User Interaction Models

No screens

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COMS 4170
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Goal 1

Build websites that suit the needs and abilities of users

1. Display information
The Design of Everyday Things: Revised and Expanded Edition
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Users interact with the system to accomplish a goal.
Goal 1

Build websites that suit the needs and abilities of users

1. Display information

2. Design interactions that allow users to accomplish a goal
How do users interact with this webpage?
Cart subtotal (1 item): $11.33
Add $13.67 of eligible items for FREE Shipping or sign up for Amazon Prime and get faster, FREE Two-Day Shipping.

Get a $50 Amazon.com Gift Card instantly upon approval for the Amazon Rewards Visa Card

Customers also bought these highly rated items

- Steve Krug
  - DON'T MAKE ME THINK
  - A Common Sense Approach to Web Usability

- 100 Things

- SET PHASERS ON STUN

- Steve Krug
  - ROCKET SURGERY MADE EASY
  - The Do-It-Yourself Guide to Finding and Fixing Usability Problems
Secure Payment Info

Name (as it appears on your card)

Card number (no dashes or spaces)

Expiration date

Security code (3 on back, Amex: 4 on front)

Continue

You can review this order before it's final.
Review Your Order
By placing your order, you agree to Amazon.com's privacy notice and conditions of use

Shipping Address:
Chris Customer
742 EVERGREEN TERRACE
SPRINGFIELD, WV 20205
United States
Phone: 1234567890

Billing Information:
Rewards Points ending in 1234 Change
Billing Address:
Same as shipping address

Gift Cards & Promotional Codes:

Estimated delivery: Sept. 26, 2011
Apple iPad Camera Connection Kit (MC531ZM/A)
$29.95
Prime
Quantity: 1
Sold by: Media-Mart
Add gift options

Choose your Prime shipping speed:
- FREE Standard Shipping (3-5 business days)
- FREE Two-Day Shipping —get it Monday, September 26
- $3.99/item One-Day Shipping —get it Saturday, September 24

Order Summary

<table>
<thead>
<tr>
<th>Items</th>
<th>$29.95</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shipping &amp; Handling</td>
<td>$0.00</td>
</tr>
<tr>
<td>Total Before Tax</td>
<td>$29.95</td>
</tr>
<tr>
<td>Estimated Tax To Be Collected</td>
<td>$0.00</td>
</tr>
<tr>
<td>Rewards Points</td>
<td>-$4.58</td>
</tr>
</tbody>
</table>

Order Total: $25.37

How are shipping costs calculated?
Amazon Prime Shipping has been applied to the eligible items in your order.
The designer must know the users goals and help them accomplishing it.
In the goal of buying a book, what were some of the intermediate goals?
Low-Level Interaction: Clicking Buttons
Which button is faster to click?
Which button is faster to click?
Which button is faster to click?
Fitts’s Law

Time to move your pointer to a target

\[ T = a + b \times \log \left( \frac{2D}{S} \right) \]
Which button is faster to click according to Fitts?

\[ a + b \times \log\left(\frac{2D}{S}\right) \]
Which button is faster to click according to Fitts?

\[ T = a + b \cdot \log \left( \frac{2D}{S} \right) \]
Which button is faster to click according to Fitts?

\[
\text{\textbf{Fitts' Law}}
\]

\[
T = a + b \cdot \log \left( \frac{2D}{S} \right)
\]

\(D\): Distance to the target
\(S\): Size of the target

\[a, b\]: Constants

A and B are two buttons with different sizes and distances.
Placing buttons on the edge of the screen gives them effectively infinite size
Fitts’s Law: What are $a$ and $b$?

Time to move your pointer to a target

$$= a + b \times \log \left( \frac{2D}{s} \right)$$
Time to move your pointer to a target

\[ \text{Time} = a + b \times \log \left( \frac{2D}{s} \right) \]
Low-Level Interaction: Keystrokes
What types of low-level actions are needed?
Tunneling Menus
Cascading Tunnel Menus
Cascading Tunnel Menus
Every motor action takes time and effort, and is a potential source of error.
What would be better?
Low-level Interactions take time and effort. Minimize them because you do them a lot.
High-Level Interaction Loop
Establish a goal: Buy a book.
What are the cognitive roles of these two screen? (in relation to the goal)

To accomplish a goal, users must **execute** an operation and **evaluate** the result.
The Seven Stages of Action

1. Form the goal

2. Plan the action
3. Specify the action sequence
4. Perform the action sequence

5. Perceive the state of the world
6. Interpret the perception
7. Compare the outcome with the goal
Establish a goal: Buy a book.
Goal Execution Step 1: Plan the action
Goal Execution Step 2: Specify the action sequence
Goal Execution Step 3: Perform the action sequence
Goal Evaluation Step 1: Perceive the State of the world
Goal Evaluation Step 2: Interpret the perception
Goal Evaluation Step 3: Compare the outcome with the goal
What does The 7 Stages of Action remind you of?
What’s the users goal?
Execution

Plan the action
Specify the action sequence
Perform the action sequence

Knicks vs. Celtics tonight!
Evaluation

Perceive the state of the world
Interpret the perception
Compare the outcome with the goal
What’s the users goal?
Execution

Plan the action
Specify the action sequence
Perform the action sequence
Evaluation

Perceive the state of the world
Interpret the perception
Compare the outcome with the goal
What’s the users goal?
**Execution**

Plan the action  
Specify the action sequence  
Perform the action sequence
Evaluation

Perceive the state of the world
Interpret the perception
Compare the outcome with the goal
Summary
Users interact with the system to accomplish a goal.

Low-level goals:  
Clicking, Typing

Intermediate goals:  
Filling out forms

High-level goals:  
Buying a book
Know the users' goals and design an interaction that facilitates all 7 stages of action.

**Execution**
- Plan the action
- Specify the action sequence
- Perform the action sequence

**Evaluation**
- Perceive the state of the world
- Interpret the perception
- Compare the outcome with the