Will the paperless office always be a myth?

From book of Kells 800 BC
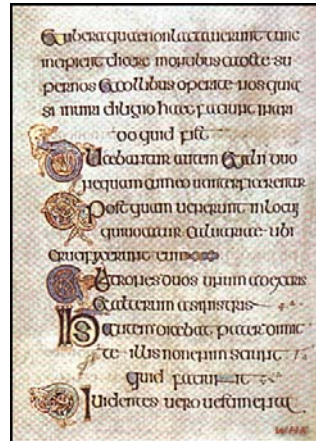
The Paperless Myth

- For a very long time people have predicted that offices will *soon* be paperless
- It has not happened.
- In fact paper consumption has increased more-or-less in parallel with computer use!
- Why is this?

http://www.iied.org/smg/pubs/rethink3.html
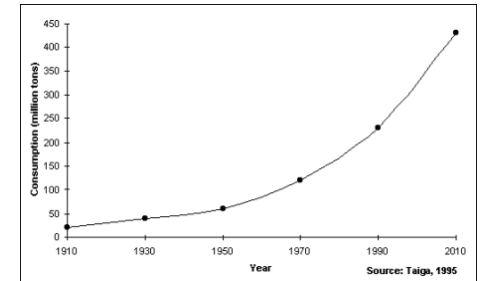
Paper

- Integrated into work practices – almost inseparable in some cases.
- Physical
  - Its presence tell us things about it (type of book)
  - Can be spread about, ordered stacked, have post-its attached

Ink Repository

- Mostly paper is an ink repository
- We can write on it
- We can read from it.

- Sometimes we do both at the same time

Paper's affordances

- Always 'on'
- No applications, file formats, artificial limitations
- Informal
- Has a physical presence – which makes it easier to
  - Scan
  - Navigate flexibly
  - View multiple documents at one time
  - Annotation

Active Reading

- Most people prefer to read off paper
- This used to be blamed on poor screens
- But it is more about *active* reading
  - Following along with a finger or pen
  - Annotating
    - Emphasis – highlight, underline, circle
    - Notes – explain, clarify, question
    - Correct – cross out, insert, reorder
- Reading a annotated document is quite different to reading the same document un-annotated

Digital documents

- Virtual rather than physical
- Easy version control
- Easy replication
- Easy editing
- No geographic restrictions
- Quite likely, more permanent
  - because of multiple copies

Digital affordances

- Easy editing
  - But annotation (a la word review) is a poor substitute for *red ink*
- Non linear possible (hyper-links, OO programs)
- Search

What is missing in digital environments

- Support of work practises

- What do we need to support human work
  - Portable affordable hardware
  - Large work surfaces
  - Interaction devices
  - Suitable software

An Exemplar assignment marking as an activity

- Tasks
  - Collect the assignments
  - Write the marking rubric
  - Pre-scan the assignment (order?)
    - Teachers do this, but markers don't
  - Detailed marking of each assignment
    - Reading, annotating, executing (programs), scoring
  - Recording scores against the rubric
  - Total scores and save in a file
  - Return work to students

  - Sometimes produce work for moderation

Doing it paperless

- Make a marking rubric (easy)
- Electronic Drop-box (already exists)
- Replicate a stack of papers
- Easy navigation between papers
- Easy annotation and recording of scores
- Easy running of programs
- Easy return of work

Stack of papers

Submissions - 39 students
- agit002 - 3/06/2005 8:59:58 p.m.
- avut001 - 2/06/2005 5:27:37 p.m.
- awan015 - 3/06/2005 6:16:04 p.m.
- bmeg002 - 3/06/2005 1:13:20 p.m.
- bqi002 - 3/06/2005 10:42:21 p.m.
- cche211 - 2/06/2005 9:24:08 p.m.
- *chsi021 - 3/06/2005 7:23:49 p.m.*
- cliu052 - 3/06/2005 10:30:49 p.m.
- csia005 - 3/06/2005 5:28:30 p.m.
- dyan024 - 2/06/2005 5:14:48 p.m.
- efug001 - 3/06/2005 10:46:43 p.m.
- ehar060 - 3/06/2005 4:52:01 p.m.
- gche043 - 3/06/2005 10:54:41 p.m.
- gnot002 - 3/06/2005 10:54:41 p.m.
- gwon031 - 2/06/2005 6:26:52 p.m.
- hhua058 - 2/06/2005 6:26:52 p.m.
- hvoi001 - 3/06/2005 9:51:52 p.m.
- hwu065 - 3/06/2005 9:18:31 p.m.
- hzha123 - 2/06/2005 4:45:17 p.m.
- jche117 - 3/06/2005 9:34:29 p.m.
- jli039 - 3/06/2005 6:20:53 p.m.
- jyu036 - 3/06/2005 1:13:50 a.m.
- mcho061 - 3/06/2005 8:56:30 p.m.
- mli051 - 3/06/2005 4:38:00 p.m.
- mtin010 - 3/06/2005 10:47:58 p.m.
- nmar046 - 3/06/2005 1:10:44 a.m.
- qgao005 - 3/06/2005 8:30:14 a.m.
- sher038 - 3/06/2005 8:30:14 a.m.
- slou014 - 3/06/2005 6:51:50 p.m.

- Each student listed
- Italic when opened
- Ticked when finished

- Double tap – opens student

- Should
  - Allow reordering
  - Show total when finished?

Annotation

- Ink anywhere
- Eraser
- No clipboard

Multiple documents

- Running programs
- Dual displays
  - Tablet for inking
  - Other for IDE

Scoring

- Ink entry
- Needs recognition
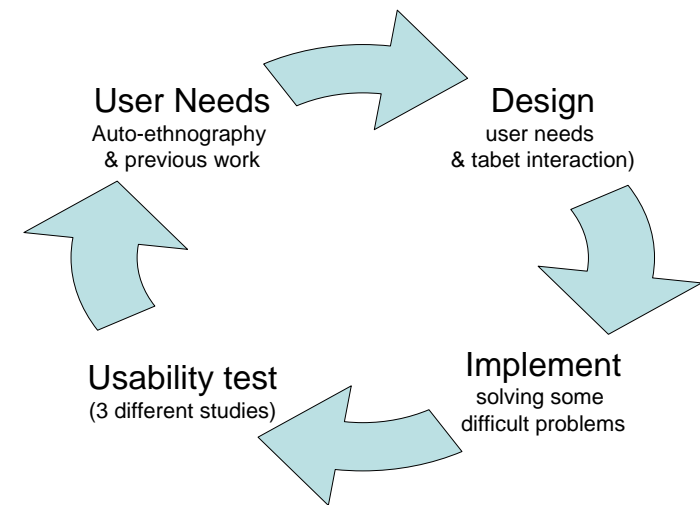- Handwriting takes more space

Post marking

- Save grades to xml file
  - From where they can be imported into most things (like cecil, excel …..)
- Make pdf of mark schedule and annotated assignment
- Email to student

It is paperless!

- We use it for marking compsci 280
- We don't print anything
- But students get comments on their work

It is an example of practising HCI

User Needs
Auto-ethnography & previous work

Design
user needs
& tabet interaction)

Usability test
(3 different studies)

Implement
solving some difficult problems

What doesn't it do

- Afford spreading the assignments around the desk top
  – But what if we had a "real desktop" computer
- Work inside the programming IDE
- Different file formats

Is paperless possible?

- Completely paperless
  – Not for a while yet
- Reducing the use of paper
  – Absolutely!
- We just have to understand more about how we use it!
- And have the hardware and software to support it.