

- o Specialist devices become commodities
- o more opportunities for prototypes
- o Moore's Law!
- o Systems become computer controlled
- o Tough UI
- o Simplification of Jobs
 - USER abilities don't change much (Human in the loop)
- o Technology becomes widely available
- o Technical limits disappear
- o Perception of Privacy changes
- o Processing (cheap & fast)
- o Storage (big & fast)
- o Networking
- o Displays
- o Sensors
- o Actuators
- LESSONS LEARNED
 - it's about the Vision
 - Technology + understanding plays important role
 - Implementation + UX is key

Inventing Interaction Technologies

- o Ivan Sutherland
- * Sketch Pad (drawing interface) OO-principles
- * Head mounted Display
- o Douglas Engelbart
- * Mouse

Personal Information becomes a commodity we trade against benefits

Wearable Computing

LESSONS LEARNED

- Vannevar Bush (1945) "As we may think"
- Chordashin (Brad Rhodes 1997)
- Portable
- non-obstructive
- Proactive
- augmentation of environment
- hands-free use
- Sensors

now more products with wearable computing integrated in things (ingestible sensors, ...)

- Technical vision!
- lots of research, but no adoptions (yet)
- many concepts on smart phones
- "Always on" is tricky!

Technical focus

How can we build stuff so that it fits?

Ubiquitous Computing

The most profound technologies are those that disappear

WEISER coined Term

- invisible
- adapt & support the user
- do not grab attention
- e.g. Active Badge, THE Pad

- Bulky invisible interfaces
- Beyond the sketchpad
- Seamless integration
- requires no focus
- location based computing & context

USER Focused

User need!

Internet of Things

Business Vision

Centered around Objects

Objects become individuals (with sensors)

Objects communicate

Objects show their history

Objects become embedded exhibits

Definition

Media integration

Gap (Digitalization)

Business Driven!

linking physical & virtual objects

LESSONS LEARNED

- business Vision
- has become buzzword for digital transformation
- Sensing, communication + data management important
- Data security / business model + implementation

Original concept does not match with companies' interests.

Network of Things

how everything works together