Heuristic evaluation is a hill-climbing technique
Heuristic evaluation gives you terms for intuitive ideas.

It is a suite of unit tests for user interfaces.
Multiple ways to evaluate

Empirical  Assess with real users
Formal    Models and formulas to calculate measures
Automated Software measures
Critique  Expertise and heuristic feedback
When to get design critique?

• **Before user testing.** Don’t waste users on the small stuff. Critique can identify minor issues that can be resolved before testing, allowing users to focus on the big issues.

• **Before redesigning.** Don’t throw out the baby with the bathwater. Critique can help you learn what works and what should change.

• **When you know there are problems, but you need evidence.** Perhaps you’ve received complaints from customers or found yourself stumbling around your own site. Critique can help you articulate problems and provide you with ammunition for redesign.

• **Before release.** Smooth off the rough edges.
Begin Review with a Clear Goal
Heuristic Evaluation

- Developed by Jakob Nielsen
- Helps find usability problems in a design
- Small set (3-5) of evaluators examine UI
  - independently check for compliance with usability principles ("heuristics")
  - different evaluators will find different problems
  - evaluators only communicate afterwards
    - findings are then aggregated
- Can perform on working UI or sketches

Jacob Nielsen, http://www.useit.com/papers/heuristic  · Slide summary adapted from James Landay
Ten Design Heuristics

- Show system status
- Familiar metaphors & language
- Control & freedom
- Consistency
- Error prevention
- Recognition over recall
- Flexibility & efficiency
- Aesthetic & minimalist design
- Recognize, diagnose, & recover from errors
- Help

Evaluators’ Process

- Step through design several times
  - Examine details, flow, and architecture
  - Consult list of usability principles
  - ..and anything else that comes to mind
- Which principles?
  - Nielsen’s “heuristics”
  - Category-specific heuristics from e.g., design goals, competitive analysis, existing designs
- Use violations to redesign/fix problems
Why Multiple Evaluators?

- No evaluator finds everything
- Some find more than others

PROBLEMS

EVALUATORS

successful

unsuccessful

hard

easy

Jacob Nielsen, http://www.useit.com/papers/heuristic · Slide summary adapted from James Landay
Decreasing Returns

• Caveat: graphs for a specific example
Heuristic Eval: Cost-effective

• In one case: benefit-cost ratio of 48
  • estimated benefit $500,000; cost $10,500
  • value of each problem ~$15K
• how might we calculate this value?
  • in-house -> productivity; open market -> sales
• Severe problems found more often
• Single evaluator achieves poor results
  • only finds 35% of usability problems
  • 5 evaluators find ~ 75% of problems
Heuristics vs. User Testing

- Heuristic Evaluation often faster
  - 1-2 hours each evaluator
- HE results come pre-interpreted
- User testing is more accurate (by def.)
  - takes into account actual users and tasks
  - HE may miss problems & find “false positives”
- Valuable to alternate methods
  - find different problems
  - don’t waste participants
Phases of Heuristic Evaluation

1. **Pre-evaluation training**: give evaluators needed domain knowledge and information on the scenario

2. **Evaluation**: individuals evaluate and then aggregate results

3. **Severity rating**: determine how severe each problem is (priority). Can do first individually and then as a group

4. **Debriefing**: review with design team
How-to: Heuristic Evaluation

• At least two passes for each evaluator
  • first to get feel for flow and scope of system
  • second to focus on specific elements
• If system is walk-up-and-use or evaluators are domain experts, no assistance needed
  • otherwise might supply evaluators with scenarios
• Each evaluator produces list of problems
  • explain why with reference to heuristic or other information
  • be specific and list each problem separately

Jacob Nielsen, http://www.useit.com/papers/heuristic · Slide summary adapted from James Landay
How-to: Heuristic Evaluation

• Why separate listings for each violation?
  • risk of repeating problematic aspect
  • may not be possible to fix all problems

• Where problems may be found
  • single location in UI
  • two or more locations that need to be compared
  • problem with overall structure of UI
  • something is missing
    • ambiguous with early prototypes; clarify in advance
    • sometimes features are implied by design docs and just haven’t been “implemented” – relax on those
Severity Rating

- Independently estimate after review
- Allocate resources to fix problems
- Estimate need for more usability efforts
- Severity combines
  - frequency
  - impact
  - persistence
Severity Ratings

0 - don’t agree that this is a usability problem
1 - cosmetic problem
2 - minor usability problem
3 - major usability problem; important to fix
4 - usability catastrophe; imperative to fix
Severity Ratings Example

- **Issue**: Unable to edit one’s weight
- **Severity**: 2
- **Heuristics violated**: User control and freedom
- **Description**: when you open the app for the first time, you have to enter your weight, but you cannot update it. It could be useful if you mistyped your weight, or if one year or two after the first use of the app, your weight has changed.
Debriefing

- Conduct with evaluators, observers, and development team members
- Discuss general characteristics of UI
- Suggest potential improvements to address major usability problems
- Dev. team rates effort to fix
- Brainstorm solutions
The Heuristics
Show System Status
Show: Time

- Feedback depends on response time
  - <1s: just show outcome
  - ~1s: feedback that activity is underway
  - >>1s: Show fractional progress; time
You are currently using 7488 MB (99%) of your 7498 MB.

Last account activity: 0 minutes ago at this IP (75.210.243.152). Details
Stanford University HCI Group Mail view: standard | turn on chat | older version | basic HTML Learn more

©2010 Google - Terms of Service - Privacy Policy - Program Policies - Google Home
Powered by Google
Show: Change

Do you want to save the changes you made in the document “Untitled”?
Your changes will be lost if you don’t save them.

- Don’t Save
- Cancel
- Save...
Show: Next steps

**Important Message**
Thank you! Your message was sent to the seller and a copy was sent to the e-mail address on your account. The seller will respond to you directly via e-mail.

[Back to Member Profile]
Show: Completion

Put down that cocktail...
Your HandBrake queue is done!

Handbrake
Familiar Metaphors & Language
Familiar Metaphors
Electronic Bill Presentment and Electronic Correspondence for the William D. Ford Federal Direct Loan (Direct Loan) Program

Services you are already enrolled in:

Electronic Correspondence

You already are enrolled in this service that enables you to receive your Direct Loan correspondence electronically. If you wish to cancel enrollment for this service, click here.

Services you are not eligible for:

Electronic Bill Presentment

Your account is not eligible for participation in Electronic Bill Presentment because either you already are enrolled in our Electronic Debit Account, your account is in an inactive status such as paid in full, or your account is greater than 210 days delinquent.
Familiar Categories

Need a Visa?
Citizenship: Not a U.S. Citizen?
State of Residence:
Destination:
Purpose of Travel:
Multiple Destinations
Account #:
Familiar Choices

Document encoding mismatch.

This document contains data which describes its encoding as Unicode (UTF-8, no BOM), but the encoding has been set to Western (ISO Latin 1).

Saving this document as-is will likely cause unexpected display of its contents and may prevent BBEdit from opening it in the future.

Cancel  Save Anyway
Consider corner cases
User Control & Freedom
Freedom to Undo
Freedom to Explore

**Flight Information**

- **11:05 PM SJC**
- **7:21 AM JFK** (Next day)
- Total trip time: 9h 38m

- **10:38 AM JFK**
- **11:43 AM BOS**

**Flight Details**

- **Flight 670**
  - View seats
  - Duration: 5h 16m

- **Flight 518**
  - View seats
  - Duration: 1h 5m

**Prices**

- **Lowest**
  - $493

- **Refundable**
  - $981
Consistency & Standards
Consistent Layout
Consistent Layout

Example headline.
Note: If you’re viewing this page via a \texttt{file://} URL, the "next" and "previous" Glyphicon buttons on the left and right might not load/display properly due to web browser security rules.

Sign up today
Consistent Layout

http://www.youtube.com/watch?v=jXaleptB54c
Consistent Names

Send an email

Please provide the requested information below to contact us by email. Your inquiry will be forwarded to our Customer Service Team for resolution. Our goal is to respond and resolve your inquiry within 24 hours.

Privacy and Security
Verizon Wireless considers your personal information completely private and will not disclose to any outside organization for its use in marketing or solicitation. View our Privacy Principles

* Indicates required fields.

Topic*
Internet and Data Products

Subtopic*
Please Select
Mobile Office
Mobile Web
National Access
Bluetooth Technology
Broadband Access
Blackberry/PDA Smartphone
Wireless Sync

Question or Comment (line length 2000)
Consistent Choices

Terminal — sudo — 80×53

Trusted Storage Recovery Script v1.0.9

Please choose a language:

   e: English
   j: Japanese (日本語)

>: e

DISCLAIMER:

WARNING: Run at your own risk and make sure that ALL Adobe products are closed and not running before you proceed further.

This tool has been developed to upgrade the licensing service and repair a license file for Adobe Acrobat 8 and 9, and Creative Suite 3 and 4 products.

Do you wish to continue? [y/n]: [y/n]: 

Adobe Acrobat license repair utility
Clearer Choices...

Are you sure you want to change the extension from “.do” to “.pdf”? If you make this change, your document may open in a different application.

Keep .do  Use .pdf
Error Prevention
Prevent Data Loss

The following files already exist.

/Users/srk/Desktop/L1010235.jpg

Do you wish to overwrite the existing files, skip the existing files, or rename the exported files to avoid collision?

- Overwrite
- Skip
- Cancel
- Use Unique Names

Adobe Lightroom
Prevent Painful Paths

25 CENTS PER COPY

DO NOT USE QUARTERS
Prevent Misinterpretation
Prevent Bad input
Prevent Unnecessary Constraints
Recognition Over Recall

6 / 10
Recognition: Avoid codes

- 1 = Falafel
- 2 = Chicken Shawerma
- 4 = Beef & Lamb Shawerma
- 6 = Chicken Shish Kebob
- 7 = Lamb Shish Kebob

Photo by Scott Klemmer; taken at Stanford HCI lunch
Recognition: Avoid codes
Recognition with previews
Recognition with previews
Flexibility & Efficiency

7 / 10
Flexible shortcuts
Flexible defaults with options
Flexible: ambient information

BusyCal weather in week view
Flexible proactivity

Google Gmail automatic unsubscription
Flexibility: Recommendations

Customers Who Bought This Item Also Bought

- Don't Make Me Think, Revisited: A Common …
  - Steve Krug
  - Kindle Edition
  - $27.89

- Emotional Design: Why We Love (or Hate) …
  - Don Norman
  - Kindle Edition
  - $10.49

- Don't Make Me Think: A Common Sense Approach …
  - Steve Krug
  - Kindle Edition
  - $16.00

- Universal Principles of Design, Revised and …
  - William Lidwell
  - Kindle Edition
  - $16.50
Flexibility: keep it relevant

Customer Discussions

<table>
<thead>
<tr>
<th>Discussion</th>
<th>Replies</th>
<th>Latest Post</th>
</tr>
</thead>
<tbody>
<tr>
<td>No discussions yet</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Ask questions, Share opinions, Gain insight

Start a new

Active discussions in related forums

- **health**
  - Male circumcision
  - Fat and slim
  - Does chemotherapy work?
  - Do you think it's possible to stop smoking?

- **health**
  - Why are Americans still struggling with obesity?

- **home improvement**
  - BEST PERFORMING REPLACEMENT TOILET??
  - Will these resellers now honor returns on the Zhu Zhu toys?
  - Several Sunset and Lowes Home Improvement Books RECALLED
  - Lollipops haters are disgusting
  - Quiet Bedroom Fan

- **toys**
  - USPS Carriers smoke in their trucks
  - NO harm in second hand smoke

Search Customer Discussions

Amazon Customer Discussions
Flexibility: keep it relevant

User-modified remote control courtesy Bill Moggridge
Aesthetic & Minimalist Design

8 / 10
Our ancestors
Minimalism: above the fold
Minimalism: signal-to-noise
Minimalism: signal-to-noise
Minimalist Login

Your personal domain management dashboard is only a few seconds away!

Ordering a domain is fast and easy!
Sign in with your email address and iWantMyName password or enter a new one if you are not a customer yet:

What is your email address?

My email address is: [yourname@example.com]

Do you have an iWantMyName password?

- Yes, I'm a returning customer and have a password.
- No, I'm a new customer.

Enter password: [_________]

Type it again: [_________]

I accept the [Terms and Conditions]

Continue (secure connection) » [Forgot your password?]
Minimalism: Redundancy
Minimalism: functionality
Recognize, Diagnose, & Recover from Errors
Errors: make problem clear
Errors: make problem clear

The following errors were detected:
- You must fill out all required fields.

Please select which sessions you plan to attend:

**Monday, August 15 -**

- **General Session**
  - **KEYNOTE SPEAKER:** Lynn Tilton, Chief Executive Officer, Patriarch Partners LLC
  - Date: 8/15/2011 8:00 AM - 9:15 AM (Pacific Time)
  - Location: Yerba 7-9

- **Mission IT Supporting Science & Engineering**
  - Title: NASA Supercomputing and Its Impact on Agency Missions
  - Speaker: Rupak Biswas, Ames Research Center
  - Date: 8/15/2011 9:45 AM - 10:45 AM (Pacific Time)
  - Location: Yerba 5-6

- **Waves of the Future**
Errors: Provide a solution

The iPod “srk’s iPod” cannot be updated because there is not enough free space to hold all of the songs in the selected playlists.

[ ] Do not warn me again

OK
Errors: propose an alternative

No results found matching your criteria.
Remove individual filters above, or clear all filters.
Recognize Errors

Reported Attack Page!

This web page at batmazgumruk.com.tr has been reported as an attack page and has been blocked based on your security preferences.

Attack pages try to install programs that steal private information, use your computer to attack others, or damage your system.

Some attack pages intentionally distribute harmful software, but many are compromised without the knowledge or permission of their owners.

Get me out of here!  Why was this page blocked?

Ignore this warning
Help (I need somebody)
Help learning with examples

jQuery

Modifying HTML Elements

Having something like:

```javascript
$p = $('p');
```

We'll want to pass in an entire HTML element in quotes:

```javascript
$p = $('"<p>I'm a new paragraph!</p>"');
```

Codecademy

index.html

```html
1. <!DOCTYPE html>
2. <html>
3.   <head>
4.     <title>Result</title>
5.     <script type='text/javascript' src='script.js'></script>
6.   </head>
7. </body>
8. </html>
```
Help choices with examples

Sign up to receive e-mail from UPS and stay on top of the latest promotions, news, critical updates and announcements.

E-mail Options: 
- Send me the following UPS e-mail communications: 
  - New Product Announcements/Enhancements
  - Promotions and Offers
  - Newsletters
  - Service Updates / Regulatory Changes
- Remove me from UPS e-mail communications

How will you pay for your shipping? 
- No Payment Default

Note: After completing registration, you can change your payment defaults in Shipping Preferences.

Which of these statements best describes you? 
- I don't ship daily, but when I do, I want it to be quick and informative.
- I use ups.com daily and know several shortcuts to save time.
- I use ups.com to troubleshoot and to report on shipping activity.
- I focus on the big picture and monitor shipping operations performance.
- I prefer to use the web only when necessary. My job is easier without it.

You can manage the e-mail communications you receive from UPS. To receive the types of communications that are of interest to you, choose any of the following options:

New Product Announcements/Enhancements
Select New Product Announcements/Enhancements to keep up to date with new product announcements and enhancements to existing products.

Promotions and Offers
Select Promotions and Offers to receive communications regarding available UPS promotions and special offers that best suit your business needs.

Newsletters
Select Newsletters to receive the latest information, exclusive news, and feature stories.

Service Updates/Regulatory Changes
Select Service Updates/Regulatory Changes to receive alerts about service changes or announcements of proposed regulatory changes.
Help show the steps

Adobe Photoshop Elements

Please select (command-click) from 2 to 10 photos in the Project Bin and then choose Photomerge Scene Cleaner again.

OK
Help point things out

On Mar 25, 2009, at 5:50 AM, eBay Member: m

Message from eBay member,

Do not respond to the sender if this message is sent outside of eBay. This type of offer is against the eBay Terms of Use and policy.

User details:
From User: (User has chosen to remain anonymous.)

eBay shopping cart
Shop, compare and buy several items at once with your shopping cart.
Help provide more information

EnVision
Your VSP insider to eye health, eyewear fashion & trends

Are you sure you want to unsubscribe from VSP's EnVision newsletter? You'll miss out on:
- Eye health and eyecare tips,
- The latest trends in eyewear fashion,
- Fun contests, promotions, and more!

To continue your subscription, click cancel:
(Cancel)

Just curious, why are you unsubscribing?
  ○ I receive too many e-mails.
  ○ I'm not interested in eye health and eyecare information.
  ○ I don't recall subscribing to this newsletter.

Enter your e-mail address to unsubscribe:
(Enter e-mail address)
Help provide more information

Are you sure you want to unsubscribe from VSP's EnVision newsletter? You'll miss out on:
- Eye health and eyecare tips,
- The latest trends in eyewear fashion,
- Fun contests, promotions, and more!

To continue your subscription, click cancel:

Cancel

Just curious, why are you unsubscribing?

- I receive too many e-mails.
  
  Wait – You can change the frequency!
  
  ○ Monthly ○ Every other month ○ Quarterly

  Update

- I'm not interested in eye health and eyecare information.
- I don't recall subscribing to this newsletter.

Enter your e-mail address to unsubscribe:
Help clearly

Please Accept the TurboTax License Agreement

Just one more thing before you get started (our lawyers made us do it).

☐ I have read and agree to the terms of the license agreement. View agreement.

Cancel  Continue

☐ Add more personal information to your bill

☐ Yes, I want to be reminded by SMS if I forget my username and password

I agree that Telekom Deutschland GmbH can use my data to contact me by e-mail, mail, telephone SMS or MMS, to provide me with advice, information and for market research purposes.

☐ Please carefully read the Terms & Conditions and pricing, Data Privacy and Right of Withdrawal notices before purchasing HotSpot

*) Please complete all mandatory fields.

back  proceed

EULA approval for TurboTax, T-Mobile Germany
Help clearly

GitHub

The terms of services are fair towards the user but they could be improved.

👍 You don't grant any copyright license to github

“We claim no intellectual property rights over the material you provide to the Service. Your profile and materials uploaded remain yours. However, by setting [...] your repositories to be viewed publicly, you agree to allow others to view and fork your repositories.”

👎 Changes can happen any time, sometimes without notice

“GitHub reserves the right to update and change the Terms of Service from time to time without notice.” Fortunately, the privacy policy benefits from a special clause: changes to the privacy policy will be notified to you, but there is no delay.

👎 You shall defend and indemnify GitHub

“You shall defend GitHub against any claim, demand, suit or proceeding made or brought against GitHub by a third party alleging that Your Content, or Your use of the Service in violation of this Agreement, infringes or misappropriates the intellectual property rights of a third party or violates applicable law, and shall indemnify GitHub for any damages finally awarded against, and for reasonable attorney’s fees incurred by, GitHub in connection with any such claim, demand, suit or proceeding; provided, that GitHub (a) promptly gives You
Help share what others know

```ruby
# Annotations in the Codex IDE

# Creating a nested hash
choices = Hash.new { |h,k| h[k] = {} }

new do |var0, var1|
  var0[var1] = {}
end

Projects: cassandra fakeweb fog jruby
```

```
"a string".split("\n").to_s
```

Function to_s has appeared 12 times and split has appeared 29 times, and they've appeared 0 times together.
Heuristic evaluation is a hill-climbing technique
Heuristic evaluation gives you terms for intuitive ideas. It is a suite of unit tests for user interfaces.