Due Soon

Pilot Usability Study (Apr 20)
Refine your implementation
Evaluate your implementation
Topics

Precursors
1940’s Early Visions
1960’s Visionary Demos
1970’s Personal Computing
1980’s Graphical User Interfaces
Mobile Computing
Precursors
Astrolabe (Middle Ages)

Convenient interface to complex computation
Astrolabe Video

Tom Wujec, TED 2009

http://www.ted.com/talks/lang/eng/tom_wujec_demos_the_13th_century(astrolabe.html

Segments starting at: 01:20, 04:30
Mechanical Control & Computation

Jacquard Loom (1804)  Babbage Difference Engine (1849)
Babbage Difference Engine Video

http://www.youtube.com/watch?v=0anIyVGeWOI
Hollerith Punch Cards (1890)

Hollerith Punch Cards (1890)

Computer History Museum video:
http://www.youtube.com/watch?v=9HXjLW7v-II
Teletype (ca. 1910)

http://www.youtube.com/watch?v=niYDegfpfA5
http://www.youtube.com/watch?v=Ml00ngVwrcU
1940’s Early Visions
ENIAC (1943)

World’s first numerical integrator and computer
Harvard Mark I (1944)

55 feet long, 8 feet high, 5 tons
Harvard Mark I (1944)

**Hardware**

Physical switches (before microprocessors)

Paper tape

**Uses**

Ballistics calculations

Simple arithmetic & fixed calculations (before programs)

3 seconds to multiply
Adm. Grace Murray Hopper

First programmer of Mark I
Adm. Grace Murray Hopper

First programmer of Mark I

Filed first bug report
Vannevar Bush

Name rhymes with "Beaver"
Faculty member MIT
Coordinated WWII effort with 6000 US scientists
Social contract for science
Federal government funds universities
Universities do basic research
Research helps economy & national defense

1890 - 1974
What will the computer of the future look like?

- Wearable cameras for photographic records
- Encyclopedia Brittanica for a nickel
- Automatic transcripts of speech
- Memex
- Trails of discovery
- Direct capture of nerve impulses
Memex

Store all personal books, records, communications
Items retrieved through indexing, keywords, cross references,...
Can annotate text with margin notes, comments...
Can construct a trail through the material and save it
Acts as an external memory
1960’s Visionary Demos
Context - Computing in 1960s

Transistor (1948)
ARPA (1958)
Timesharing (1950s)
Terminals and keyboards

Computers still primarily for scientists and engineers
Ivan Sutherland (1938 - )

Established Computer Graphics
Turing award 1988
Now a fellow at Sun and until recently a visiting Professor at Berkeley
Sketchpad (1963)

Ivan E Sutherland’s PhD thesis
Modern pen-based system
  CAD design
  3D modeling
Key: Interactivity
  Real-time computing was non-existent
Doug Engelbart (1925 - )

Strongly influenced by Bush

How would you implement the Memex in 1963?
NLS: oNLine System (1968)

1968 Fall Joint Computer Conference (SF)

Demonstrated NLS to 1000 computer scientists

Video screen, chording keyboard, mouse, videoconferencing, hyperlinking, word processing, email,

User testing

Video: 10:54 – 17:00
8. Historic Video: A Research Centre for Augmenting Human Intellect

Contact:
Douglas C. Engelbart
Bootstrap Institute
6505 Kaiser Dr.
Freemont, CA 94555, USA
email: DCE@bootstrap.org
Chording Keyboard and Mouse

Advantages/Disadvantages?
(cc) Flickr user John Chuang
http://www.flickr.com/photos/13184584@N08/1362760884/
1970’s Personal Computing
Altair (1975)
Apple I (1976)
Personal Computers

Apple II 1977

IBM PC 1981
VisiCalc (Bricklin, 1979)
1980's Graphical User Interfaces
Xerox Star (1982)

Bitmapped display, windows, icons, menus, pointer, desktop, direct manipulation, WYSIWYG …

Video: 1:11 – 8:20
Contact:
Ken Pier
Xerox PARC
3333 Coyote Hill Road
Palo Alto, CA 94304
(415) 494-4861
pier.pa@Xerox.com

1) Xerox Star User Interface: An Overview
Designing the Star

Design team developed new methodology
- Task analysis
- Wide range of users
- Usage scenarios

Decomposition of design:
- Display and control interface
- User's conceptual model

Many prototyping cycles

User centered design
Star → Mac

But the Star was expensive and slow ($25k).

Steve Jobs visits PARC in 1979
Sees Alto (precursor to Star)
Lisa ships in 1983 at $10,000,
1-button mouse
Menu bar (instead of pop-up menus)
Fails in marketplace

Macintosh ships in 1984 at $2500
Most consistent WIMP UI
Look and feel guidelines
Personal computing market changes for good
History of Mobile Computing

(see slide deck #2)
Next Time

**Monday**: Collaboration and Social Software

**Wednesday**: Panel on Mobile Start-Ups!
Andy Russell, Launchpad Toys
Kevin Collins, Sutro Media