Mobility

Learning Outcomes

- After attending this lecture and reading the additional literature, you should be able to:
  - Understand what type of problems can arise when you include mobile workers in a team
  - Understand the unpredictability associated with mobile ICT
  - Give examples of mobile devices and groupware supporting mobile collaboration

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Mobile workers

- The mobile worker can be defined by having a 'place of work' that is not fixed
  - They have to be able to work effectively in a range of different work settings and contexts
  - For some workers mobility is central to their role – e.g., field service engineers
  - They are also known as Nomads

Devices

- Personal Mobile
  - Two-way pagers
  - Mobile phones
    - Talk/SMS/MMS/Video
  - Wireless PDAs
    - Mobile Web Browsing
      - Offline
      - Online
  - Laptop
  - In-car

- Public Static
  - Internet Café
  - Email & Broadband Internet 'Phoneboxes'
    - Can be used to access private space
  - Large public displays
    - Cannot be used to access private space

Examples

Mobile computing

- Exploits the advanced technologies of
  - Wireless communication and networking
    - GSM, GPRS, UMTS, 802.11, Bluetooth
  - Internet
  - GPS
- Provide anytime, anywhere access

Loss of Predictability

- Device capabilities
  - Small low-resolution screens
  - Limited processing power
  - Limited battery life
  - Clumsy input mechanisms

- Network conditions
  - Low-bandwidth variable connectivity
  - Unpredictable connections that may break up frequently

- Context
  - Location
  - Environmental conditions
  - Attention

Dealing with unpredictability

- Device capabilities
  - Service discovery (Bluetooth)
  - Device aware services
    - Content selection/transformation (HTML to WML)
    - Modality selection (Text to Voice)
- Network conditions
  - Anticipating information needs
  - Server emulation
  - Backup
  - Synchronisation
- Context
  - GPS, sensor technology
  - Zone markers

Mobile awareness

- Extend the benefits of awareness information to mobile users
  - E.g., Mobile IM (IBM Sametime Everyplace)
- Provide information about unpredictable factors
  - Presence: Which device should a person be contacted on?
    - E.g., desktop or mobile phone
  - Context: Which mode of communication will be most effective and suitable for the circumstances?
    - E.g., voice or text
  - Location: Is the person in a location in which this message makes sense? (GPS + meta data?)

Space-Time Matrix

	SAME TIME	DIFFERENT TIME
SAME PLACE	Whiteboards, projectors Recording devices	Messages, documents Shared data stores
DIFFERENT PLACE	Telephone Videoconferencing Shared workspaces	Mail Shared data stores

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Extended Matrix

		TIME	
		Same time	Different time
	Same place/fixed		
	Same place/mobile	RoamWare	Footsteps/Digital Graffiti
SPACE	Different place/ fixed		
	Different place/mobile	Mobile chat; SMS, MMS etc. (IBM mobile IM)	WAP mail

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Group exercise

- In small groups, think about how you can design a system to exploit the mobility of students on campus
  - Information access
  - Sociability support
  - Communication

RoamWare

Digital Footprints

- Aka Digital Graffiti
- Uses GPS (although location information can be provided by other means)
- Attaches location information to media objects available on the Web
- Objects can be retrieved when in the right location using a GPS enabled multimedia phone

Hubbub

Accessibility

- How do provide access in unpredictable circumstances?
  - Input/Output redundancy
  - System standards
  - Compatible devices

Further Reading

- Wiberg and Gronlund – Exploring mobile CSCW

http://www.cos.ufrj.br/~jano/CSCW2004/5mobilecscw.pdf