

Understanding Ambient Intelligence – from an ethical and social perspective

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Some background

- School of Computing Science at Middlesex University
- Ethical, Legal and Professional Issues of Computing
- **Research**
 - Ambient Intelligence: values and choices, security and privacy
 - Ethical awareness in design and policy issues.
- Chair IFIP Working Group 9.2 Social Accountability
- Manager British Computer Society Ethics Forum



An 'embedded' world ...



There are now more embedded devices
than people on earth

Viviane Reding
Member of the European Commission responsible for
Information Society and Media

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Adding 'intelligence'



"Humans are no longer the only intelligent decision makers on earth. Numerous decisions are being made by the visible and invisible microchips that are increasingly present everywhere in our working and living environment. Soon they will be hidden not only in our dishwasher and our mobile phone, but also in our furniture, clothing, shoes and walls. ... There is no need for keyboards or screens or menus "

Van Steendam, et.al. (2006) Report: The Budapest meeting 2005, Intensified networking on Ethics of Science, The Case of Reproductive Cloning, Germline Gene Therapy and Human Dignity. Science and Engineering Ethics, Vol. 12, No. 4, Excerpt: 731-793. 4

The Technology Perspective



Intelligent devices are ...

- Context aware
- Reactive
- 'Assess' situation
- Make 'decisions'
- Make judgements

and act on our behalf, to support our lifestyles

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Where?



- In the home: information and entertainment
(see Amigo
[<http://www.hitech-projects.com/euprojects/amigo>])
- Health: ICTs ... allow patients to be monitored in real-time, both in their homes and on the move, improving their quality of life... [Cordis]
- Travelling : "Today's' trains made safer by more reliable and intelligent software" [Cordis]

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'Invisibility' – the ethical challenge



James Moor (1985)

- Computers raise special ethical issues because
 - Social impact
 - Logical malleability
 - Invisibility
 - Invisible abuse
 - Invisible programming
 - Invisible complex calculations

In a word document type: rand = (900,22)

In Windows create a folder named: con

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Ethical issues



Ambient world – even more invisible

- Today's issues
 - privacy, profiling, tracking, security, biometrics, personal data, reliability, credibility, discrimination
- New issues?
 - All the above plus ... errors of judgement, predictability, unfamiliar devices, cognitive overload

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Supporting the elderly



- monitoring pill box use
- pressure sensors on a chairs
- radio tags embedded in household items and clothing that communicate with tag readers in floor mats, shelves, and walls?

(Research proposed by Intel and described by Blanchard, J. (2004) Ethical Considerations of Home Monitoring Technology, reprinted from the Home Health Care Technology Report, v1(4):53,63-64, 2004. Civic Research Institute.

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Extracts from [swami]



... profiling and personalisation ... is inherent in AmI and operators and service providers invariably and inevitably will want to "personalise" their offerings ...

... many operators and service providers, some of whom may be visible, some of whom will not be.

The dark side of ambient intelligence (David Wright, Emerald Insight, VOL. 7 NO. 6 2005, pp. 33-51, Emerald Group Publishing Limited, ISSN 1463-6697

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Questions ...



- Will consumers need or even be able to negotiate their level of protection with each one?
- If you want a particular service, will you have no choice except to forego some of your privacy?
- Are the privacy policies of operators and service providers satisfactory from the consumer's point of view? Can they be trusted?
- Are the data protection safeguards put in place by the operator or service provider adequate?
- If new Aml networks have a profile-learning capability, will the "negotiated" privacy protection rules still be relevant after a year or two of service?

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Transparency and disclosure



We should

- Inform the user (processes)
- Alert the user ('on' or 'off')
- Be mindful of 'cognitive overload'
- Accept responsibility

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Designers need to ...



- Effect a 'dialogue box' that helps the user
- Have an 'on/off' indication
- Be aware of the user capabilities and diverse needs, especially in the case of:
 - Elderly (impairments, physical and cognitive)
 - Children (capability, physical size)
- Take responsibility - not pass it to the user

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Passing responsibility to the User



The following is from a Nokia mobile phone instruction booklet

- Operation of ... wireless phones, may interfere with the functionality of inadequately protected medical devices.
 Consult a physician or the manufacturer of the medical device to determine if they are adequately shielded from external RF energy or if you have any questions. Switch off your device in health care facilities ...
- Pacemaker manufacturers recommend that a minimum separation of 15.3cm be maintained between a wireless phone and a pacemaker to avoid potential interference ...
 If you have any reason to suspect that interference is taking place, switch off your device immediately.
- Hearing aids: some digital wireless devices may interfere with some hearing aids.
 If interference occurs, consult your service provider ...

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Conclusion



To encourage take-up, trust, and to meet ethical obligations Ambient Technologies need to:

- Address issues of security, privacy etc.
- Introduce transparency in use
- Be fit for purpose (meeting the needs of diverse users)

Ethical issues are receiving more attention.

<http://unesdoc.unesco.org/images/0014/001499/149992E.pdf>

Ethical Implications of Emerging Technologies: A Survey

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Finally – don't lose heart!



- Ethical issues are receiving more attention.
- In EU FP7 ethics is recognised in the technology streams
- UNESCO has recently produced a report:
Ethical Implications of Emerging Technologies: A Survey
Prepared by Mary Rundle and Chris Conley,
Geneva Net Dialogue
- <http://unesdoc.unesco.org/images/0014/001499/149992E.pdf>

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THANK YOU ...



• ANY QUESTIONS?