Introduction

Pervasive Computing and Urban Development
Issues for the individual and society

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Intelligent Inhabited Environments Group

http://iieeg.essex.ac.uk
• parkland of 200 acres
• Royal Charter in 1965
• 5,926 students
• 25% post graduates
• 24% overseas
   (120 countries)
Pervasive ICT (PICT) – What is it?

- PICT - Pervasive Information and Communication Technology

- Existence of billions “invisible”, omni-present, always-on, communicating computers embedded into everyday environments, gathering personal information from people & delivering services to them.

- Embedded Intelligence (learning) used to shield users from the technology (orchestrate the often unique combinations of available devices to provide the services the user wants).
Examples

-The Cisco Internet Home

- Essex University iDorm
  (http://iieg.essex.ac.uk)
Empowers the Individual

- People can be “designers” of their own technical environments
- Helps level the “knowledge playing field”
- Gives people choice and access

Support Society & and Relationships

- Allows geographically separated family to have virtual presence (communication etc)
- Offers, safer more secure environments

Opens New Opportunities

- Opens New Life styles (living is no longer bound to location)
- Opens new commercial opportunities (new types of products, "manufacturing in the home" etc)
Concerns For Society and the Individual

• Privacy & Security
  ? Sensors in our most private spaces (on our bodies, even in bedrooms)
  ? Our most intimate habits potentially exposed

Who controls the technology?

• Commercial companies? Perhaps seeking to:
  ? Control the market
  ? Sell personal information
  ? Monitor usage of equipment
  ? Monitor efficiency of employees

• Governments & Their Agencies seeking to:
  ? Enforce the Law (eg speed cameras, cell phones etc)
  ? Understand the behaviours and needs of the population

commercial success needs transparency & people to feel they are in control
Some Consequences for Urban Societies

• More dependency on:
  - “wired” architecture (less on “brick” architecture)
  - Technology and electricity
  - Creation of wealth through developments in the virtual world.
  - Virtual relationships (less on physical ones)

• Less dependency on:
  - location and proximity in forming social or economic communities
  - physical enterprises (businesses may be virtual)
  - need to physically travel

• Continuing dependencies
  - Physical aspects of human relationships
  - Food, drink and building services

• Some possible changes
  - Rise in personal privacy issues
  - Increase in “technology free”, and “technology full” areas
  - Rise of currently less well developed economies (less baggage)
Possible Actions for Government & Society

- Privacy one of the dominant threads of new information age. Needs society to:
  - a legal framework that constrains individuals, firms, local and central government and multi-national corporations.
  - Ensures a balance between need to protect society and maintain privacy

- Security is another issue. Needs Society to ensure:
  - Security of data services and critical equipment
  - That system operation is transparent & under the control of people about whom data is collected.

- If not already in existence, perhaps the UN could produce a set of guidelines for the sorts of levels of privacy and security that are desirable for civilised countries to achieve.
Educating People

People

• Are, to an extent, ignorant of the technological potential of pervasive computing.
• Are likely to reject the possibilities because of the fear of the surveillance society or the manipulations of big business.

• Need to be educated to
  • understand the nature of the possibilities
  • make rational choices about accepting or rejecting it.

• How should it be achieved?
Space Habitats

• In the not too distant future it will be possible to holiday in orbiting space hotels or spend time on a colony on the moon or Mars.
• The well-being of each is subservient to the overall safety of all.
• Dependence on technology for survival breeds a new attitude to what is acceptable
• Interesting model to consider for a yardstick of earth-bound pervasive computing solutions.
  ? If they favour only a small relatively well-off sector of society then should any of us support them?
  ? If they only favour vested interests and are of little consequence to the bulk of us should we oppose them?
• Technology is potentially as divisive as might bring wealth and happiness to some whilst oppressing others.
• Need to be very careful about hoping that it will solve our problems when it could be used to enslave us.
Any Questions?

This work was made possible by funding from the EU Future & Emerging Technologies and the UK DTI Next wave Technologies and Markets programmes.

Some References


More information can be found on: http://iieg.essex.ac.uk