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Make it Multitouch
(3) Design Considerations

Paul Lacey & Jim Spadaccini
ideum (www.ideum.com)

Make it Multitouch

(3) Design Considerations

OPENING QUESTIONS

What the differences between multitouch interfaces and traditional touch interfaces?

Which gestures are truly intuitive? How do we incorporate gestures into design?

How does the "form factor;" tables, walls, projection other "non-terminal" configurations come into play?

What are the considerations when it comes to multiuser applications?

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OUTLINE

We will look at the following aspects of multitouch and multiuser design.

1) Interaction and Feedback

2) User Interface Elements, Objects and Environments

3) Visitor Experience

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I) INTERACTION & FEEDBACK

Interaction

How do users interact with interface elements and content on a multitouch screen or surface? And how are these interactions different than those we observe in standard mouse-driven or touch-screen applications?

Touch. Just like standard touch screen development, touch areas are made larger to accommodate a finger tip than those for mouse or trackball driven kiosks and exhibits.

Drag. With either one finger or multiple points, this type of interaction is similar to what we see with a mouse and pointer.

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I) INTERACTION & FEEDBACK

Interaction

Pinch & Expand. This is an intuitive way to increase or decrease the size of objects in multitouch environments.

Rotate. As a visitor drags or pinches and expands an object it becomes apparent whether it can be rotated or not.

Double Tap. Not as an intuitive as some of the other types interaction. Although, once observed, most visitors found it simple and helpful.

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I) INTERACTION & FEEDBACK

Interaction

Draw. Some multitouch applications allow visitors to draw shapes, such the *Gravitor* application. It is also possible to draw “commands.” For example, you could draw an “x” on an object to close it.



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I) INTERACTION & FEEDBACK

Feedback

**Tracers/Trails/
Auras.** As each finger point is detected as a “blob” by the “touch core” software, a small graphic or animation follows the point across the surface or screen.



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I) INTERACTION & FEEDBACK

Feedback

Highlights and Ghosting. As visitors touch an object, it can be made to highlight or animate in some way. Ghosting can be helpful for dragging as you can still see where the item originated.

Connections. Lines (or other indicators) that connect objects can be helpful in way-finding particularly in multiuser environments.

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2) USER INTERFACE ELEMENTS, OBJECTS & ENVIRONMENTS

Objects and Environments (and physical objects)

Objects. Resizing and rotating objects is a common feature in many multitouch applications. This type of interaction is very intuitive and we've observed museum visitors spending a lot of time viewing images in this way.



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2) USER INTERFACE ELEMENTS, OBJECTS & ENVIRONMENTS

Objects and Environments

Environments.

Environments can provide context for objects and/or they can change the properties of the objects that appear within them.



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2) USER INTERFACE ELEMENTS, OBJECTS & ENVIRONMENTS

User Interface Elements

Universal, Omni-Directional Navigation.

Since multiuser, multitouch applications (on tables) can be accessed from any side, there is a need, in some applications, for universal navigation elements.



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2) USER INTERFACE ELEMENTS, OBJECTS & ENVIRONMENTS

User Interface Elements

Symmetric Navigation. Navigational items are repeated in two places on a table. For example, duplicate sets of tabs or buttons can appear on opposite sides. While the information is repeated, it is properly oriented for a visitor approaching either side. NUI's Snowflake uses symmetric navigation, placed in opposite corners of screen.

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2) USER INTERFACE ELEMENTS, OBJECTS & ENVIRONMENTS

User Interface Elements

Flip (or Flick) elements. Both the Apple iPhone and the HP TouchSmart have applications that allow visitors to “flip or flick” through images.

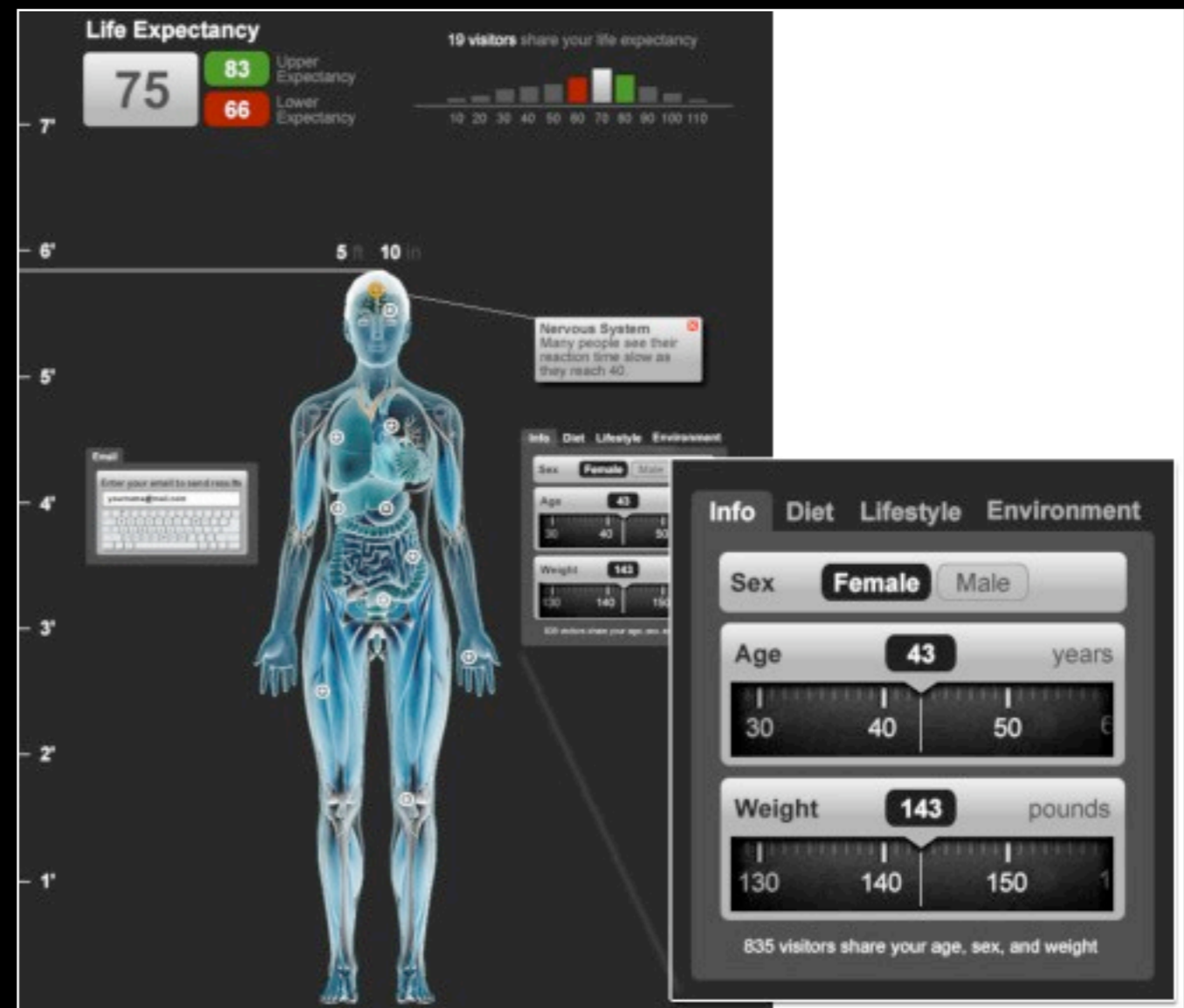
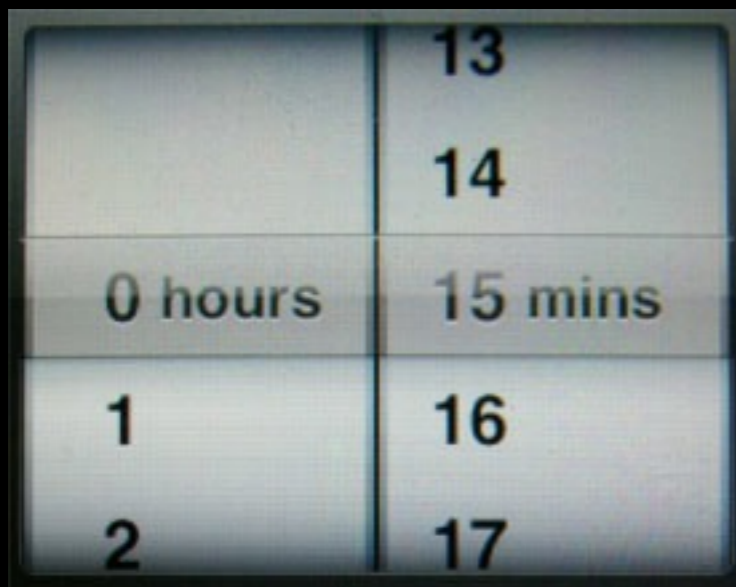


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2) USER INTERFACE ELEMENTS, OBJECTS & ENVIRONMENTS

User Interface Elements

Dials. “Slot machine-type” dials appear in some Apple’s iPhone applications.



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2) USER INTERFACE ELEMENTS, OBJECTS & ENVIRONMENTS

User Interface Elements

Drawers (and docks). Pull-down menus don't work well for touch, or multitouch applications. Although, a variation requiring two touches can be used: one touch opens the menu (or drawer) and the second touch makes a selection.

Buttons /Icons/ Thumbnails. These conventional navigational elements appear in most traditional applications. Of course, these graphic elements need to be large enough to be pressed by a finger tip, as they would in a touch screen application.

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2) USER INTERFACE ELEMENTS, OBJECTS & ENVIRONMENTS

Fiducials and physical objects

(defined, WIKIPEDIA) In imaging technology, a fiduciary marker or fiducial is an object used in the field of view of an imaging system which appears in the image produced, for use as a point of reference or a measure.

<http://www.youtube.com/watch?v=B5VDrj2EK44>

<http://www.youtube.com/watch?v=IusJKU6KEi0>

<http://www.youtube.com/watch?v=prDBRCKF66o>

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2) USER INTERFACE ELEMENTS, OBJECTS & ENVIRONMENTS

Fiducials and physical objects



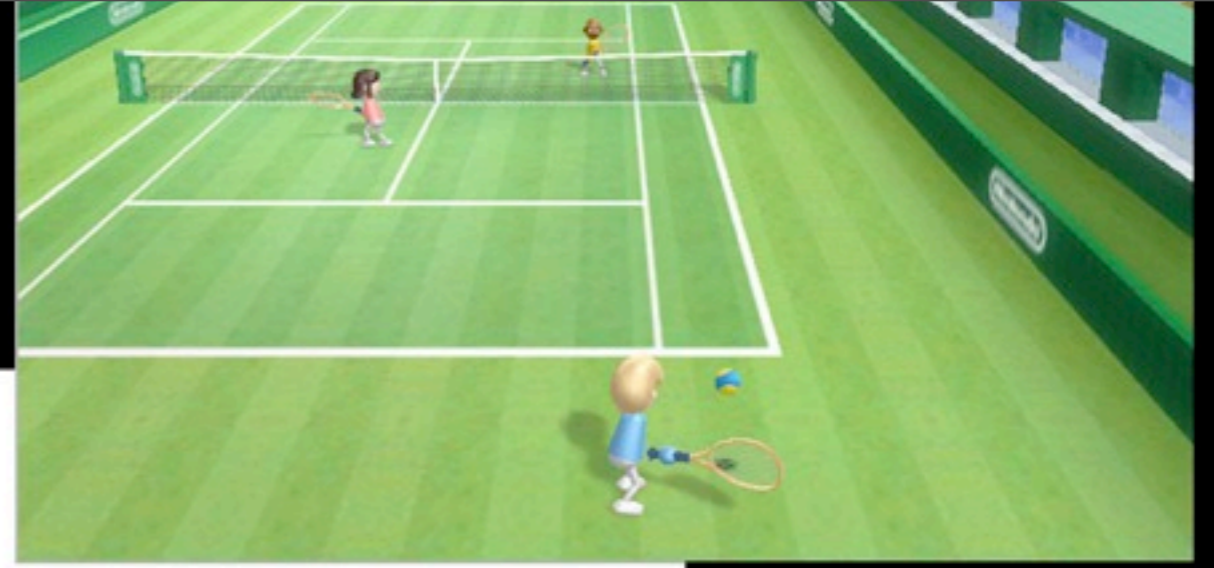
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3) The Visitor Experience

Again...with one important addition

- More intuitive and compelling interfaces for computer-based interactive exhibits
- Computer-based exhibits with a greater degree physical interaction
- Exhibits that encourage social interaction and collaboration
- Exhibits that can "compete" with the new generation of computer-based devices found at home, school, and work
- Visitor expectations are changing based on their experience with devices like the iPhone
- Computer-based exhibits that are actually "fun" to use



Talks Don Norman: The three ways that good design makes you happy

Filmed Feb 2003; Posted Mar 2009



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About this talk

In this talk from 2003, design critic Don Norman turns his incisive eye toward beauty, fun, pleasure and emotion, as he looks at design that makes people happy. He names the three emotional cues that a well-designed product must hit to succeed.

About Don Norman

Don Norman studies how real people interact with design, exploring the gulf between what a designer intends and what a regular person actually wants. His work has resulted in some classic...

[Full bio and more links](#)

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http://www.ted.com/index.php/talks/don_norman_on_design_and_emotion.html

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FINAL THOUGHTS ON DESIGN FOR MULTITOUCH

- In many multitouch designs, the physical quality of objects is mimicked. This allows for more intuitive interaction. (This also creates expectations on the part of the visitor that objects will behave in a certain way.)
- Many traditional computer-based designs require fixed navigation for usability. In a multitouch environment, fixed navigation may not be possible or preferable.
- Since interaction is based (in part) on intuitive gestures, exhibits can have more dynamic and surprising qualities. (The omnidirectional nature of tables also plays into this.)
- Finding a balance between shared and personal space in multiuser applications can be extremely challenging. (Competition & Cooperation)

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FINAL THOUGHTS ON DESIGN FOR MULTITOUCH

- Multitouch is still a "novelty" and as such, even simple interaction is interesting to many visitors.
- Multitouch exhibits can encourage communication between visitors. We've observed conversations that are first about the interaction itself, but later visitors move on to discuss the qualities of the content.
- Additional connected screens, multitouch devices, and physical objects (fiducial markers), will continue to push these design considerations even further in the future.

Jim Spadaccini & Paul Lacey
ideum (www.ideum.com)