

CSE 440: Introduction to HCI

User Interface Design, Prototyping, and Evaluation

Lecture 12:
Testing, Patterns, Anti-Patterns

James Fogarty
Daniel Epstein
Brad Jacobson
King Xia

Tuesday/Thursday
10:30 to 11:50
MOR 234



Today

Comments on Paper Prototypes

Golden Path Prototype is Definitely Appropriate

Heuristic Evaluation Ignores Missing Nodes

Be Concerned if Participants Veer From Path

Fix it between tests, remember your talk aloud

Comments on Project Status

Comments on Presentations

Testing, Patterns, and Anti-Patterns

Introduce
Yourself

DisTrack

Refocus yourself

Graeme Britz	-	Project Manager
Max Suffel	-	Writer/User Researcher
Angela Suhardi	-	Writer/Designer
Jackie Chui	-	Writer/Designer
Bryan Djunaedi	-	Writer/Designer

Title
Image
Value Proposition



The recurring subscription management tool that let's you finally take control of your recurring services and payments.

Jen Kang • Vivian Yu • Si Liu • Brendan Lee

Contractions Typos



The recurring subscription management tool that let's you finally take control of your recurring services and payments.

Jen Kang • Vivian Yu • Si Liu • Brendan Lee

Finding

Typography
Consistency

- **Reimbursement is a burden...**
 - More people, more difficult
- **Compiling shopping list**
 - mental note, notepad, or phone
- **Brand and price conscious**

Task

- 1. Making list & budgeting**
- 2. Choosing a store & transportation**
- 3. Shopping**
- 4. Purchasing**
- 5. Storing groceries**
- 6. Managing \$\$\$ & requesting reimbursement**

Summary

Widows
Orphans

- Iteration is key
- Understand how users think
- Better design ideas came from more out-of-the-box thinking
- Discretionary spending is easy but discretionary spending tracking is hard
- Users crave positive motivation

Things to Do (Tasks)

1. Ability to record running statistics such as distance run, speed, number of runs, etc.
2. Share statistics with friends
3. Create running events and invite friends
4. Send mass notifications to friends for a spontaneous run
5. Find a SmartMatch (based on various criteria) to run with
6. Write and search for reviews on the route/experience

Overall Problem: Joint Pain & Activity

- Target Audience: Athletes
 - Health conscious
 - Disciplined
- Problem: Overexertion and aggravation of injury among athletes

Running with Friends

Erica Putsche, Heidi So, Luke
Chang, Linsen Wu

Parent Contextual Inquiry

Participants:

- Two parents whose children formerly had IEPs
- One parent with two children that currently have IEPs
- One guardian of a student with an IEP

The Process:

- “The lingo and paperwork are confusing, they come with 17 people and you are there by yourself.”

Communication:

- “right now I come in doing all the communications to get information”

Tracking



Contextual Inquiry - Insights

Johnson (20, undergraduate, CSE 006 Lab)

- Perception ≠ Observation
- Distracted by people talking and noise
- More focused at CSE Labs than at home

Steve (25, graduate, Mercer Court)

- Motivated by seeing people working
- Distracted by people and social media
- Takes breaks often

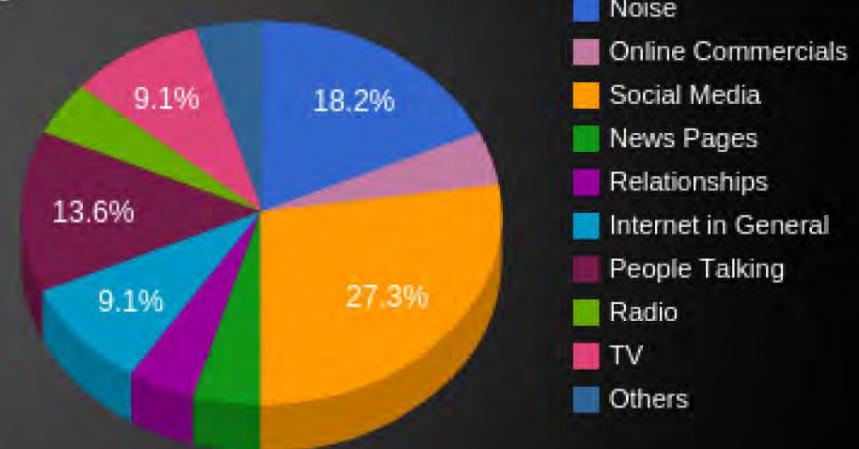
George (25, graduate, Odegaard Library)

- Turns notifications off while studying

Group (4 undergraduates, Yunnie Bubble Tea)

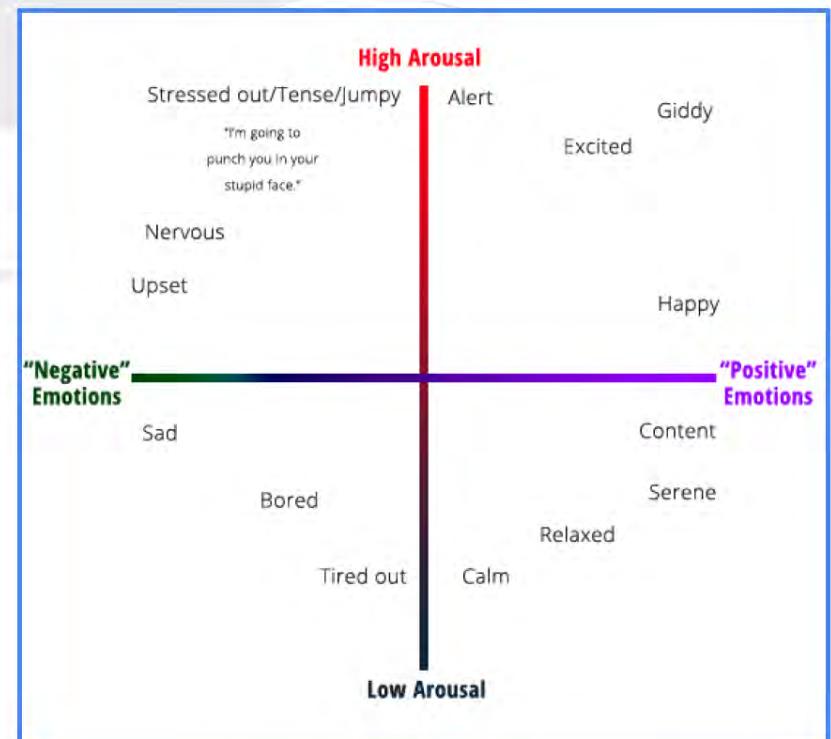
- Distracted by each other and apps
- Use headphones (music) to focus

Distraction Sources



Our three inquiries showed us:

1. People valued the insights acquired from a mood journal.
2. People thought journaling was a hassle.
3. People were interested in what triggers their mood
4. People want to share information with a mental health professional



Design 1: Running separately

May add some motivation but does not provide the full experience of running with a companion

Design 2: Coordinating running events in advance

Tasks can be accomplished using Facebook events or other similar tools

Design 3: Spontaneous Running

Tasks are unique and they also address the concerns raised in our contextual inquiries. Our chosen design also provides us with an interesting opportunity to explore personal informatics

Summary

Too Much Text

- Iteration is key
- Understand how users think
- Better design ideas came from more out-of-the-box thinking
- Discretionary spending is easy but discretionary spending tracking is hard
- Users crave positive motivation

Having Too Much Text

If you can read it
you probably will
we probably will

Be conversational, engaged
even when not talking

Notes are fine
but do not read them

Lore ipsum dolor sit amet, consetetur sadipscing
elitr, sed diam nonumy eirmod tempor invidunt ut
labore et dolore magna aliquyam erat, sed diam
voluptua. At vero eos et accusam et justo duo
dolores et ea rebum. Stet clita kasd gubergren, no
sea takimata sanctus est Lorem ipsum dolor sit
amet. Lorem ipsum dolor sit amet, consetetur
sadipscing elitr, sed diam nonumy eirmod tempor
invidunt ut labore et dolore magna aliquyam erat,
sed diam voluptua. At vero eos et accusam et justo
duo dolores et ea rebum. Stet clita kasd gubergren,
no sea takimata sanctus est Lorem ipsum dolor sit
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Overall Problem: Joint Pain & Activity

- Target Audience: Athletes
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Pictures
are Good

Contextual Inquiry

- Dancers
 - Use of entire body
 - Diverse Injuries
- Observation
 - Warmup
 - Preventative Habits



Pictures
are Good

Contextual Inquiry

4 Locations

- Odegaard Library
- CSE Undergraduate Labs
- Mercer Court
- Yunnie Bubble Tea (Ave)



3+1 Approaches

- Observation + Interview (3x)
- Interview-only (2x)
- In-group Interview (1x4)
- + Online Survey (16x)



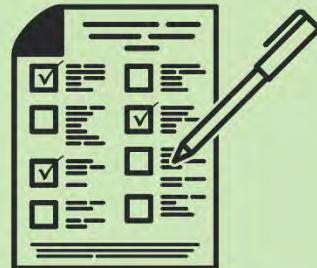
Pictures
are Good

Contextual Inquiry

- People do not want to be interrupted or distracted
- Most people do not have a liquid intake plan
- People often reach for soda, coffee, or other beverages when they feel thirsty



Pictures
are Good

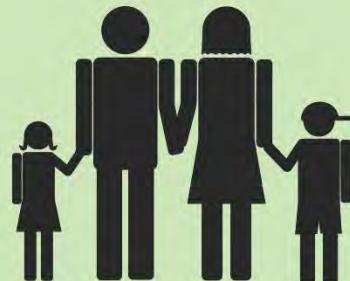


Contextual Inquiry

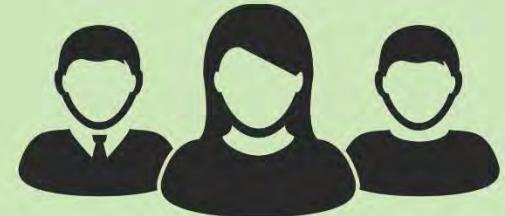
Professional
(20-40s)



Family



Undergrad
Student



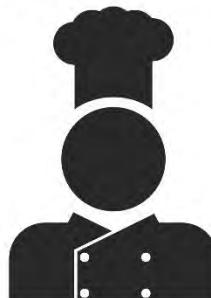
15% of Americans between the ages of 20 and 69 experience hearing loss that may have been caused by **noise at work or during leisure activities.**

Motivation of Participants



Very noisy work environment

Some control over exposure levels



Moderately noisy work environment

Lacks control of his noise exposure



Dartmouth student who is exposed to **noisy social environments** multiple days per week

Has control over exposure levels

Watch the
Selling

We can help

Tasks

- Record mood reflections
- Discover triggers and warning signs
- Discover wellness strategies
- Planning for health
- Quick mood check-ins
- Aid your health professional

Tasks

1

Engage a work session.

2

Record digital and non-digital behavior.

3

Prompt for taking breaks.

4

Reflect on recorded data relative to time and location.

5

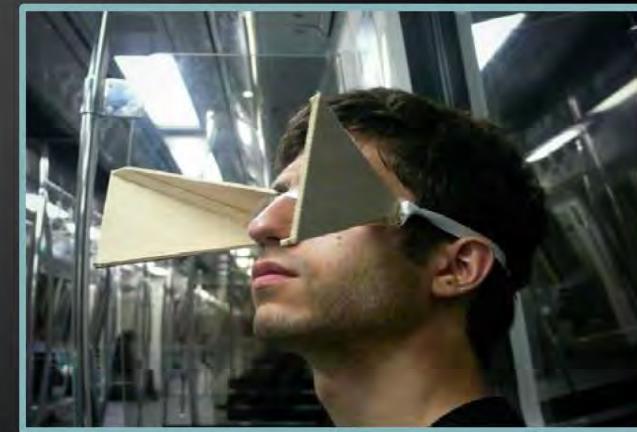
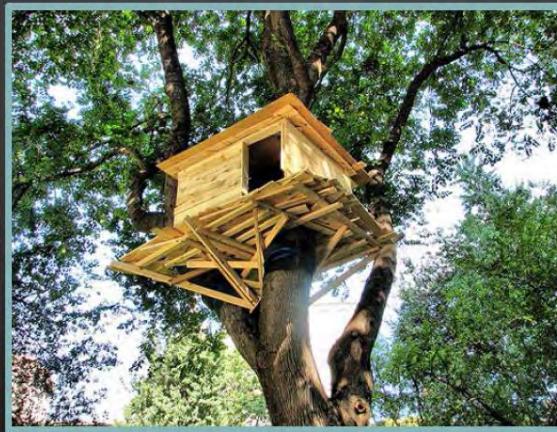
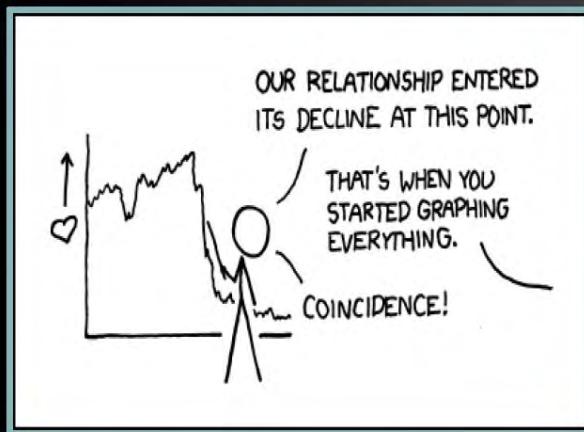
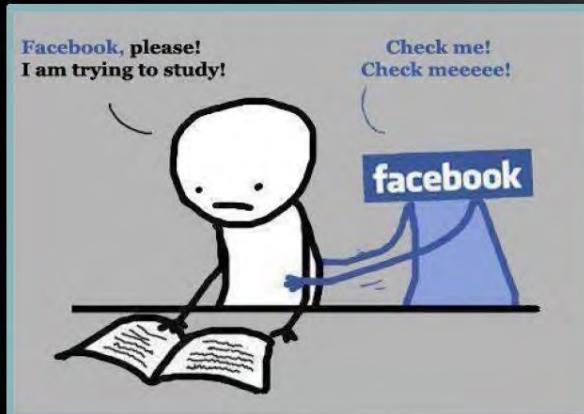
Find a productive work place.

6

Find and implement methods/strategies to stay focused.

Distracting

Tasks



Speaking of Distractions

Whether correct or not, many things distract

Plural possessive

a posteriori

Anything that might be sensitive

Original Tasks

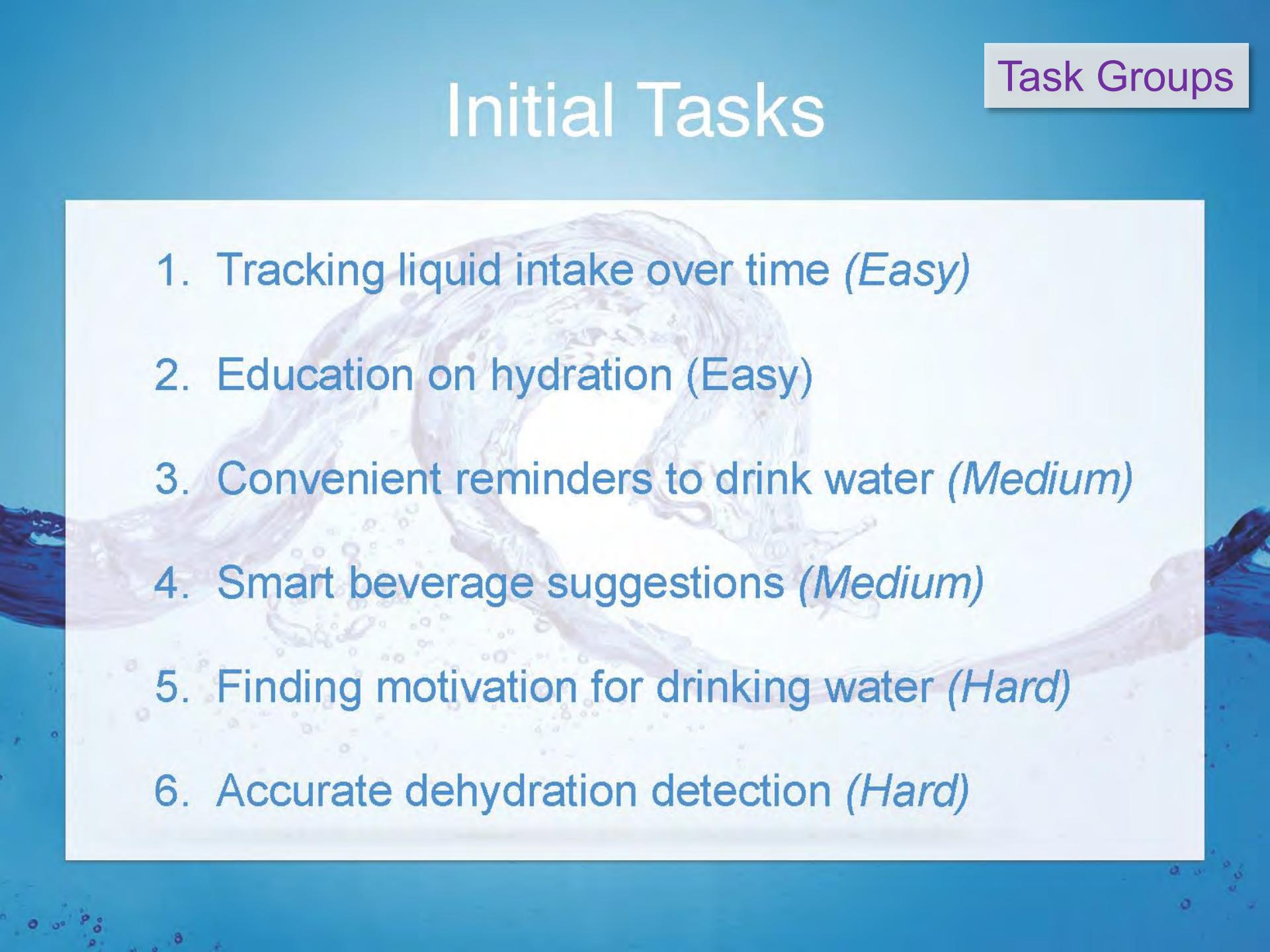
Current Tasks:

- Aggregate and collect all IEP information for continuity and stakeholder accessibility.
- Encourage communication between stakeholders.
- Connect with other parents who have children with similar disabilities.

New Tasks:

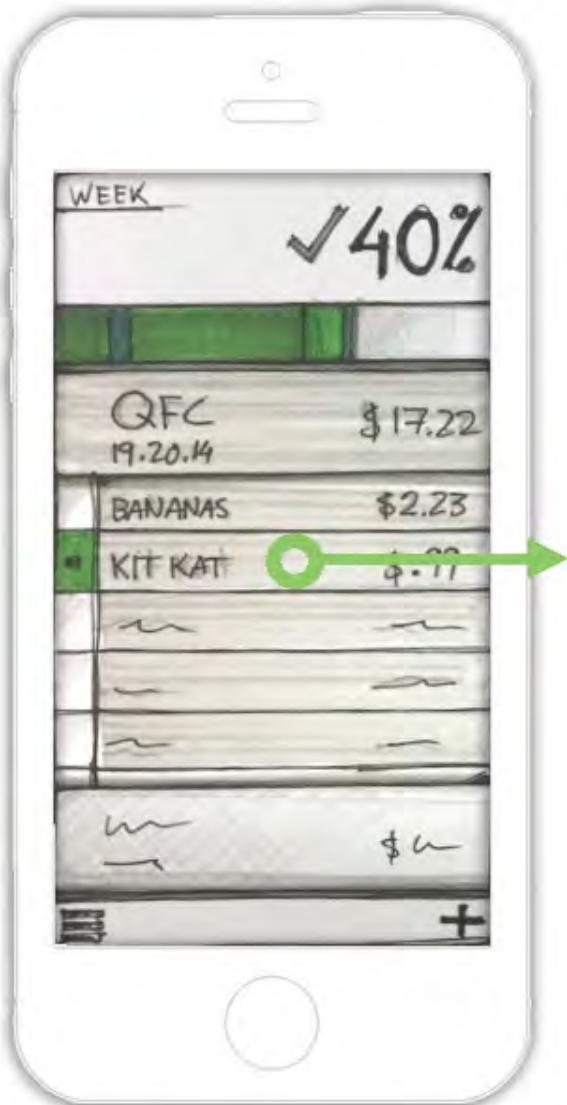
- Access mini lessons to support the developmental master of IEP tasks.
- Motivational rewards system to encourage students to be active in their IEP.
- IEP videos for parents to understand how to best advocate for their child.

Initial Tasks

- 
1. Tracking liquid intake over time (*Easy*)
 2. Education on hydration (*Easy*)
 3. Convenient reminders to drink water (*Medium*)
 4. Smart beverage suggestions (*Medium*)
 5. Finding motivation for drinking water (*Hard*)
 6. Accurate dehydration detection (*Hard*)

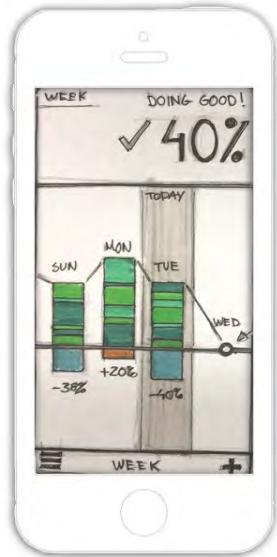


Adjust budget between different categories.



Designate spending as discretionary.

Verb as Task



Review spending **progress** compared to goals.



Account for **future** spending.



Prevent **unwanted** habitual spending.



Check if a potential purchase **fits the budget**.

Consistency of Emphasis

Many people make **general** budgeting goals.

Large items are monitored.

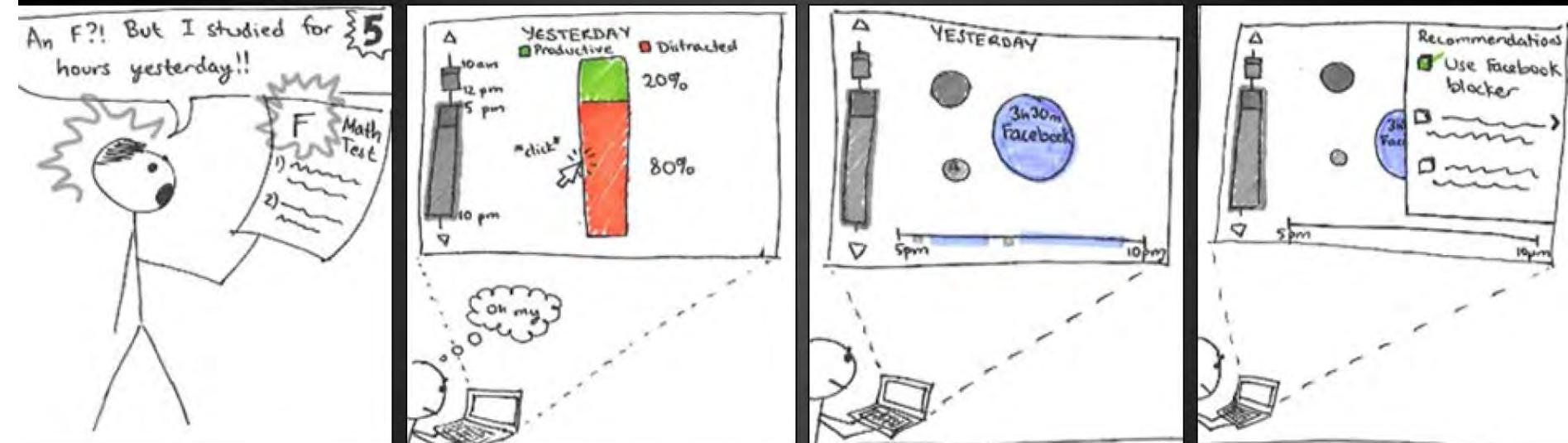
Small items cumulative impact
not considered.

Challenging setting up budgets.

Complicated input leads to **less use**.

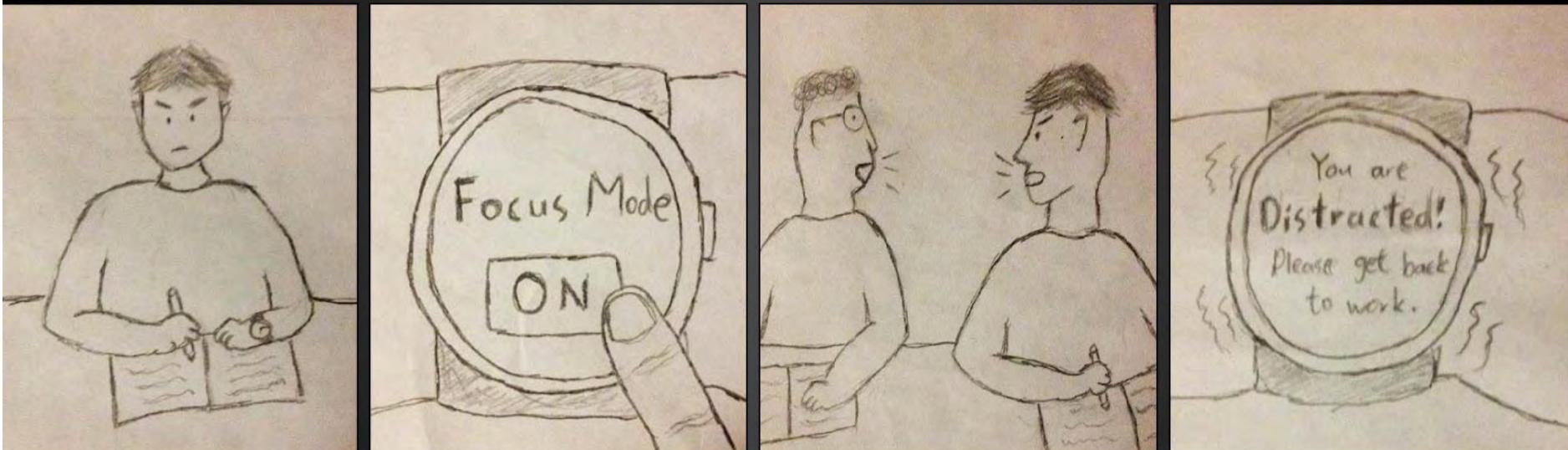
Consistency of Emphasis

Task: Reflect on recorded data relative to time and location



Consistency of Emphasis

Task: Find and implement methods/strategies
to **reduce distractions** and **increase focus**



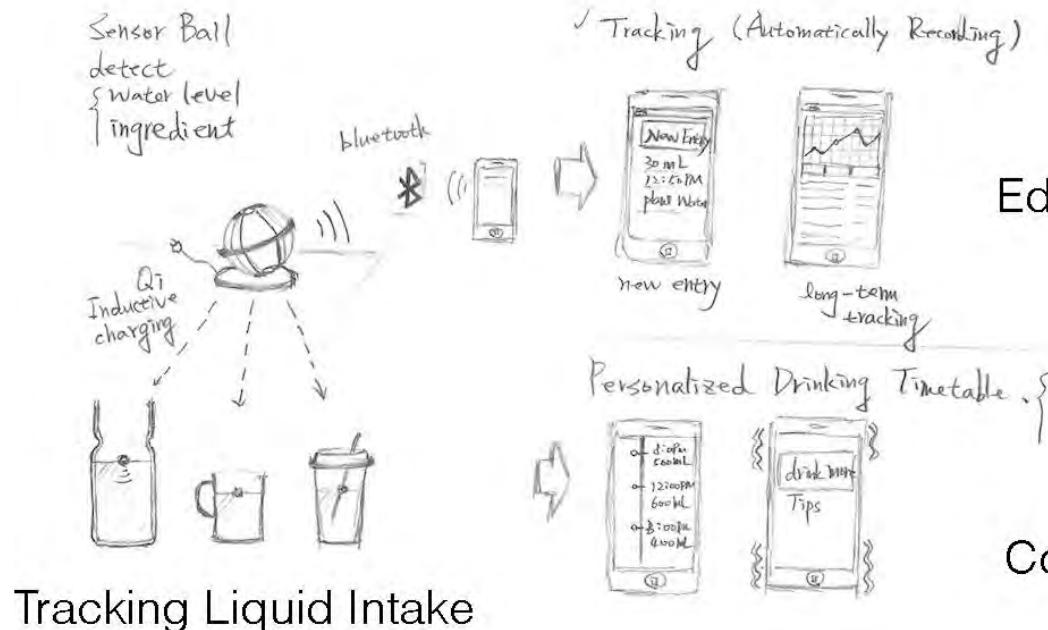
Pre-shopping

Design 1

Naming
Designs



Naming Designs



Education on Hydration

Convenient Reminders



Design 1

Sensor Ball with Mobile App

Naming Designs versus Slide Title

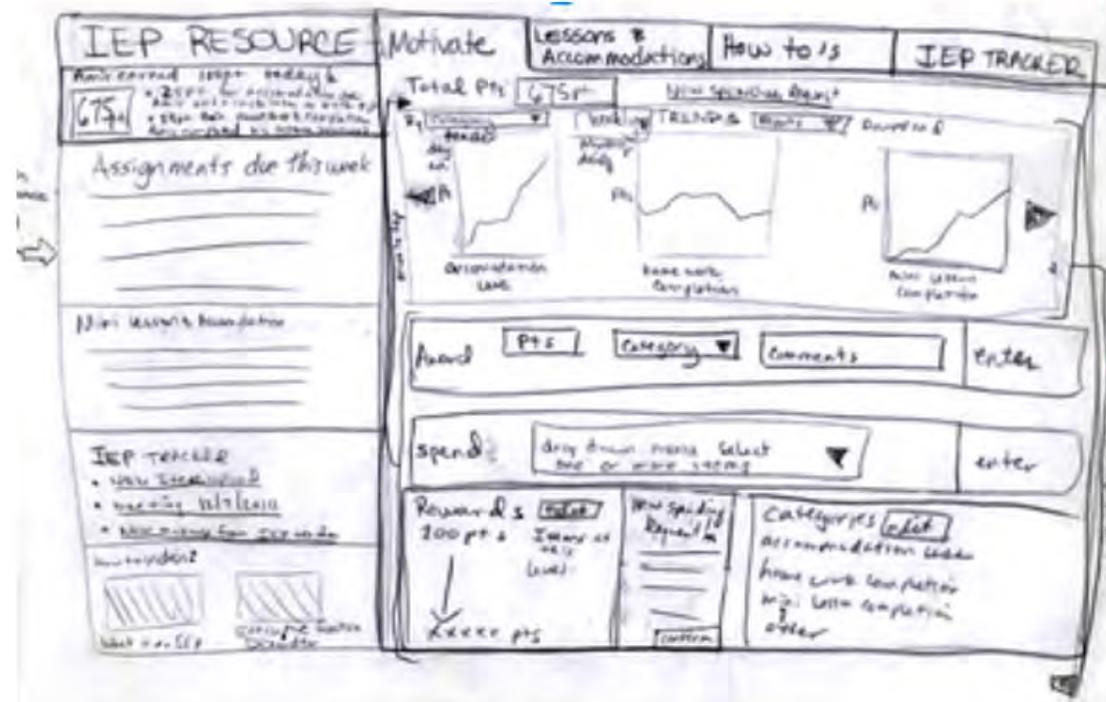
Sketch 3

Main Focus:

- Student Motivation

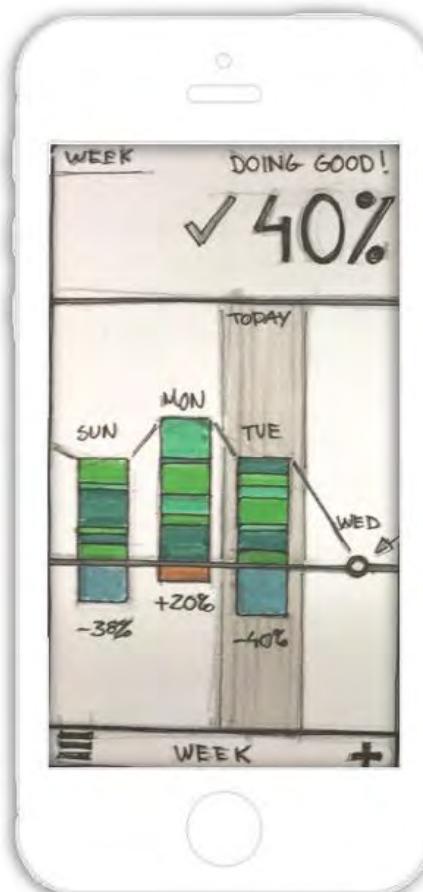
Key Features:

- Mini lessons accessible for the student and parent to work on
- Points awarded for completion of task on the website
- Spending points for various rewards



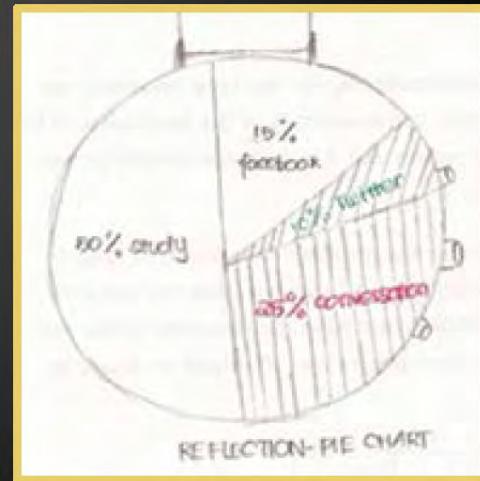
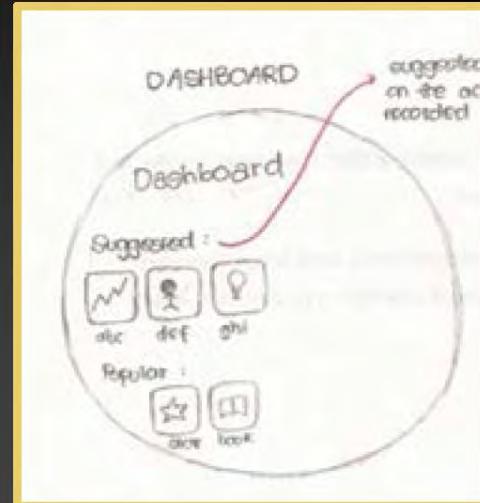
Design 1

Legibility
of Sketches



Blurry Images

Design 3

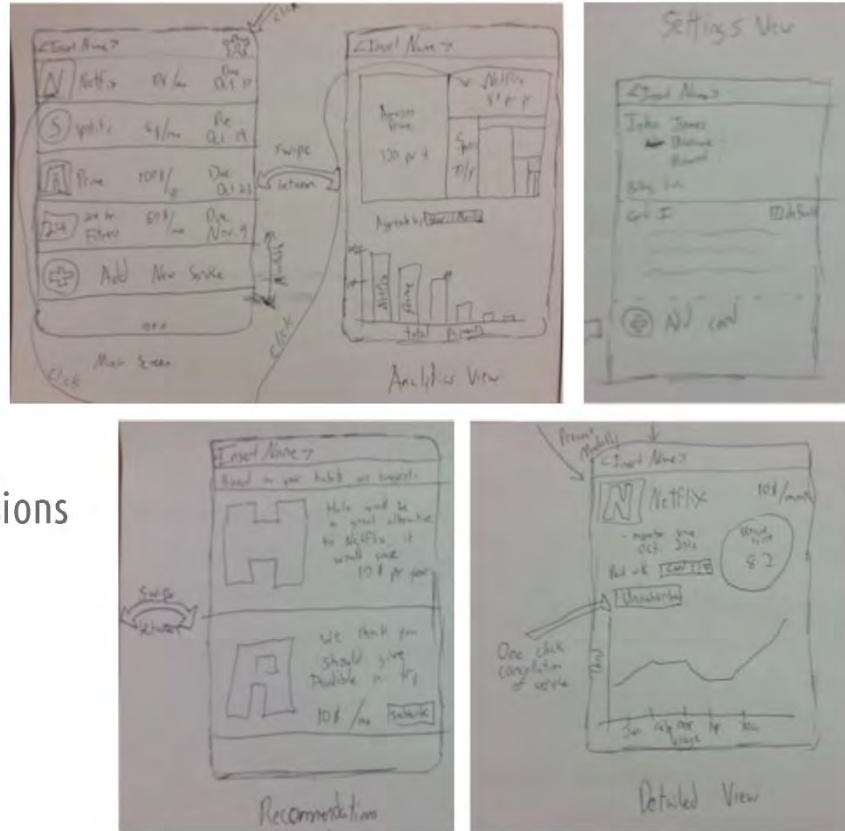


Low Contrast Images Low Contrast Text

Updated Sketch

Two Tasks

- Recurring subscription management
- Insight and informed decisions



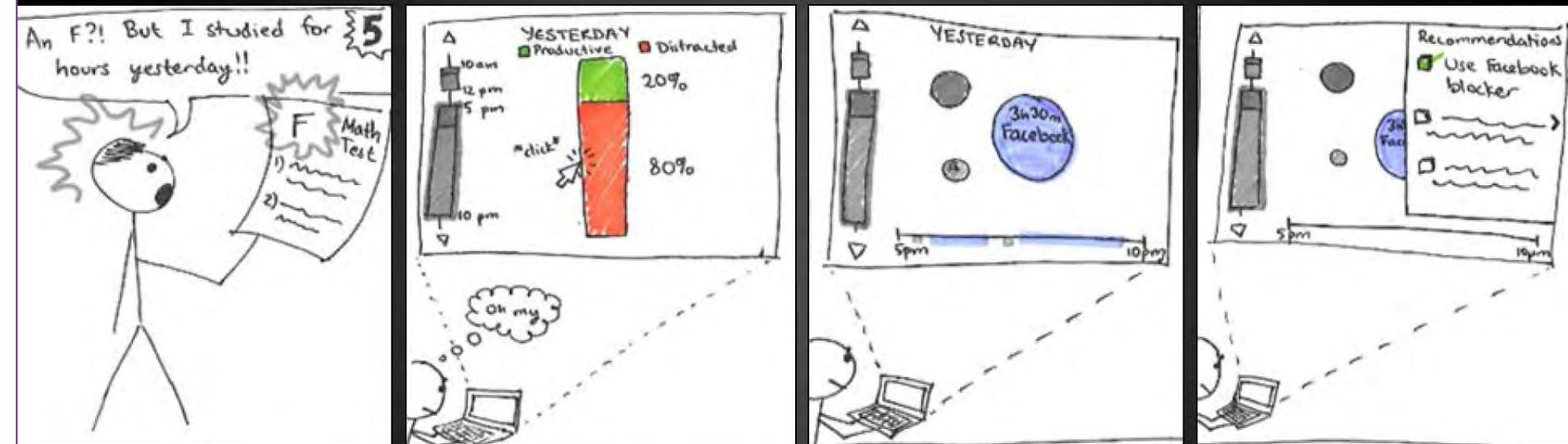
Problem

Check the
Projector

A lack of awareness about the long-term
implications of noise exposure

Color as Emphasis in Storyboards

Task: Reflect on recorded data relative to time and location



Finishing
Slide

KACHING

Remote Usability Testing

Conferencing-based testing

Use tools like video conferencing, instant messaging, and screencasting to test with a remote participant

Semi-automated remote testing

Automatic logging and some analysis of usage

Controlled online A/B experiments

Carefully measure results of showing different versions to different sets of live customers

Semi-Automated Remote Usability

Move usability testing online

participants access the “lab” via web

answer questions & complete tasks in “survey”

records actions or screens for playback

can test many people completing many tasks

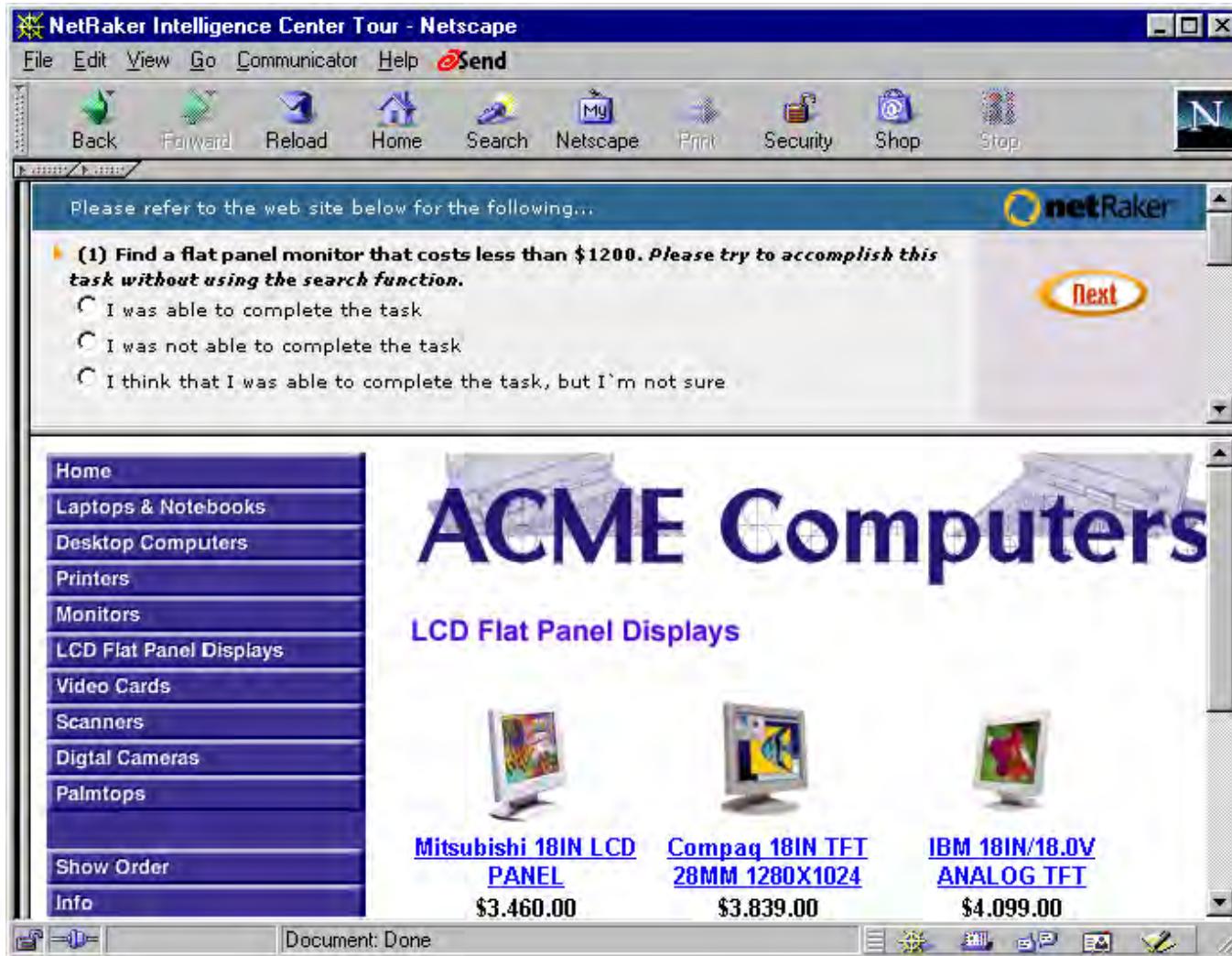
Analyze data individually or in aggregate

playback individual sessions

find general problem areas

if needed, look more closely with traditional methods

Semi-Automated Remote Usability



Semi-Automated Remote Usability

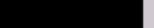
NetRaker Intelligence Center Tour - Netscape

File Edit View Go Communicator Help 

Back Forward Reload Home Search Netscape Print Security Shop Stop 

Percentages Totals Respondents Details Demographics

► 1. Find a flat panel monitor that costs less than \$1200. Please try to accomplish this task without using the search function.

Task	Response(s)
I was able to complete the task	90% 
I was not able to complete the task	10% 
I think that I was able to complete the task, but I`m not sure	0% 

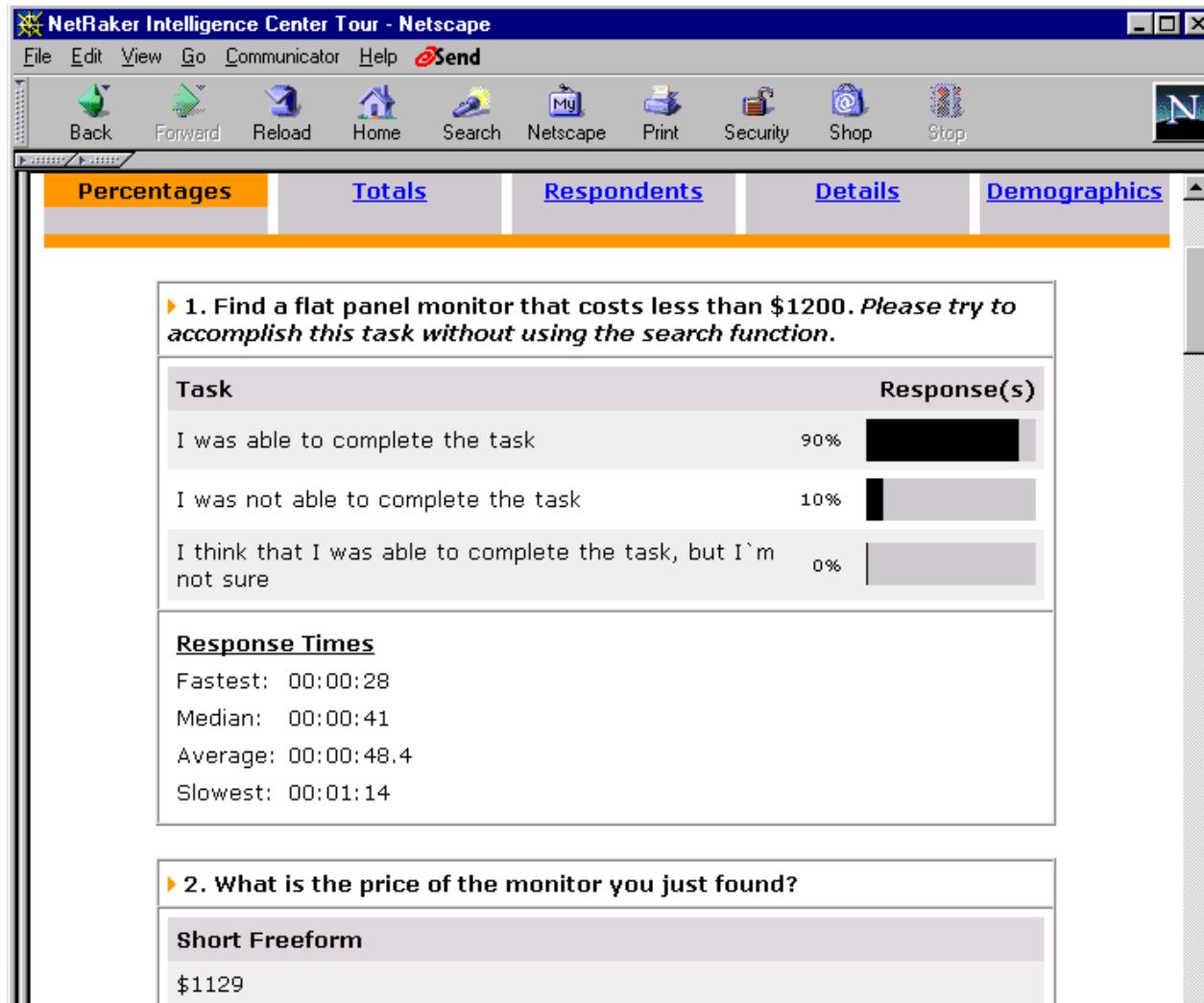
Response Times

Fastest: 00:00:28
Median: 00:00:41
Average: 00:00:48.4
Slowest: 00:01:14

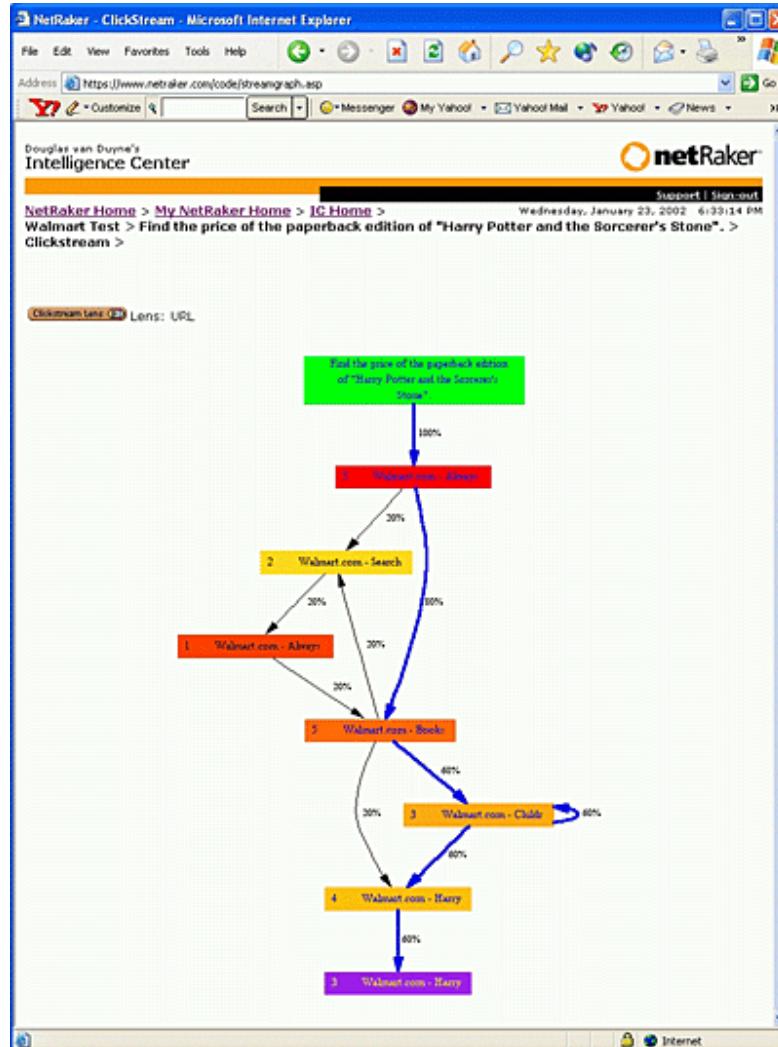
► 2. What is the price of the monitor you just found?

Short Freeform

\$1129



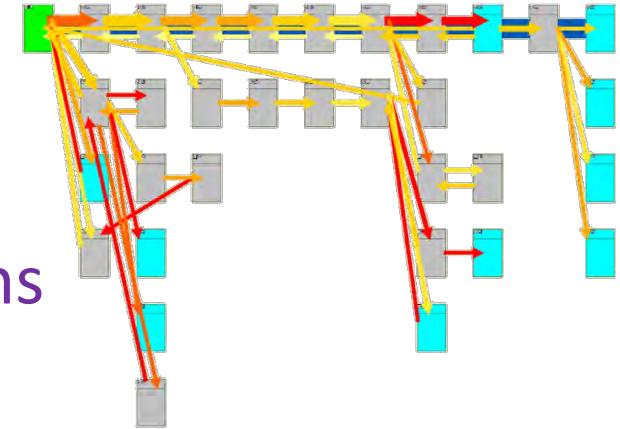
Semi-Automated Remote Usability



WebQuilt: Visual Analysis

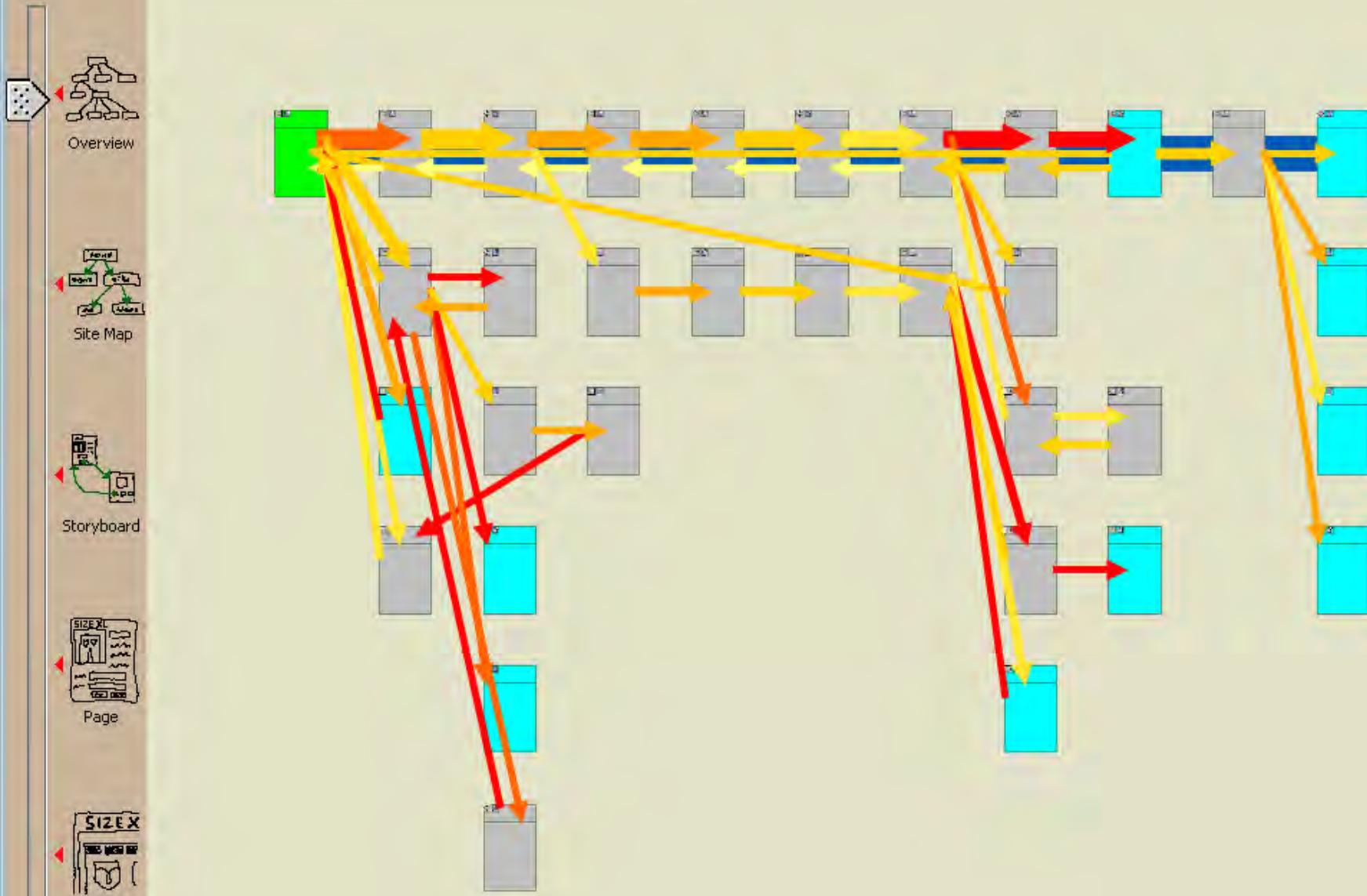
Goals

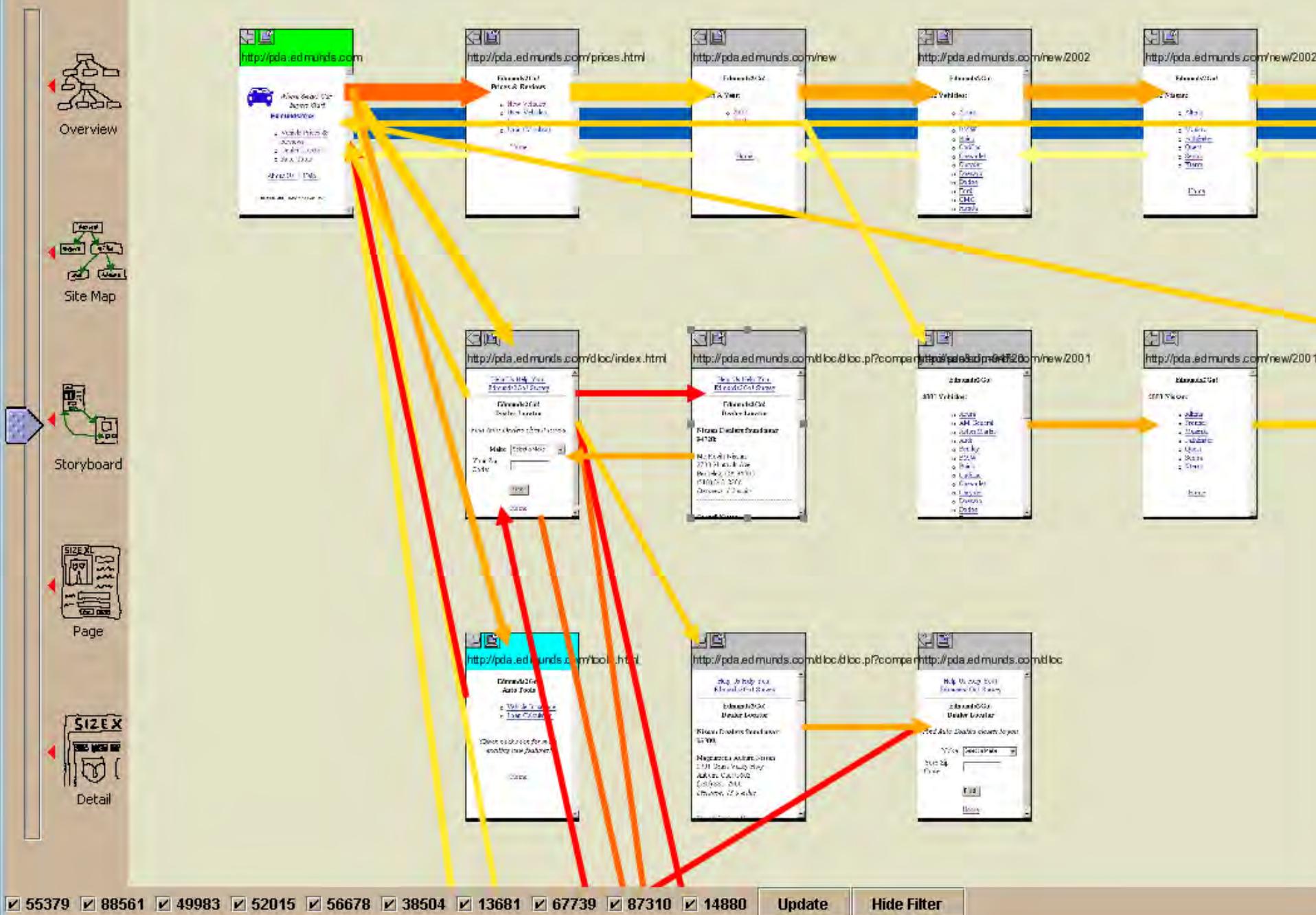
- link page elements to actions
- identify behavior/navigation patterns
- highlight potential problems areas

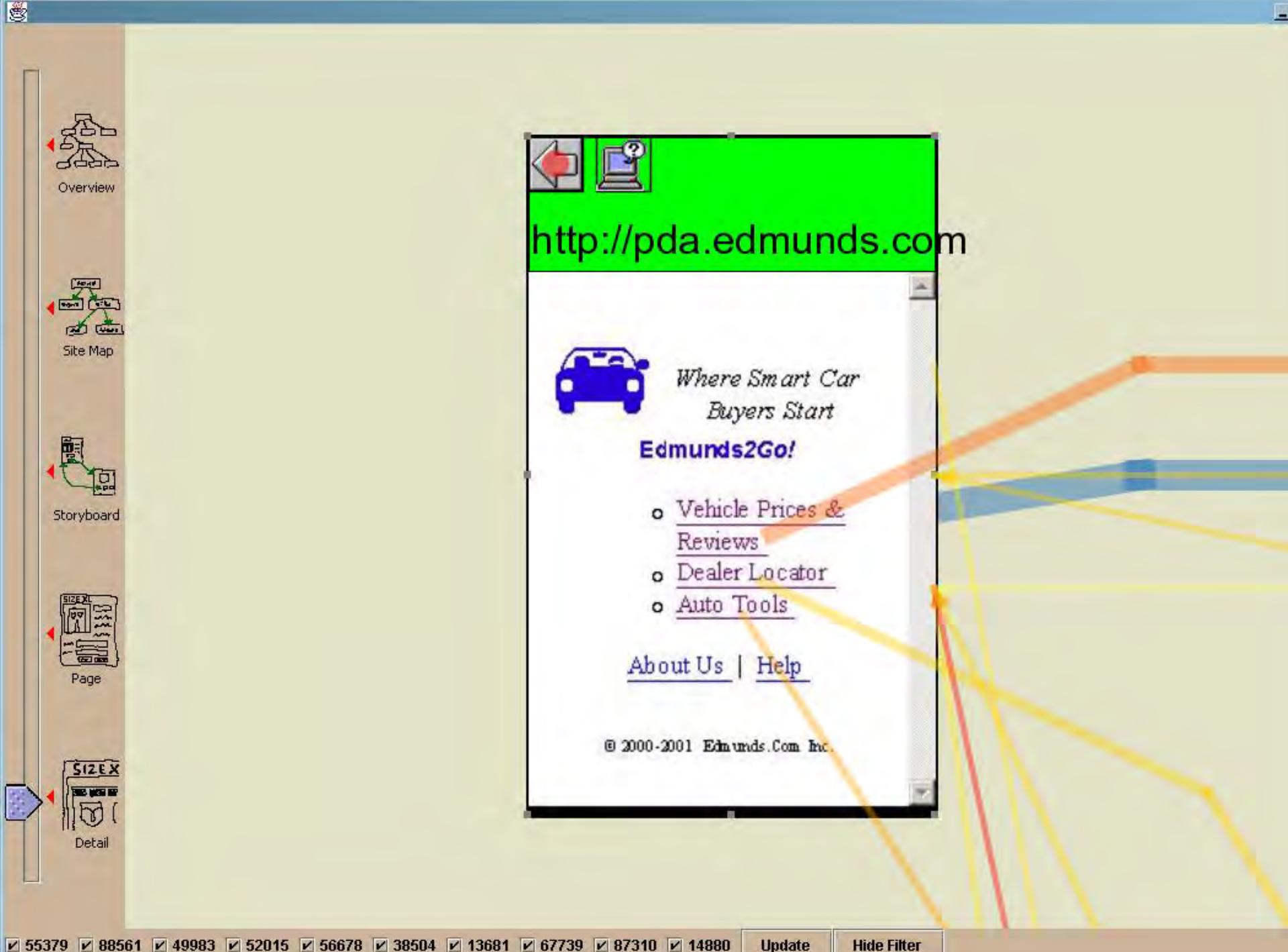


Interactive graph based on web content

- designers can indicate expected paths
- color code common usability interests
- filtering to show only target participants
- use zooming for analyzing data at varying granularity







Controlled A/B Experiments

Many names for concept

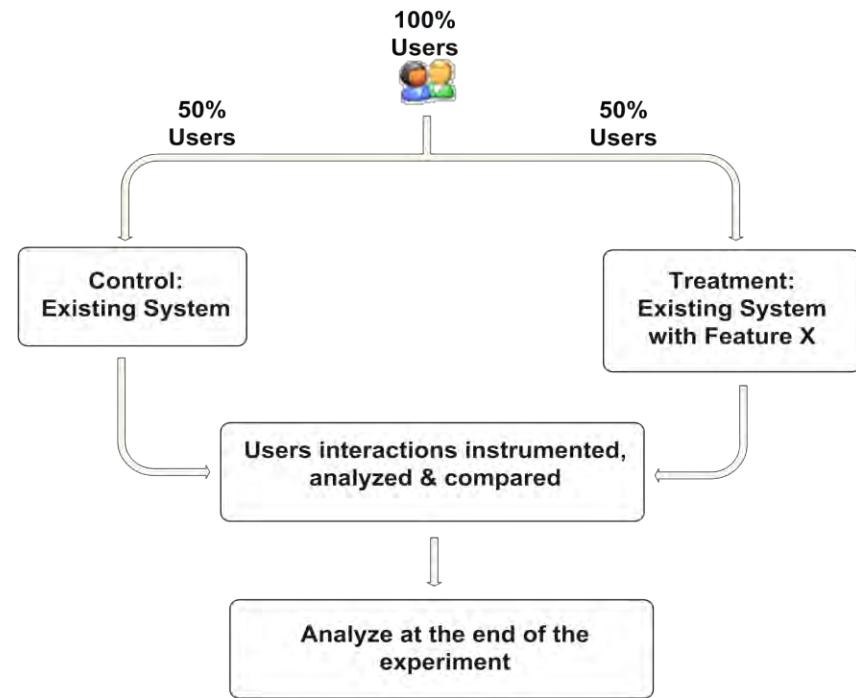
A/B tests or
Control/Treatment

Randomized
Experimental Design

Controlled experiments

Split testing

Parallel flights



Controlled A/B Experiments

Example: Amazon Shopping Cart Recommendations

Add an item to your shopping cart

Most sites show the cart

At Amazon, Greg Linden had idea to show recommendations based on cart items

Controlled A/B Experiments

Evaluation

Pro: cross-sell more items

Con: distract people from checking out

Highest Paid Person's Opinion:

Stop the project

Simple experiment run:

Wildly successful



University of
Washington

From Greg Linden's Blog: <http://glinden.blogspot.com/2006/04/early-amazon-shopping-cart.html>

Marketplace: Solitaire v Poker

Experiment run in Windows Marketplace / Game Downloads

Which image has the higher clickthrough? By how much?



A: Solitaire game



B: Poker game

A is 61% better

SIX CHIX

BY RINA PICCOLO



Checkout Page

Conversion rate is percentage of visits that include purchase

A

Doctor FootCare™

Home | Products | Learn More | Tips | Testimonials | FAQ | About Us | Contact Us 1-866-211-9733

Shop With Confidence

Satisfaction Guaranteed 30-day, hassle-free Returns
 100% Safe, **Secured** shopping We assure your Privacy

100% Secured Checkout

Continue Shopping > Proceed To Checkout

Item Name	Item Number	Quantity	Remove	Unit Price	Subtotal
Trial Kit	FFCS	1		\$0.00	\$0.00

Update Total: \$0.00

Select Shipping Method Standard (\$5.95)

100% Secured Checkout

Continue Shopping > Proceed To Checkout

Home | Products | Learn More | Tips | Testimonials | FAQ | About Us | Contact Us | Shopping Cart

B

Doctor FootCare™

Home | Products | Learn More | Tips | Testimonials | FAQ | About Us | Contact Us 1-866-211-9733

Shop With Confidence

Satisfaction Guaranteed 30-day, hassle-free Returns
 100% Safe, **Secured** shopping We assure your Privacy

100% Secured Checkout

> Proceed To Checkout

Item Name	Item Number	Quantity	Remove	Unit Price	Subtotal
Trial Kit	FFCS	1		\$0.00	\$0.00

Discount Total: \$0.00

Enter Coupon Code

Select Shipping Method Standard (\$5.95)

100% Secured Checkout

Recalculate Continue Shopping > Proceed To Checkout

Home | Products | Learn More | Tips | Testimonials | FAQ | About Us | Contact Us | Shopping Cart

Which version has a higher conversion rate?

Coupon code decreases by factor of 10

Example from Bryan Eisenberg's article on clickz.com

Office Online Feedback

A

Please let us know if this content was helpful.

Rate this content:



Tell us why you rated the content this way (optional):

Remaining characters: 650

Submit

B

How helpful was this information?

Click a star.

Not
helpful



Very
helpful

Click to rate: 3 out of 5 stars

How helpful was this information?

Click a star.

Not
helpful



Very
helpful

Why did you rate the information this way?

Remaining characters: 650

Submit

Feedback A puts everything together, whereas feedback B is two-stage: question follows rating.

Feedback A just has 5 stars, whereas B annotates the stars with “Not helpful” to “Very helpful” and makes them brighter.

Which one has a higher response rate? By how much?



B gets more than double the response rate.

Another Feedback Variant

Call this variant C. Like B, also two stage.

Which one has a higher response rate, B or C?

C

Was this information helpful?

Yes No I don't know

How was this information helpful?

What are you trying to do?

How can we make this information more helpful?

```
graph TD; A[Was this information helpful?] --> B[How was this information helpful?]; A --> C[What are you trying to do?]; A --> D[How can we make this information more helpful?]; B --> E[How was this information helpful?]; B --> F[What are you trying to do?]; C --> G[How can we make this information more helpful?];
```

C outperforms B by a factor of 3.5 !

MSN US Home Page

Proposal: New Offers module below Shopping

Shopping

- Lancôme: Free deluxe compact w/ purchase
- Special promotions at your favorite stores
- Warm fall fashion styles are here
- Save on top brand digital cameras
- Free shipping on furniture for every room

Advertisements

**A smart way to buy a diamond**

- Wal-Mart: Back-to-school
- Our editor picks budget electronics
- Get fit & save money: Sports sale

Control

Shopping

- Lancôme: Free deluxe compact w/ purchase
- Special promotions at your favorite stores
- Warm fall fashion styles are here
- Save on top brand digital cameras
- Free shipping on furniture for every room

Advertisements

**A smart way to buy a diamond**

- Wal-Mart: Back-to-school
- Our editor picks budget electronics
- Get fit & save money: Sports sale

Offers

**Search GM Certified**

With our 117-Point Inspection
GM Certified means no worries

**Online University**

Earn degree from a top school
100% Online. Get Free Info!

**\$200k Loan, Get Low Rates**

Secure Financing and Increase
Cash Flow. Click Here Now!

Treatment

Experiment Results

Ran A/B test for 12 days on 5% of MSN US visitors

Clickthrough decreased 0.49% ($p < 0.0001$)

Page views per user-day decreased 0.35% ($p < 0.0001$)

Value of click from home page: X cents

Net = Expected Revenue –
direct lost clicks –
lost clicks due to decreased page views

**Net was negative (in millions of dollars),
offers module did not launch**

Data Driven Methods Not Just Online

[PREVIOUS](#)[NEXT](#)[Back to story](#)**1999**

Made from cardboard, the first Netflix mailer weighs more than an ounce. But with only 100,000 customers, reducing material and shipping costs is not yet a priority for the company.

[PREVIOUS](#)[NEXT](#)[Back to story](#)**2000**

Thick paper replaces cardboard. DVDs are inserted and removed from the top rather than the side.

[PREVIOUS](#)[NEXT](#)[Back to story](#)**2000**

Full-color printing is introduced. Top-loading is abandoned in favor of side-loading, which is judged more convenient.

[NEXT»](#)

Data Driven Methods Not Just Online



[PREVIOUS](#)

[NEXT](#)

[Back to story](#)

2000

Customers are asked to peel off a sticker to reveal Netflix's return address. The design is eventually deemed too complex.



[PREVIOUS](#)

[NEXT](#)

[Back to story](#)

2000

Made from plastic instead of paper, this mailer is cheaper, but it sometimes inflates when transported on airplanes.



[PREVIOUS](#)

[NEXT](#)

[Back to story](#)

2001

An airhole (the black dot on the left side of the mailer) is added to prevent the package from inflating.



[PREVIOUS](#)

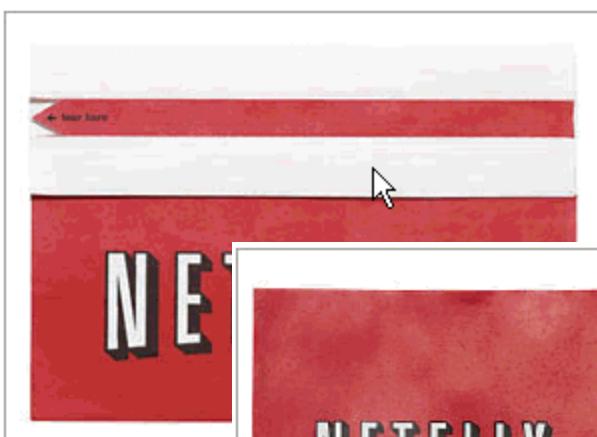
[NEXT](#)

[Back to story](#)

2001

Netflix returns to paper because it's easier to recycle. Foam padding is added to reduce breakage.

Data Driven Methods Not Just Online

[PREVIOUS](#)[NEXT >](#)[Back to story](#)**2001**

Foam padding is dropped because the benefits don't justify the cost. The company gives top-loading another try.

[PREVIOUS](#)[NEXT >](#)[Back to story](#)**2001**

Marking a return to side-loading, this mailer is a direct ancestor of the one the company uses today.

[PREVIOUS](#)[NEXT >](#)[Back to story](#)**2003**

Instead of sealing the entire top and bottom, Netflix introduces a circular sticker, affixed only on the top.

[PREVIOUS](#)[NEXT >](#)[Back to story](#)**2004**

A window shows the disc bar code. Speculation is that this enables storing discs in mailers prior to shipping.

Limitations

Drives hill-climbing, but not overall design

A design may be better, but is it good?

Impossible for new designs to compete

Can be difficult to scale to many features

How about we step through a larger example

The Smartest Place to Buy and Sell Books, Music, Computers, Electronics, DVDs & more...**Welcome**

[Learn about Buying](#)
[Learn about Selling](#)
[Register Now!](#)

Announcement Board
 Updated Jun 13, 2002

DESKTOP LIQUIDATION CENTER as low as **\$249!**

Categories**Books**

[Textbooks](#), [Fiction](#),
[Biography](#), [Cooking](#),
[Business](#), & more...

Music

[Rock](#), [Hip Hop/Rap](#),
[Country](#), [Pop](#), [eBay](#)
 items, & more...

Movies/DVDs

[Action](#), [Comedy](#),
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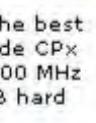
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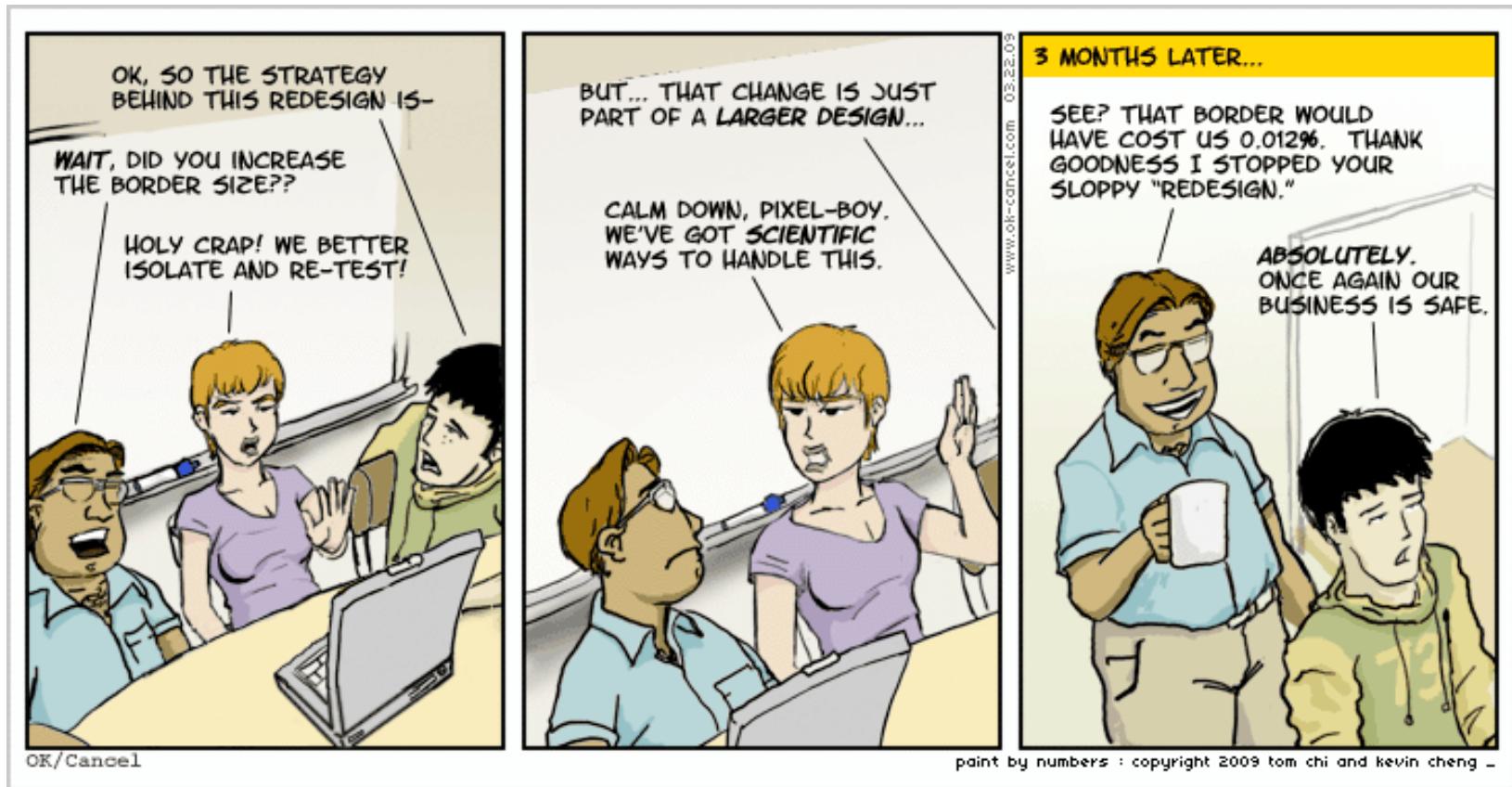
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Catalog 493 045

Standard shipping ([USPS Media Mail](#)) for this item is \$2.30.[Find out more...](#)
[Full product info](#), [Product Reviews](#)[Not ready to buy?](#)[Add to your Wish List](#), [Preorder this item](#), [May we also suggest...](#)**Like New**Sorted by **Price**

74 items in stock

Price	Total Price	Seller (Rating)	Seller Comments	
\$7.75	\$10.20	custodian46 (149)	best buy	More info...
\$8.00	\$10.45	stargaze13 (3)	Disk, case, and liner all in excellent c more...	More info...
\$8.25	\$10.70	dazzyliz (1205)	SEALED NEW BMG	More info...
\$8.50	\$10.95	photn (35)	perfect condition	More info...

Very GoodSorted by **Price**

Price	Total Price	Seller (Rating)	
\$8.00	\$10.45	lucidsky (14)	
\$8.84	\$11.29	steveeq1 (82)	
\$9.00	\$11.45	saint.timothy (18)	Great shape...first class ship More info...

The Fold

– Hmm, what's below here?

2

may we also suggest...

» People who bought "Weezer (2001)" also bought:

Weezer (1994) CD, Release Year: 1994

Weezer

Save \$6.97 - Best price: \$5.00Pinkerton CD, Release Year: 1996

Weezer

Save \$10.95 - Best price: \$6.00Hybrid Theory CD, Release Year: 2000

Linkin Park

Save \$11.68 - Best price: \$6.29**About this album****Song List**

1. Don't Let Go
2. Photograph
3. Hashpipe
4. Island In The Sun
5. Crab
6. Knock-Down Drag-Out
7. Smile
8. Simple Pages
9. Glorious Days
10. O Girlfriend

Album Credits

Ken Allerdyce, Engineer
Ric Ocasek, Producer

- **Impulse buy**
 - PESONALIZED RECOMMENDATIONS
- **About this album**
- **Lots of unused space**
- **Still more info below...**

Album Notes

Weezer: Rivers Cuomo (vocals, guitar); Brian Bell (guitar); Matt Sharp (bass); Patrick Wilson (drums). Recorded at Cello Studios, Los Angeles, California in December 2000. In 1994 Weezer burst onto the music scene, reaching platinum status with their debut, and in the process proving that there was still room in an airbrushed MTV world for unrepentant power pop played by decidedly non-airbrushed guys. Following a brief sojourn into semi-deconstructionism, 1997's PINKERTON, the four men who make up Weezer serve up a third offering, WEEZER 2001, returning to the sound and producer of their successful debut. Nowhere does producer Ric Ocasek define his trademark refined power pop style more than with Weezer. Unlike the immediate, obvious pop hooks of the string of singles on the first album, though, the songs on WEEZER 2001 may take a few listens to settle in. However, once the subtle-yet-undeniable refrains of such tracks as "Crab," "Don't Let Go," and first single "Hash Pipe" make their way into your skull, they're there to stay, as furious, fuzzy, layered guitars compliment Rivers Cuomo's raw, vulnerable vocals. While this disc clocks in at less than a half-hour long, it packs more hooky wallop than many double live albums.

Product Reviews**Editorial Reviews****Spin (01/01/2002)**

Ranked #9 in Spin's Albums of the Year 2001
 Ranked #13 in AP's 25 Best Albums of 2001
 beast...Rolling Stone (6/7/01, p.110) - 4 excellent tunes in less than half an hour
 Rivers Cuomo's shrink another hot tub...On the observed power pop of their '94 debut, a

Customer Reviews

Rated 4.3 out of 5.0 by 29 raters.

[» Read Customer Reviews](#)

[» Rate this item](#)

- **Is this product any good?**
 - Editorial reviews
 - Customer reviews
 - **RECOMMENDATION
COMMUNITY**

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People with similar tastes
also enjoyed...

Weezer (1994)

(CD, 1994)
Weezer
\$5.00
(Save \$6.97)



Pinkerton
(CD, 1996)
Weezer
\$6.00
(Save \$10.95)



All Killer No Filler
[ECD]
(CD, 2001)
Sum 41, Sum 41
\$4.29
(Save \$8.68)

[Redeeming a Gift Certificate or Coupon?](#)[Proceed to Checkout](#) [=Speedy Checkout](#)**Shopping Cart**Weezer (2001) Weezer, Weezer (Music)

CD, Release Year: 2001

Seller: naojia@hotmail.com (35)

Condition: Like New • Notes: Perfect condition

Item: \$8.30

Media Mail: \$2.45

[\(Change Shipping Method\)](#)[Move to WishList](#) • [Remove from Cart](#) • [Find another one](#)**TOTAL: \$10.75****Gift Certificates and Coupons**

Redeeming your Half.com Gift Certificate or Coupon is easy. Just enter your Claim Code in the box to the right and click "Redeem".

[Proceed to Checkout](#) [=Speedy Checkout](#)

People with similar tastes
also enjoyed...[Weezer \(1994\)](#)

(CD, 1994)

Weezer

\$5.00

(Save \$6.97)

[Pinkerton](#)

(CD, 1996)

Weezer

\$6.00

(Save \$10.95)

[All Killer No Filler](#)

[ECD]

(CD, 2001)

Sum 41, Sum 41

\$4.29

(Save \$8.68)

[Redeeming a Gift Certificate or Coupon?](#)[Proceed to Checkout](#) [=Speedy Checkout](#)

Shopping Cart

Weezer (2001) Weezer, Weezer (Music)

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Condition: Like New • Notes: Perfect condition

Item: \$8.30

Media Mail: \$2.45

[\(Change Shipping Method\)](#)[Move to WishList](#) • [Remove from Cart](#) • [Find another one](#)**TOTAL: \$10.75**

• What site am I at?

- Logo in upper-left
- Colors, layout, font
- examples of SITE BRANDING

Gift CertiRedeeming
Claim Code**Redeem**[Proceed to Checkout](#) [=Speedy Checkout](#)

People with similar tastes
also enjoyed...



[Weezer \(1994\)](#)
(CD, 1994)
Weezer
\$5.00
(Save \$6.97)



[Pinkerton](#)
(CD, 1996)
Weezer
\$6.00
(Save \$10.95)



[All Killer No Filler \[ECD\]](#)
(CD, 2001)
Sum 41, Sum 41
\$4.29
(Save \$8.68)

[Redeeming a Gift Certificate or Coupon?](#)

Shopping Cart

Weezer (2001) Weezer Weezer (Music)
CD, Release Year: 2001
Seller: naojia@hotmail.com (35)
Condition: Like New • Notes: Perfect condition

[Move to WishList](#) • [Remove from Cart](#) • [Find another one](#)

Item: \$8.30

Media Mail: \$2.45

[\(Change Shipping Method\)](#)

TOTAL: \$10.75

Redeem

• Where am I in the site?

- Last link clicked was “Buy!”
- “Shopping Cart” and “Proceed to Checkout” reinforce that this is “the right page”
- **SHOPPING CART**

to Checkout

Speedy Checkout

People with similar tastes
also enjoyed...

[Weezer \(1994\)](#)

(CD, 1994)

Weezer

\$5.00

(Save \$6.97)

[Pinkerton](#)

(CD, 1996)

Weezer

\$6.00

(Save \$10.95)

[All Killer No Filler \[ECD\]](#)

(CD, 2001)

Sum 41, Sum 41

\$4.29

(Save \$8.68)

[Redeeming a Gift Certificate or Coupon?](#)[Proceed to Checkout](#) [=Speedy Checkout](#)

Shopping Cart

Weezer (2001) Weezer, Weezer (Music)

CD, Release Year: 2001

Seller: naojia@hotmail.com (35)

Condition: Like New • Notes: Perfect condition

Item: \$8.30

Media Mail: \$2.45

[\(Change Shipping Method\)](#)[Move to WishList](#) • [Remove from Cart](#) • [Find another one](#)**TOTAL: \$10.75**

• Cross-selling

- Possibly a pleasant surprise
- Impulse buy
- **CROSS-SELLING & UP-SELLING**

Gift Certi

Redeeming
Claim Code**Redeem**[Proceed to Checkout](#) [=Speedy Checkout](#)

People with similar tastes also enjoyed...



[Weezer \(1994\)](#)
(CD, 1994)
Weezer
\$5.00
(Save \$6.97)



[Pinkerton](#)
(CD, 1996)
Weezer
\$6.00
(Save \$10.95)



[All Killer No Filler \[ECD\]](#)
(CD, 2001)
Sum 41, Sum 41
\$4.29
(Save \$8.68)

[Redeeming a Gift Certificate or Coupon?](#)

[Proceed to Checkout](#) 

[Speedy Checkout](#)

Shopping Cart

[Weezer \(2001\)](#) Weezer, Weezer (Music)
CD, Release Year: 2001
Seller: [naojia@hotmail.com](#) (35)
Condition: Like New • Notes: Perfect condition

Item: \$8.30

Media Mail: \$2.45

[Change Shipping Method](#)

[Move to WishList](#) • [Remove from Cart](#) • [Find another one](#)

TOTAL: \$10.75

[Redeem](#)

• What am I going to buy?

- Easy to remove
- Easy to move to wishlist

• How much will it cost?

- Shipping costs there, no nasty surprises

• SHOPPING CART

[Proceed to Checkout](#) 

[Speedy Checkout](#)

3

[NEW: Counting Crows: Hard Candy \\$11.88 Save 37%!](#)[my account](#)  [cart](#)  [help](#) [eBay home](#) [sign in](#)[Home](#) [Books](#) [Music](#) [DVDs/Movies](#) [Video Games](#) [Computers & Software](#) [Electronics](#) [Everything Else...](#)[Gift Certificates](#) [Wish List](#) [Pre-Orders](#) [Sell Your Stuff](#) [New Users](#)Search: 

People with similar tastes also enjoyed...



[Weezer \(1994\)](#)
(CD, 1994)
Weezer
\$5.00
(Save \$6.97)



[Pinkerton](#)
(CD, 1996)
Weezer
\$6.00
(Save \$10.95)



[All Killer No Fille \[ECD\]](#)
(CD, 2001)
Sum 41, Sum 41
\$4.29
(Save \$8.68)

[Redeeming a Gift Certificate or Coupon?](#)

Shopping Cart

[Weezer \(2001\)](#) Weezer, Weezer (Music)
CD, Release Year: 2001
Seller: [naojia@hotmail.com](#) (35)
Condition: Like New • Notes: Perfect condition

[Move to WishList](#) • [Remove from Cart](#) • [Find another one](#)

Item: \$8.30

Media Mail: \$2.45

[\(Change Shipping Method\)](#)

TOTAL: \$10.75

- What can I do?
 - “Proceed to Checkout”
HIGH VISIBILITY ACTION BUTTON
 - Visually distinct
 - 3D, looks clickable
 - Repeated above and below fold


[Proceed to Checkout](#) 
[=Speedy Checkout](#)

Checkout

Enter your User ID and Password.

Are you a **half.com** user having
trouble signing in? [Get help now.](#)

eBay [User ID](#)

You can also use your registered email.

eBay Password

[Forgot](#) your password?

[Learn how to protect your account](#)

or [Register Now](#)

Keep me signed in on this computer unless I
sign out. [Learn more](#).

② Having problems signing in? [Get help now.](#)

For more information about sign in, visit [sign in help](#).

Or sign in to eBay
using:



Checkout

Enter your User ID and Password.

Are you a **half.com** user having trouble signing in? [Get help now.](#)

eBay [User ID](#)

You can also use your registered email.

eBay Password

[Forgot your password?](#)
Learn how to [protect your account](#)

[Secure Sign In](#)

or [Register Now](#)

Keep me signed in on this computer unless I sign out. [Learn more](#).

② Having problems signing in? [Get help now.](#)

For more information about sign in, visit [sign in help](#).

Or sign in to eBay using:



- **What if I don't have a User ID?**
- **What if I forgot my password?**
- **SIGN-IN/NEW ACCOUNT options**



Step 1 - Choose Shipping Address

Ship my order to:

Jason Hong
387 Soda Hall Computer Science UC Berkeley
Berkeley, CA 94720

[Use This Address](#)

OR

Enter a new shipping address:

Name

Street address

City

If U.S. Military, enter APO/FPO for City.

State

Select State

If U.S. Military, select AE, AP or AA from bottom of list for State.

ZIP code

Country

USA

[Save Changes](#)



Step 1 - Choose Shipping Address

Ship my order to:

Jason Hong
387 Soda Hall Computer Science UC Berkeley
Berkeley, CA 94720

[Use This Address](#)

OR

Enter a new shipping address:

Name

Street address

City

If U.S. Military, enter APO/FPO for City,

State

If U.S. Military, select AE, AP or AA from bottom of

ZIP code

Country

[Save Changes](#)

- **What site?**

- Logo, layout, color, fonts

- **Where in site?**

- Checkout, step 1 of 3
 - “Choose shipping address”
 - **QUICK-FLOW CHECKOUT**



Step 1 - Choose Shipping Address

Ship my order to:

Jason Hong
387 Soda Hall Computer Science UC Berkeley
Berkeley, CA 94720

Use This Address

OR

Enter a new shipping address:

Name

Street address

City

If U.S. Military, enter APO/FPO for City,

State

If U.S. Military, select AE, AP or AA from bottom

ZIP code

Country USA

Save Changes

- Note what's different
 - No tab rows
 - No impulse buys
 - Only navigation on page takes you to next step

- This is a PROCESS FUNNEL
 - Extraneous info and links removed to focus customers

6

Checkout

1 Shipping

2

3 Place Order

Secure
Shipping Place my order!

Order Summary

Weezer (2001) Weezer, Weezer (Music)
Seller: naojia@hotmail.com (35)
Condition: Like New • Notes: Perfect condition

Item: \$8.30

Media Mail: \$2.45

Subtotal: \$10.75

Total Merchandise: \$8.30

Total Shipping: \$2.45

TOTAL: \$10.75

Ship to

Jason Hong
387 Soda Hall Computer Science UC Berkeley
Berkeley, CA 94720

[Edit / Change Shipping Address](#)

Bill to

MasterCard ending with 0155
Expires 11/2003
Zipcode: 94709

[Edit / Change Billing](#)

Use this shipping and billing information as my Speedy Checkout settings.

 Place my order!

6

Checkout

1 Shipping

2

3 Place Order

Secure
Shipping**Place my order!**

- **Last step of process**
 - Step 3, “Place Order”
 - “Place my order” button
- **Two HIGH-VISIBILITY ACTION BUTTONS for fold**

 Use this shipping and billing information for my speedy Checkout settings.**Place my order!**



• No nasty surprises

- Can see order
- Total price is same as shopping cart
- ORDER SUMMARY

order!

Item: \$8.30
Media Mail: \$2.45
Subtotal: \$10.75
Total Merchandise: \$8.30
Total Shipping: \$2.45
TOTAL: \$10.75

Ship to

Jason Hong
387 Soda Hall Computer Science UC Berkeley
Berkeley, CA 94720

[Edit / Change Shipping Address](#)**Bill to**

MasterCard ending with 0155
Expires 11/2003
Zipcode: 94709

[Edit / Change Billing](#)

Use this shipping and billing information as my Speedy Checkout settings.

Place my order!



- **Easy to change shipping and billing**
- **Easy to save this info**
 - Easier to setup info in context of specific task

order!

Item: \$8.30

Media Mail: \$2.45

Subtotal: \$10.75

Total Merchandise: \$8.30

Total Shipping: \$2.45

TOTAL: \$10.75**Ship to**

Jason Hong
387 Soda Hall Computer Science UC Berkeley
Berkeley, CA 94720

[Edit / Change Shipping Address](#)**Bill to**

MasterCard ending with 0155
Expires 11/2003
Zipcode: 94720

[Edit / Change Billing](#) Use this shipping and billing information as my Speedy Checkout settings.**Place my order!**

Design equals Solutions

Design is about finding solutions

Designers often reinvent

- Hard to know how things were done before

- Why things were done a certain way

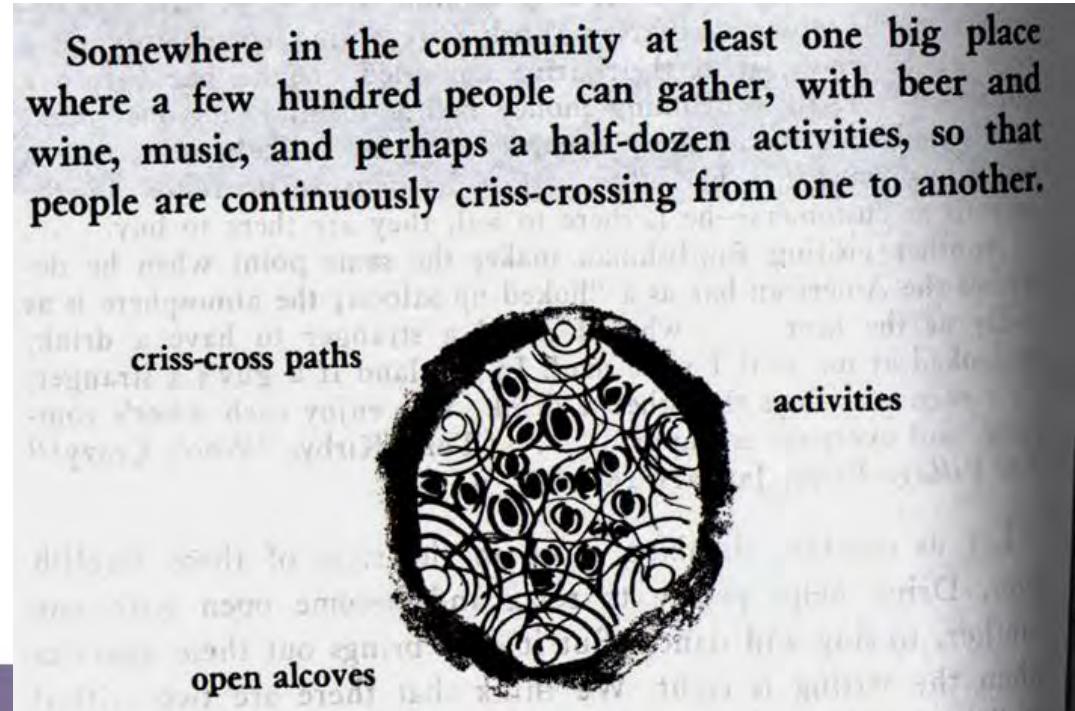
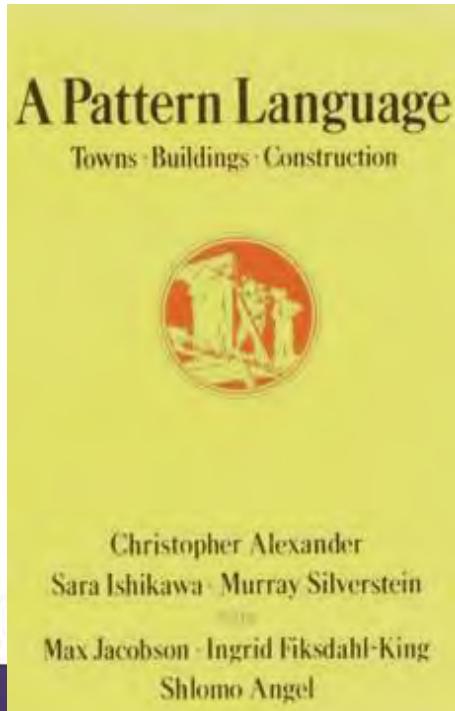
- How to reuse solutions

Design Patterns

Design patterns communicate common design problems and solutions

First used in architecture [Alexander]

How to create a beer hall where people socialize?



Design Patterns

Somewhere in the community at least one big place where a few hundred people can gather, with beer and wine, music, and perhaps a half-dozen activities, so that people are continuously criss-crossing from one to another.

criss-cross paths



activities

open alcoves

Using Design Patterns

Not too general and not too specific

use a solution “a million times over, without ever doing it the same way twice”

Design patterns are a shared language

for “building and planning towns, neighborhoods, houses, gardens, and rooms”

Beer hall is part of a center for public life

Beer hall needs spaces for groups to be alone ALCOVES

A Web of Design Patterns



(8) Mosaic of Subcultures

(31) Promenade

(33) Night Life

(90) Beer Hall

(95) Building Complex

(179) Alcoves

(181) The Fire

Cities
& Towns

Local
Gatherings

Interiors

Web Design Patterns

Communicate design
problems & solutions

how to create navigation bars
for finding relevant content

how to create a shopping cart
that supports check out

how to make e-commerce sites
where people return & buy



NAVIGATION BAR (K2)

Problem: Customers need a structured, organized way of finding the most important parts of your Web site

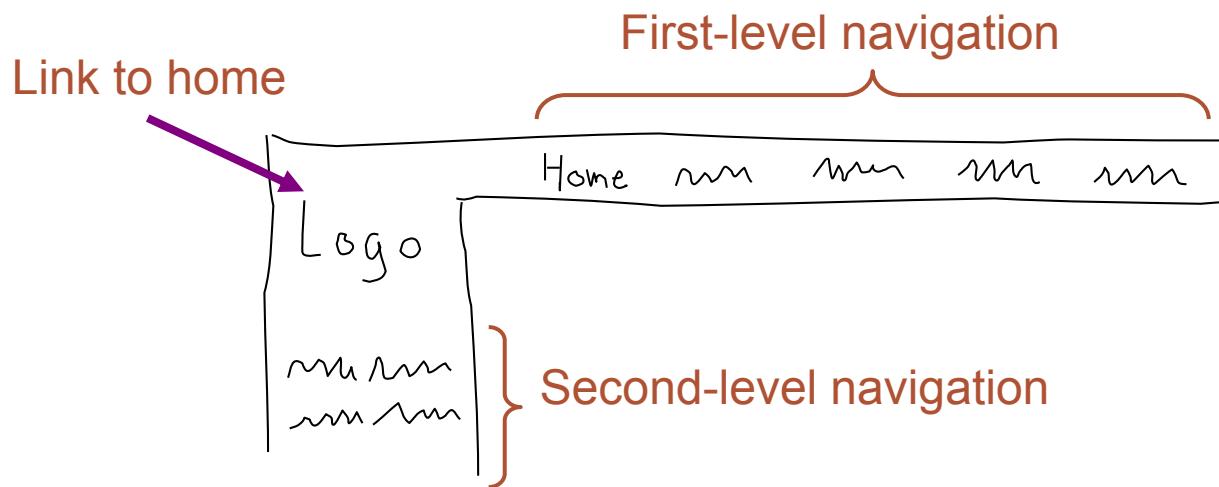
The image displays three examples of navigation bars, each highlighted with a red border:

- Group for User Interface Research:** A dark brown header bar with the logo on the left and five menu items: Home, Projects (highlighted in blue), People, Publications, and Links.
- DENIM and SILK:** A light gray header bar with the logo on the left and a menu on the right: DENIM and SILK, Download, Documentation, Support, Research, Publications, and More Projects.
- IBM:** A blue header bar with the IBM logo and country selection (United States). The main menu includes Home, Products & services, Support & downloads, and My account. Below the header, there's a sidebar for "More up-front product life" and sections for e-business on demand and IBM Global Financing.

NAVIGATION BAR (K2)

Solution diagram

Captures essence on how to solve problem



Pattern Groups

Patterns organized by group

- | | | | |
|---|------------------------|---|-----------------------|
| A | Site genres | G | Advanced ecommerce |
| B | Navigational framework | H | Completing tasks |
| C | Home page | I | Page layouts |
| D | Content management | J | Search |
| E | Trust and credibility | K | Page-level navigation |
| F | Basic ecommerce | L | Speed |
| | | M | The mobile web |

PROCESS FUNNEL (H1)

Problem:

Need a way to help people complete highly specific stepwise tasks

Ex. Create a new account

Ex. Fill out survey forms

Ex. Check out

PROCESS FUNNEL (H1)

NEW: Counting Crows: Hard Candy \$11.88 Save 37%!

my account  help  sign in

Home Books Music DVDs/Movies Video Games Computers & Software Electronics Everything Else...

Gift Certificates Wish List Pre-Orders Sell Your Stuff New Users

Search: All Categories

People with similar tastes also enjoyed...


[Weezer \(1994\)](#)
(CD, 1994)
Weezer
\$5.00
(Save \$6.97)


[Pinkerton](#)
(CD, 1996)
Weezer
\$6.00
(Save \$10.95)


[All Killer No Filler \(ECD\)](#)
(CD, 2001)

[Redeeming a Gift Certificate or Coupon?](#)

[Proceed to Checkout](#) 
[Speedy Checkout](#)

Shopping Cart

Weezer (2001) Weezer, Weezer (Music)
CD, Release Year: 2001
Seller: [naoli@hotmail.com](#) (35)
Condition: Like New • Notes: Perfect condition

Move to WishList • Remove from Cart • Find another one

Item: \$8.30
Media Mail: \$2.45
([Change Shipping Method](#))

TOTAL: \$10.75

Gift Certificates and Coupons

Redeeming your Half.com Gift Certificate or Coupon is easy. Just enter your Claim Code in the box to the right and click "Redeem".

[Redeem](#)

[Proceed to Checkout](#) 
[Speedy Checkout](#)

PROCESS

- **What's different?**

- No tab rows
- No impulse buys
- Only navigation on page takes you to next step

The screenshot shows a web browser displaying the half.com website. The URL bar shows 'half.com' and 'by ebay'. The page title is 'Checkout'. A progress bar at the top indicates 'Step 1 Shipping'.

Step 1 - Choose Shipping Address

Ship my order to:

Jason Hong
387 Soda Hall Computer Science UC Berkeley
Berkeley, CA 94720

Use This Address

OR

Enter a new shipping address:

Name: [Input field]

Street address: [Input field]

City: [Input field]

State: [Select State dropdown]
If U.S. Military, enter APO/FPO for City.

ZIP code: [Input field]

Country: [Input field]
If U.S. Military, select AE, AP or AA from dropdown menu.
USA

Save Changes

- **What's the same?**

- Logo, layout, color, fonts

PROCESS FUNNEL (H1)

Problem:

What if users need extra help?

PROCESS FUNNEL (H1)

Dell.com | About Dell | Contact | Search | Support | Order Status | My Cart | HOME & HOME OFFICE

DELL

Buy Online or Call
1-800-915-3355

Purchase Assistance

- Payment Solutions
- Tax & Shipping Info
- Secure Shopping Guarantee
- Privacy Policy

Recommended Systems

Click here for more Dimension 4100 recommended systems.

FEATURED SYSTEM

Featured Dimension 4100



The Dimension 4100 desktop offers you amazing power and flexibility at a price that won't break your budget.

- Intel® Pentium® III processor at 933Mhz
- 40GB⁵ Hard Drive
- 128MB SDRAM
- 32MB Nvidia GeForce2 MX 4X AGP Graphics Card

Free Ground (3-5 day) Shipping with purchase of any new Dell Home System. Offer ends 4/23/01.
[Click Here for Details.](#)

Dimension 4100

Intel® Pentium® III processor at 933Mhz

\$1,199

As low as \$36⁴ /mo pmts
No payment for 90 days
(Click or scroll for details)⁴

Customize It

E-Value Code
8W771-4100po1

Processor: Intel® Pentium® III processor at 933MHz

Keyboard: QuietKey® Keyboard

Hard Drive: 40GB⁵ Ultra ATA/100 Hard Drive (7200 RPM)

Check any item(s) you wish to add to this system, then click Customize It.

3 Year On-Site Service

Add
With on-site service, you don't have to leave your home or ship your computer to us should you have a problem.

More Details

Epson Stylus Color 880 Ink Jet Printer

Add
\$149
A creative and versatile printer that features super fast print speeds.

More Details

Epson 640U Scanner

Add

CONTEXT-SENSITIVE HELP (H8)

The screenshot shows a Dell.com website page for a Dimension 4100 computer system. A red arrow points from the 'Customize It' button on the left to a context-sensitive help window titled 'Keyboards - Netscape'.

Keyboards - Netscape

LEARN MORE **Close**

Keyboards
Great Keyboard Choices to Suit Your Needs:

- Choose from standard-size and "space-saver" designs
- Ergonomic design for added comfort
- Hot Keys provide quick, one-touch access to frequently used programs and Web sites
- USB ports allow for quick and easy access to USB peripherals, such as digital cameras, scanners and joysticks

Dell™ Enhanced Performance Keyboard

DELL GLOSSARY
Need a definition?
Click on a term.

Keyboard Type	Dell™ QuietKey	Microsoft® Internet Keyboard, Dell Edition	Dell™ Enhanced QuietKey	Dell™ Enhanced Performance
ZOOM! For a closer look.				
Benefits	<ul style="list-style-type: none">Quiet key responseSoft "rubberdome" touch	<ul style="list-style-type: none">10 Hot Keys for easy access to your internet and e-mailE-mail Hotkey	<ul style="list-style-type: none">3 programmable keysSoft "rubberdome"	<ul style="list-style-type: none">7 programmable keysBuilt-in 2 port USB HUB

Customize It

E-Value Order 8V771-450p01

Processor Intel® Pentium® III processor at 933MHz

Keyboard QuietKey® Keyboard

User Drive 40GB⁵ Ultra ATA-100 Hard Drive (7200 RPM)

More Details

Order Status **My Cart**

HOME & HOME OFFICE

FEATURED
Featured Dimension 4100

**Buy Online or Call
1-800-915-3355**

Purchase Assistance

- Payment Solutions
- Tax & Shipping Info
- Secure Shopping Guarantee
- Privacy Policy

Recommended Systems

Click here for more Dimension 4100 recommended systems.

FLOATING WINDOWS (H6)

The screenshot shows the Netflix homepage with a floating window overlay. The main navigation bar includes 'Browse', 'Recommendations' (which is active), 'Friends', 'Queue', and 'Buy DVDs'. Below the navigation, there are links for 'Get Recommendations (636)', 'Rate Movies', and 'Movies You've Rated (210)'. The main content area is titled 'Recommendations' with the subtitle 'Movie suggestions based on your ratings'. A section for 'NEW RECOMMENDATIONS' lists two movies: 'Gladiator: Extended Edition' and 'Samurai Champloo'. The 'Gladiator: Extended Edition' entry is highlighted with a yellow starburst icon and a red 'Add' button. A mouse cursor is hovering over the title 'Gladiator: Extended Edition'. A detailed description of the movie follows, along with its cast, director, genre, and rating information. The 'Samurai Champloo' entry also includes a starburst icon and an 'Add All' button.

Arthine van Duyne | Your Account

Browse Recommendations Friends Queue Buy DVDs

Get Recommendations (636) Rate Movies Movies You've Rated (210)

Recommendations

Movie suggestions based on your ratings

NEW RECOMMENDATIONS

Gladiator: Extended Edition

(2000)

Fans of Gladiator's original theatrical release will appreciate this extended version of the epic Ridley Scott film, packed with 17 extra minutes of action footage and gripping dialogue. Featuring a strong supporting cast and an Oscar-winning performance from actor Russell Crowe as the dauntless Roman general Maximus, this big-budget Best Picture winner became an instant classic -- and helped elevate its leading man to icon status.

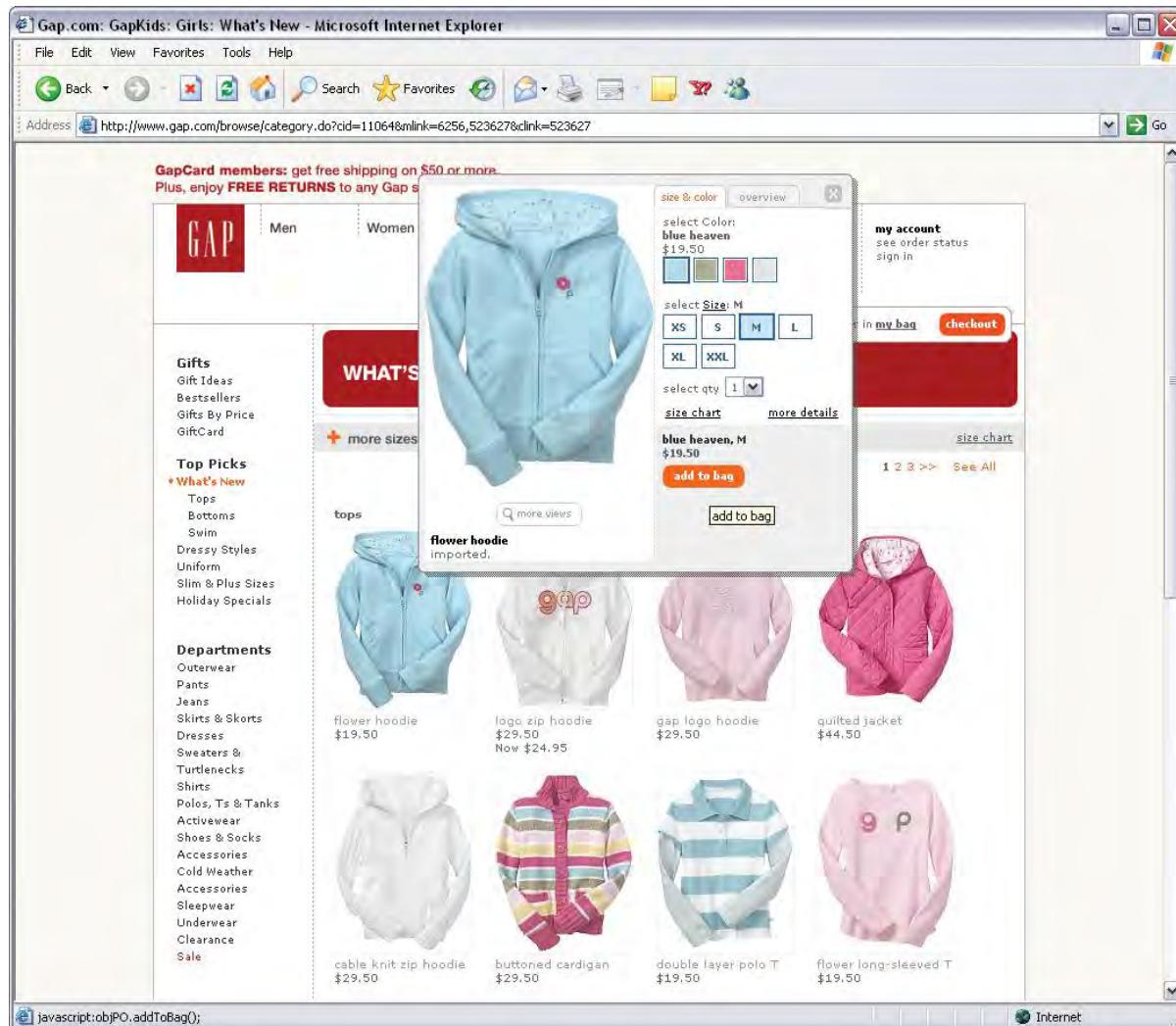
Starring: Russell Crowe, Joaquin Phoenix
Director: Ridley Scott
Genre: Action & Adventure
MPAA: R

Recommended based on 1 rating

Samurai Champloo (7.1)

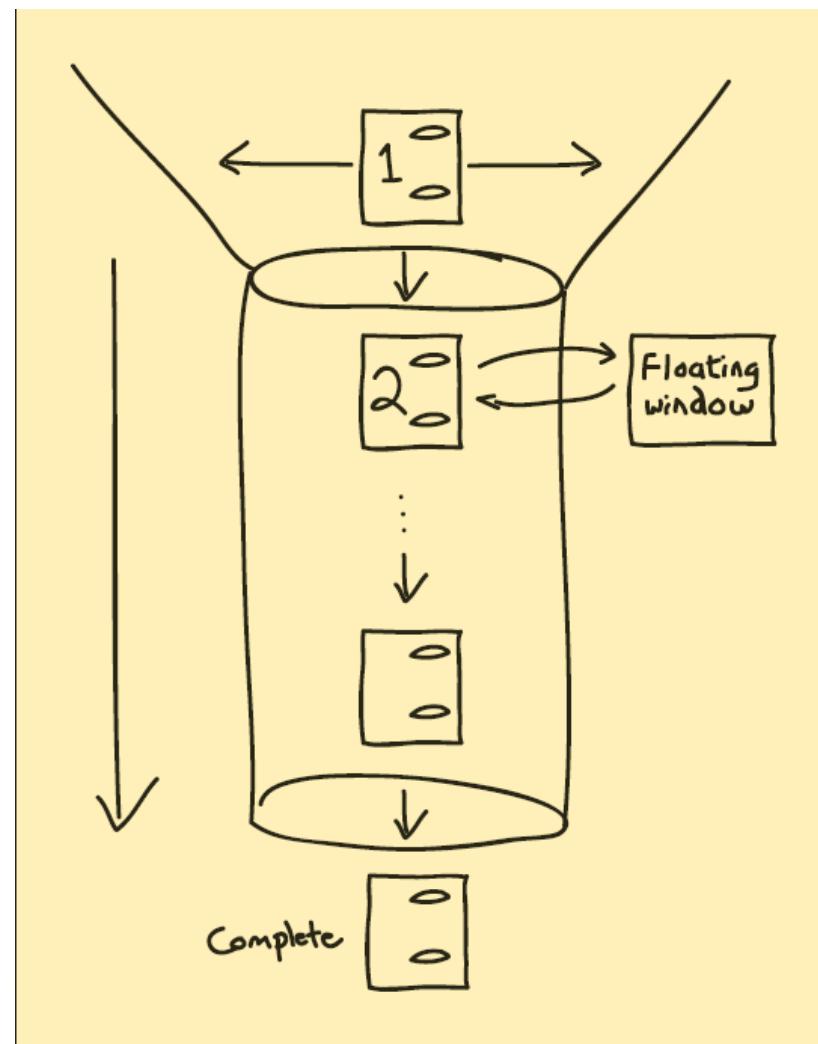
Director Shinichiro Watanabe mixes a maturity rarely found in anime with a historical Japanese setting and a funky hip-hop soundtrack. Fuu is a spacey waitress at a teahouse where a sword fight breaks out between Mugen, a wild warrior, and Jin, a ... [Read More](#)

FLOATING WINDOWS (H6)

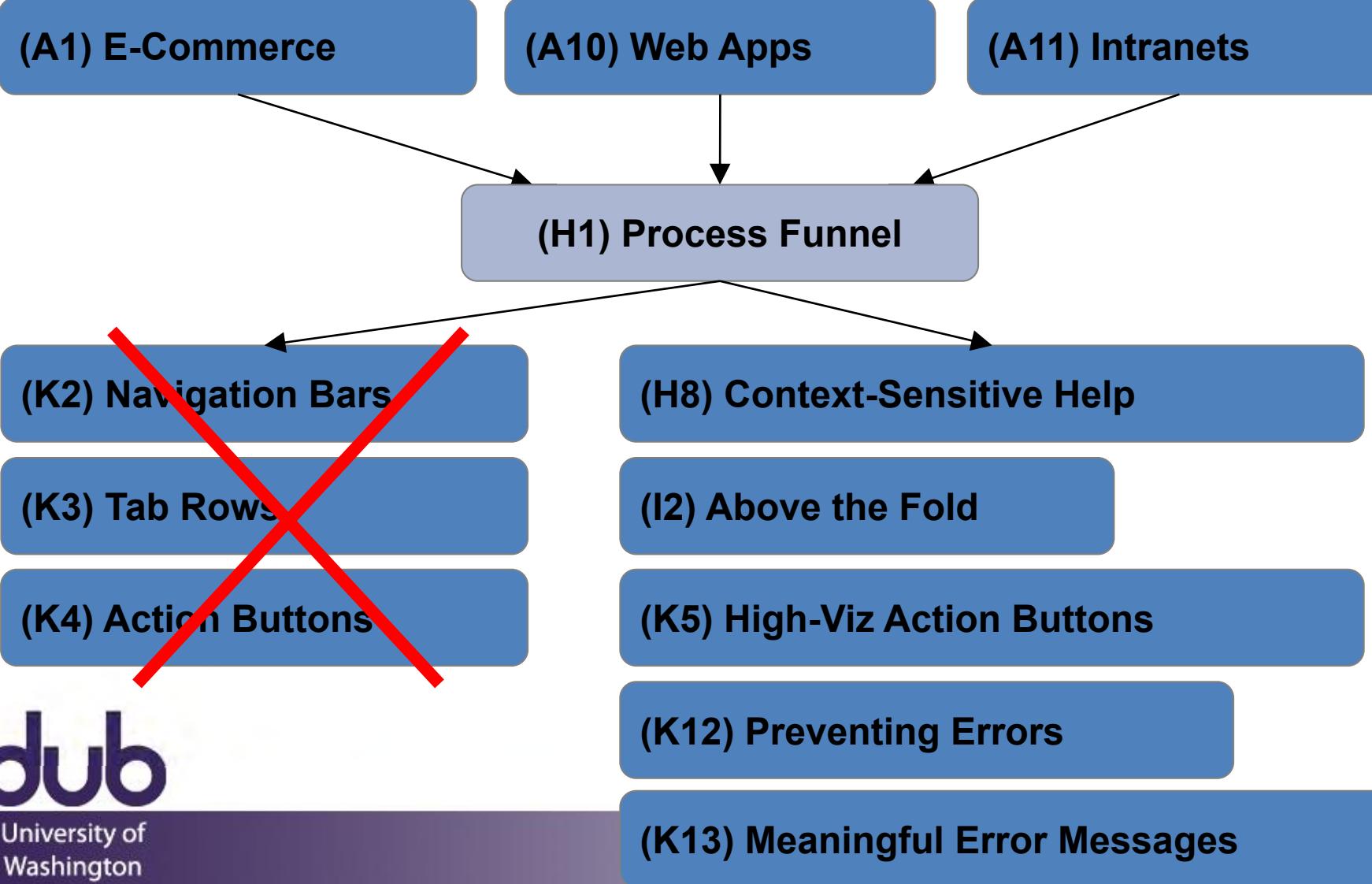


PROCESS FUNNEL (H1)

Solution Diagram



Related Patterns



Patterns Support Creativity

Patterns come from successful examples

- sites that are so successful that lots of people are familiar with their paradigms

- interaction techniques/metaphors that work well across many sites (e.g., shopping carts)

Not too general and not too specific

- you need to specialize to your needs

Patterns let you focus on the hard, unique problems of your design situation

Principles, Guidelines, Templates

Patterns help design without over-constraining

unlike principles, patterns are not too general

unlike guidelines, patterns discuss tradeoffs, show good examples, and tie to other patterns

unlike style guides, patterns not too specific, can be specialized to a design

unlike templates, patterns illustrate flows and relationships among different pages

Format of Web Design Patterns

Pattern Name and Number

Exemplar

Background

Problem

Forces

Solution

Solution Diagram

Related Patterns



Pattern Name and Number

H1 PROCESS FUNNEL



H1.1

(www.dell.com, May 18, 2002)

BACKGROUND

All Web applications that lead visitors through stepped tasks—PERSONAL E-COMMERCE (A1), SELF-SERVICE GOVERNMENT (A4), WEB APPS THAT WORK (A10), and ENABLING INTRANETS (A11)—need ways to help people succeed at completing the tasks.

PROBLEM

Customers often need to complete highly specific tasks on Web sites, but pages with tangential links and many questions can prevent them from carrying out these tasks successfully.

People enjoy completing the tasks they start. Yet all kinds of distractions—including links that lead off the critical path, extra steps, and extra

Figure H1.1

Dell uses a process funnel consisting of several logical steps that guide customers to quickly configure and purchase a personal computer. Information in a pop-up window shows additional details but keeps customers in the funnel so that they can continue to completion.



Exemplar

content—can inadvertently lead them away from accomplishing their goals. These diversions can have legitimate purposes, however, such as providing continuity, giving visitors opportunities to explore, providing instructions, or providing extra details. Striking a balance between these two extremes can be challenging.

Required to Complete a Task • Customers must go through many steps. A process funnel should have no more than eight steps. Anything less than two steps is not a process, and a process of more than eight steps is unmanageable. If there are more than eight steps, try to split the process into two or more separate process funnels, or try combining multiple steps into one page. However, this is not always a viable solution because one choice may precede another, and not every page can hold all the information that customers might need at certain points.

Forces & Solution

Provide a Progress Bar to Let Customers Know How Far They've Come • Funnel • Showing a progress bar at each step lets visitors know how much farther they have to go to complete the task. It is often not worth your time to make a progress bar clickable because doing so is not a benefit for customers.

Remove Unnecessary Links and Content While Reinforcing the Brand • Funnel • Removing links and content unrelated to the task at hand will reduce the number of choices available, making it more likely that your customers will focus on completing their tasks. Remove all NAVIGATION BARS (K2), TABS (K3), BREAD CRUMBS (K6), and EMBEDDED LINKS (K7), leaving only ACTION BUTTONS (K4) that help visitors reach their goals. Take out any content that is superfluous to the task.

Reinforce the Web site brand to minimize any disorientation customers might feel from sudden changes in navigation options • Funnel • Reinforce the Web site brand to minimize any disorientation customers might feel from sudden changes in navigation options. Use the same colors, font, layout, and logo throughout the Web site so that no one knows they're still on the same site.

Background

Problem Statement

where they are in the process funnel and how much farther they have to go.



(www.half.com, October 24, 2001)

Use Pop-Up Windows to Provide Extra Information, without Leading Visitors Out of the Process Funnel • Sometimes customers need additional information that you have not provided on a page, such as extra help or product details. Provide a link to a POP-UP WINDOW (H6) containing CLEAN PRODUCT DETAILS (F2) (see Figure H1.1), CONTEXT-SENSITIVE HELP (H8), or information from the FREQUENTLY ASKED QUESTIONS (H7) page, to make the extra information less intrusive. Your challenge is to implement this extra content without detracting from the main purpose.

Make Sure the Back Button Always Works • Customers often use the **Back** button on browsers to modify answers they have typed in on previous pages. However, if the Web site is not implemented correctly, the information they have already entered may be lost when they hit the **Back** button, forcing them to type everything again. In the worst case, people get a cryptic error message saying that the posted information was lost. You can address this annoying problem by temporarily storing the information they type in on each page, redisplaying this information if customers hit the **Back** button, and then overriding the temporarily stored information on the page if it is changed.

Always Make It Clear How to Proceed to the Next Step • Some Web pages are longer than can be displayed on a customer's Web browser. The problem is that people sometimes get lost if the critical ACTION BUTTON (K4), the one that takes them to the next step, is hidden below the fold. Place HIGH-VISIBILITY ACTION BUTTONS (K5) both high *and* low on the page, ensuring that at least one of the critical action buttons is visible without scrolling.

Prevent Errors Where Possible, and Provide Meaningful Error Messages When They Do Occur • People will always make mistakes. You can provide good customer support and sample input to help prevent errors, and provide MEANINGFUL ERROR MESSAGES (K13).

★ SOLUTION

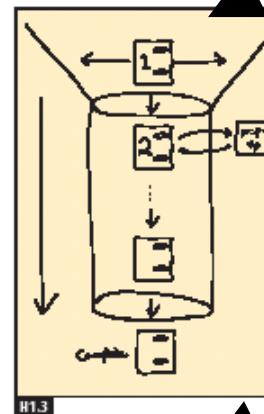
Minimize the number of steps required to complete a task, keeping them between two and eight. Remove unnecessary and potentially confusing links and content from each page, while reinforcing the brand to maintain a sense of place. Use pop-up windows to provide extra information, without leading people out of the process funnel. Make sure the Back button always works so that customers can correct errors. Make it clear how to proceed to the next step

Bus Stops

tion buttons. P error messages whenever errors h

Figure H1.3

A process funnel lets people complete their goals by breaking down complicated tasks into a small number of steps, using pop-up windows for detailed information, and reducing the number of links to only the critical ones, so that people are never distracted.



Solution Diagram

Related Patterns

★ CONSIDER THESE OTHER PATTERNS



Many kinds of Web sites use process funnels, including sites for PERSONAL E-COMMERCE (A1), SELF-SERVICE GOVERNMENT (A4), WEB APPS THAT WORK (A10), and ENABLING INTRANETS (A11). Customers use process funnels when they finalize purchases through QUICK-FLOW CHECKOUT (F1), when they create new accounts through SIGN-IN/NEW ACCOUNT (H2), and when they post new messages to a RECOMMENDATION COMMUNITY (G4), to name some examples.

Remove NAVIGATION BARS (K2), TAB ROWS (K3), irrelevant ACTION BUTTONS (K4), LOCATION BREAD CRUMBS (K6), and EMBEDDED LINKS (K7) to ensure that customers stay on their paths. However, keep strong SITE BRANDING (E1) so that customers still know where they are.

Design process funnels to PREVENT ERRORS (K12), and provide MEANINGFUL ERROR MESSAGES (K13) when errors do occur.

Track your customers through PERSISTENT CUSTOMER SESSIONS (H5) to avoid problems with the **Back** button, and to save customer-entered information.

Move extra content, such as CONTEXT-SENSITIVE HELP (H8) and FREQUENTLY ASKED QUESTIONS (H7), to POP-UP WINDOWS (H6) to keep the main task page on the screen. Make the next action visible by keeping it ABOVE THE FOLD (I2) and by using HIGH-VISIBILITY ACTION BUTTONS (K5).

Pre-Patterns

Patterns require broad adoption and examples

- Many versions of the same basic idea

- Shown successful in many contexts

- That is what makes them patterns

This is challenging in novel domains

Pre-patterns are based in weaker evidence

- Can help speed diffusion of techniques and results

- Can help see relationships among ideas

UbiComp Pre-Patterns

Literature review

Button-up card sorting of lessons from literature

Cut down based on critique by other researchers

E13 - Notification on Access of Personal Data



Figure 1. AT&T Wireless Find Friends service notifies your friend if you ask for his or her location.

Forces

A key design decision here is whether the person is simply notified or has choice over whether information is disclosed. There are plausible cases for each. For example, "always let my family know where I am", but "let me choose whether to reveal my current location if a co-worker asks". This is primarily an issue of trust and boundaries with other individuals.

[Privacy Mirrors](#) also act as a form of notification. Notification can also be combined with unobtrusive displays to provide constant feedback.

Synopsis

Systems can provide feedback about what is being monitored and recorded.

Background

This pattern is one part of providing [Appropriate Privacy Feedback](#) to individuals.

Problem

How can systems provide feedback about what is being monitored, as well as the current state of the system?

Solution

There at least two different times that notification can be used, during an access and afterwards.

UbiComp Pre-Patterns

B6 • FIND A FRIEND



Figure 1. AT&T Wireless' mMode service allows customers to add friends to a friend list, find out who is nearby, and call or send messages to them. Users can make themselves invisible whenever they want.

• BACKGROUND

This pattern discusses services that allow people to find where their friends are while allowing those friends some level of privacy. This pattern is useful for GUIDES FOR EXPLORATION AND NAVIGATION (A5).

• PROBLEM

People would like to know where their friends are, for impromptu communication and gatherings. At the same time, those people may not always want to be tracked.

Displaying people's location • There are several different ways of displaying a person's location. A straightforward approach is to simply show the location in text, for example "near corner of Euclid Ave and Hearst Ave" or "in Soda Hall". Another approach is to show the data on a map, or possibly even an ACTIVE MAP (B1) that is constantly updated.



Figure 2. UC San Diego's ActiveCampus project shows your friends' location in real time. While useful, this visualization raises many privacy concerns.

Managing privacy concerns • There are many privacy concerns about find-a-friend applications due to the potential for abuse. This is not just the fear of "Big Brother," but also so-called "Stitcher People," including abusers

UbiComp Pre-Patterns

A – Ubiquitous Computing Genres	B – Physical-Virtual Spaces	C – Developing Successful Privacy	D – Designing Fluid Interactions
Describes broad classes of emerging applications, providing many examples and ideas	Associating physical objects and spaces with information and meaning; location-based services; helping users navigate such spaces	Policy, systems, and interaction issues in designing privacy-sensitive systems	How to design for interactions involving dozens or even hundreds of sensors and devices while making users feel like they are in control
Upfront Value Proposition (A1) Personal Ubiquitous Computing (A2) Ubiquitous Computing for Groups (A3) Ubiquitous Computing for Places (A4) Guides for Exploration and Navigation (A5) Enhanced Emergency Response (A6) Personal Memory Aids (A7) Smart Homes (A8) Enhanced Educational Experiences (A9) Augmented Reality Games (A10) Streamlining Business Operations (A11) Enabling Mobile Commerce (A12)	Active Map (B1) Topical Information (B2) Successful Experience Capture (B3) User-Created Content (B4) Find a Place (B5) Find a Friend (B6) Notifier (B7)	Fair Information Practices (C1) Respecting Social Organizations (C2) Building Trust and Credibility (C3) Reasonable Level of Control (C4) Appropriate Privacy Feedback (C5) Privacy-Sensitive Architectures (C6) Partial Identification (C7) Physical Privacy Zones (C8) Blurred Personal Data (C9) Limited Access to Personal Data (C10) Invisible Mode (C11) Limited Data Retention (C12) Notification on Access of Personal Data (C13) Privacy Mirrors (C14) Keeping Personal Data on Personal Devices (C15)	Scale of Interaction (D1) Sensemaking of Services and Devices (D2) Streamlining Repetitive Tasks (D3) Keeping Users in Control (D4) Serendipity in Exploration (D5) Context-Sensitive I/O (D6) Active Teaching (D7) Resolving Ambiguity (D8) Ambient Displays (D9) Follow-me Displays (D10) Pick and Drop (D11)

Patterns

When you see advice, consider its depth

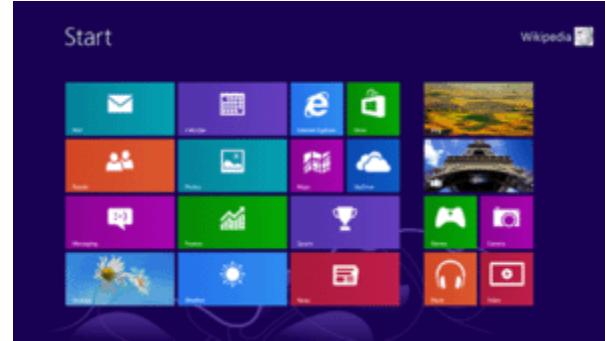
- Result of an individual study

- Pre-pattern based on some meta-analysis

- Established pattern

Be aware of misapplying patterns

Touch and Microsoft Windows



2004



2012

Consistency vs. Specialization

Beware of simply copying a design language

Consistency is your friend until it is not your friend

Not limited to platform-level decisions

One “look” for your app

Or targeted at each device

CSE 440: Introduction to HCI

User Interface Design, Prototyping, and Evaluation

Lecture 12:
Testing, Patterns, Anti-Patterns

James Fogarty
Daniel Epstein
Brad Jacobson
King Xia

Tuesday/Thursday
10:30 to 11:50
MOR 234

