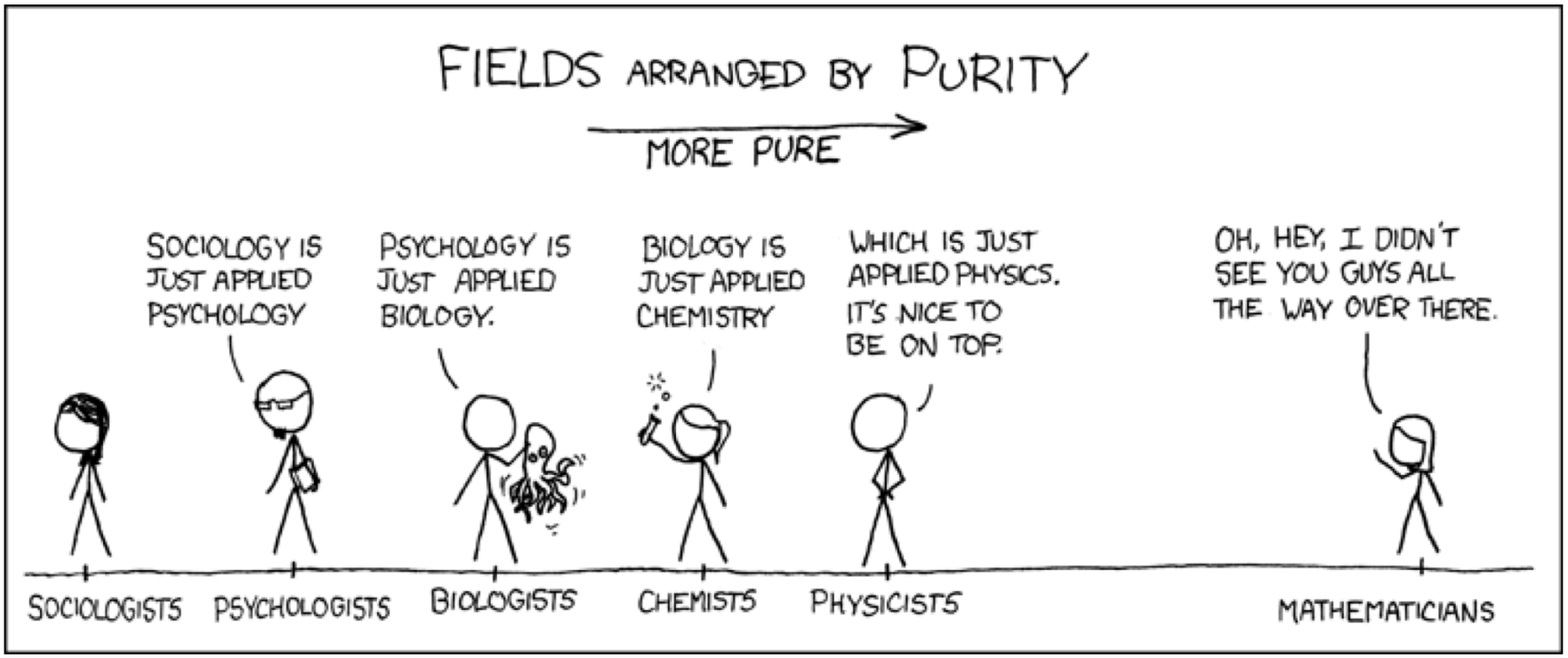
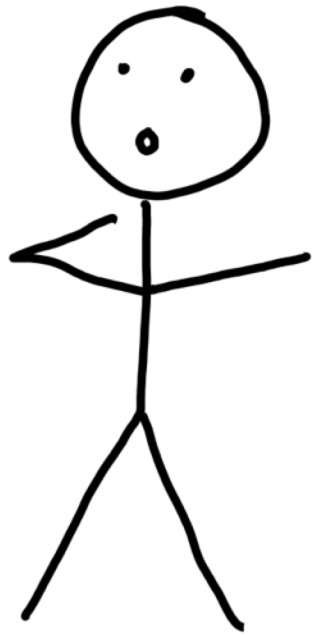


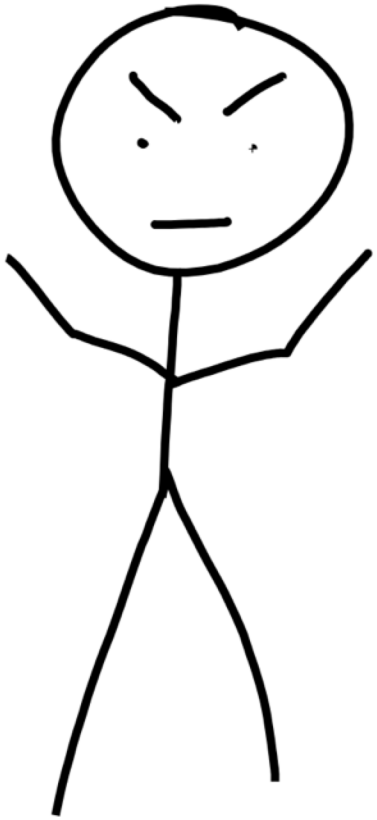
https://xkcd.com/435/



Stage 1:

The Intimidated Initiate

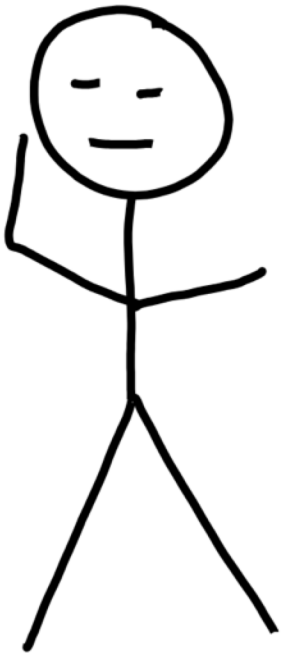
Wow, justified-aligned columns are so orderly, and some of these words are big.



Stage 2:

The Disillusioned Idealist

This work is terrible and
I hate it all!



Stage 3:

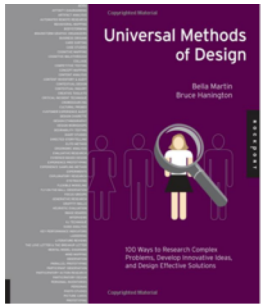
The Resigned Pragmatist

Hmm, I tried something kind of like this once and it was hard.

HEURISTIC EVALUATION

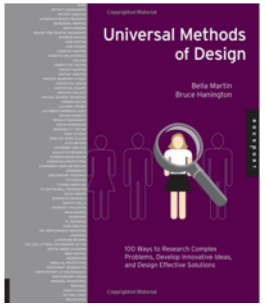
Heuristic Evaluation

"An agreed-upon set of usability best practices can help detect usability problems before actual users are brought in to further evaluate an interface."



Main idea: Research/Design team or UX expert uses a set of heuristics to inspect for UX problems.

Other Resources



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- Desurvire, Heather, Jim Kondziela, Michael E. Atwood. What is Gained and Lost When Using Methods Other Than Empirical Testing. *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems* (CHI), 1992.
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- Nielsen, Jakob. *Usability Engineering*. Boston, MA: Academic Press, 1993.
- Ginsburg, Suzanne. *Designing the iPhone User Experience*. Boston, MA: Addison Wesley, 2010.

What Heuristics to Use…?

What Heuristics to Use…?

- Nielsen 1994 (Nielsen and Molich 1990)
- Ben Shneiderman’s Eight Golden Rules of Interface Design
- (Wikipedia) Gerhardt-Powals' cognitive engineering principles
- (Wikipedia) Weinschenk and Barker classification
- …?

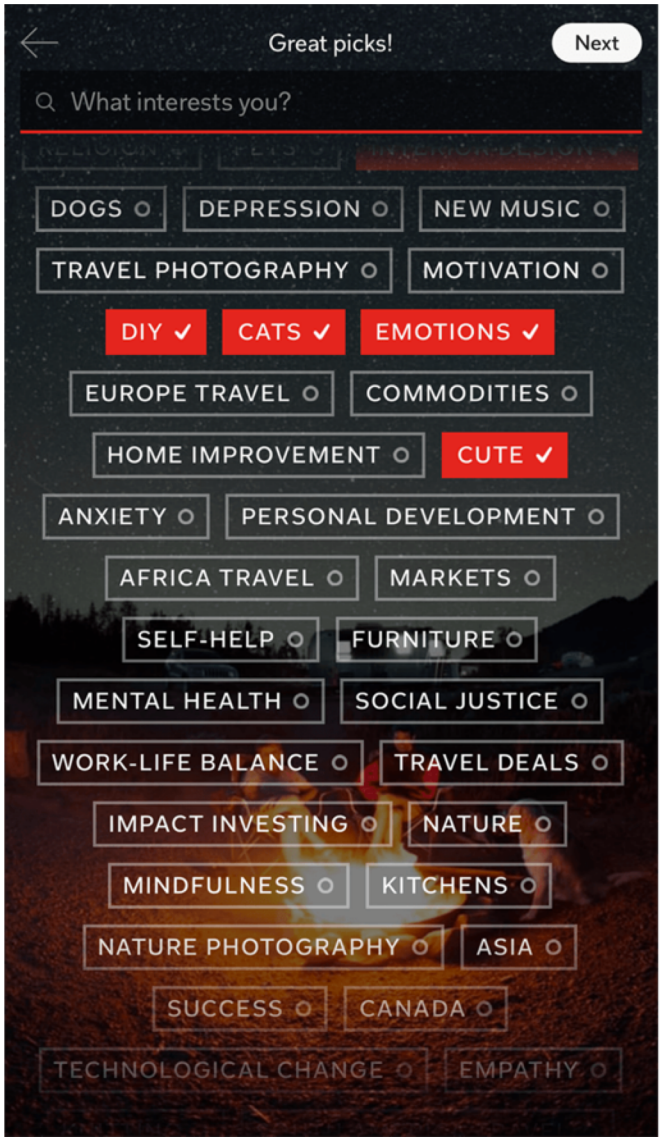
Nielsen's 10 Usability Heuristics for User Interface Design

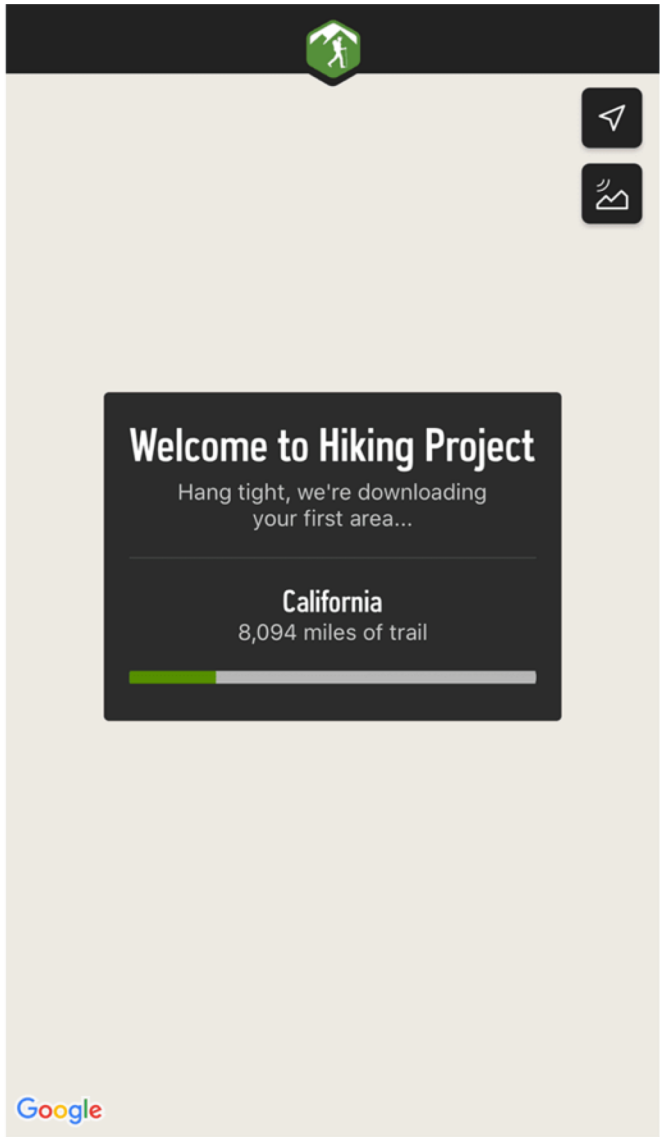
1. Visibility of system status
2. Match between system and the real world
3. User control and freedom
4. Consistency and standards
5. Error prevention
6. Recognition rather than recall
7. Flexibility and efficiency of use
8. Aesthetic and minimalist design
9. Help users recognize, diagnose, and recover from errors
10. Help and documentation

#1: Visibility of system status

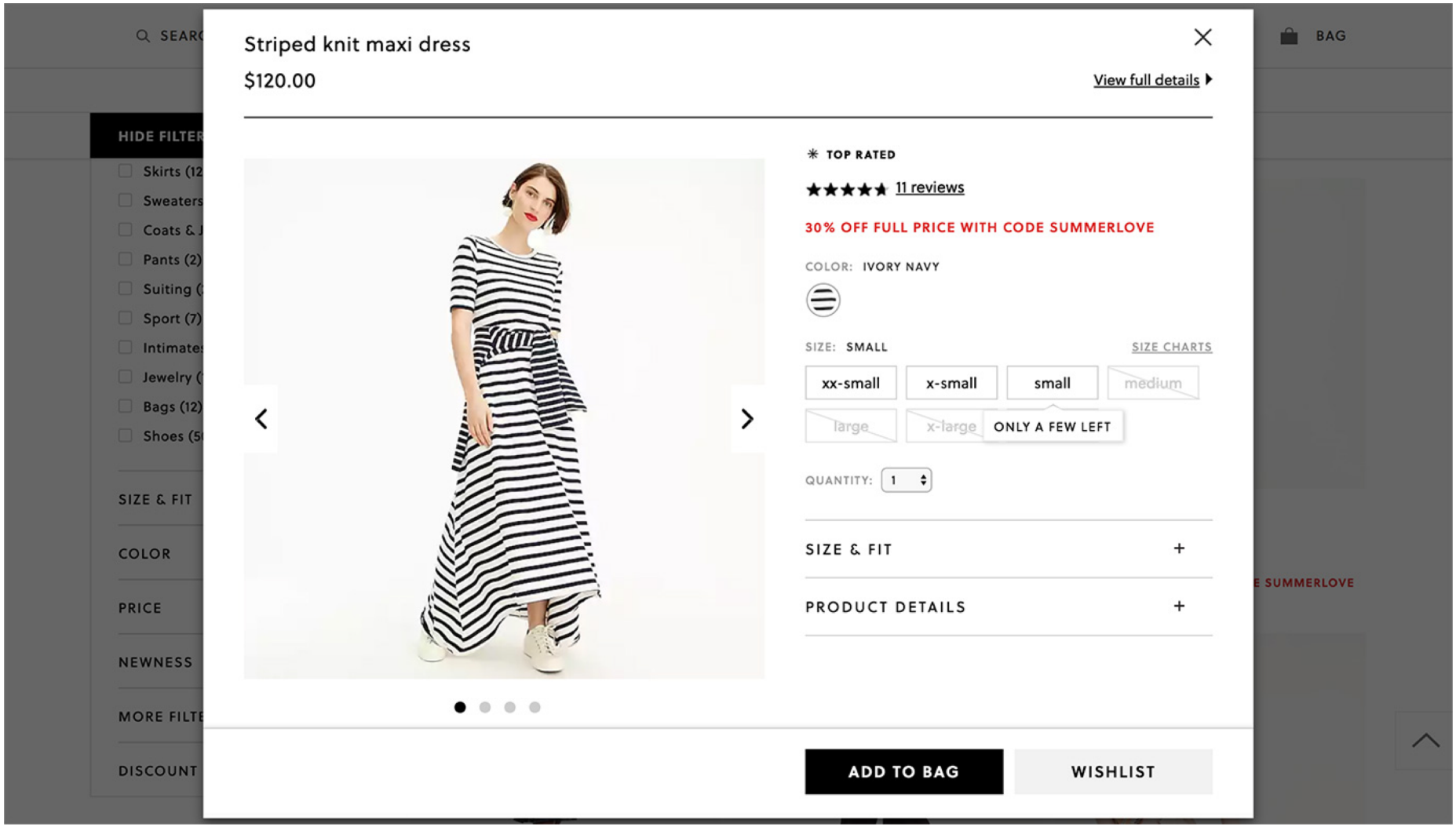
“The system should always keep users informed about what is going on, through appropriate feedback within reasonable time.”

#1: Visibility of system status





#1: Visibility of system status



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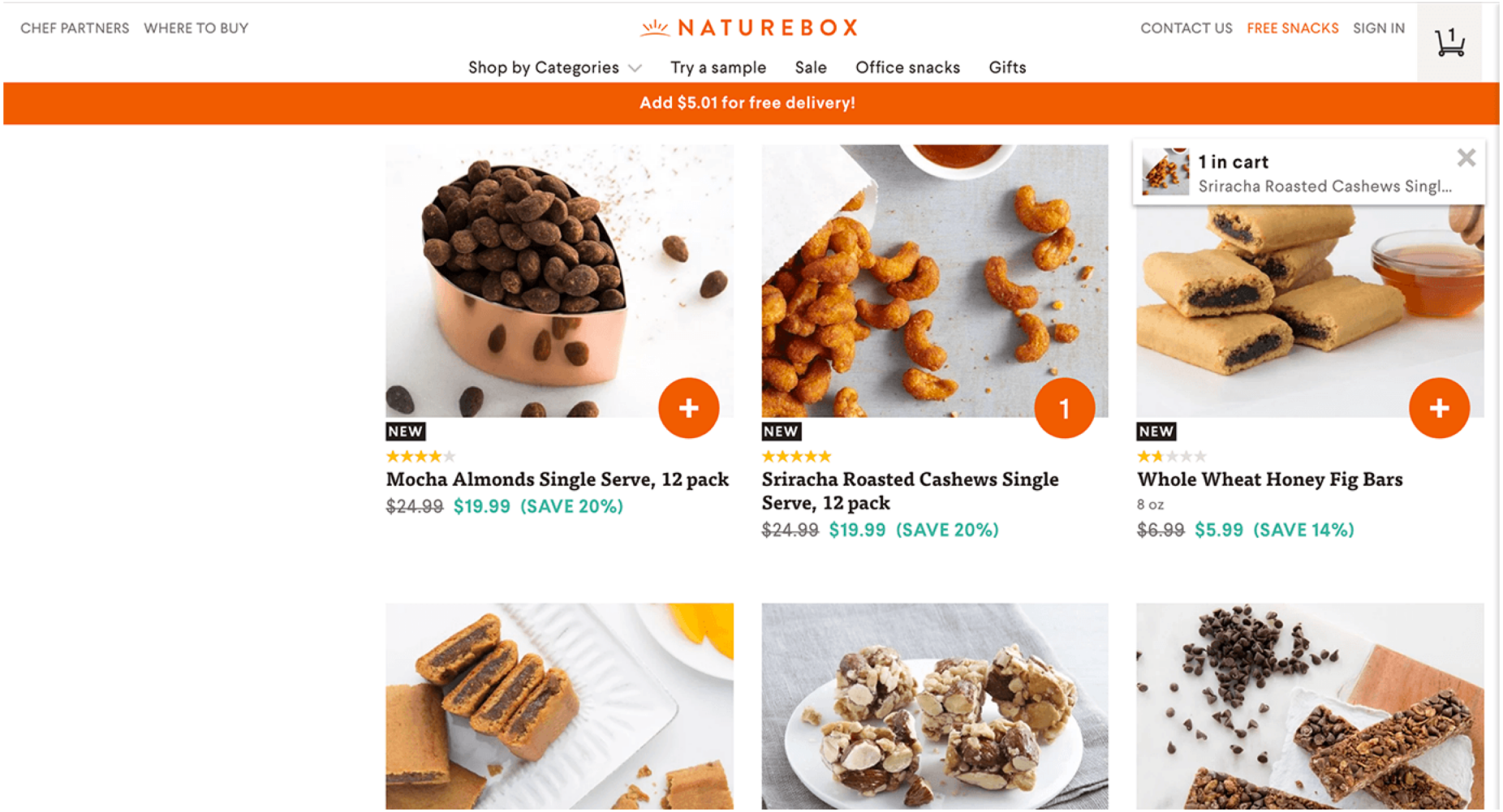


#1: Visibility of system status

- With Amazon Echo…?

#1: Visibility of system status

- With Amazon Echo…?

http://www.aftvnews.com/amazon-echos-can-already-call-other-echos-in-the-same-house/

#1: Visibility of system status

?

#2: Match between system and the real world

“The system should speak the users' language, with words, phrases and concepts familiar to the user, rather than system-oriented terms. Follow real-world conventions, making information appear in a natural and logical order.”

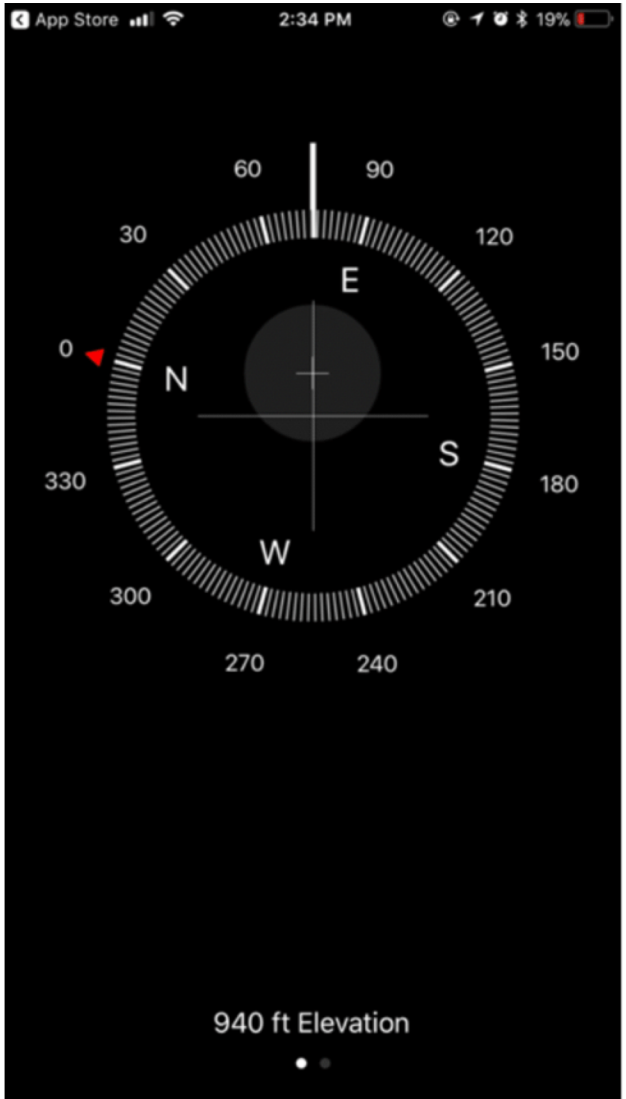
-
-

#2: Match between system and the real world

“The system should speak the users' language, with words, phrases and concepts familiar to the user, rather than system-oriented terms. Follow real-world conventions, making information appear in a natural and logical order.”

- **Familiar Language**
- **Leverage Familiarity with Real-World Objects and Activities**

#2: Match between system and the real world



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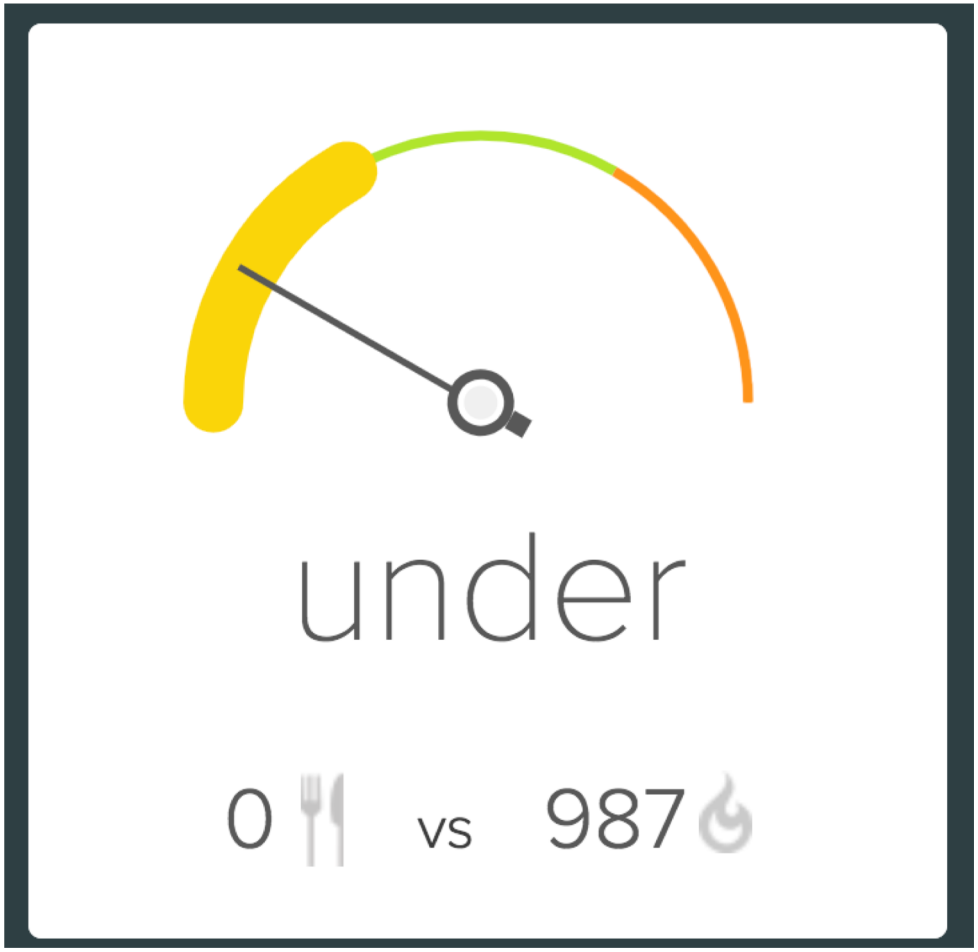

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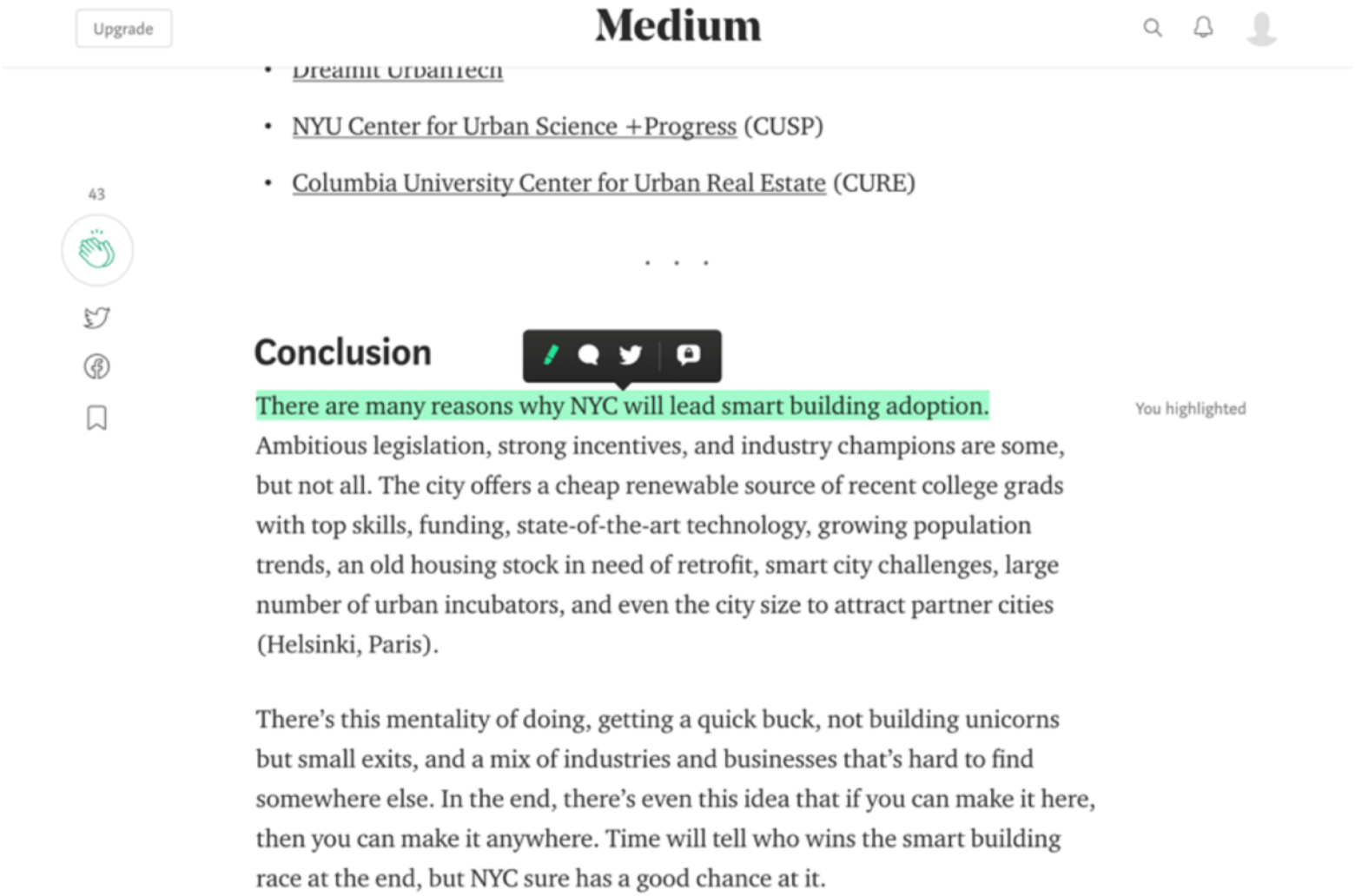

#2: Match between system and the real world

?

#3: User control and freedom

“Users often choose system functions by mistake and will need a clearly marked "emergency exit" to leave the unwanted state without having to go through an extended dialogue. Support undo and redo.”

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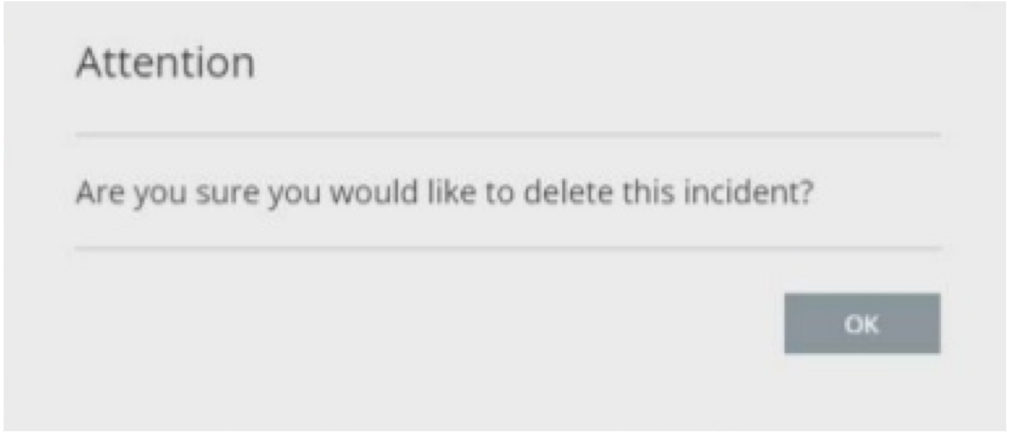


https://www.slideshare.net/hanochaloni/bad-error-messages

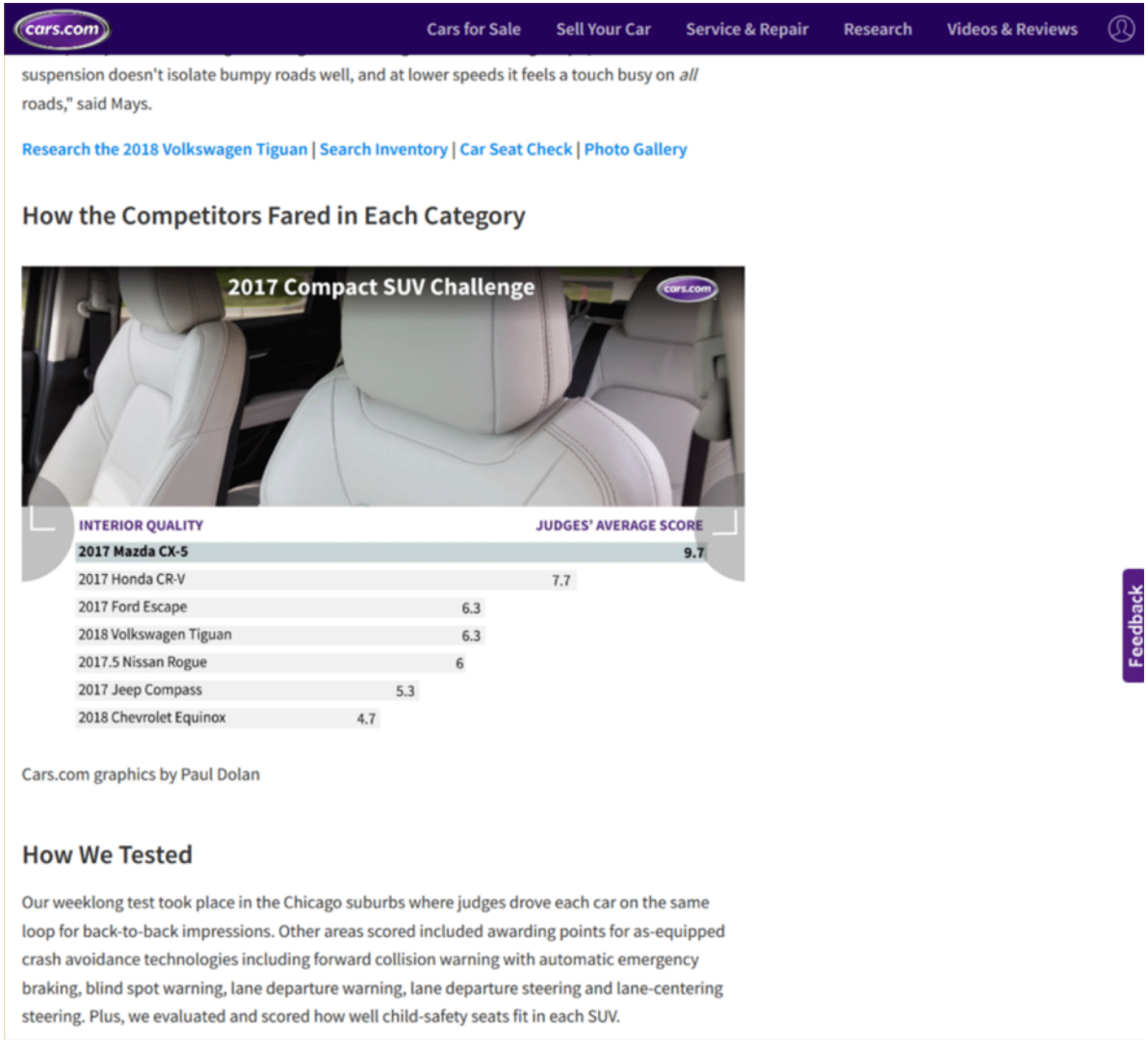
#3: User control and freedom

?

#4: Consistency and standards

“Users should not have to wonder whether different words, situations, or actions mean the same thing. Follow platform conventions.”

#4: Consistency and standards



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suspension doesn't isolate bumpy roads well, and at lower speeds it feels a touch busy on *all* roads," said Mays.

Research the 2018 Volkswagen Tiguan | Search Inventory | Car Seat Check | Photo Gallery

How the Competitors Fared in Each Category

INTERIOR QUALITY	JUDGES' AVERAGE SCORE
2017 Mazda CX-5	**9.7**
2017 Honda CR-V	7.7
2017 Ford Escape	6.3
2018 Volkswagen Tiguan	6.3
2017.5 Nissan Rogue	6
2017 Jeep Compass	5.3
2018 Chevrolet Equinox	4.7

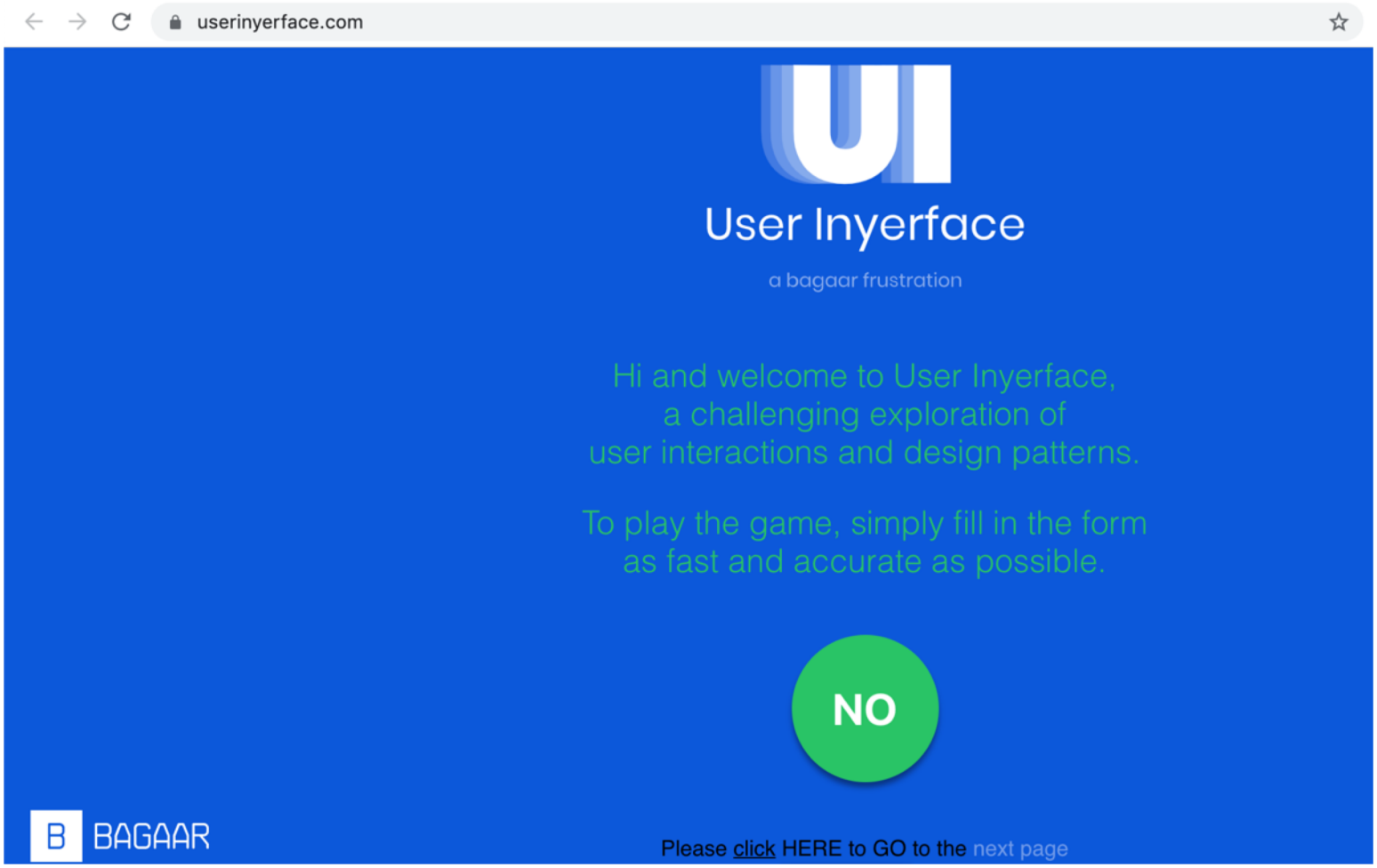
Cars.com graphics by Paul Dolan

How We Tested

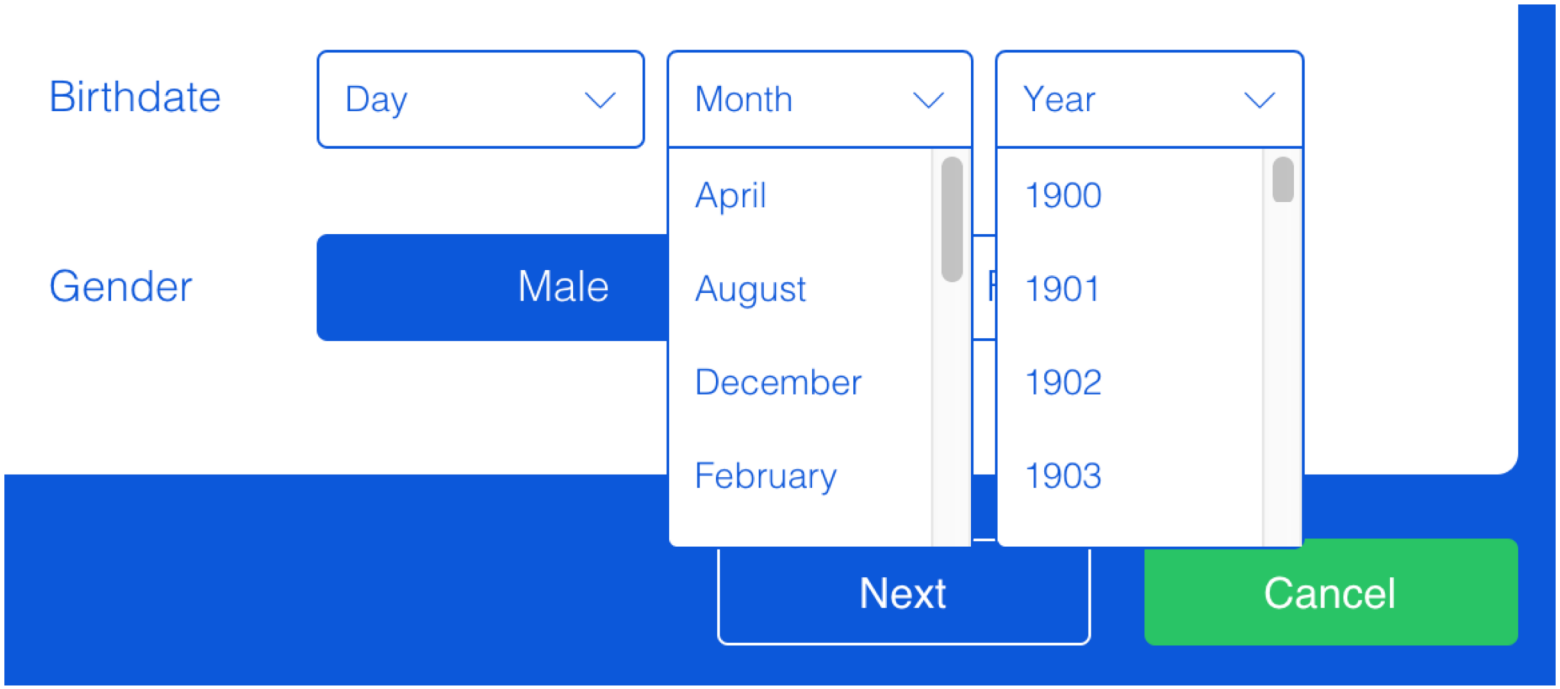
Our weeklong test took place in the Chicago suburbs where judges drove each car on the same loop for back-to-back impressions. Other areas scored included awarding points for as-equipped crash avoidance technologies including forward collision warning with automatic emergency braking, blind spot warning, lane departure warning, lane departure steering and lane-centering steering. Plus, we evaluated and scored how well child-safety seats fit in each SUV.

Feedback

#4: Consistency and standards



#4: Consistency and standards



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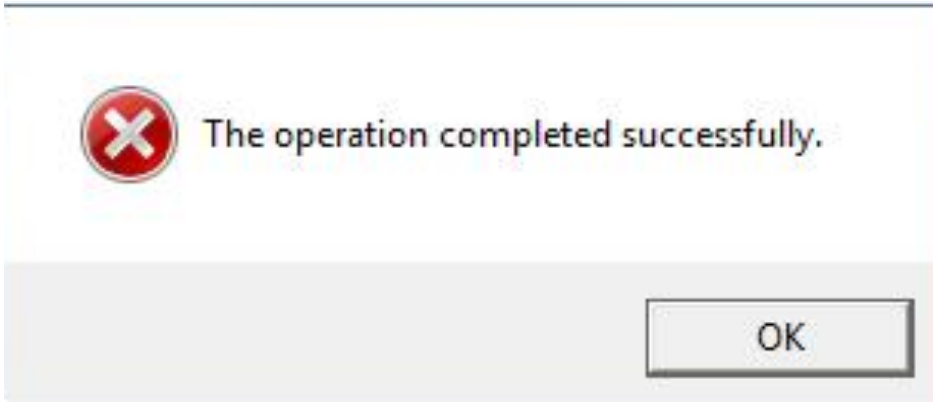


https://www.slideshare.net/hanochaloni/bad-error-messages

#4: Consistency and standards

?

#5: Error prevention

“Even better than good error messages is a careful design which prevents a problem from occurring in the first place. Either eliminate error-prone conditions or check for them and present users with a confirmation option before they commit to the action.”

Two Types of Errors

Slips occur when users intend to perform one action, but end up doing another (often similar) action. For example, typing an “i” instead of an “o” counts as a slip; accidentally putting liquid hand soap on one’s toothbrush instead of toothpaste is also a slip. Slips are typically made when users are on autopilot, and when they do not fully devote their attention resources to the task at hand.

Two Types of Errors

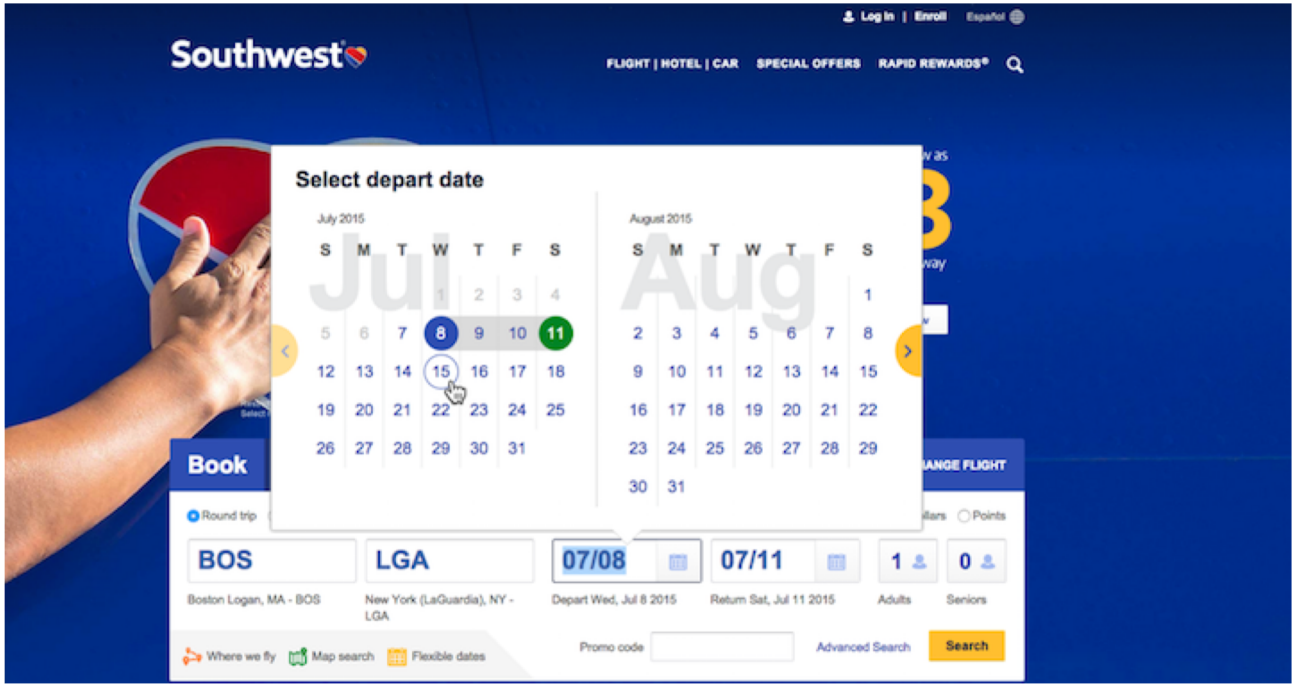
Mistakes are made when users have goals that are inappropriate for the current problem or task; even if they take the right steps to complete their goals, the steps will result in an error. For example, if I misunderstood the meaning of the oil-pressure warning light in my car, and thought it was the tire-pressure monitor, no matter how carefully I added air to my tires, it would not fix the issue with my oil pressure…Mistakes are conscious errors, and often (though not exclusively) arise when a user has incomplete or incorrect information about the task, and develops a mental model that doesn't match how the interface actually works.

#5: Error prevention

"Even better than good error messages is a careful design which prevents a problem from occurring in the first place. Either eliminate error-prone conditions or check for them and present users with a confirmation option before they commit to the action."

- **Include Helpful Constraints**

#5: Error prevention



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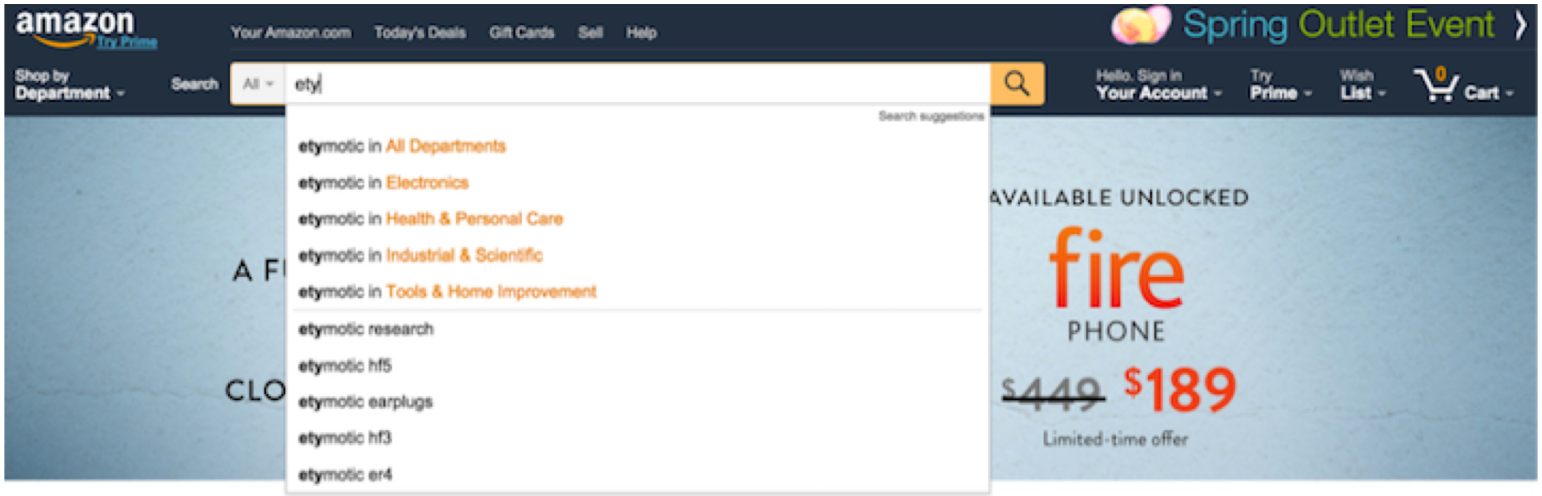
"Even better than good error messages is a careful design which prevents a problem from occurring in the first place. Either eliminate error-prone conditions or check for them and present users with a confirmation option before they commit to the action."

- **Include Helpful Constraints**
- **Offer Suggestions**

#5: Error prevention



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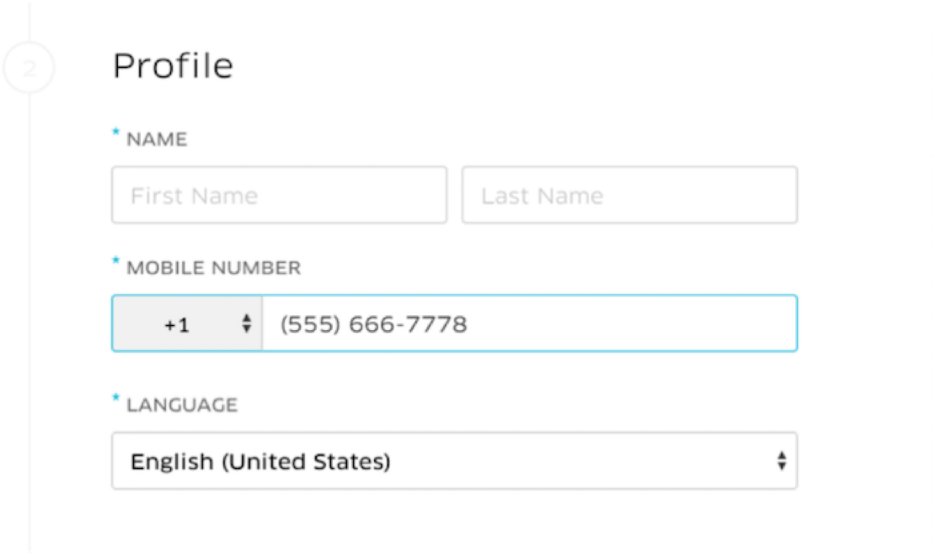
- **Include Helpful Constraints**
- **Offer Suggestions**
- **Choose Good Defaults**

#5: Error prevention

“Even better than good error messages is a careful design which prevents a problem from occurring in the first place. Either eliminate error-prone conditions or check for them and present users with a confirmation option before they commit to the action.”

- **Include Helpful Constraints**
- **Offer Suggestions**
- **Choose Good Defaults**
- **Use Forgiving Formatting**

#5: Error prevention



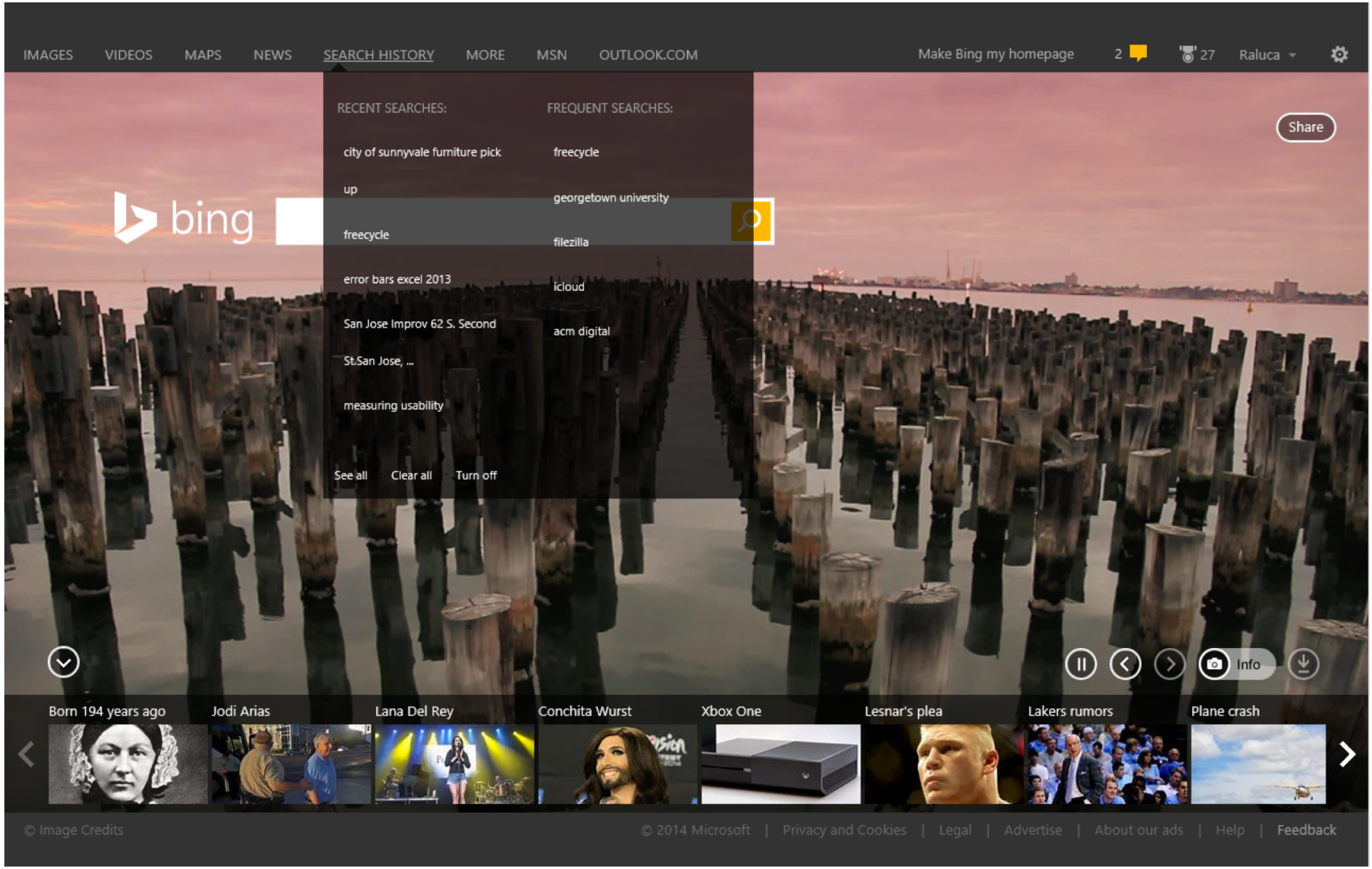
#5: Error prevention

?

#6: Recognition rather than recall

“Minimize the user's memory load by making objects, actions, and options visible. The user should not have to remember information from one part of the dialogue to another. Instructions for use of the system should be visible or easily retrievable whenever appropriate.”

#6: Recognition rather than recall



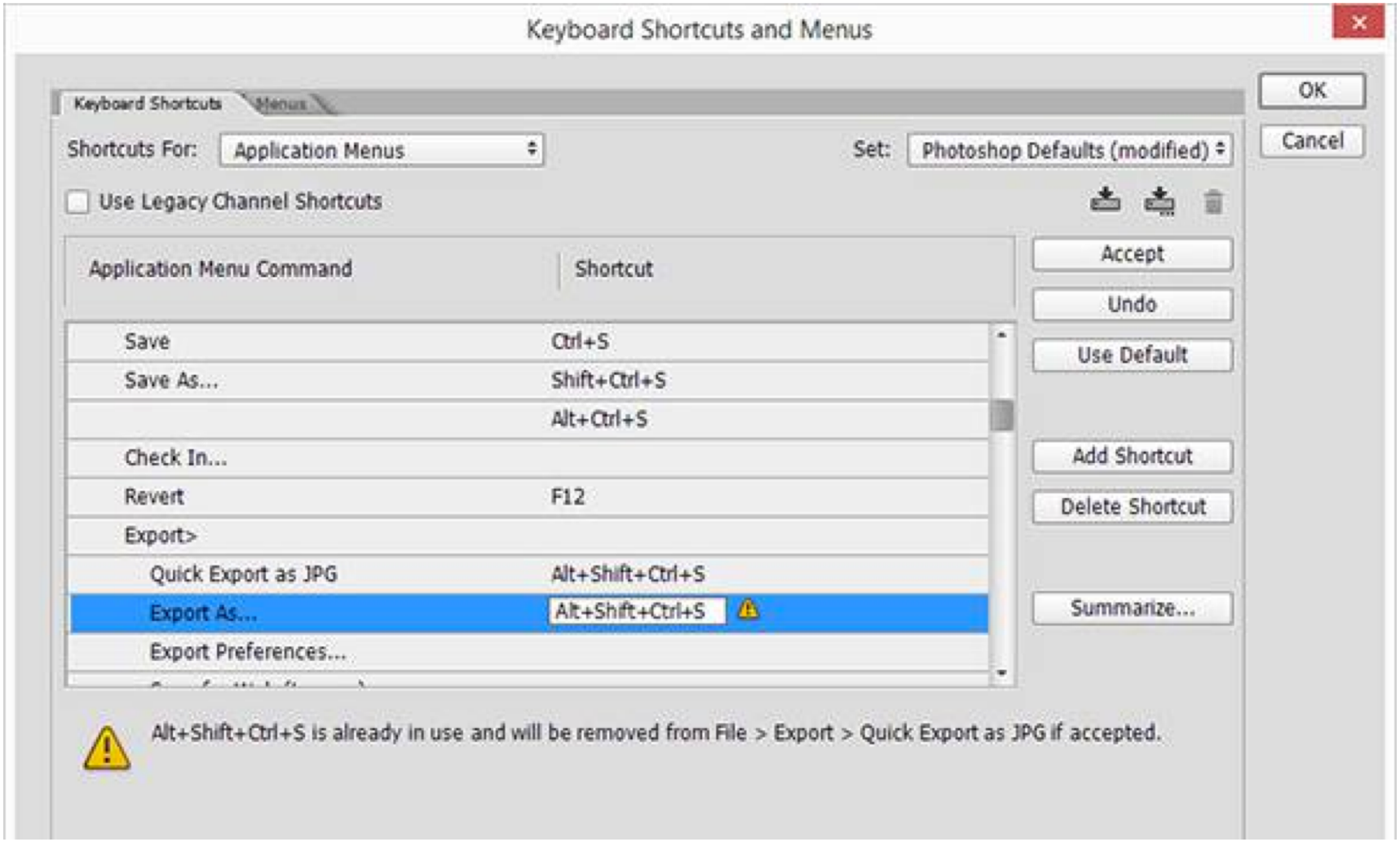
#6: Recognition rather than recall

?

#7: Flexibility and efficiency of use

“Accelerators — unseen by the novice user — may often speed up the interaction for the expert user such that the system can cater to both inexperienced and experienced users. Allow users to tailor frequent actions.”

#7: Flexibility and efficiency of use



#7: Flexibility and efficiency of use

?

#8: Aesthetic and minimalist design

“Dialogues should not contain information which is irrelevant or rarely needed. Every extra unit of information in a dialogue competes with the relevant units of information and diminishes their relative visibility.”

#8: Aesthetic and minimalist design

?

#9: Help users recognize, diagnose, and recover from errors

“Error messages should be expressed in plain language (no codes), precisely indicate the problem, and constructively suggest a solution.”

#9: Help users recognize, diagnose, and recover from errors

- **Explicit** indication that something has gone wrong

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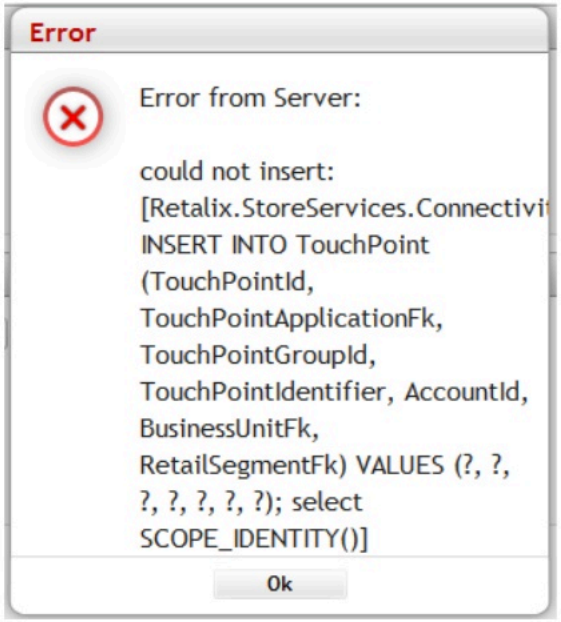

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#9: Help users recognize, diagnose, and recover from errors

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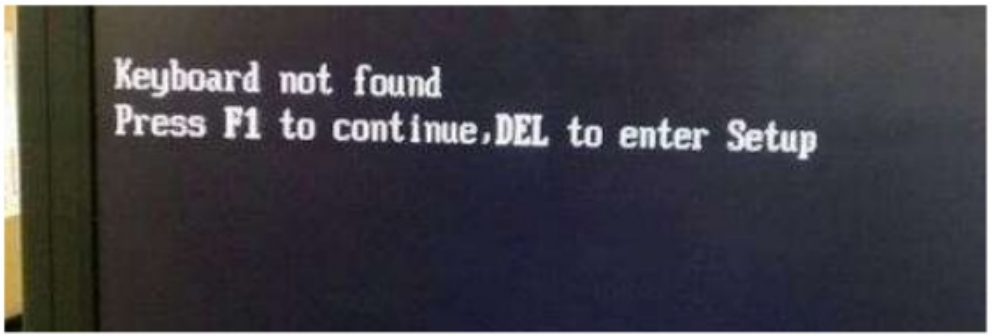

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- **Visible** and highly noticeable

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- **Preserve** as much as the user's work as possible

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- **Human-readable** language
- **Polite** phrasing
- **Precise** descriptions of exact problems
- **Constructive advice** on how to fix the problem
- **Visible** and highly noticeable
- **Preserve** as much as the user's work as possible
- **Reduce** the work of correcting the error

#10: Help and documentation

“Even though it is better if the system can be used without documentation, it may be necessary to provide help and documentation. Any such information should be easy to search, focused on the user's task, list concrete steps to be carried out, and not be too large.”

#10: Help and documentation

?

Ben Shneiderman's Eight Golden Rules of Interface Design

1. Strive for consistency.
2. Seek universal usability.
3. Offer informative feedback.
4. Design dialogs to yield closure.
5. Prevent errors.
6. Permit easy reversal of actions.
7. Keep users in control.
8. Reduce short-term memory load.