

Pervasive Computing and Urban Development Issues for the individual and society

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Intelligent Inhabited
Environments Group



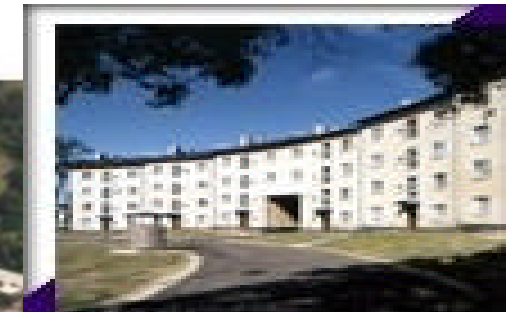
<http://iieg.essex.ac.uk>

Essex University

- parkland of 200 acres
- Royal Charter in 1965
- 5,926 students
- 25% post graduates
- 24% overseas
(120 countries)



the campus



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>)

How PICT Supports Urban Lifestyles *(for those that can afford the technology)*

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.**

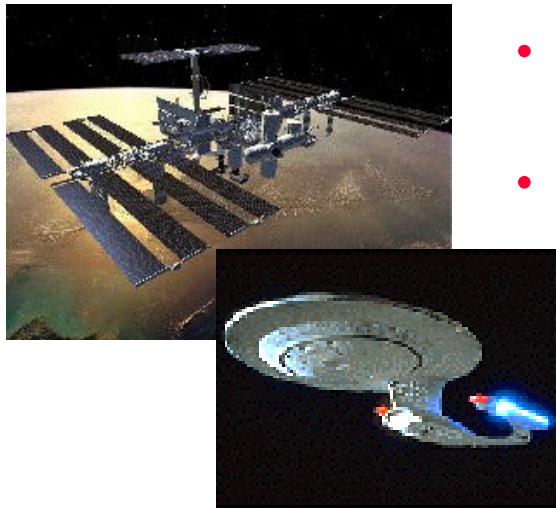
Educating People

- **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?

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⊕ Some References

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- ⊕ Chin JSY, Callaghan V, "Embedded-Internet Devices: A Means Of Realizing The Pervasive Computing Vision", IADIS International Conference, Algarve, Portugal, 5-8 November 2003. ISTAG (EU) "Scenarios for Ambient Intelligent in 2010 see www.cordis.lu/ist/istag.htm

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