

The Benefits of Geo-Tagging and Microblogging in m-Learning: a Use Case

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A Geospatial Wiki for M-Learning

- Introduction
- Requirements
- Development of TUGeoWiki
- Extension with Microblogging
- Summary & Future Work

Introduction: Why TUGeoWiki?

- Supports learning in a specific setting (Field Trips)
 - Civil Engineering
 - Geosciences
 - Archeology
 - Architecture
 - ...

- Unique combination of
 - Collaborative authoring (Wiki)
 - Geo-tagged information (images)
 - Mobile application
 - [Micro]blogging]

Use Case: Support Field Trips

- Preparation of field trips
 - Collaborative work
 - Preparation for the individual locations

- Learning on-site
 - Location-based information retrieval
 - Real-time sharing of resources

- Post-processing of field trips
 - Collaborative work
 - Review and consolidate information

System Requirements (1/2)

- Lightweight
 - Implement only **basic** features of GIS
 - Focus on support of technology enhanced learning
 - Unobtrusive user interaction
 - Low-cost
 - Low maintenance

- Geotagging-based
 - Location-related information
 - Focus on learning scenarios with such information
 - Clearly defined relation: learning material ↔ location

System Requirements (2/2)

- Mobile
 - Learning „in-the-field“
 - Mobile phones and PDAs
 - Foster collaboration wherever, whenever

TUGeoWiki at a glance

- TU Graz (Graz University of Technology) Geospatial Wiki

- Extension of MediaWiki
 - Special Pages
 - Templates
 - Server-side API
 - Mobile clients
 - Java ME
 - Android
 - iPhone
 - (Symbian)

Why MediaWiki?

- Well-defined mechanism for extensions
 - Special Pages
 - Pages without content to provide tools for users
 - Templates
 - Contain repetitive material and blocks of information

- Well-known user interface
 - Used for Wikipedia

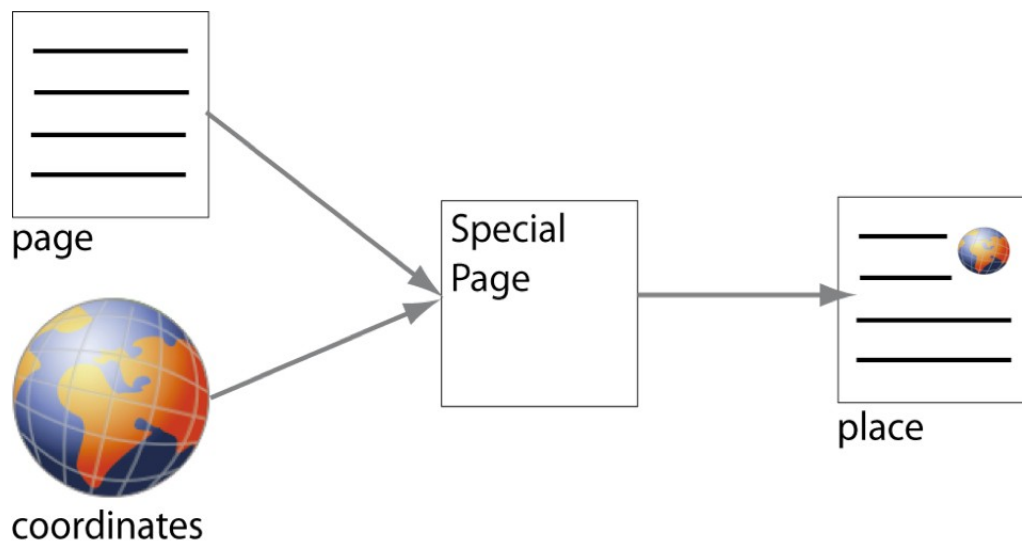
Terminology

- *Page*
 - Standard wiki paradigm for one piece of Information

- *Place*
 - TUGeoWiki paradigm for one piece of location-based information
 - Represented by a geo-tagged wiki *page*

- *Location*
 - Actual geographic entity
 - Represented by a *place* in TUGeoWiki

Places in TUGeoWiki



Application Scenarios

- Desktop scenario
- Mobile scenario

Desktop scenario

- Collaborative authoring

- Supports
 - Process-oriented learning
 - Task-based learning

- Use Cases
 - Preparation for field trips
 - Post-processing of a field trip
 - Reviewing information from a field trip

Mobile Scenario

- Access to learner's current location
 - GPS sensor

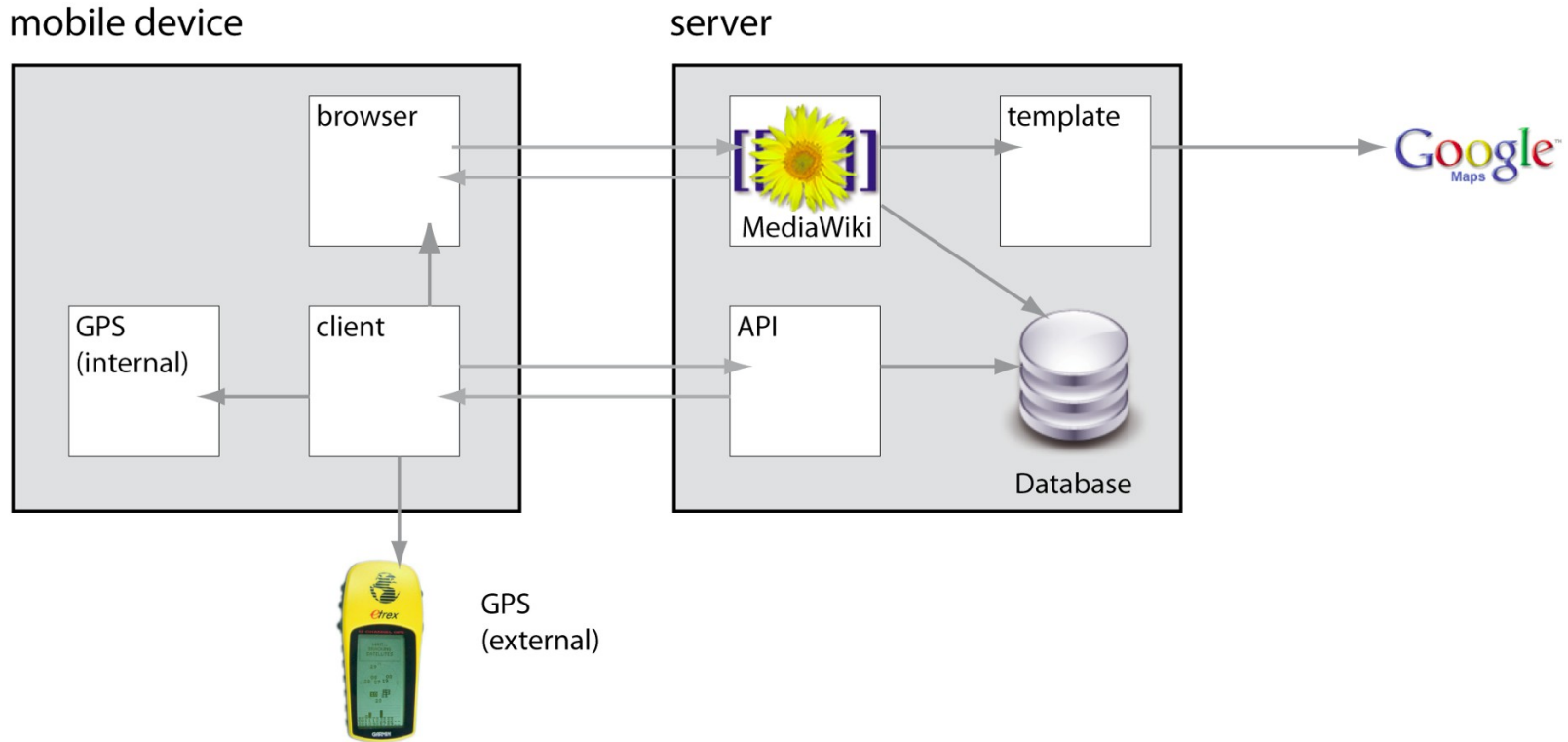
- Use current location to find corresponding *place*

- Satisfy information need *just-in-time*

- *Real-time* sharing of resources

- User interface restrictions on small mobile devices
 - Focus on *place stubs* rather than long descriptions

Component architecture



Microblog Integration

- First Evaluation Results
 - Mobile scenario mainly used to satisfy information need
 - Collaborative authoring perceived complex on small mobile devices

- Focus on information push
 - Extend existing *places* with geotagged images
 - Create *place stubs* for current location
 - Add short messages

Micropages

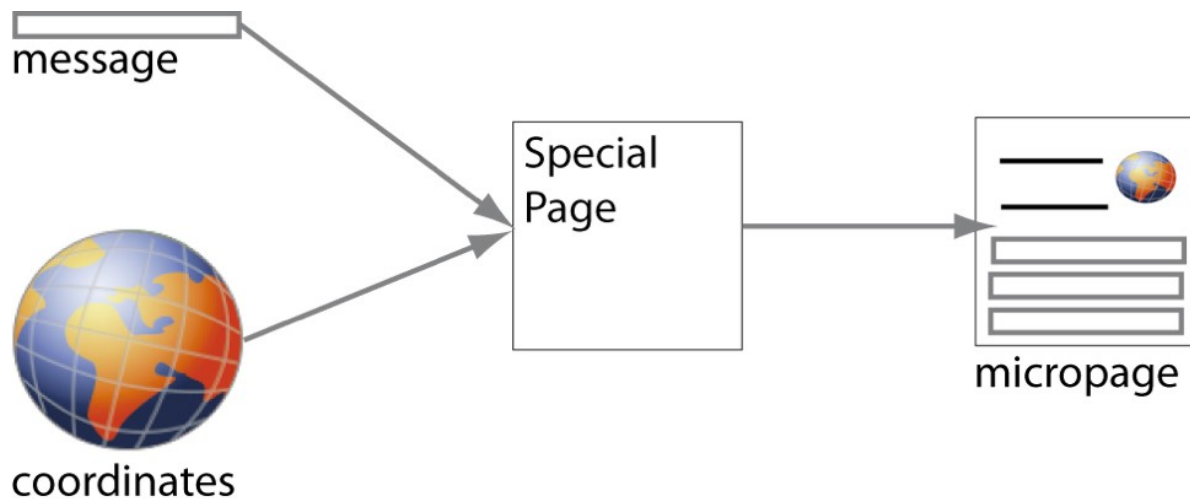
- Additional paradigm
 - Wiki page extended by short text messages
 - Analogously to microblogging

- Micropage
 - Wiki page consisting of short individual messages
 - Instead of longer, collaboratively authored texts
 - Smaller portions of information
 - Subsequent collaborative editing to create higher quality content

Example

The screenshot shows a TUGeoWiki page for "Lainzer Tunnel LT 44 (Baustelle)". The page layout includes a top navigation bar with buttons for "Page", "Discussion", "Edit", "History", "Delete", "Move", "Protect", and "Watch". The main content area features a title "Lainzer Tunnel LT 44 (Baustelle)", a photograph of a construction site, and a text block: "HL-AG was assigned the development of the tunnel in 1990 and with the building in 1996. Since 1999 the vonnection of "Westbahn" and "Wienerwaldtunnel" is under construction." Below this is a comment: "Lainzer Tunnle is a 12.8 km long tunnel in Vienna. -- [[Benutzer:Essayen|Essayen] 2009-05-25 16:03". To the right is a map titled "Karte" showing the location in Vienna. The sidebar on the left contains a "Navigation" section with links to "Main Page", "Current events", "Recent changes", "Random page", and "Help", and a "Search" section with a search box and "Go" and "Search" buttons. The TUGeoWiki logo is also visible in the top left of the page content.

Creating Micropages



Limitations

- Not intended for communication
 - Reduced to information push aspect of microblogging

- Not intended as final content of a page
 - Revising necessary
 - Stubs for wiki content

Summary and Future Work

- Development of a geospatial Wiki for m-Learning
 - To enhance collaborative activities
 - To enable feeding and composition of geo-tagged information
 - To enhance learning in-the-field
 - To enable real-time sharing of information and media

- First evaluation with small groups of students
 - Interviews with lecturers for feedback on further development

- Future work
 - Development of additional mobile clients
 - Symbian OS
 - Evaluation in formal experiments

Thank you for your attention.

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