

MAS.834 Tangible Interfaces

Digital Augmentation of Existing Familiar Objects

Principle of Tangible Interface Design



Bottles 99



I/O Brush 04

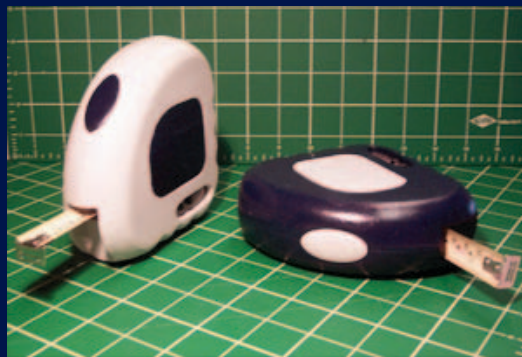
Augment

Digital Augmentation of Existing Familiar Objects

Principle of Tangible Interface Design



Bottles 99



HandSCAPE 00

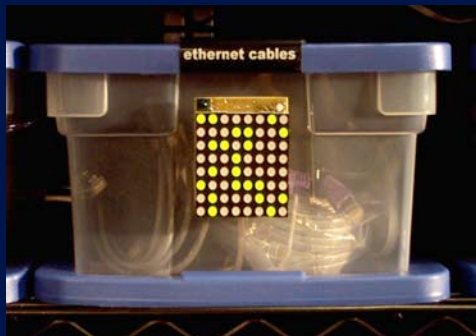


I/O Brush 04

Count

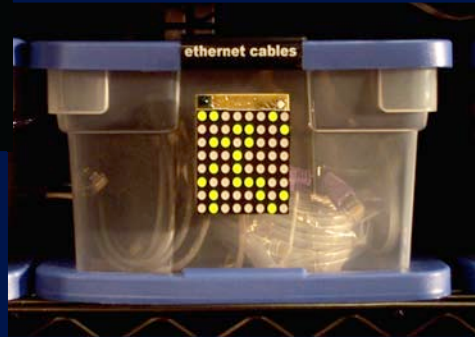
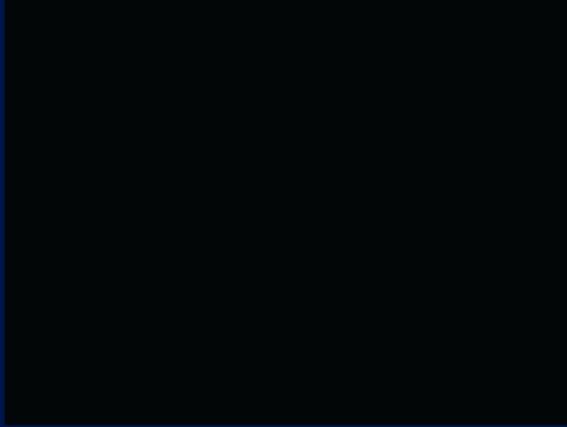
TouchCounters: Interactive Electronic Labels for Physical Containers (Yarin and Ishii 99)

“Distributed visualization of usage history”:
Physical objects and surfaces that display
their history of use



TouchCounters:

Interactive Electronic Labels for Physical Containers (Yarin and Ishii 99)



Measure

HandSCAPE 2000

Jay Lee, Victor Su, Hiroshi Ishii



透明

transparent

“The Computer for the 21st Century”

“The most profound technologies are those that disappear. They weave themselves into the fabric of everyday life until they are indistinguishable from it.”

Mark Weiser

July 23, 1952 - April 27, 1999



musicBottles

Ishii, Fletcher, Mazalek, Lee, Choo, Berzowska, Paradiso, 98-00

- Glass bottles as “containers” and “controls” for digital information
- Seamless extension of metaphors and physical affordances into the digital domain



Jazz



Techno

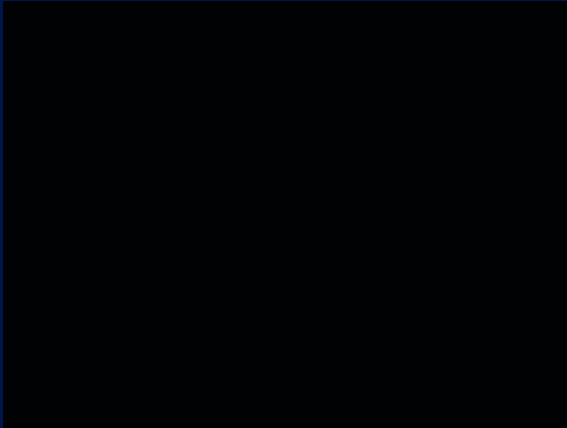


Classical

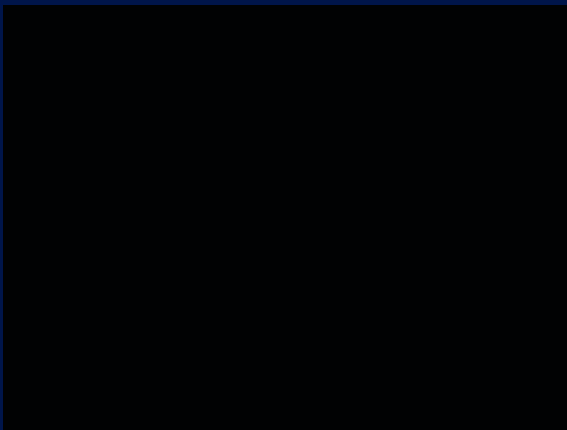


Weather

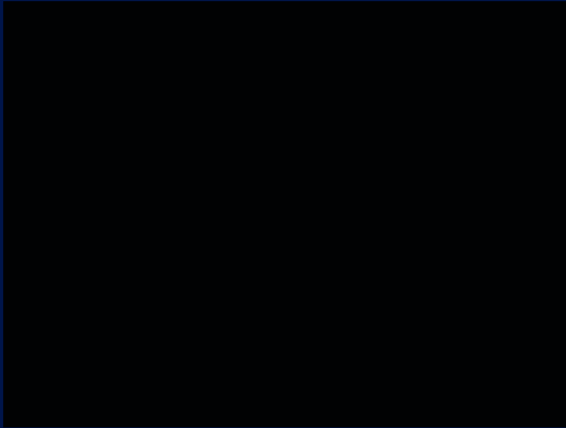
musicBottles (jazz)



musicBottles (techno)



musicBottles (classical)



Origin: Weather Bottle



present for my mother
soy sauce bottle
in her kitchen



The new standard in medication packaging

GlowCaps™



猫

Paint

I/O Brush: Motivation: Colors Around Kids

- Appreciating richness of their surrounding colors, textures, and patterns
- Identifying and working with personal material that are meaningful (Papert, 1980; Resnik, et al., 1999)



I/O Brush

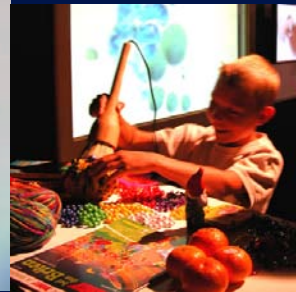
Kimiko Ryokai, Stefan Marti, & Hiroshi Ishii

- Explore patterns of colors and textures through familiar materials
- Your environment as a color palette to draw with



I/O Brush

Kimiko Ryokai, Stefan Marti, & Hiroshi Ishii



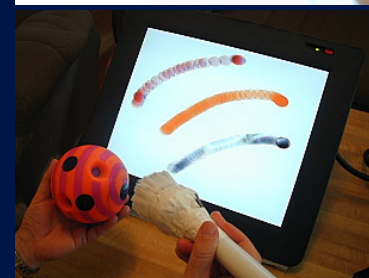
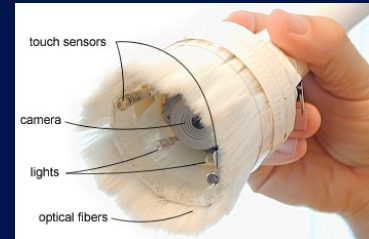
Explore patterns of colors and textures through familiar materials



I/O Brush (video)

Kimiko Ryokai, Stefan Marti, & Hiroshi Ishii

- Draw with colors, patterns, and movements



I/O Brush History Mode

Kimiko Ryokai, Stefan Marti, & Hiroshi Ishii

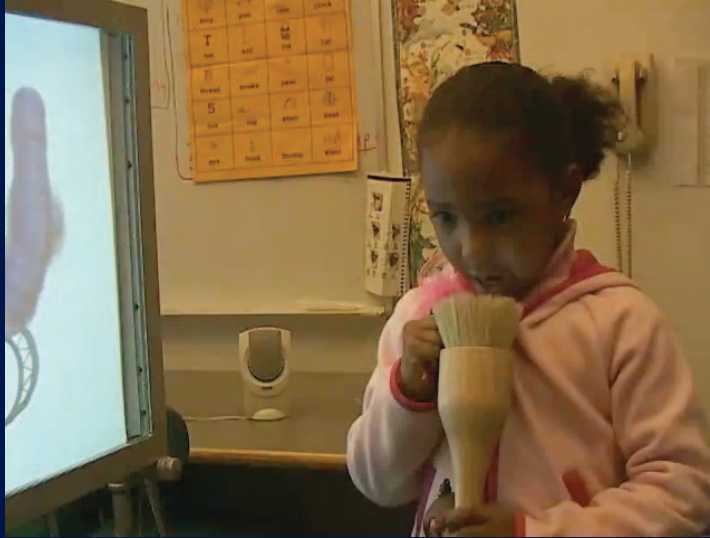
- From where the ink came from?



I/O Brush History Mode

Kimiko Ryokai, Stefan Marti, & Hiroshi Ishii

- Capturing and weaving the (hi)story for every stroke



I/O Brush Exhibition at the Ars Electronica Center

September 2004 ~ August 2005



The World as the Palette

Colors in Barcelona



7

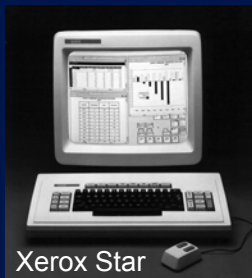
summary

Tangible Bits

- Giving physical forms to digital information and computation, making bits
 - directly manipulable with two hands
- Continuity between physical and digital representation in design
- Supporting multi-user collaboration and “tangible thinking”



Painted Bits (GUI) and Tangible Bits (TUI)



Graphical User Interface

- Intangible representation (pixels on a screen) +
- Generic input devices as “remote-controllers”



Tangible User Interface

- Tangible representation as interactive control mechanism to manipulate the information and computation
- Continuity between physical and digital representation in design

Urp running on the Sensetable

Tangible Bits



- Reconciliation of our dual citizenship in the worlds of bits and atoms.
- Interaction Design
 - informed by sciences (HCI),
 - materialized by technologies (CS, EE, ME), and
 - shaped by industrial design, media arts and practical real-world applications.

My Research

