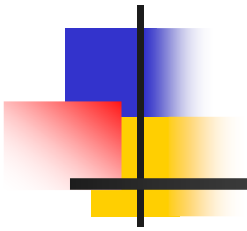
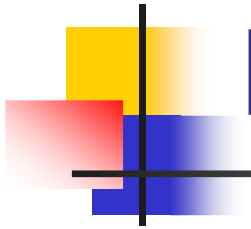


Using Wireless Sensors as Selection Devices for a Multimedia Guidebook Scenario

Presenter: Andras Toth

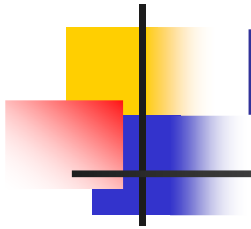
Montserrat Ros, Matthew D'Souza, Michael Chan, Konstanty Bialkowski, Adam Postula, Neil Bergmann, Andras Toth

The University of New England, The University of Queensland & RUNES



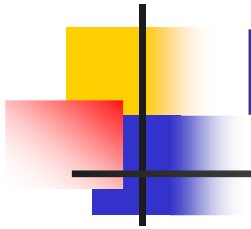
Presentation Outline

- Multimedia Guidebook outline
- Information Point Station Network Structure
- Pointer and Laser Sensor Node
- Pointer and Isolated Sensor Node
- System Operation
- Current Progress
- Findings
- Future Work
- Questions



Multimedia Guidebook Outline

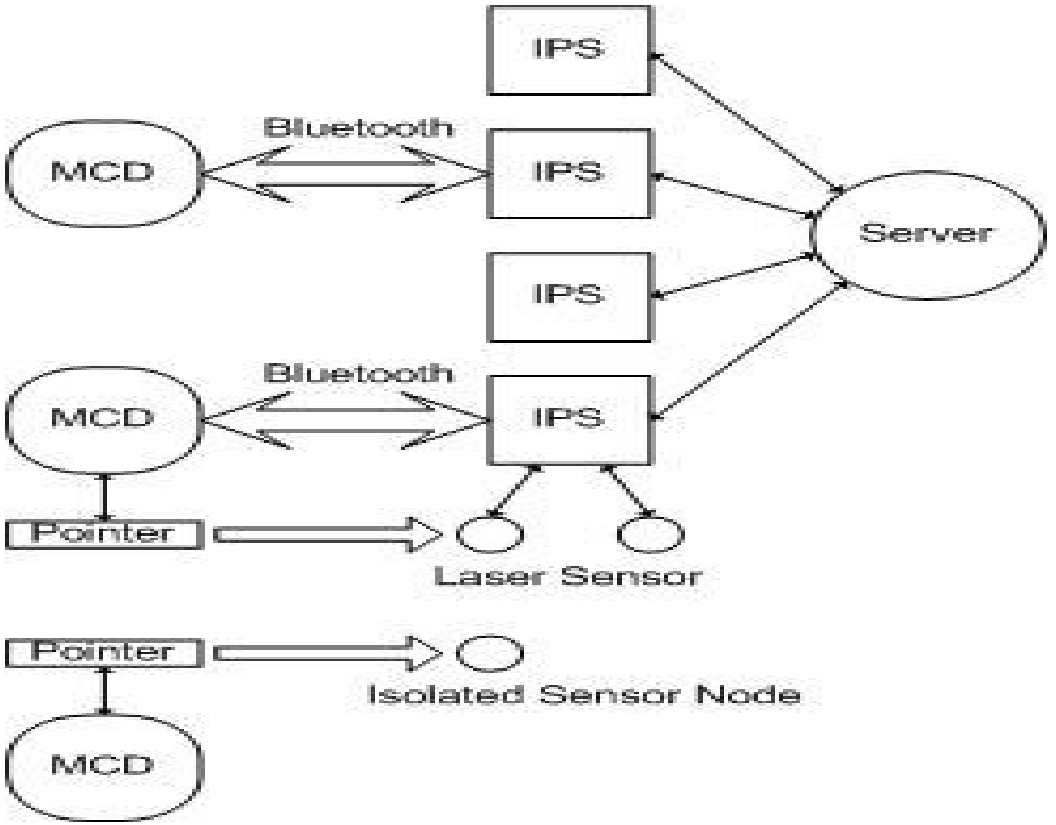
- Multimedia Guidebook Project conducted with the Australasian Co-Operative Research Centre for Interaction Design (ACID) and the EU Project RUNES.
- Allows user's mobile computing device (MCD) to act as a guide book.
  - Mobile phones and Personal Digital Assistants are examples of mobile computing devices.
- A information point station (IPS) is placed at a place of interest.
- User's handheld connects to IPS using Bluetooth.
- Transferred information can be text, images or audio.



Pointer and Sensor Node

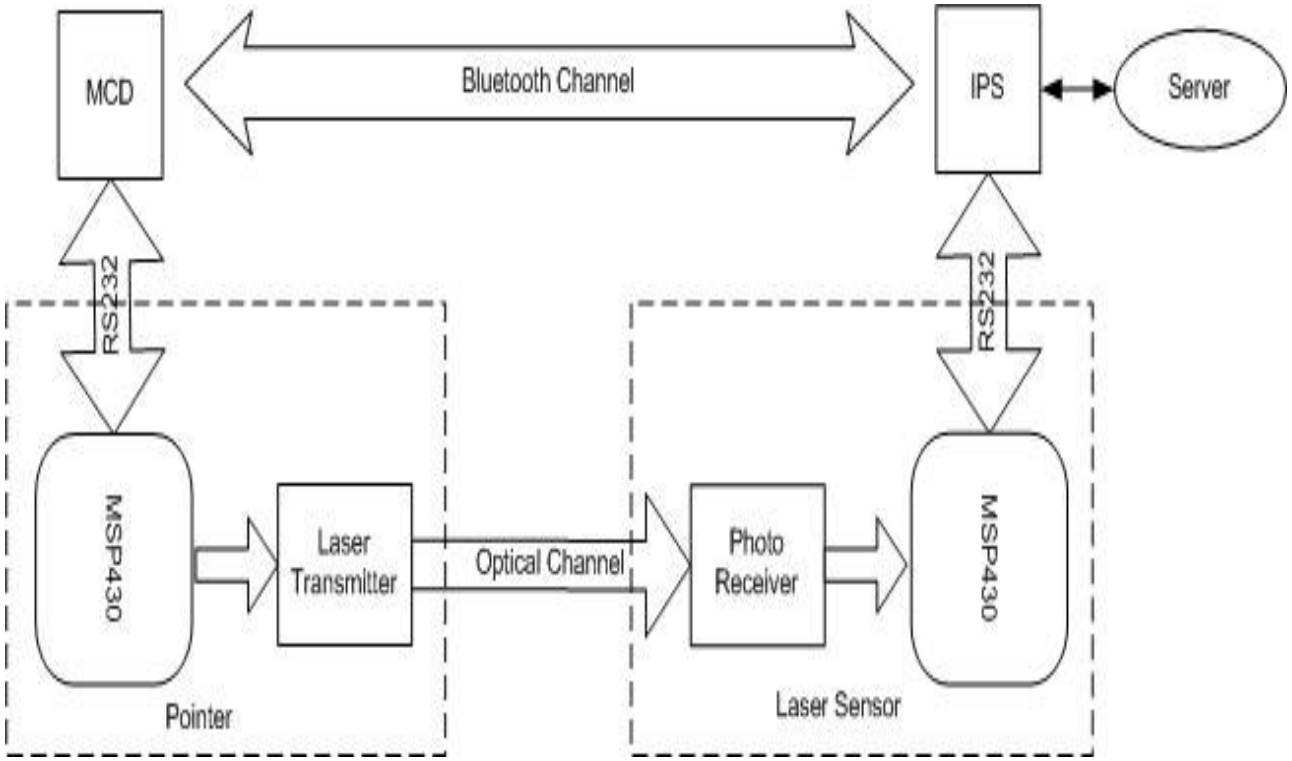
- Pointer device allows user to select information without using handheld.
  - The user points the pointer at the sensor node.
- Two types of sensor nodes:
  - IPS attached laser sensor node
    - When activated by the pointer, the requested information is transmitted via Bluetooth by the IPS to the user's MCD.
  - Isolated sensor node
    - When activated, the requested information is transmitted via infrared by the sensor node to the user's MCD.

Information Point Station Network Structure

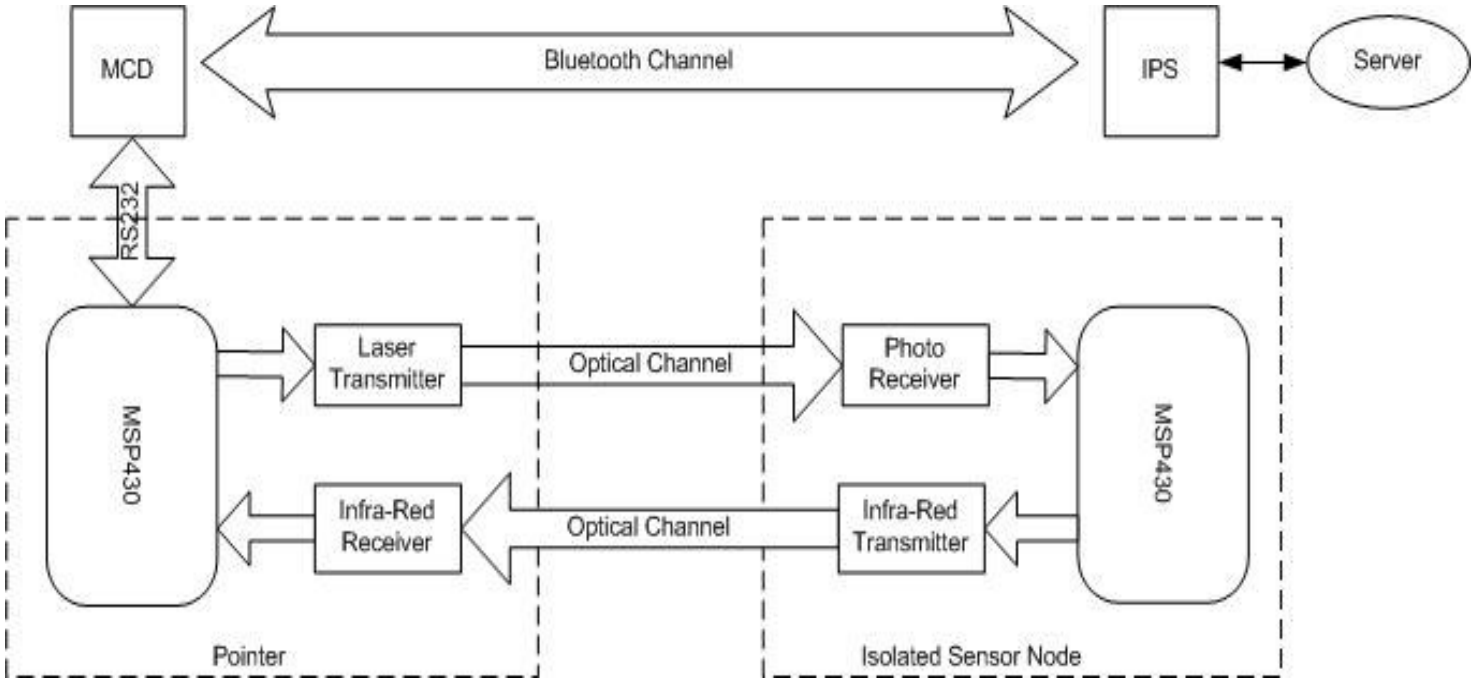


MCD = Mobile Computing Device IPS = Information Point Station

Pointer and Laser Sensor Node

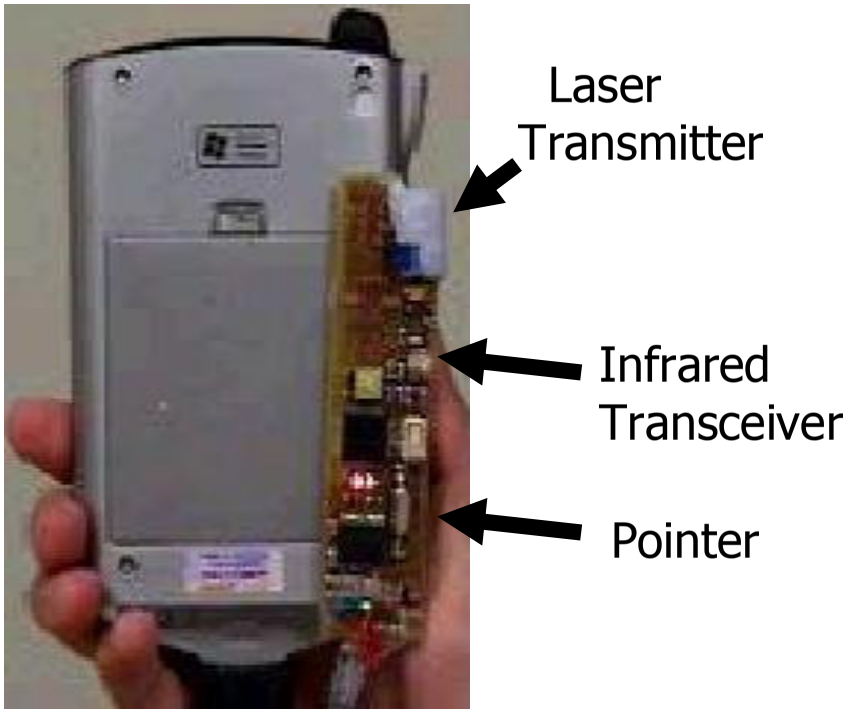


Pointer and Isolated Sensor Node



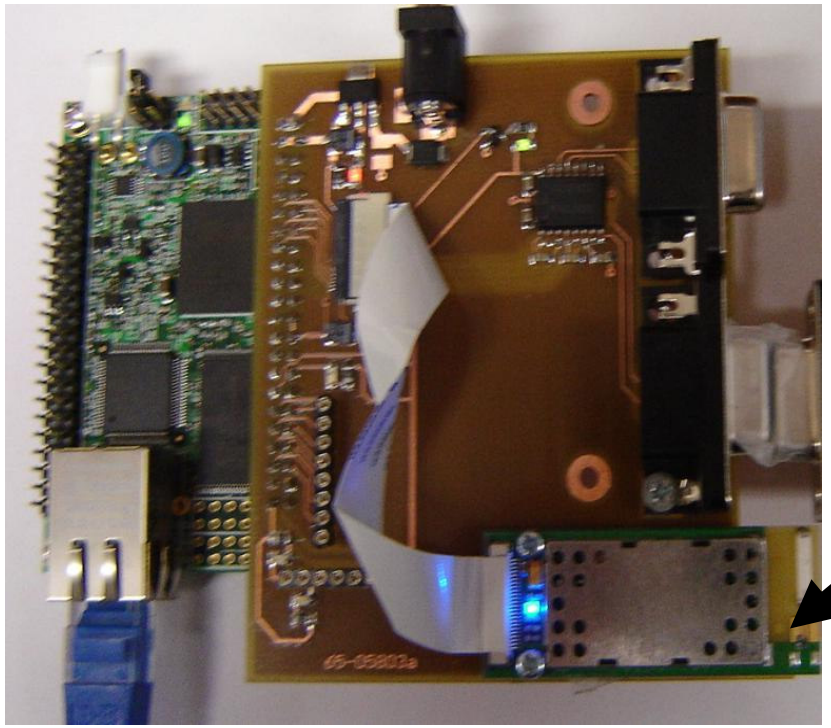
System Operation

Menu on HP iPaq PDA



Pointer attached to HP IPaq PDA

System Operation



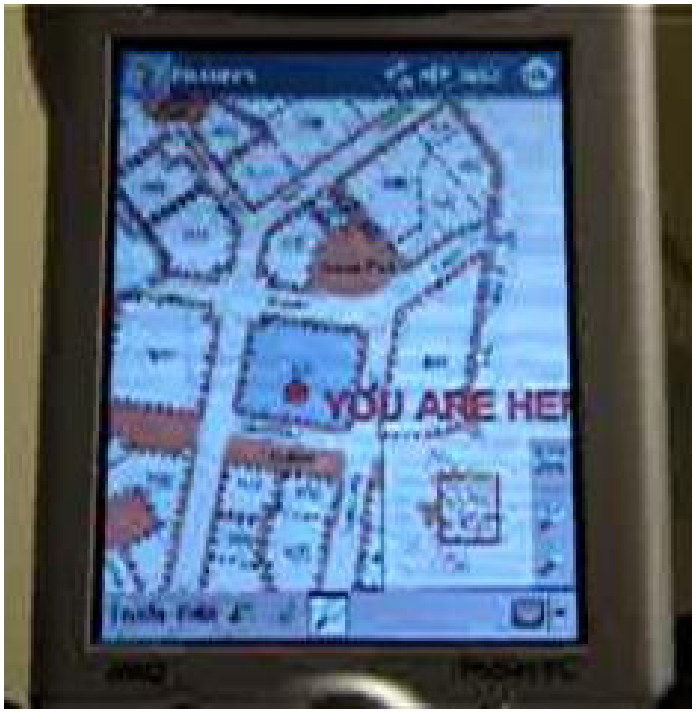
Information Point Station

Laser Detector

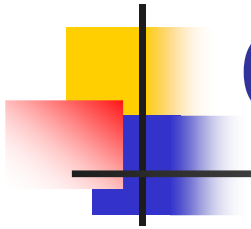
Bluetooth
Transceiver

Laser Pointer activating IPS
attached Laser Sensor Node

System Operation

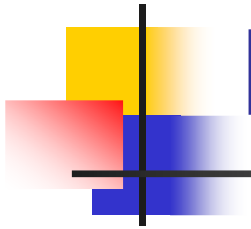


User views received selected item (Map) via Bluetooth



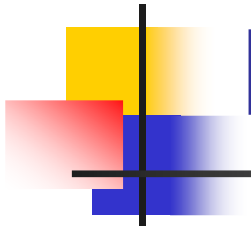
Current progress

- Information Point Station
  - Completed implementation using an embedded Linux computing platform.
- Handheld Device Software
  - Completed walking guidebook software on HP IPAQ.
  - Completed walking guidebook software for SonyEricsson P910i smart phone.
- Pointer/Tag
  - Completed initial pointer and tag prototypes.



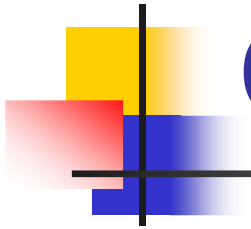
Findings

- Bluetooth
  - Widespread usage on most Handheld Devices.
  - Provides useful file transfer and serial port profiles.
- Server\IPS
  - Use of Linux and the open source Bluez Bluetooth stack allowed for rapid development.
- Handheld
  - Programmability for I/O API is not so flexible.
    - Depends on the Software Development Kits Used.
    - Some SDKs are intentionally limited due to security reasons.



Future Work

- Server
  - Development of User registration mechanism.
  - Development of Tools that can add, remove or modify information items.
- Handheld Devices
  - Deploy the Walking Guide Book software to other handhelds
  - Further develop a commentary system that allows user to add audio and visual comments.
- Pointer and Tag System
  - Use pointer and tag for other applications on the handheld apart from information item selection.
  - Design low physical profile of Pointer.
  - Design recharging electronics for Tag.



Questions & Thank You

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