Design Patterns

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Prof. James A. Landay
Computer Science Department
Stanford University

Autumn 2022
November 28, 2022
Hall of Fame or Shame?

Southwest.com
Hall of Shame!

Southwest.com

- hard to notice key functions on far right
- ads dominating the screen
Improved southwest.com

Earn up to 60,000 points.*

Points take you places.

TRAVEL ADVISORY: California Wildfires | Winter Storm Bruce

Round trip One-way

DEPART ARRIVE

DEPART DATE RETURN DATE

11/26 11/29

Mon, Nov 26 2018 Thu, Nov 29 2018

Baggage and optional fees

ADULTS SENIORS

1 0

Dollars Points
Hall of Fame or Shame?

Wiimote
By Nintendo
Great at opening up gaming to a wider audience but…

the main thing that differentiated the product (movement in gaming) resulted in it being thrown at windows/TVs

- slippery plastic hard to hold. Later designs added rubber case & strap

- lack of a joystick was initial problem resulting in a second controller

Hall of Fame/Shame!

Autumn 2022
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Outline

- Detailed Design Example
- Web Design Patterns
- Patterns in the Design Exploration Phase
- Dark Patterns
Valentines Day Gift for Him, Wood Watch, Personalized Watch, Engraved Watch, Wooden Watch, Groomsman Watch, Mens Watch, Boyfriend Gift, Gift for Dad

$49.99+

Would you like to engrave?
Select an option
Add your personalization
Example only:
Engrave: I love you to the moon and back!
"no engraving" if you choose "no engraving" option

11,338 reviews ★★★★★
Buyers are raving! Multiple people gave 5-star reviews to this shop in the past 7 days.
Valentines Day Gift for Him, Wood Watch, Personalized Watch, Engraved Watch, Wooden Watch, Groomsmen Watch, Mens Watch, Boyfriend Gift, Gift for Dad

Stayfineofficial
Star Seller 3,956 sales ★★★★★
Etsy's Pick
In stock

$49.99 $124.99
You save $74.99 (60%)

Would you like to engrave?
No Thanks!

Add your personalization
Example only:
Engrave: I love you to the moon and back!
"no engraving" if you choose "no engraving" option

You are my Analog!

Add to cart

Other people want this. Over 20 people have this in their carts right now.

Star Seller. This seller has a history of 5-star reviews, shipment on time, and replying quickly when they got any
Valentines Day Gift for Him, Wood Watch, Personalized Watch, Engraved Watch, Wooden Watch, Groomsmen Watch, Mens Watch, Boyfriend Gift, Gift for Dad

StayFineOfficial
Star Seller | 30,156 sales  ★★★★★

$49.99 $124.99
You save $74.99 (60%)

In stock

Would you like to engrave?
No Thanks!

Add your personalization
Example only:
Engrave: I love you to the moon and back!
"no engraving" if you choose "no engraving" option

You are my Analog!

Add to cart
1 item in your cart

Valentines Day Gift for Him, Wood Watch, Personalized Watch, Engraved Watch, Wooden Watch, Groomsman Watch, Mens Watch, Boyfriend Gift, Gift for Dad
Would you like to engrave? No Thanks! [49.99]
Edit
Personalization: You are my Analog!

Save for later  Remove

This order is a gift
Prices will not be shown on packing slip

Add a note to stayfineofficial (optional)

Proceed to checkout

How you'll pay
- [ ] Visa
- [ ] Mastercard
- [ ] American Express
- [ ] Discover
- [ ] PayPal
- [ ] Klarna
- [ ] 4 interest-free installments

$50.00 product minimum applies

Item(s) total $124.98
Shop discount -$74.99
Subtotal $49.99

Get shipping cost

Estimated delivery: Mar 7-9 from United States

Apply shop coupon codes

Apply Etsy coupon code

The Uplift Fund supports nonprofits that provide resources to creative entrepreneurs in communities that need it most. You can donate your change at Checkout. Learn more

Etsy offsets carbon emissions from every delivery
1 item in your cart

Valentines Day Gift for Him, Wooden Watch, Personalized Watch, Engraved Watch, Wooden Watch, Groomsmen Gift, Boyfriend Gift, Gift for Dad. Would you like to engrave? No Thanks. Edit

Personalization: You are my Analog

Save for later  Remove

This order is a gift
Prices will not be shown on packing slip

Add a note to stayfineofficial (optional)

Go to checkout

Sign in

For your security, we ask for a security code for new device sign ins. You should be receiving a six digit security code at landay@gmail.com. It may take a few minutes.

If you still cannot find the code, please check any spam or trash folders for the code.

Security Code

Stay signed in

Sign in

Resend security code
Choose a payment method

You will not be charged until you review this order on the next page.

Default Visa
Exp: James Landay

Add a new card

Pay with PayPal

Gift cards & Etsy Credit

 Redeem a gift card or Etsy Credit

© 2022 Etsy, Inc.
Double check your order details

Shipping address
James Landay
440 Tamarack St.
STANFORD, CA 94305
United States
Change

Payment method
Visa Exp. 09/2023
Change

Billing address
Same as shipping address
Change

Order summary

<table>
<thead>
<tr>
<th>Item(s) total</th>
<th>$124.98</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shop discount</td>
<td>-$74.99</td>
</tr>
<tr>
<td>Subtotal</td>
<td>$49.99</td>
</tr>
<tr>
<td>Shipping</td>
<td>$4.52</td>
</tr>
<tr>
<td>Sales tax</td>
<td>$4.56</td>
</tr>
<tr>
<td>Order total (1 item)</td>
<td>$59.07</td>
</tr>
</tbody>
</table>

Place your order to Stanford

By clicking Place your order to Stanford, you agree to Etsy's Terms of Use and Privacy Policy.

I'd like to round up and donate $0.93 to the Uplift Fund
Learn more

stayfinedesign
Ships from United States

Valentine's Day Gift for Him, Wood Watch, Personalized Watch, Engraved Watch, Wooden Watch, 1

Choose a shipping method

USPS First-Class Mail

$4.52
Basic Web Design

• Let’s take a closer look page by page
What site is this?
– Logo in top-left corner denotes the site
– examples of SITE BRANDING (E1)
What kind of site is this?

- Shopping cart icon
- Tab row categories/featured navigation
- UP-FRONT VALUE PROPOSITION (C2)
- example of PERSONAL E-COMMERCE (A1)
What can I do here?
- Support sellers → buy
- Tab row / Search on top
- Click on popular gifts
• Most important info visible without scrolling
• ABOVE THE FOLD (I2)
Valentines Day Gift for Him, Wood Watch, Personalized Watch, Engraved Watch, Wooden Watch, Groomsmen Watch, Mens Watch, Boyfriend Gift. Gift for Dad

Stayfineofficial
Star Seller | 36,158 sales  ★★★★★

$49.99  $124.98
You save $74.99 (60%)

Would you like to engrave?
No Thanks!

Add your personalization
Example only:
Engrave: I love you to the moon and back
"no engraving" if you choose "no engraving" option

You are my Analog!

Add to cart

11,338 reviews  ★★★★★
Buyers are raving! Multiple people gave 5-star reviews to this shop in the past 7 days.

Other people want this. Over 20 people have this in their carts right now.

Star Seller. This seller has a history of 5-star reviews, shipping on time, and replying quickly when they got any
What site am I at?

- Logo in upper-left reinforces brand, can click to go to home
- Same font, layout, color scheme also reinforces
- examples of SITE BRANDING (E1)
- price emphasizes I can buy
- i.e., PERSONAL E-COMMERCE (A1)
Where am I in the site?

- This is one place Etsy falls down
- Could have had
  - “Home > Watches” as LOCATION BREADCRUMBS (K6)
  - “Jewelry & Accessories” could be selected in TAB ROW (K3) & SEARCH ACTION MODULE (J1)
Where am I in the site?

- This is one place Etsy falls down
- Could have had
  - “Home > Watches” as LOCATION BREADCRUMBS (K6)
  - “Jewelry & Accessories” could be selected in TAB ROW (K3) & SEARCH ACTION MODULE (J1)
Can I trust this seller?
  – Who am I buying from?
  – Are they reputable?
    – aside: what do stars mean?
  – Do people like the product?
  – What about shipping cost?
The Fold

– Hmm, what’s below here?
Watch, Mens Watch, Boyfriend Gift, Gift for Dad

$49.99+

You save $24.99 (60%)

Add to cart

Details

Handmade item
Can be personalized

Description

Open the buyer's direct message to ask for a wood link.
Autumn 2022
dt+UX: Design Thinking for User Experience Design, Prototyping & Evaluation

Helpful?

Alvissa Strausser, Feb 22, 2022

Would you like to engrave?: Yes Please!
I ordered this for my boyfriend for Valentine's Day and I could not be happier! The quality was impeccable and the customer service was even better. I chose to get it engraved and after I submitted my order, I thought of something different to have engraved. The... 

Helpful?

Meghan Welte, Feb 23, 2022

Would you like to engrave?: Yes + Extra Links
I will definitely order from Paul again. And I highly recommend ordering from Paul! He was quick to respond when I had a moment of panic that I wrote the message I wanted engraved wrong, which I didn’t, and he understood exactly what I meant and needed. M... 

Helpful?

Emily Cromer, Feb 22, 2022

Would you like to engrave?: Yes Please!
This watch is beautiful! It looks even better in person! This is the first thing I've ordered through Etsy, and it couldn't have been a better outcome!
• What site am I at?
  – Logo in upper-left
  – Colors, layout, font
  – examples of SITE BRANDING (E1)
• Where am I in the site?
  – Last button clicked was “Add to cart!”
  – “in your cart” & “Proceed to Checkout” reinforce I’m on “the right page”
  – shopping cart icon changed
  – SHOPPING CART (F3)
• What am I going to buy?
  – Easy to remove & save for later
• How much will it cost?
  – Could be better as need to click for shipping costs – surprise!
• SHOPPING CART (F3)
What can I do (they want me to do)?

- “Proceed to Checkout”
- HIGH VISIBILITY ACTION BUTTON (K5)
- visually distinct, looks clickable
- large
• What if I don’t have a User ID?
• SIGN-IN/NEW ACCOUNT (H2)
• What if I’m using a new device?
  - 2-factor auth
• SIGN-IN/NEW ACCOUNT (H2)
1 item in your cart

- What if I forgot my password?
- SIGN- IN/NEW ACCOUNT (H2)
Choose a shipping address

Default
James Landay
STANFORD, CA 94305
United States

Ship here
Edit
Delete

Add a new address
• What site?
  – Logo, layout, color, fonts
• Where in site?
  – Checkout, step 1 of 3
  – “Choose a shipping address”
  – QUICK-FLOW CHECKOUT (F1)
• Note what’s different (?)
  – No tab rows
  – No impulse buys
  – Only navigation on page takes you to next step
• This is a PROCESS FUNNEL (H1)
  – Extraneous info & links removed to focus customers
Choose a payment method

You will not be charged until you review this order on the next page.

- Default
- Visa
- $50.00 product minimum applies

Add a new card

Pay with PayPal

Gift cards & Etsy Credit

Redeem a gift card or Etsy Credit
Double check your order details

Shipping address
James Landay
448 Talmage St.
STANFORD, CA 94305
United States
Change

Payment method
Visa, Exp: 10/2023
Change

Billing address
Same as shipping address
Change

Order summary

| Item(s) total | $124.98 |
| Shop discount | -$74.99 |
| Subtotal      | $49.99  |
| Shipping      | $4.52   |
| Sales tax     | $4.56   |
| Order total (1 item) | $59.07 |

Place your order to Stanford

By clicking Place your order to Stanford, you agree to Etsy's Terms of Use and Privacy Policy.

I'd like to round up and donate $0.93 to the Uplift Fund
Learn more

Choose a shipping method
USPS First-Class Mail $4.52

stafineofficial
Ships from United States

Valentines Day Gift for Him, Wood Watch, Personalized Watch, Engraved Watch, Wooden
• Last step of process
  – Step 3, “Review/Place Order”
  – “Place your order” button
• HIGH-VISIBILITY ACTION BUTTON (K5)
• No nasty surprises
  – Can see order
  – Total price is same as shopping cart
  – ORDER SUMMARY (F7)
• Easy to change shipping & billing
• All of these things are part of the design pattern – QUICK-FLOW CHECKOUT (F1)
Design = Solutions

• Design is about finding solutions
• Unfortunately, designers often reinvent
  • Hard to know *how* things were done before
  • *Why* things were done a certain way
  • *How* to reuse solutions
Design Patterns
Communicate common design problems & solutions
- First used in architecture [Alexander]
  - Ex. How to create a beer hall where people socialize?
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**
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, & rooms.”
  – Ex. Beer hall is part of a center for public life…
  – Ex. Beer hall needs spaces for groups to be alone…
ALCOVES
A Web of Design Patterns

(8) Mosaic of Subcultures

(31) Promenade
(90) Beer Hall
(95) Building Complex
(179) Alcoves
(181) The Fire
(33) Night Life
Web Design Patterns

- Also used in UI design
- 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…
Problem: Customers need a structured, organized way of finding the most important parts of your Web site.
NAVIGATION BAR (K2)
Solution diagram
- captures essence on how to solve problem

Link to home

First-level navigation

Second-level navigation
Pattern Groups

Our patterns organized by group

- Site genres
- Navigational framework
- Home page
- Content management
- Trust and credibility
- Basic ecommerce
- Advanced ecommerce
- Completing tasks
- Page layouts
- Search
- Page-level navigation
- Speed
- The mobile web
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
• What’s different?
  – No tab rows
  – No impulse buys
  – Only navigation on page takes you to next step

• What’s the same?
  – Logo, layout, color, fonts
PROCESS FUNNEL (H1)

Problem: What if users need extra help?
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
- 40GB² 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 / 45 pmts
No payment for 90 days
(Click or scroll for details)⁴

Customize It

E-Value Code 6V771-4100po1

Great Add-Ons For This System

<table>
<thead>
<tr>
<th>Add-On Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 Year On-Site Service</td>
<td>Add</td>
</tr>
<tr>
<td>• With on-site service, you don't have to leave your home or ship your computer to us should you have a problem.</td>
<td>$99</td>
</tr>
<tr>
<td>Epson Stylus Color 880 Ink Jet Printer</td>
<td>Add</td>
</tr>
<tr>
<td>• A creative and versatile printer that features super fast print</td>
<td>$149</td>
</tr>
</tbody>
</table>

More Details
CONTEXT - SENSITIVE HELP (H8)
FLOATING WINDOWS (H6)

**Recommendations**
Movie suggestions based on your rating.

**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
FLOATING WINDOWS (H6)
PROCESS FUNNEL (H1)
Solution Diagram
PROCESS FUNNEL (H1)

Related Patterns

(A1) E-Commerce

(K2) Navigation Bars

(K3) Tab Rows

(K4) Action Buttons

(A10) Web Apps

(H8) Context-Sensitive Help

(I2) Above the Fold

(K5) High-Viz Action Buttons

(K12) Preventing Errors

(A11) Intranets
Patterns Support Creativity

• Patterns come from successful examples
  – sites that are so successful that lots of users are familiar with their paradigms (e.g., Google, Amazon, Yahoo, Facebook…)
  – interaction techniques/metaphors that work well across many sites (e.g., shopping carts)

• Not too general & not too specific
  – you need to specialize to your needs

• Patterns let you focus on the hard, unique problems to your design situation
  – every real design will have many of these
Patterns Offer the Best of Principles, Guidelines & Templates

• Patterns help get details right, without over-constraining the solution
  – unlike principles, patterns not too general, so can see how to apply to your situation
  – unlike guidelines, patterns discuss tradeoffs, show good examples & tie to other patterns
  – unlike style guides, patterns not too specific, so can still be specialized
  – unlike page templates, patterns illustrate flows among different pages

• Patterns can serve as documentation for teams
• Often used along with or as part of design systems
Administrivia

- Project Questions?
- Project Fair Questions?
Grading on Last Assignment

Assignment #6 Medium-fi Prototype

A6 Prototype:

-: 4% ✓ --: 0% ✓ -: 16% ✓ : 36% ✓ +: 44% +: 0%

A6 Individual Presentation:

-: 4% ✓ --: 4% ✓ -: 28% ✓ : 44% ✓ +: 20% +: 0%

A6 Prototype Average: 91%
A6 Individual Presentation Average: 89%
TEAM BREAK

WORK ON FINAL DELIVERABLES

1. PROTOTYPE
2. POSTERS
3. PITCH SLIDES
4. DEMO VIDEO
5. REPORT
Patterns in Exploration Phase

• Exploration-level patterns to design overall structure
  - different choices will give radically different designs
• For example, how to organize information
  - HIERARCHICAL ORGANIZATION (B3)
  - TASK-BASED ORGANIZATION (B4)
  - ALPHABETICAL ORGANIZATION (B5)
  - …
Patterns in Exploration Phase

TASK-BASED ORGANIZATION (B4): Link the completion of one group of tasks to the beginning of the next related task(s)
Design Exploration Example

- John given the task of designing a new subsite for showing maps to businesses
  - listings found by typing in address
  - key feature: show nearby businesses
- John comes up with two design sketches
  - Design #1 uses ALPHABETICAL ORGANIZATION (B5) for list of all nearby businesses
  - Design #2 uses TASK-BASED ORGANIZATION (B4) for list of related nearby businesses
Design #1
ALPHABETICAL ORGANIZATION (B5)

Address:
1645 Solano Ave.
Berkeley, CA 94707

Nearby businesses:
- A.G. Ferrari's Foods
- Andronico's Market
- Barney's Hamburgers
- Berkeley Public Library
- Cactus Taqueria
- Celadon Fine Teas
- China Village Feet
- Copy Express
- Fumire Gourmet
Design #2
TASK-BASED ORGANIZATION (B4)
Evaluating Which Design to Choose

- Low-fidelity Usability Test
  - sketches the rest of the key screens on paper
  - brings in 5 participants to his office
  - asks each to carry out 3 tasks while colleague Sam “plays computer”
  - John observes how they perform

- Tasks
  - look up 1645 Solano Ave., Berkeley CA
  - look up 1700 California Ave, San Francisco CA & find Tadich Grill
  - look up 2307 Birch St., Palo Alto CA & find a Sushi restaurant nearby
Evaluating Which Design to Choose

- Results with Design #1 (Alphabetical)
  - Task 1: look up 1645 Solano Ave
    - no difficulties encountered – warm-up task!
  - Task 2: look up 1700 California & find Tadich Grill
    - several users didn’t notice that the list of nearby businesses was scrollable (due to paper affordances?)
    - those that scrolled took awhile to find in list of over 500
  - Task 3: look up 2307 Birch St. & find nearby Sushi restaurant
    - 3 users only picked restaurants that had “restaurant” in the name & thus couldn’t find “Daigo”
Evaluating Which Design to Choose

- Results with Design #2 (Task-based)
  - Task 1: look up 1645 Solano Ave
    - no difficulties encountered – warm-up task!
  - Task 2: look up 1700 California & find Tadich Grill
    - 1 user took awhile to figure out that Tadich Grill was a restaurant & to click on the “Restaurants” link
    - all others found it in 2 clicks (Restaurants->Tadich Grill)
  - Task 3: look up 2307 Birch St & find nearby Sushi restaurant
    - 3 found “Daigo” in 2 clicks
    - 2 others asked for a listing of Japanese restaurants
Evaluating Which Design to Choose

• General comments
  – 2 users said they often want to email/text maps to friends who they will be meeting (task-based)
  – 3 users wanted driving directions (task-based)

→ TASK-BASED ORGANIZATION (B4) worked better, but still had some minor problems
Design #2 – Revision 1
Adding More Related Tasks
Design #2 – Revision 2
Adding HIERARCHICAL ORGANIZATION (B3) & LOCATION BREADCRUMBS (K6)
Design #2 – Revision 3 Hi-Fi Prototype Adding SEARCH ACTION MODULE (J1)
Anything wrong here?

Please enter your details to reserve your item(s)

Title: Mr.

First name *: First name

Last name *: Last name

Email *: Email

Phone number *: Phone number

- Please do not send me details of products and offers from Currys.co.uk
- Please send me details of products and offers from third party organisations recommended by Currys.co.uk

Reserve items
Dark Patterns

- Trick questions
  - meaning of checkboxes alternates so 1st is “opt out” but 2nd is “opt in”
- Many other types of dark patterns
  - confirmshaming
  - bait & switch
  - hidden costs
  - friend spam…
- https://www.darkpatterns.org/
- Take Comm 130D/230D for more on this topic!
Exit Ticket

Summary

- Lots of issues involved in designing compelling, usable interfaces (web or mobile)
- Design patterns are one way of capturing good design knowledge
  - generative (help you create new designs)
  - consider trade-offs
  - concrete examples of successful uses
  - a networked language that works together
Further Reading

Books on Web Design

• *The Design of Sites*. Doug Van Duyne, James Landay, Jason Hong. Addison-Wesley. 2nd edition. 2007. [at this point out of date]

• *Information Architecture for the Web and Beyond*. Louis Rosenfeld, Peter Morville, Jorge Arango. O'Reilly. 4th edition. 2015

• *Don’t Make Me Think!, Revisited*. Steven Krug. Que. 3rd edition. 2014.
Further Reading
Websites on Web Design

• digital.gov, for building accessible websites & more
• User Interface Engineering, at http://www.uie.com
• Mark Hurst’s creativegood.com
• Jakob Nielsen’s www.nngroup.com

• What are your favorite web design blogs?
Next Time

• Lecture
  – guest lecture with Irene Au, Operating Partner at Khosla Ventures
  – lots of time for Team Work on Project

• Studio
  – A8 presentations & Team Work on Project

• Next week
  – Project Expo (160+ guests have RSVPd so far!)