goto; conference aarhus

MULTI-TOUCH UI:
A TOUCHY SUBJECT

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INTERNATIONAL SOFTWARE DEVELOPMENT CONFERENCE

gotocon.com

Background

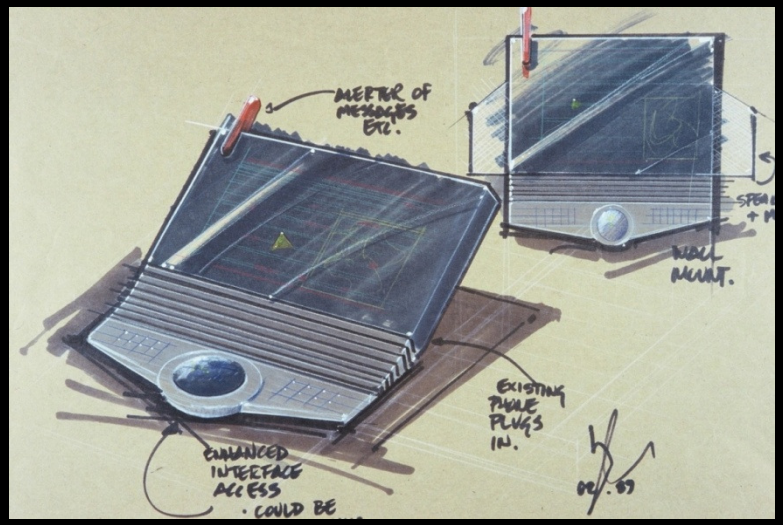
Landscape

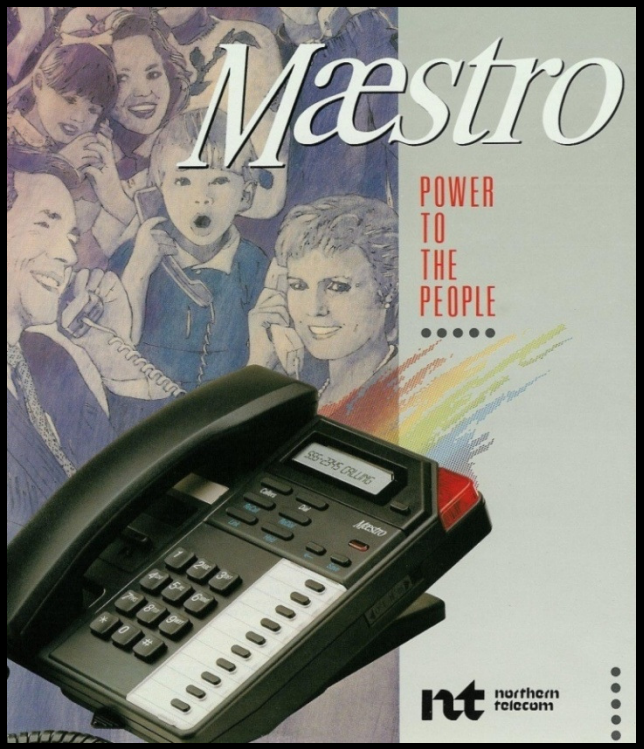
Challenges

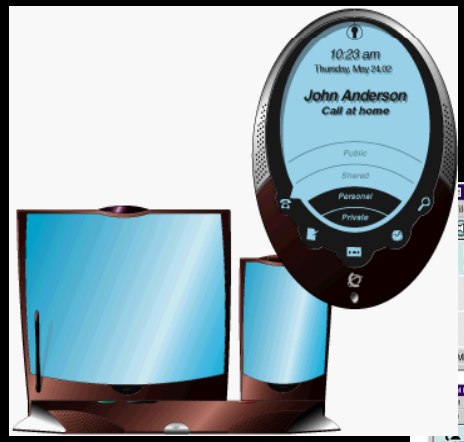
UX methods

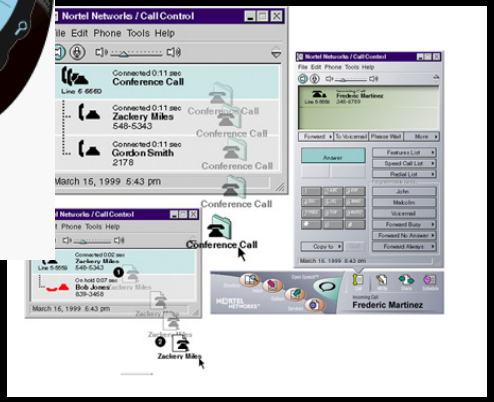
From - To

Discussion









Academic and industry background

Multi-touch *“multiple points of contact” ** *enables:*

Multi-touch gestures

*“the user is not required [to] point with some manually held device”**

Multiple tools to be detected

Multiple users to interact simultaneously

** Buxton et al., 1985*

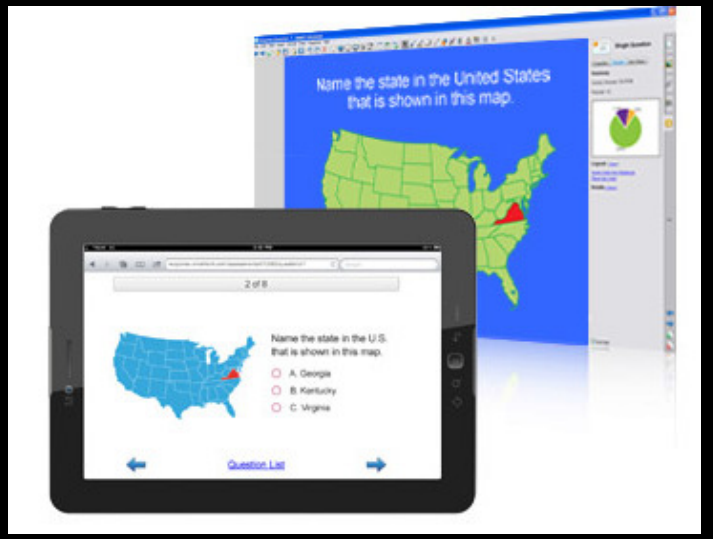
Hardware

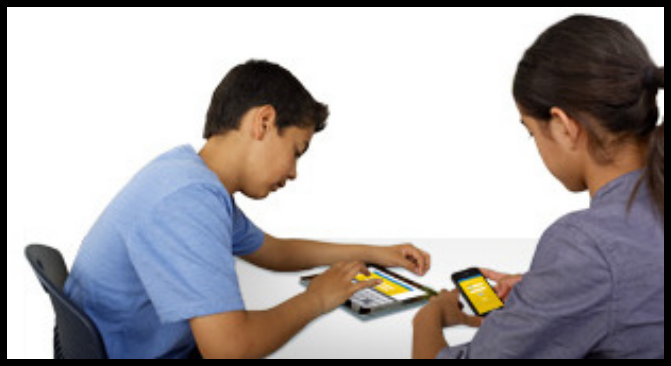
+

Software

=

User Experience



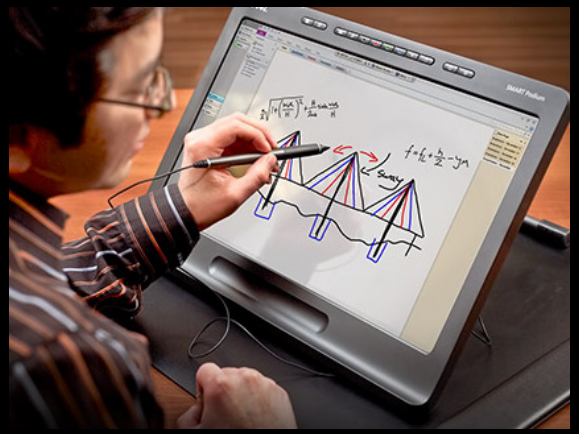


Rich learning environments demand consistency

SMART

Freestorm™

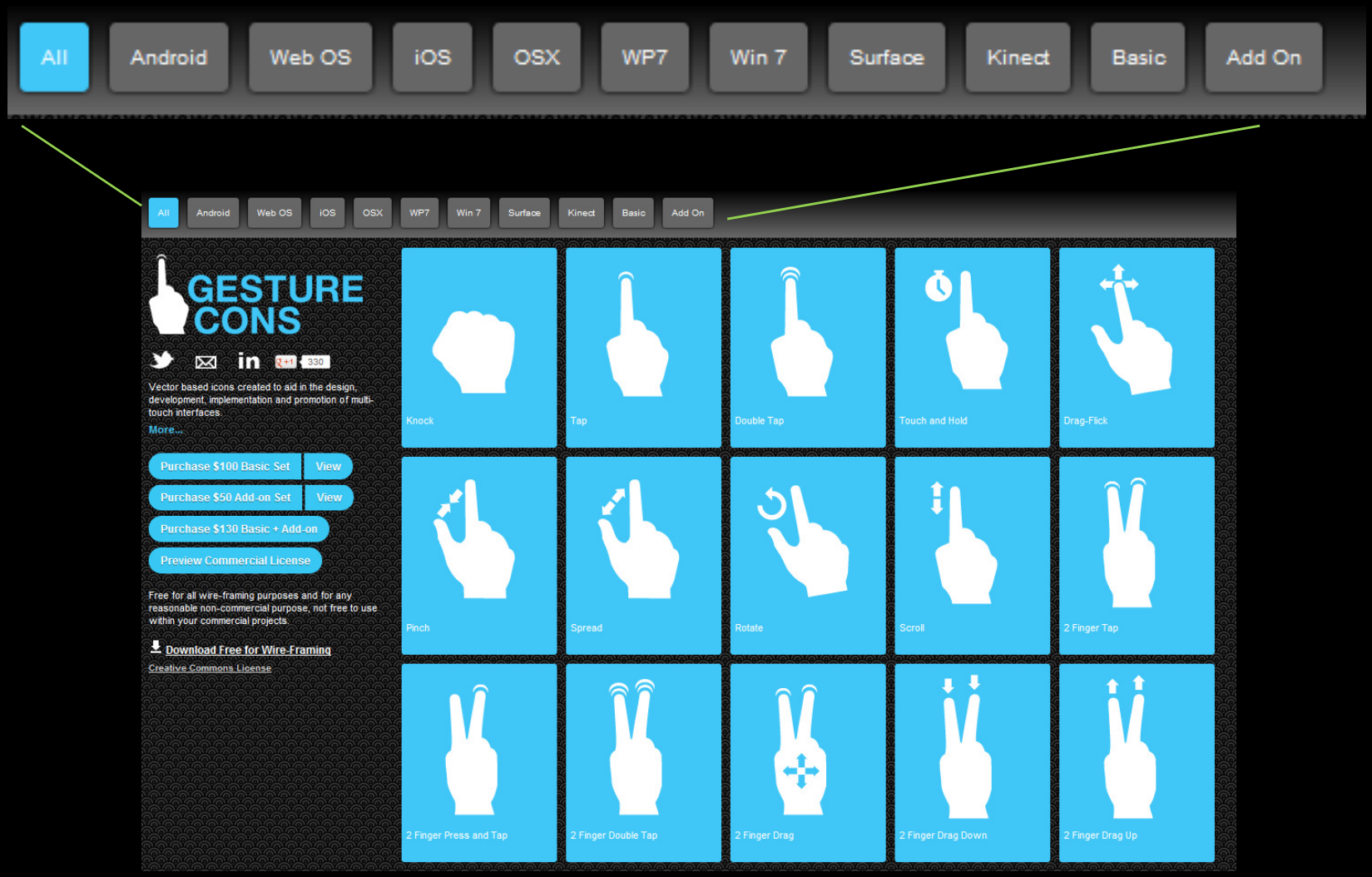
visual collaboration solutions



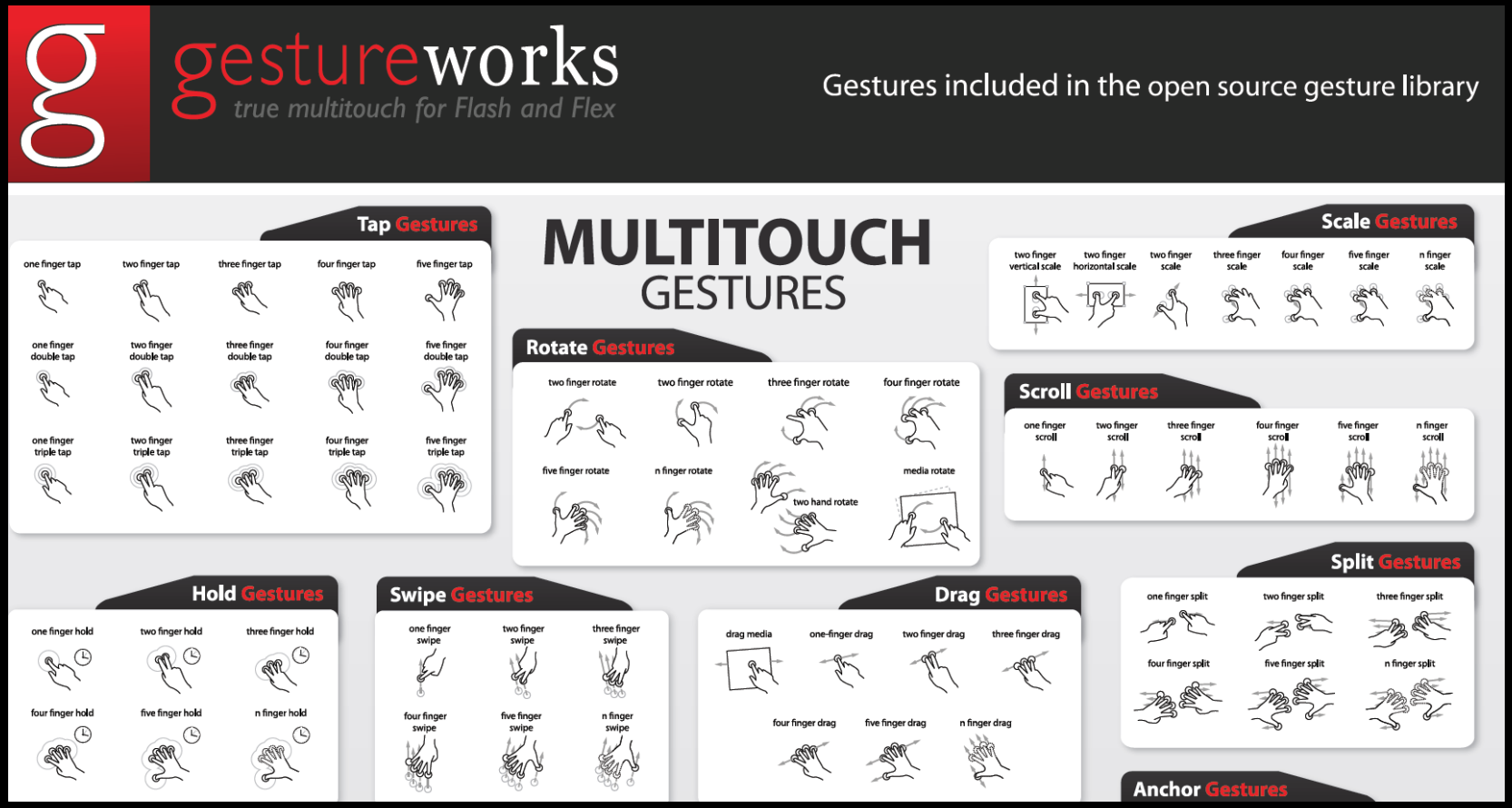
Challenges

Context and scale variance

Multi-touch technology and OS variance



http://gesturecons.com/



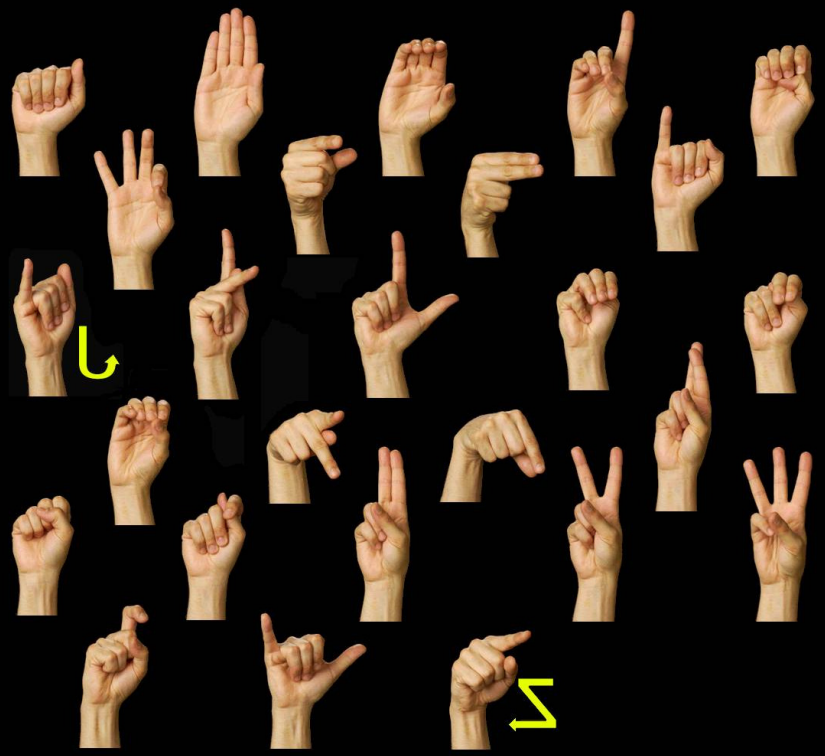
System centric

Feature	SMART Interactables Gesture	SMART Interactables Like	SMART Interactables HP 10.8	SMART Interactables HP 11	SMART Interactables HP 3.8	SMART Interactables Table	Windows 7 Gesture	Windows 7 Interaction Notes	Windows 7 Gesture	Windows 8 Interaction Notes	Apple iOS 5 Gesture	Apple iOS 5 Interaction Notes	Mac OS X [Trackpad] Gesture	Mac OS X [Trackpad] Interaction Notes	Mac OS X Lion [Trackpad] Gesture	Mac OS X Lion [Trackpad] Interaction Notes
Tool	Tap [1 finger]	Works best unless all inputs	Works best unless all inputs	Works best unless all inputs	Works best unless all inputs	Works best unless all inputs	Tap [1 or 2 fingers]	1. Works all 2, 4, and 8 fingers on building section list not works. 2. Works on all 1 and 2 fingers on PPT	Tap [1 finger]	works all 1 finger on a Slice 10.	Tap [1 finger]	8 quick-and-time notes will a finger, also clicking the mouse.	Tap [1 finger]	Works all 3 fingers 1 the fingers on one enough	Tap [1 or] [1 finger]	Tap the tool [1 finger]
	Mouse cursor [1 finger]	Tracel selects at clicks and then long a mouse to make clicks is to control	Tracel selects at clicks and then long a mouse to make clicks is to control	Tracel selects at clicks and then long a mouse to make clicks is to control	Tracel selects at clicks and then long a mouse to make clicks is to control	Tracel selects at clicks and then long a mouse to make clicks is to control	Mouse cursor [1 finger]	Tracel selects at clicks and then long a mouse to make clicks is to control	Tap and then let on tool start, then tap the end of the clicks [2 fingers]	In PPT, tap to send on start, then let 1 and tap also clicks to all to the section.	Press and let on the tool start, then tap the end of the clicks [2 fingers]	In Counts, pass and let on on start, and then tap also clicks to all to the section.	Mouse cursor [1 finger]	Tracel selects at clicks and then long a mouse to make clicks is to control	Mouse cursor [1 finger]	Tracel selects at clicks and then long a mouse to make clicks is to control
1st Hand	8/8	8/8	8/8	8/8	8/8	8/8	8/8	8/8	Tap off to split [1 finger]	In the Slice pass of PPT, make a start all to split ways mouse and also to all to the section. Tap upon mouse a model also to found 1.	8/8	8/8	8/8	8/8	8/8	8/8
Two Hand	Drag [1 finger]	More legacy use makes allow long control	More legacy use makes allow long control	More legacy use makes allow long control	More legacy use makes allow long control	Works all more Inputs [adds to all?]	Drag [1 or 2 fingers]	More legacy use makes allow long control	Drag [1 finger]	PPT's allow on start a model, long start all 1 tool to more 1.	Drag [1 finger]	Press Input on the mouse and more 1 to the hand finger allow long 1 from the mouse.	Press and Drag [2 fingers]	Use Input pass and the allow Input long. Two Input at main for 1 the Input on one mouse long the hand that Input to start and use Input one.	Three-finger Drag [3 fingers]	Pass 1 to Input long a motion. Use also then Input to long 1 mouse the mouse.
Scroll	Scale by [2 finger]	Right hand makes two all Input	Right hand makes two all Input	Right hand makes two all Input	Right hand makes two all Input	Right hand makes two all Input	Scale by [2 finger]	Works all 2+ finger allow Input on one, makes not open all tool more	Scale by [1 finger]	1. works all 2+ finger allow Input on one. 2. Use of finger at for two select + Use 8. Makes Open makes two 1 to 1 for opens to not later.	8/8		Scale by [1 finger]	Works all 3 Input 1 the Input on one enough	Scale by [1 finger]	Scale by the finger all use Input to finger at.
Rotate	Press and list [1 finger]	Control menu opens also long for 1 mouse	Control menu opens also long for 1 mouse	Control menu opens also long for 1 mouse	Control menu opens also long for 8 mouse	8/8	Press and list [1 or 2 fingers]	1. Press and not for 1 to for any mention to empty, then mouse, not 1 to control menu opens. 2. Scale to Input 1 to 2+ finger.	Press and list [1 finger]	Press not list and a transparent opens to open rotate hand. ■ PPT on 1 tool any mention to empty ■ Mind and then mouse 1 to hand, 1 to control menu opens.	Press and list [1 finger]	To Input on mention to list, empty control rotate 1 to Input, 1 to pinch rotate then on 1 to ■ opens not 1 to ■ opens not 1 to Input.	Two Input at [2 fingers]	Two Input 1 to 1 to open 1 1 to 1 to 1 to hand 1 not hand 1 to 1 to 1 to rotate 1 of any mouse 1 to 1 to pinch	Rotation set [2 fingers]	Try 1 to hand 1 all 1 to Input 1 to mouse 1 to hand mouse.
	[2 fingers]	Control menu opens on 1 to mouse 1 1 to 1 mouse 1 Input	Control menu opens on 1 to mouse 1 mouse 1 1 to 1 to 1 to

	SMART						Windows 7	
		Implementation Notes						
Feature	Gesture	Lib	NB 10.8	NB 11	MP 3.0	SMART Table	Gesture	Interaction Notes
Select	Tap (1 touch)	Briefly touch surface with fingertip	Briefly touch surface with fingertip	Briefly touch surface with fingertip	Briefly touch surface with fingertip	Briefly touch surface with fingertip	Tap (1 or 2 touches)	1. Works with 3, 4, and 5 touches on desktop selection but not reliable. 2. Works only with 1 and 2 touches in PPT
	Marquee select (1 touch)	Touch outside of objects and then drag a marquee to include objects to be selected	Touch outside of objects and then drag a marquee to include objects to be selected	Touch outside of objects and then drag a marquee to include objects to be selected	Touch outside of objects and then drag a marquee to include objects to be selected	Touch outside of objects and then drag a marquee to include objects to be selected	Marquee select (1 touch)	Touch outside of objects and then drag a marquee to include objects to be selected
Multi Select	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Move object	Drag (1 touch`	Move fingertip over surface without losing contact	Move fingertip over surface without losing contact	Move fingertip over surface without losing contact	Move fingertip over surface without losing contact	Works with many touches (what's the limit?)	Drag (1 or 2 touches)	Move fingertip over surface without losing contact
Double click	Double tap (1 touch)	Rapidly touch surface twice with fingertip	Rapidly touch surface twice with fingertip	Rapidly touch surface twice with fingertip	Rapidly touch surface twice with fingertip	Rapidly touch surface twice with fingertip	Double tap (1 touch)	Works with 2+ touches when fingers are close, sometimes could open right-click menu
	Press and hold (1 touch)	Context menu appears after holding for 1 second	Context menu appears after holding for 1 second	Context menu appears after holding for 1 second	Context menu appears after holding for # seconds	N/A	Press and hold (1 or 2 touches	1. Press and wait for the blue ring animation to complete, then release, and the context menu appears. 2. Can't be triggered by 3+ touches.

User intent

Gestures are a language.



They require learning.

Natural User Interface

That sounds nice.

Deflection point: CLI>GUI / WIMP> NUI

From

the “missionary position” of HCI thinking:
one user and one computer interacting face-to-face.*

To

rich interface concepts and patterns
enabling engaging collaboration, sharing and connection

*paraphrase Rob Kling 87 CHI keynote address comment

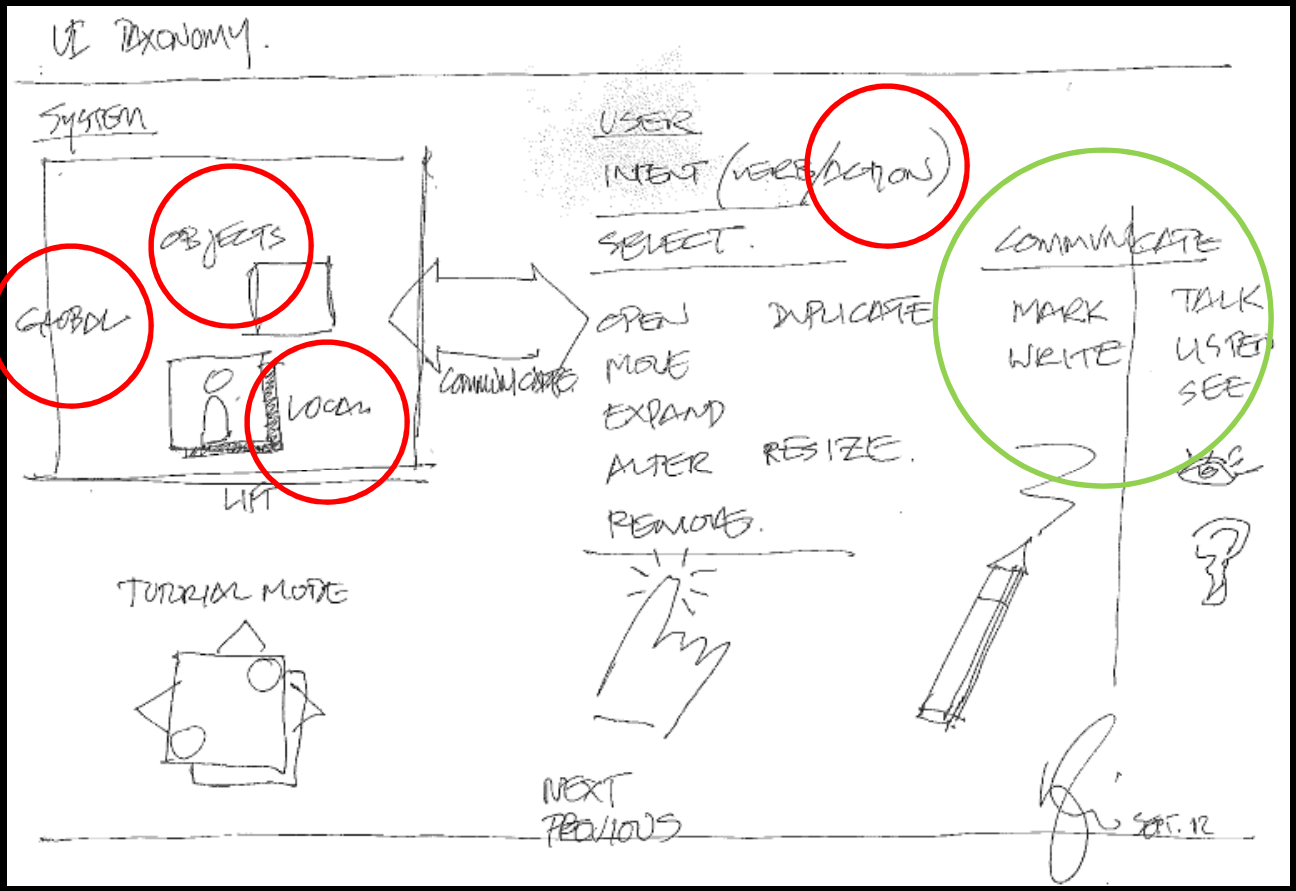
UX methods *Constantine*

user intention ⟷ system responsibility

Stage of interaction	Affordance
Out of range	?
Touch	show object selected
Move	system response
Reset	steady state

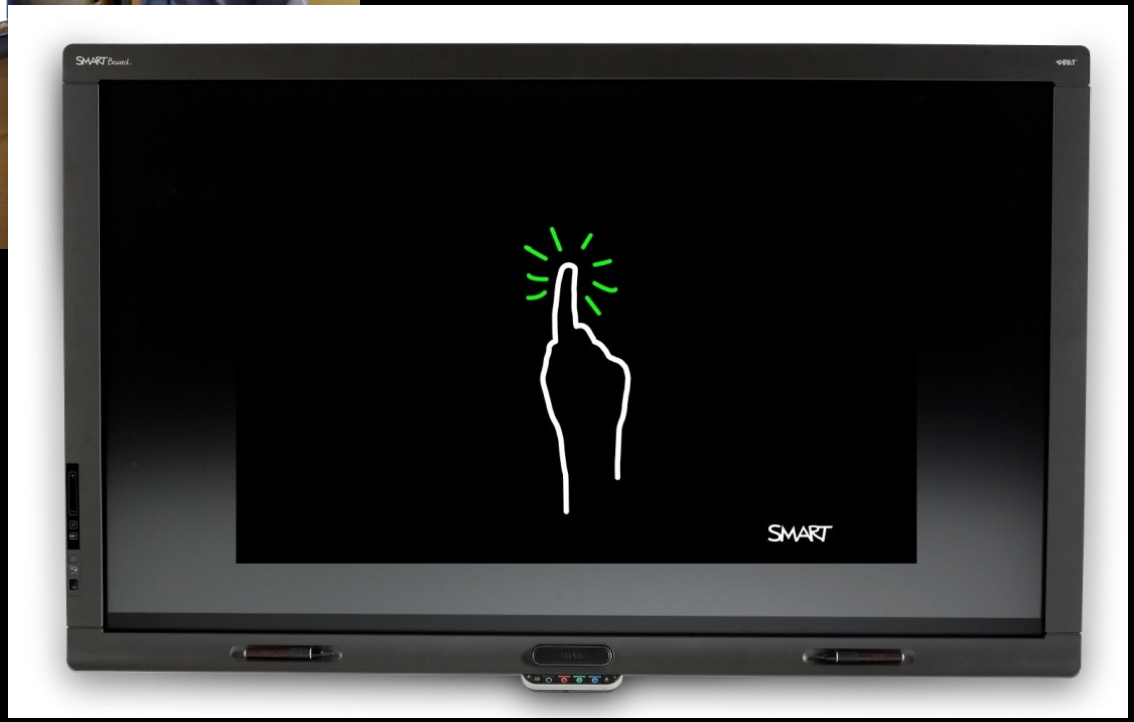
*Adapted from Daniel Wigdor talk at SMART 2010

Grammar

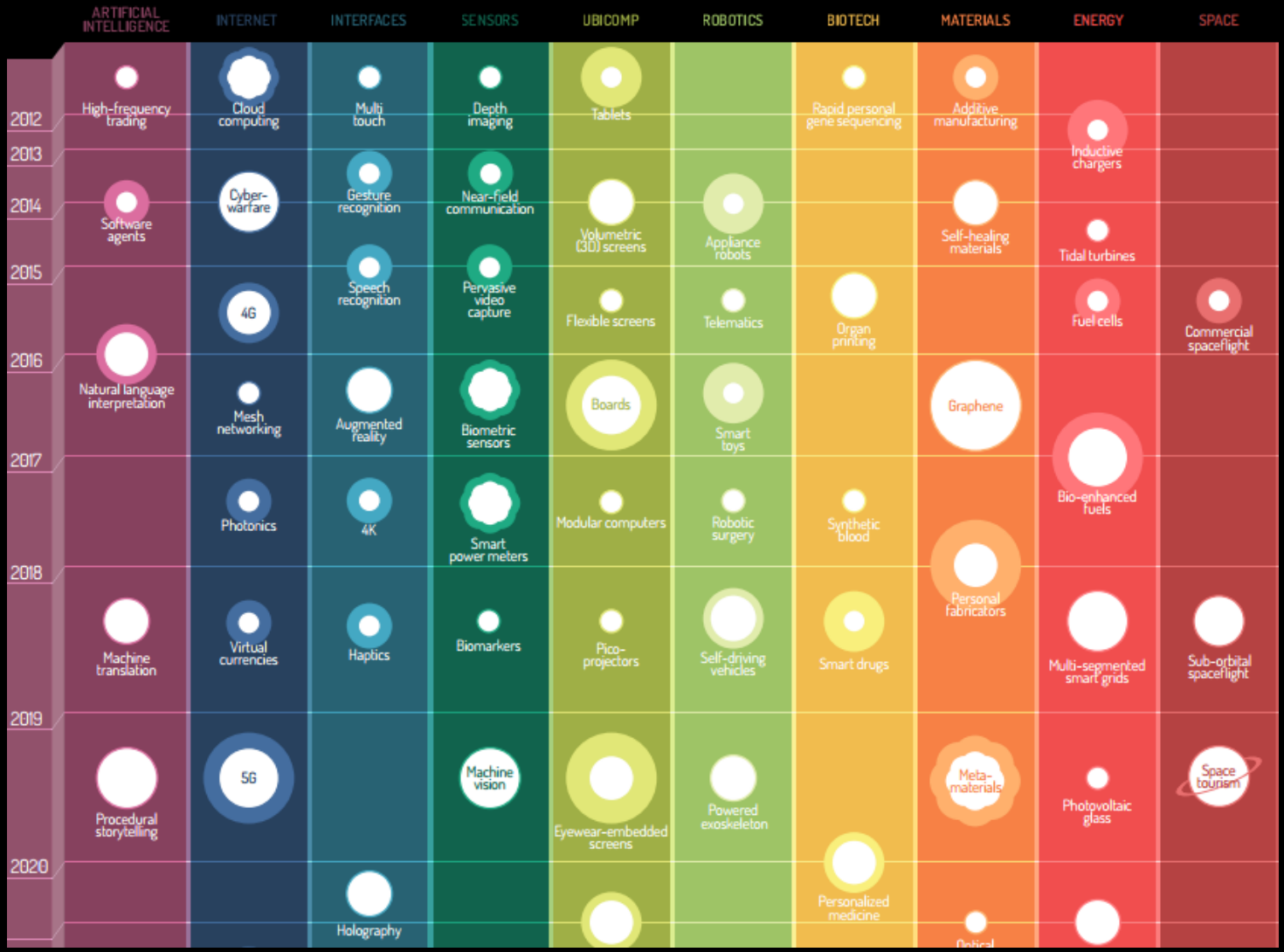


And other secret approaches…

Informance *Informative Performance*



What's next…



Research and visualization by Michell Zappa – Envisioning Technology

UX evolution

From

Clickable to Touchable

Self Evident to Discoverable, Learnable and Memorable

Responsive to Sensing

Here to Everywhere

Usability to Personality

From

Hyped to Useful

Cool to Valued

Ad Hoc to Standards

Possible ?

Thank-you

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