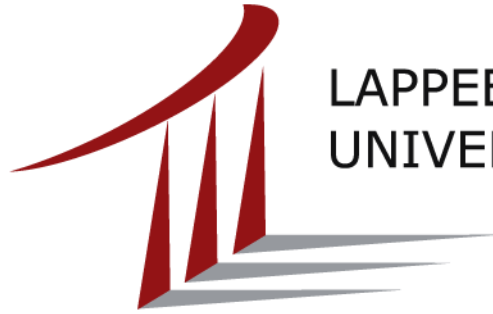




EXPERTISE IN TECHNOLOGY AND ECONOMICS



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# Mobile Feedback System for Supporting Interactive Learning

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**WEBIST,**  
**Barcelona, March 6th 2007**



# Outline

- Introduction
- Online education tool – "ITSE"
- Wireless Service Platform
- Conclusions



## Some problems in lectures in Finland

- Students are too shy or insecure to participate actively in learning and discussions during the lessons
  - Especially a problem on mass-courses
- The teacher doesn't know the students' level of knowledge on the issue before the exam
  - Preliminary knowledge also hard to define

## Our goal

- To implement a platform and some instruments that help to increase the interaction between students and the teacher during the lecture
  - Existing tools are typically aimed for time and/or location independent learning
- To also give the students a chance to have a real-time effect on the lectured topics

# Requirements for implementation

- Platform independency
  - WWW-based service, pure HTML
    - No additional SW installation needed
- Scalability
  - Laptops, PDAs and cell phones each have different size of screens
- Learnability (of usability quality components)
  - New users, one-time-users
- “Public anonymity”



# “ITSE” Application

- ITSE is a web-based platform including different modules
- The platform itself provides the basic functions for the modules
  - User account management, authentication, session management, general layout,...
- Modules are tools for
  - Sending feedback and questions
  - Voting
  - Quiz
  - File sharing



# HW Requirements

- To use the learning environment students need some equipment
  - Laptop or PDA with a web-browser
  - Network connection (WLAN, Bluetooth, wired)
- Teacher needs
  - Computer with network access and a web-browser
  - Overhead projector





## Interactive learning environment LUT

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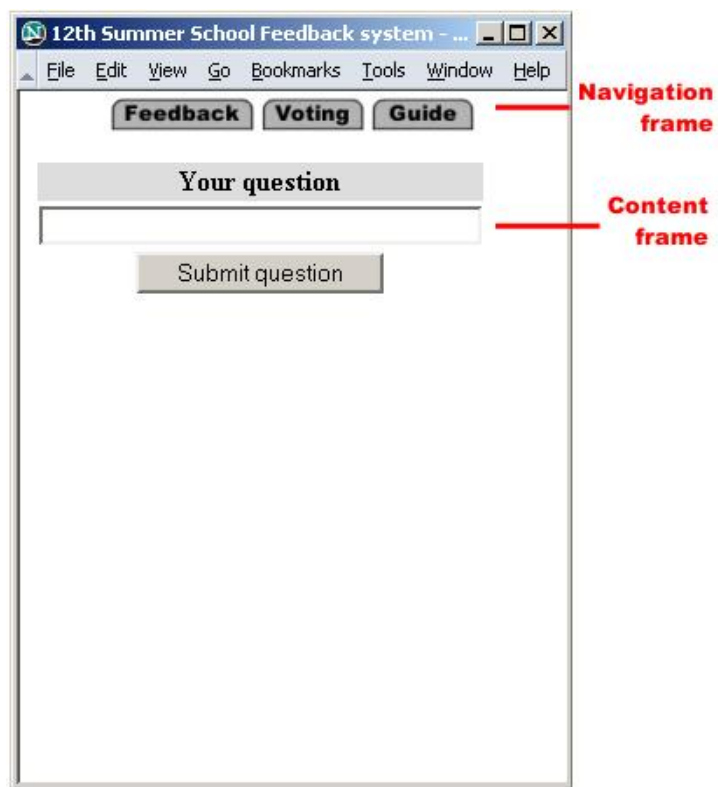
Wireless Lappeenranta



Total votes given: 13  
Period: 5 minutes

(Tue 03:06) Can I send short messages to the questions area?  
(Tue 03:05) Every classroom does not have an overhead projector!  
(Tue 03:05) What does WLAN stand for?  
(Tue 03:04) What is PDA?  
(Tue 03:03) **hjh** signed in.

# Client Interface



# Network Infrastructure

- Formerly the usage of the ITSE required ready-built network infrastructure
- The most usable connection in portable end-user devices are wireless interfaces
- Even nowadays the WLAN-connection is not too common in open classrooms
- The solution is "portable WLAN-network + service platform", "Wireless Service Platform"



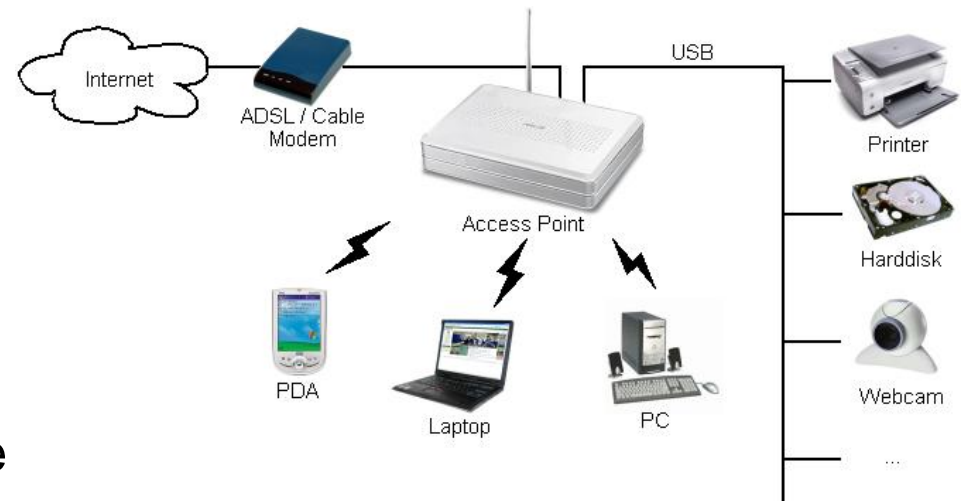
# OpenWrt Firmware

- Custom firmware for certain wireless routers (mainly based on Broadcom-chipset)
- Consists of Linux kernel v2.4 and writable Flash filesystem
- Large selection of software packets available
- Offers complete buildroot and cross-compile tools for software development
- Originally based on Linksys WRT54G -based firmware sources



# Wireless Service Platform

- Based on the OpenWrt firmware (WhiteRussian) and Asus WL500gp wireless router
- Extensible with external peripherals (e.g. memory stick, harddrive, webcam) through USB-bus
- Utilizes the flexibility and the modern features of the Linux kernel



# Conclusions

- Opportunity
  - Blurring the edge between students and teacher
    - Increasing interaction
  - The number of laptops, PDAs and wireless network connections are increasing
  - No additional software needed on client-side, just a web-browser
  - WSP-features make it a portable “tool” not requiring ready-built network infrastructure
- Challenges
  - To get the teachers to get interested on improving their teaching
  - To get the students willing to participate on learning more actively
  - To minimize the possible negative effects



## To think about...

- Who really are the most potential users for this type of solution
  - High schools, universities?
  - Companies?
  - Conferences?

## Contact Information

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**Thank You!**



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