



Tick that Box: Interactive Paper Documents

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Paperless Environment

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Source: http://www.techtimes.com/articles/5018/20140331/sony-brings-back-the-paperless-office-with-its-1-100-digital-paper-tablet.htm

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Motivation

• Abigail J. Sellen and Richard H.R. Harper. *The Myth of the Paperless Office*. MIT Press.



ADJUSTING to ...



Life in A PAPERLESS SOCIETY.

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Source: http://www.vapartners.ca/how-to-write-a-white-paper/

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Related Work



Source: www.Anoto.com Jürgen Steimle et. al. Coscribe: integrating paper & digital documents for collaborative knowledge work., IEEE 2009

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Related Work



Source: www.designboom.com Steve Hodges et. Al. Circuit stickers: peel-and-stick construction of interactive electronic prototypes. CHI14 Yoshihiro Kawahara et.al Instant inkjet circuits: lab-based inkjet printing to support rapid prototyping of ubicomp devices. Prev13

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Printing Smart Documents

- Off-the-shelf Brother DCP-J125 printer
- Mitsubishi conductive ink (NBSIJ-MU01)
- Mitsubishi paper (NBWF- 3GF100).

Yoshihiro Kawahara et.al Instant inkjet circuits: lab-based inkjet printing to support rapid prototyping of ubicomp devices. Prev13

Smart Printed Paper Forms

Adding conductive ink layer to:

- Transfer traditional forms elements to circuit layouts.
 - Checkboxes
 - Cross out items
 - Signature fields

Circiut Layout with basic 2 electrodes concept.

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Smart Printed Paper Forms (1)

Letters To A Young Poet are ten letters written to a young the German military. His name was Franz Kappus, he was wrote Rilke looking for guidance and a critique of some of was himself only 27 when the first letter was written. The correspondence is a virtual owner's manual on what it is (a



Supporting typical paper-based operations

- Text Marking
- Book Marking
- Stabling Multiple pages

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Interaction tools



Source: <u>http://www.fabercastell.com/</u> www.uniball.co.uk

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Traditional to Digital: Checkbox



Selecting Multiple Items

Digitally Synchronizing the selection

Traditional to Digital: Radio button



Selecting Single Item

Digitally Synchronizing single item selection

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Traditional to Digital: Cross Out



 Digitally Synchronizing the selection of uncrossed item

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Traditional to Digital: Eraser



Erase Selection

Digitally remove the selection

Traditional to Digital: Signature



Assuring correctness

Assuring the existence of the signature

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Traditional to Digital: Text Marking



Highlight Paragraph

Digital Highlight of the Paragraph

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Traditional to Digital: Ripping



Destroying the document

Deleting the digital version

Traditional to Digital: Paper Clip



Bookmarking the page

Temporary connecting pages

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Traditional to Digital: Hole Puncher



Preparing document for archiving — Archiving the digital document

Computing Unit: Blidget

- Tiny always-on device
 - (25x25x6mm)
- connection via Bluetooth LE
- 18 GPIO ports
 - I for each form element
 - Common ground
- Web programmable
- Stack- and chainable



Source: http://blidget.hcilab.org/

Computing Unit for Multiple Pages



Connecting multiple pages

Connecting circuits

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Study: Evaluation of Smart Forms

- 12 participants
 - 4 female, 8 male
- Tasks
 - Fill the form using:
 - Pencil
 - Ball- pen
 - Using different sizes for:
 - 3 Checkboxes
 - 3 Radio buttons
 - 2 Cross out words
 - Sign the form



Results

All mean resistances are in a range that can be sensed by a microcontroller.



Gender (delete as appropriate):

Conclusion



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