Events and Feedback

No screens

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Goal 1

Build websites that suit the needs and abilities of users

To accomplish a goal, users must **execute** an operation and **evaluate** the result.

To help users **evaluate the result**, designers must provide **feedback**.
What goes wrong when you provide **no feedback**?

**Thought:** Users are **confused** about whether their goal has been achieved.

**Action:** They continue to **expend energy** to **accomplish the goal**.
Thought: Users know something has happened, but they don’t know what.
Action: They continue to expend energy to figure out what to do.
What goes wrong when you provide too little feedback?

Thought: Users know something has happened, but they don’t know what.
Action: They continue to expend energy to figure out if it’s important.
What goes wrong when you provide too much feedback?

I am now booking your flight
I am now using Google flight search
I am now typing JFK into the departure location
I am now typing LAX into the arrival location
I am now selecting February 26, 2018 from the departure date box
I am now confirming the date I just selected from the Departure date box

Thought: Users get annoyed that some of the information is useless
Action: They ignore all the feedback.
What goes wrong when feedback too late?

By the way, I booked that flight you asked for yesterday!

Thought: Users assume that no feedback means no action
Action: They find another way to reach their goal
What goes wrong when feedback is not continuous?

Thought: Users are unsure whether the system is doing it or not.
Action: Users have to poll the system for feedback frequently.
What goes wrong when feedback acknowledges the action but **does not communicate the new state**?

**Thought:** Users will think they are still in the old state.

**Action:** Users will continue to perform actions from the previous state.
Design goals for feedback:

Communicate full and continuous information about the results of an action and the current state of the system to help people achieve their goal.
Ways of perceiving feedback
How do we perceive this feedback?

BEEP

I’m sorry, Dave. I’m afraid I can’t do that.
Examples of sound feedback?
How do we perceive this feedback?

Information incorrect
Examples of visual feedback (non-digital)?
How do we perceive this feedback?
Examples of smell feedback?
How do we perceive this feedback?
Examples of haptic (touch) feedback?
The human nervous system is designed to perceive feedback in many forms.

- Sight
- Sound
- Smell
- Touch
Physical Input Events and Feedback
Every time the user executes an action, the interface should provide feedback

- Low-level physical actions, like pressing a key
- Low-level virtual actions, like clicking a button
- Mid-level actions, like filling out a form
- High-level actions, like buying a book
Low-level user actions are represented in the system as **events**.

<table>
<thead>
<tr>
<th>Action</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>Keypress</td>
<td>Keypress event</td>
</tr>
<tr>
<td>Mousemove</td>
<td>Mousemove event</td>
</tr>
<tr>
<td>Mousepress</td>
<td>Mousepress event</td>
</tr>
<tr>
<td>Pinch gesture</td>
<td>Pinch gesture event</td>
</tr>
</tbody>
</table>
Low-level physical actions

Types of hard keyboard *keypress* feedback?

- **Haptic** (can feel the key), **sound**, and **visual** (screen action)
Low-level physical actions

Types of soft keyboard **keypress feedback**?

- **haptic** (can feel the key), **sound** (simulated), and **visual** (screen action)
Low-level physical actions

Types of hard keyboard *keydown* feedback?

- **Haptic** (can feel the spring pushing back)
- **Sound** (click)
- **Visual** (can see it pushing down a tiny bit)
Types of hard keyboard *keyup* feedback?

- **Haptic** (can feel the spring pushing up),
- **Sound** (click), and
- **Visual** (can see it move a tiny bit)
Types of trackpad Mousemove feedback?

haptic (can feel the friction), sound (no), and visual (cursor movies)
Types of trackpad *Mousedown* feedback?

- **Haptic** (spring resistance)
- **Sound** (simulated click)
- **Visual** (cursor movies)
Low-level Virtual Feedback
Every time the user executes an action, the interface should provide feedback.

Low-level physical actions, like pressing a key

Low-level virtual actions, like clicking a button

Mid-level actions, like filling out a form

High-level actions, like buying a book
What is the **first** event we respond to?

Normal state
What is the **second** event we respond to?

Normal state

Mouseover feedback
Subgoal: Press the compose button

What is the **third event** we respond to?

- **Normal state**
  - Button: COMPOSE

- **Mouseover feedback**
  - Button: COMPOSE

- **Mousedown feedback**
  - Button: COMPOSE
What is the final event we respond to?

Subgoal: Press the compose button
Implementing Low-level Feedback
How do you implement visual feedback?

Normal state

Mousedown

1. Register an event handler on the object
2. Change the style
Can you change style like this?

Normal state

Mousedown

It will work, but it’s ugly.
This is the better way to change style. Why?

Normal state

Mousedown

Classes abstract out designs and are easy to add / remove.
Mid-and High-level Action Feedback
Every time the user executes an action, the interface should provide feedback

Low-level physical actions, like pressing a key

Low-level virtual actions, like clicking a button

Mid-level actions, like filling out a form

High-level actions, like buying a book
Feedback:

Communicate full and continuous information about the results of an action and the current state of the system to help people achieve their goal.
What is the new state?
What is the new state?
What is the new state?
Every time the user executes an action, the interface should provide feedback

Low-level physical actions, like pressing a key
Low-level virtual actions, like clicking a button
Mid-level actions, like filling out a form
High-level actions, like buying a book
Final Thought on Feedback
Following instructions sux. Why?

Unexpected things happen. Instructions are rigid. Feedback allows people to make mistakes and adapt.
Summary
Feedback helps users evaluate the result of an action.
The human nervous system is designed to perceive feedback in many forms.
Design feedback that:
Communicates full and continuous information about the results of an action and the current state of the system to help people achieve their goal.
Every time the user executes an action, the interface should provide feedback

Low-level physical actions, like pressing a key

Low-level virtual actions, like clicking a button

Mid-level actions, like filling out a form

High-level actions, like buying a book
Low-level virtual actions are represented in the system as events.

**Action**
- Keypress event
- Mousemove event
- Mousepress event
- Pinch gesture event

**Event**
Even low-level events have full and continuous feedback about actions and states.

Normal state | Mouseover | Mousedown | Mouseup | Normal state
---|---|---|---|---
COMPOSE | COMPOSE | COMPOSE | COMPOSE | COMPOSE

Click!
Depress!