Ubiquitous Computing Visions

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Who cares about vision?

ubiquitous computing is unusual amongst technological research arenas

how? quote from Genevieve Bell and Paul Dourish
Structure of the lecture

the original vision
refinements and criticisms
History of computing

mainframes
(many-to-one)

personal computing
(one to one)
Mark Weiser

father of ubiquitous computing

chief scientist at Xerox PARC in the United States

had the original ubiquitous computing vision (circa 1991)
The vision
The vision

ubicomp
(one-to-many)
What ubiquitous computing is

go beyond the traditional user interface

integrate into the real physical world

small location aware computers, networked

invisible
What ubiquitous computing is not

virtual reality

ubiquitous computing
Calm computing

one person, many computers

sounds stressful

Weiser: adding more tech for a better experience
Tabs, pads and boards

basic form factors in ubiquitous computing

tabs — PDAs, phones, employee badges, RFIDs, keychains

pads — paper, laptops, books

boards — video screens, bulletin boards, windows
Example: Sal’s world

a fictional world to better illustrate ubiquitous computing concepts

core features from excerpt

- everything has a computer built in (intelligent alarm)

- the computers are relatively simple (yes and no are the only words)

- the computers are networked (alerted by restless sleep)
Are we there yet?

Weiser’s anticipated cross-over: 2005 — 2020

modern computing: one person to several computers

we’re still far from Sal’s world

hidden computers are everywhere, but not really networked
Has the vision changed?
In summary

Weiser’s vision is important

led to clarity in a futurist-inspired field

suggested new research directions
One more thing

Weiser was a drummer

in Severe Tire Damage (STD)
How’s everyone doing?

Just checking :)}
Modern ubiquitous computing

evolving Mark’s vision
Criticism #1: the ubicomp vision is too general

the research direction needs to change
Disciplines in ubiquitous computing

context-aware computing

ambient intelligence

tracking and monitoring
Limited success: BlueEyes

research question: How can we make computers "see" and "feel"?

“The success of the BlueEyes project, however, was limited; an example of an achievement that is posted on its website is of a television that would turn itself on when a person in the room made eye contact with it. To turn it off, the person could ‘tell’ it to switch off.” -- Yvonne Rogers
Suggestion: get concrete

“improve existing experiences with ubiquitous computing”

playing and learning in a mixed physical-virtual space

self-monitoring and behavioral change
Examples (playing and learning)
Examples (behavioral change)
Criticism #2: calm computing is a pipe dream

and ubicomp is already here
Singapore

SMS to hail cabs,

95% of population owns a cell

distributed poll road pricing

high internet penetration
Singapore is not calm, says Genevieve Bell
Criticism #3: ubicomp has a negative social impact

ubicomp encourages complacency and spawns privacy issues
Privacy issues

ubicomp: a lot of computers are always watching

what if someone malicious manages to get access to the computers in our sphere?

how would we know?

privacy issues of today are compounded
Sal’s world?

do we want to live there?

too much computer dependency already

do we want more?

comparison to Victorian England
Criticism #4: ubicomp is retro-futurism

why don’t we have ubicomp yet?
this is retro-futurism
Bell asks some tough questions

twenty years after Weiser

and 10,000 times the computing power later...

1. why is our vision still the same as Weiser’s?

2. why isn’t ubicomp here yet?
maybe ubicomp is inherently unattainable?
questions?

thanks for listening