

# Practical Course: Development of Media Systems / Praktikum Entwicklung Mediensysteme

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<http://www.mimuc.de>

# Structure

- Basic conditions of the practical course
- Topic: Enhancing the Mobile Guide (MOPS)
  - Presentation of MOPS
  - Physical Clicking
  - Authoring Support
  - New application area
- Organizational aspects
  - Next meetings
- J2ME / SVN - Tutorial

# Basic Conditions

- Software development as teamwork
- Management and self-organization
  - Project and time management
  - Plan → result
  - Specification and documentation
- Project schedule / Requirement specification
  - Who does what and when?
  - Work packages, milestones, dependencies, structuring the tasks

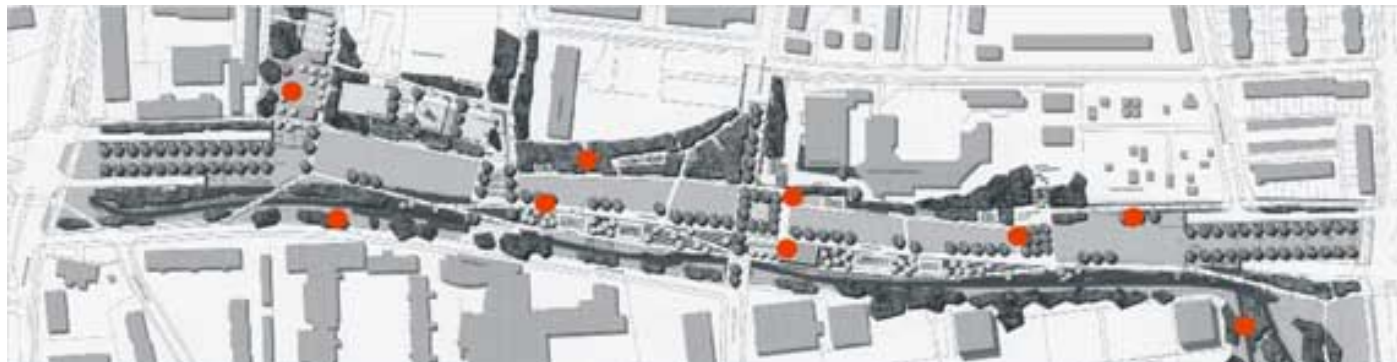
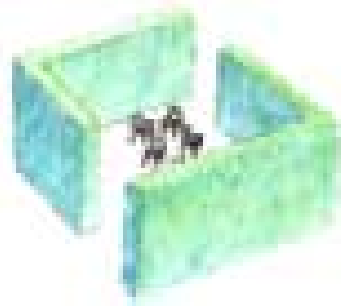
# Basic Conditions

- Predetermined
  - result
  - generic work packages
  - technical scope
  - there should be a kind of organization
- Official meetings (mostly) every 2 weeks
  - 24/10, 31/10, 14/11, 28/11, 19/12 (preliminary report), 09/01, 23/01, 06/02 (final report)

# Mobile Museum Guide (MOPS)

- Usage of the own mobile device as a virtual guide (instead of using paper material or lending an audio player)
  - User (Tourist)
    - Already familiar with his own device
    - Access to the information also after this visit available
    - Possibly to request additional information (e.g. from WWW)
  - Museum / Park / Exhibition
    - New services for the visitor
    - Reduced costs (?)
    - Easy update of information

# Petuelpark ???



# Mobile Museum Guide: Scenario

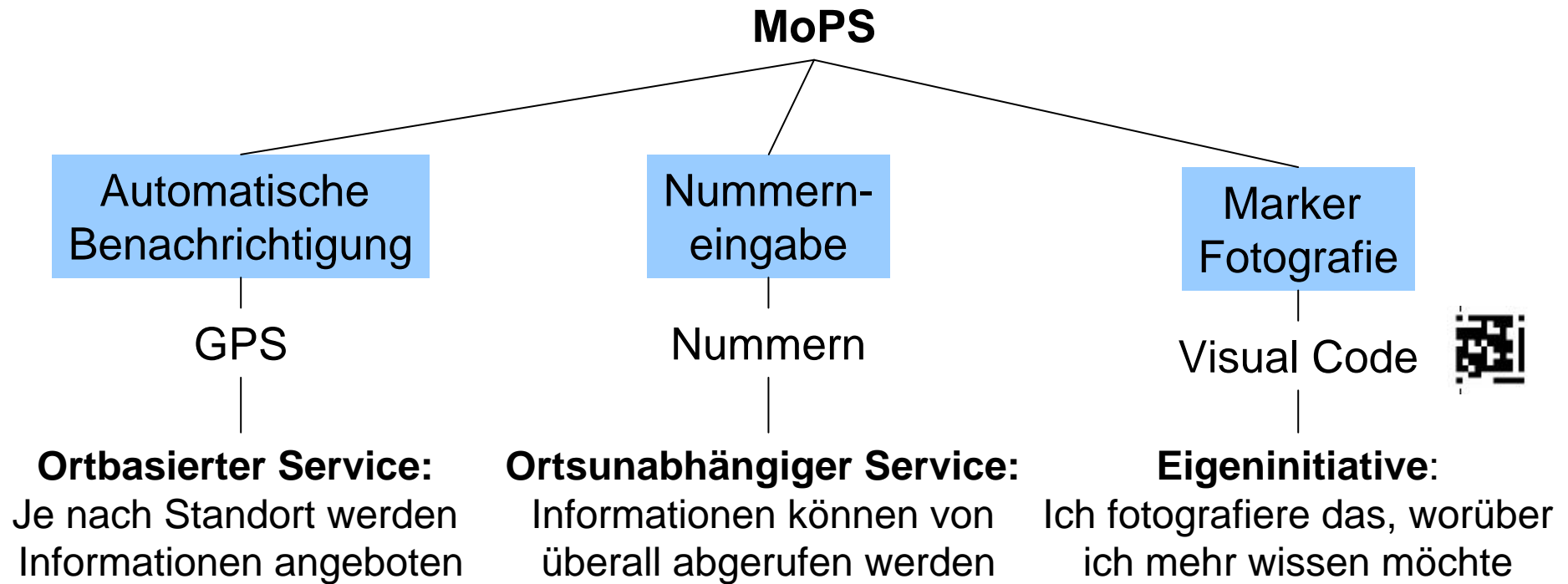
- Visitor enters the museum / park / exhibition
- Download of an MIDlet (Java application) or i-mode webpage
- Direct interaction with the exhibit (visual code), physical link → Gets information (audio or visual) on his mobile device
  - Usage of built-in camera of the mobile phone, Marker on poster represents service (URL)
  - Bridge between the real and the virtual world
- Indirect interaction with the exhibit, position-based (user is nearby an object) → Gets information (audio or visual) on his mobile device



# **MoPS**

## **„Mobile Petuelpark System“**


# Realisierung

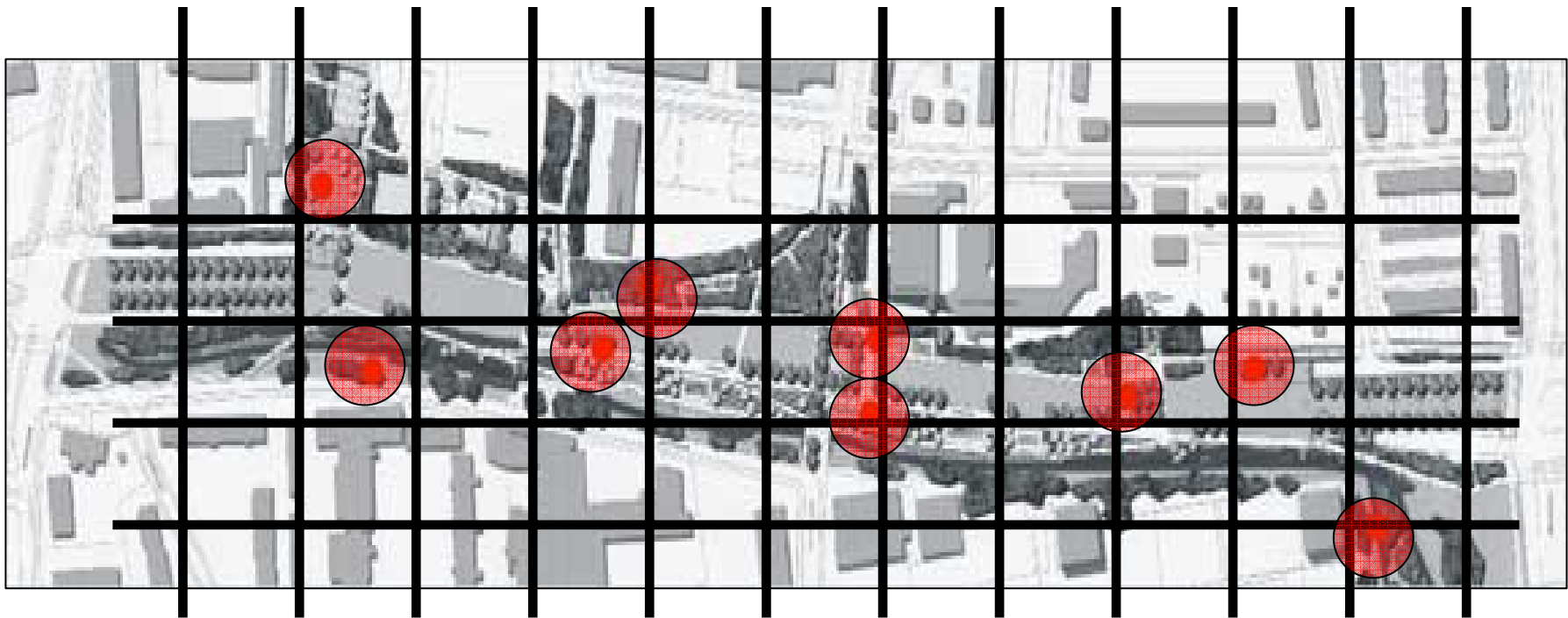


## Allgemeine Konzeptidee

- international (auch auf Englisch)
- Mobile Guide Software mit Plugin Funktionalität
- „Ich bin in New York und lad mir schnell mein Central Park-Plugin in runter.“

# Vorbereitungen - GPS

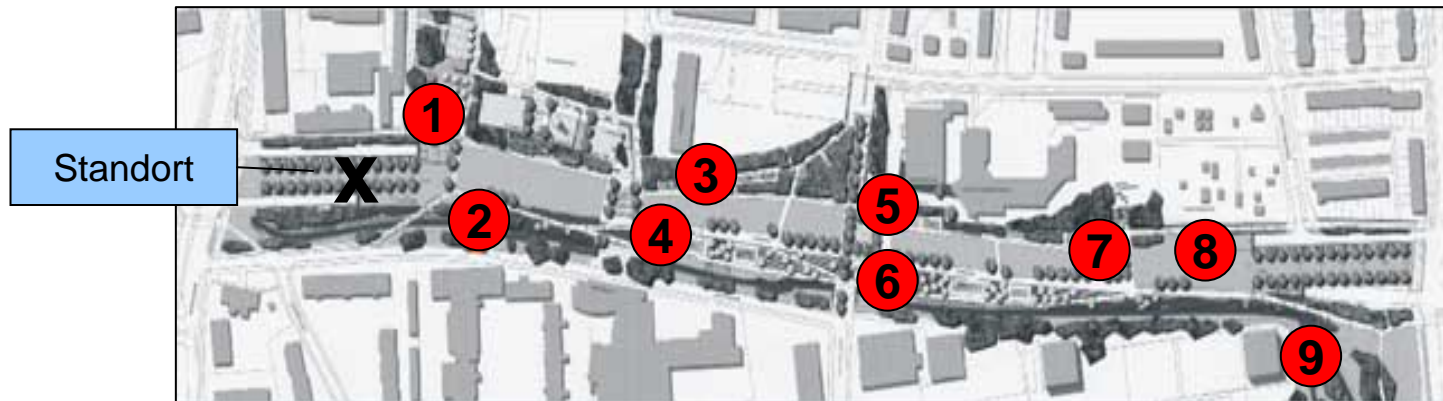
- Ausmessen der relevanten GPS-Daten
- Benachrichtigung bei Eintritt in den Bereich 
- Rasterung des Petuelparks für Ortsbestimmung



# Realisierung - GPS


## Kleines Navigationssystem

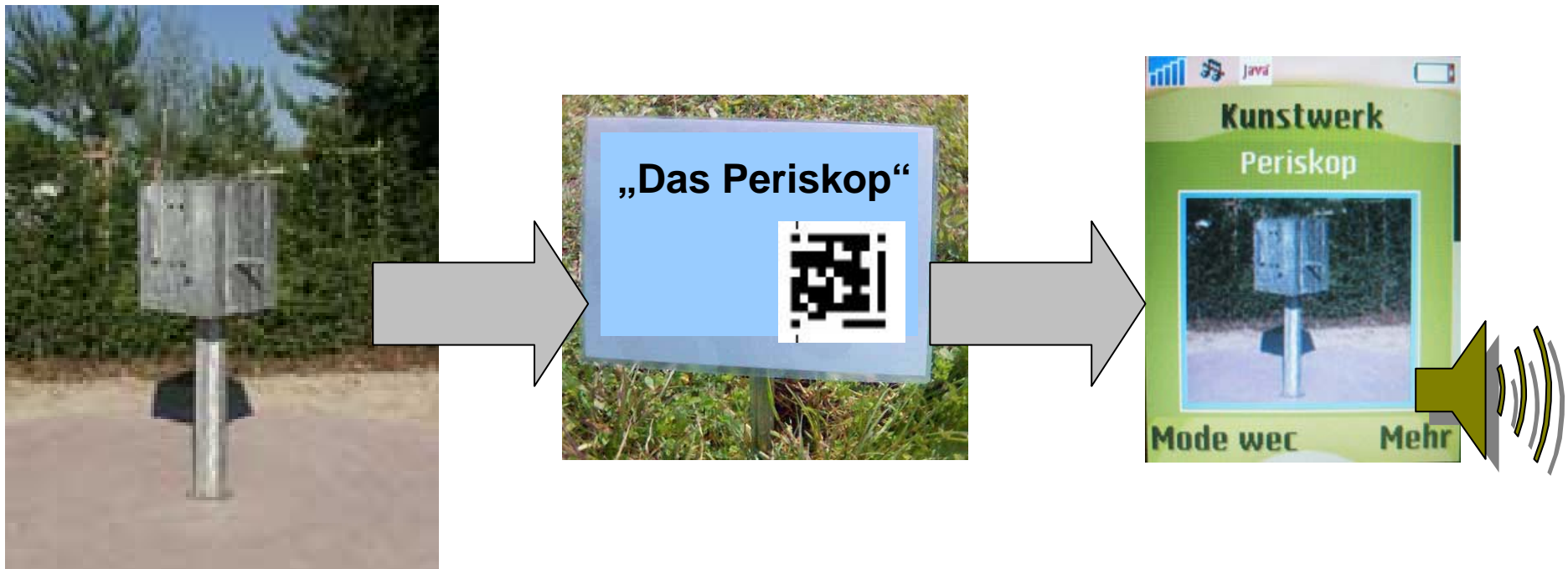
- Besucher bekommt seinen aktuellen Standort auf der Übersichtsseite angezeigt



- Benachrichtigung wenn man den sensitiven Bereich betritt
  - Abrufen der Informationen wenn man möchte
- nachdem einmal gelesen, keine weitere Benachrichtigung, sondern erst wenn man den Bereich verlassen hat und ihn dann wieder betritt

# Marker Fotografie

- Ausstatten der Objekte mit Visual Tags
- Abfotografieren des Markers an dem Objekt 
- Erkennung der Marker und Laden der Informationen aufs Handy

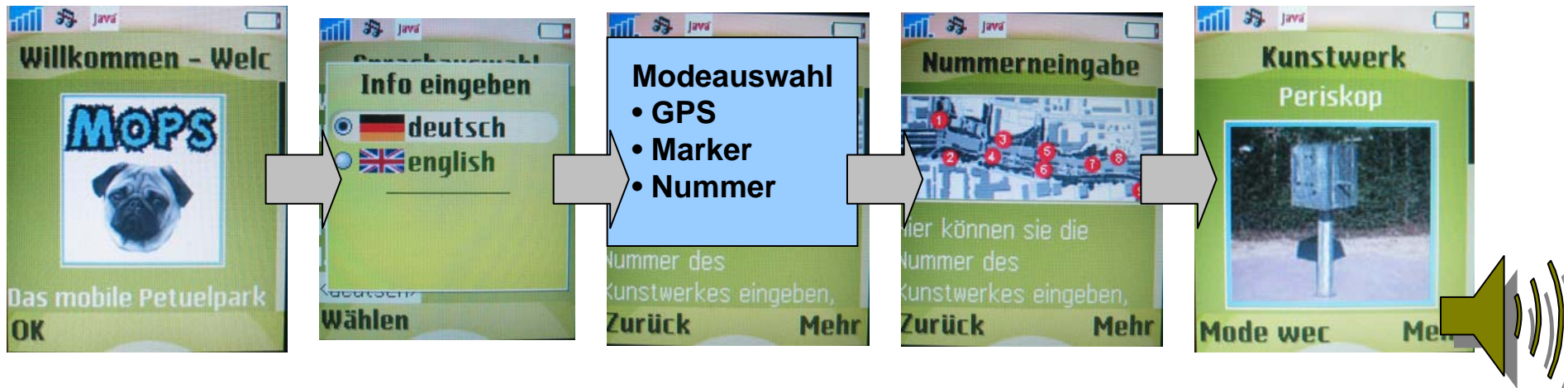


# Nummerneingabe

- Unterhalb der Karte erscheint eine Liste mit allen Kunstwerken
- nach Eingabe der Nummer des Kunstwerks werden die Informationen angezeigt
- **Vorteil:**
  - Unabhängig vom Standort
  - einfache Bedienung (intuitiv)



# Ablauf MOPS



- Informationen der einzelnen Kunstwerke liegen als XML-Daten vor



Beispiel XML.xml

# Task / Idea for WS 2005 / 2006

- Based on MOPS (PMIF – version)
- Integration of a new interaction technique:  
„physical clicking“
- Integration of authoring support
  - Web-based interface for the definition of the content of such an application
- Example (not)
  - Tour guide: Petuelpark, University tour (historical buildings), Schwabing; Game

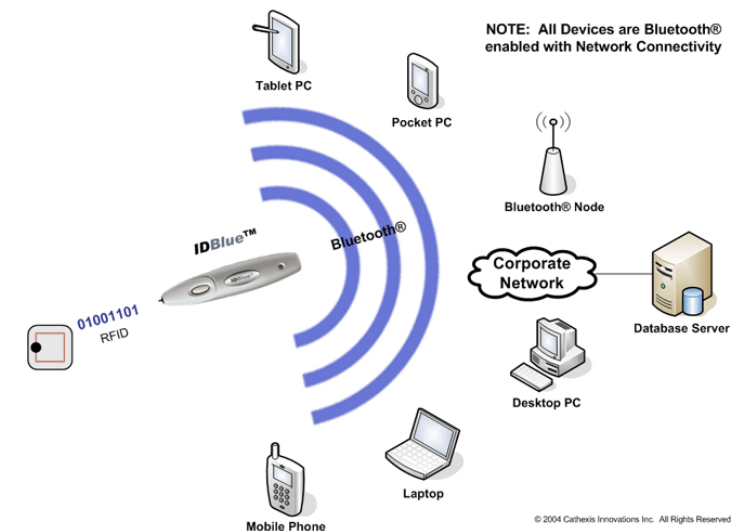
# Physical Clicking

- Based on RFID (Radio Frequency Identification) / NFC (Near Field Communication) technology
- RFID: Tag + Reader
  - Reader: emits a short-range radio signal → powers up a microchip on a tag → read / write data on the tag
- NFC: similar to RFID
  - Very short range operating distance
  - Allows two devices to interconnect (short range RFID + Bluetooth)

# Physical Clicking: RFID



- IDBlue (Bluetooth RFID Pen) [1]
  - Supported standards: ISO 15693-2, -3, Tag-it™ HF/HFI, Phillips I-Code SLI
  - Range 2 - 4 cm
  - Bluetooth 1.1, Class 2
  - Read & Write
- 125 writeable RFID Tags (ISO 15693-3)
- J2ME – Driver [2]



# Physical Clicking: NFC

- Nokia 3220 [3] & Nokia NFC Shell [4]
  - Supports: Philips MiFare UltraLight, Philips MiFare 1k and Philips MiFare 4 k
  - 22 pcs MIFARE® 1K sticker tags
- Nokia NFC & RFID SDK
  - J2ME / API
  - Reading and writing tags
- [Nokia LI Server](#)



# Integration of Authoring Support

- Goal: Management of content by non-experts
- Web-based application for managing
  - Screens of the application
  - Information for every object
  - Relationship between object, id, location, content
- Generates an XML – file (links to images, audio - files, etc.) which is used by the application

## Explore Munich

### Description

**start date:** 23.02.2005  
**start time:** 14:00  
**end date:** 25.02.2005  
**end time:** 23:00  
**sharing:** Yes  
**ordered:** Yes

By: *eva*  
Game ID: 1  
[show images](#)

### Instruction

Follow the instructions and find out interesting things about Munich.

### Task 1 Points: 5 max. Photos: 1

Find the oldest church of Munich and climb its tower. Enjoy the view and take a photo of it.

### Task 2 Points: 5 max. Photos: 15

Have a break at the "Hofbräuhaus" and illustrate your impressions with five photos.

### Task 3 Points: 20 max. Photos: 10

Check out the nightlife of Munich and show people having fun - as long as you're able to...

# Work packages

- WP 1: Scenario
  - Brainstorming: Description of the new scenario / application area
  - Which tour / museum / game?
- WP 2: Architecture
  - Define basic architecture
  - Define communication mechanisms
- WP 3: Implementation
  - Content
  - Implementation of the prototype based on the architecture and the scenario
- WP 4: User study
  - User study

# Organizational stuff

- 4 SWS
- Room for the practical course
  - 103, Amalienstraße 17
  - open during normal working times (7.30-17.00)
  - 2 keys
  - 5 PCs
- Mailing lists
  - [pems0506@medien.ifi.lmu.de](mailto:pems0506@medien.ifi.lmu.de)
- News (Meetings, Slides, etc.)
  - <http://www.medien.informatik.uni-muenchen.de/lehre/ws0506/pem.html>

# Organizational stuff

## ■ Hardware

- Mobile Phones: Nokia 6600 (4x), Siemens S65 (2x), Nokia N90
- Tablet PC (2x)
- SIM-Cards (O2, T-Mobile)



- Books: “Beginning J2ME (Sing Li, Jonathan B. Knudsen)”, in Room 103

# Organizational stuff

- Enrico Rukzio
  - [Enrico.Rukzio@ifi.lmu.de](mailto:Enrico.Rukzio@ifi.lmu.de)
  - Room 206, Amalienstraße 17
- Albrecht Schmidt
  - [Albrecht.Schmidt@ifi.lmu.de](mailto:Albrecht.Schmidt@ifi.lmu.de)
  - Room 505, Amalienstraße 17
- Rainer Fink (Administrator)
  - [rainer.fink@ifi.lmu.de](mailto:rainer.fink@ifi.lmu.de), Room 102
- Hiwi / Students
  - Specific technical questions: UI, storage, communication, etc.
  - Eva Vodvasky ([eva@vodvasky.de](mailto:eva@vodvasky.de))
  - Other students (former Hiwis / participants of practical courses)

# Next meeting

- Date 24/10/05, 16.00, Room 107
- Idea behind the Physical Mobile Interaction Framework (PMIF) (Enrico Rukzio)
- Introduction into PMIF (Sergej Wetzstein)
  - Usage of PMIF for MOPS
- Introduction into Authoring tool of Mobile Treasure Hunt
- WP1: Scenario
  - Functionality of the new prototype
  - Without thinking about technical aspects (Is this technically possible?)
- Login, Mailing list

# Meeting 31/10/05

- Presentation:
  - project plan, detailed work packages
  - who does what and when
  - first results, WP 1: Scenario, WP 2: Architecture
- Furthermore:
  - HelloWorld, Tutorials
  - Own running application on mobile phone
  - Familiar with developing environment / SVN

# References

- [1] <http://www.cathexis.com/Products/idblue.asp>
- [2] <http://auriga.wearlab.de/projects/jidblue/>
- [3] <http://www.forum.nokia.com/main/0,,018-2045,00.html?model=3220>
- [4] <http://www.nokia.com/nfc>