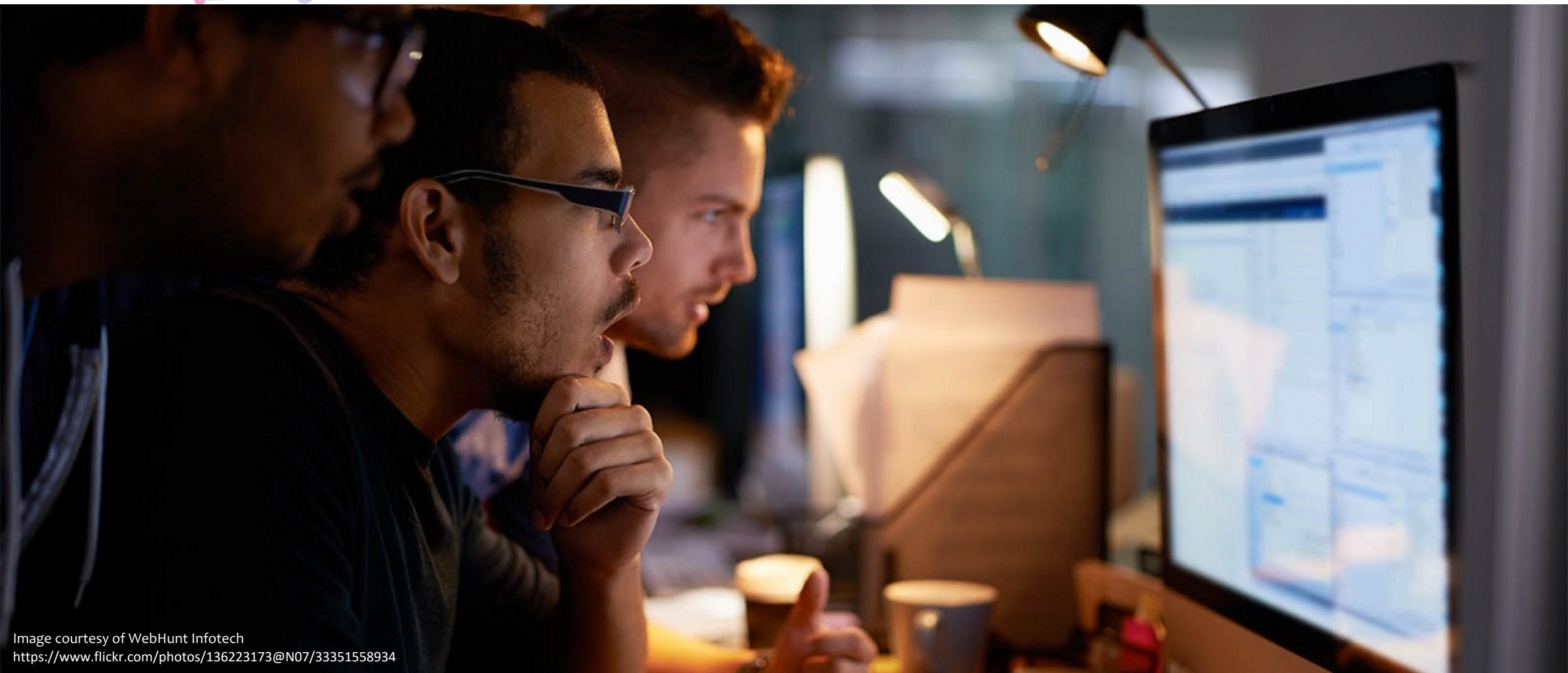

Image courtesy of WebHunt Infotech
https://www.flickr.com/photos/136223173@N07/33351558934

Heuristic Evaluation

WebCriteria

Heuristic Evaluation - A System Checklist

1. Visibility of System Status

The system should always keep user informed about what is going on, through appropriate feedback within reasonable time.

#	Review Checklist	Yes	No	N/A	Comments
1.1	Does every display begin with a title or header that describes screen contents?	o	o	●	No meaningful page headings.
1.2	Is there a consistent icon design scheme and stylistic treatment across the system?	●	o	o	
1.3	Is a single, selected icon clearly visible when surrounded by unselected icons?	o	●	o	
1.4	Do menu instructions, prompts, and error messages appear in the same place(s) on each menu?	o	o	●	Embedded error messages appear in different locations on the page
1.5	In multipage data entry screens, is each page labeled to show its relation to others?	●	o	o	
1.6	If overtype and insert mode are both available, is there a visible indication of which one the user is in?	o	●	o	
1.7	If pop-up windows are used to display error messages, do they allow the user to see the field in error?	o	●	o	
1.8	Is there some form of system feedback for every operator action?	o	o	●	Some feedback is too subtle
1.9	After the user completes an action (or group of actions), does the feedback indicate that the next group of actions can be started?	●	o	o	
1.10	Is there visual feedback in menus or dialog boxes about which choices are selectable?	●	o	o	
1.11	Is there visual feedback in menus or dialog boxes about which choice the cursor is on now?	●	o	o	
1.12	If multiple options can be selected in a menu or dialog box, is there visual feedback about which options are already selected?	●	o	o	
1.13	Is there visual feedback when objects are selected or moved?	o	●	o	
1.14	Is the current status of an icon clearly indicated?	o	●	o	
1.15	Is there feedback when function keys are pressed?	o	●	o	

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Heuristic Evaluation

5. Help Users Recognize, Diagnose, and Recover From Errors

Error messages should be expressed in plain language(NO CODES).

#	Review Checklist	Yes	No	N/A	Comments
5.1	Is sound used to signal an error?	O	O	●	
5.2	Are prompts stated constructively, without overt or implied criticism of the user?	●	O	O	
5.3	Do prompts imply that the user is in control?	●	O	O	
5.4	Are prompts brief and unambiguous.	●	O	O	
5.5	Are error messages worded so that the system, not the user, takes the blame?	O	O	●	Example: "You must enter a name for this order form".
5.6	If humorous error messages are used, are they appropriate and inoffensive to the user population?	O	●	O	
5.7	Are error messages grammatically correct?	●	O	O	
5.8	Do error messages avoid the use of exclamation points?	●	O	O	
5.9	Do error messages avoid the use of violent or hostile words?	●	O	O	
5.10	Do error messages avoid an anthropomorphic tone?	●	O	O	
5.11	Do all error messages in the system use consistent grammatical style, form, terminology, and abbreviations?	●	O	O	
5.12	Do messages place users in control of the system?	O	O	●	
5.13	Does the command language use normal action-object syntax?	O	●	O	
5.14	Does the command language avoid arbitrary, non-English use of punctuation, except for symbols that users already know?	O	●	O	
5.15	If an error is detected in a data entry field, does the system place the cursor in that field or highlight the error?	O	O	●	Instances where users must hunt for the offending field.
5.16	Do error messages inform the user of the error's severity?	●	O	O	
5.17	Do error messages suggest the cause of the problem?	●	O	O	
5.18	Do error messages provide appropriate semantic information?	O	O	●	

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Heuristic Evaluation Report

	Problem	Heuristic broken	Recommendations	Severity rating (1-4)	Number of evaluators that found issue
CONSISTENCY	There is no one consistent method used for editing. This increases the learning curve for the user.	Consistency Efficiency	Revisit the editing layout and maintain consistency in all the editing layouts.		
CONSISTENCY	There is no way for the user to know that Identity Page is a Foliotek product because of the lack of branding.	Consistency	Include elements of Foliotek brand in the form of colors and logo.		
EFFICIENCY	The clickable area for editing and adding content is very s mall. This makes it harder for the user to click on it.	Feedback Efficiency	Increase the target area/ clickable area for "EDIT/ADD" option during editing.		
EFFICIENCY	There are no keyboard shortcuts for an expert user.	Memory Efficiency	Provide keyboard shortcuts to edit content on Identity Page. This change is required only if the users are highly skilled in using Identity Page.		

Image courtesy of kruthis
http://www.kruthis.com/wp-content/uploads/2014/08/heuristic.png

Summary

- Human-centered design is necessary
- Avoid too much text
- Consider visual hierarchy
- Carefully choose what to highlight
- Don’t aim for meaningless variety
- Usability testing is important (and easy)

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