



# Nailing the reality with GeoMedia: location-aware multimedia tags

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# Outline

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- ◆ Introduction
- ◆ Virtual Post-Its
  - Advantages and challenges
  - GeoMedia system
  - Current implementation
- ◆ Conclusion

# Introduction: Post-Its



## ◆ Advantages

- Intuitive
- Easy to use

## ◆ Limitations:

- Near-range only
- Publicly seen
- Static content
- Environment clutter





Verona, 2004: Under Juliet's balcony



# Virtual Post-Its: advantages

- ◆ Can be remotely attached to any place
- ◆ Present multimedia content
- ◆ Preserve privacy
- ◆ 100% environment-friendly 😊
- ◆ Received by location-aware devices

# Virtual Post-Its: challenges

## ◆ Location-awareness

- GPS, Wi-Fi, GSM positioning methods have limitations (accuracy, coverage)
- Solution: use a position-fusion framework (e.g. PlaceLab)

## ◆ Content adaptation

- Different devices have different capabilities
- Solution: adapt the content dynamically

# Virtual Post-Its: challenges (cont'd)

## ◆ Location privacy

- To receive a virtual note, user's position is disclosed to the server
- Solution: estimate position locally on the device
  - ◆ The user has full control over positioning data flow
  - ◆ The user can stay anonymous and receive only public messages
  - ◆ Position sent to server can be deliberately distorted

# GeoMedia system: Users

## ◆ Stationary users

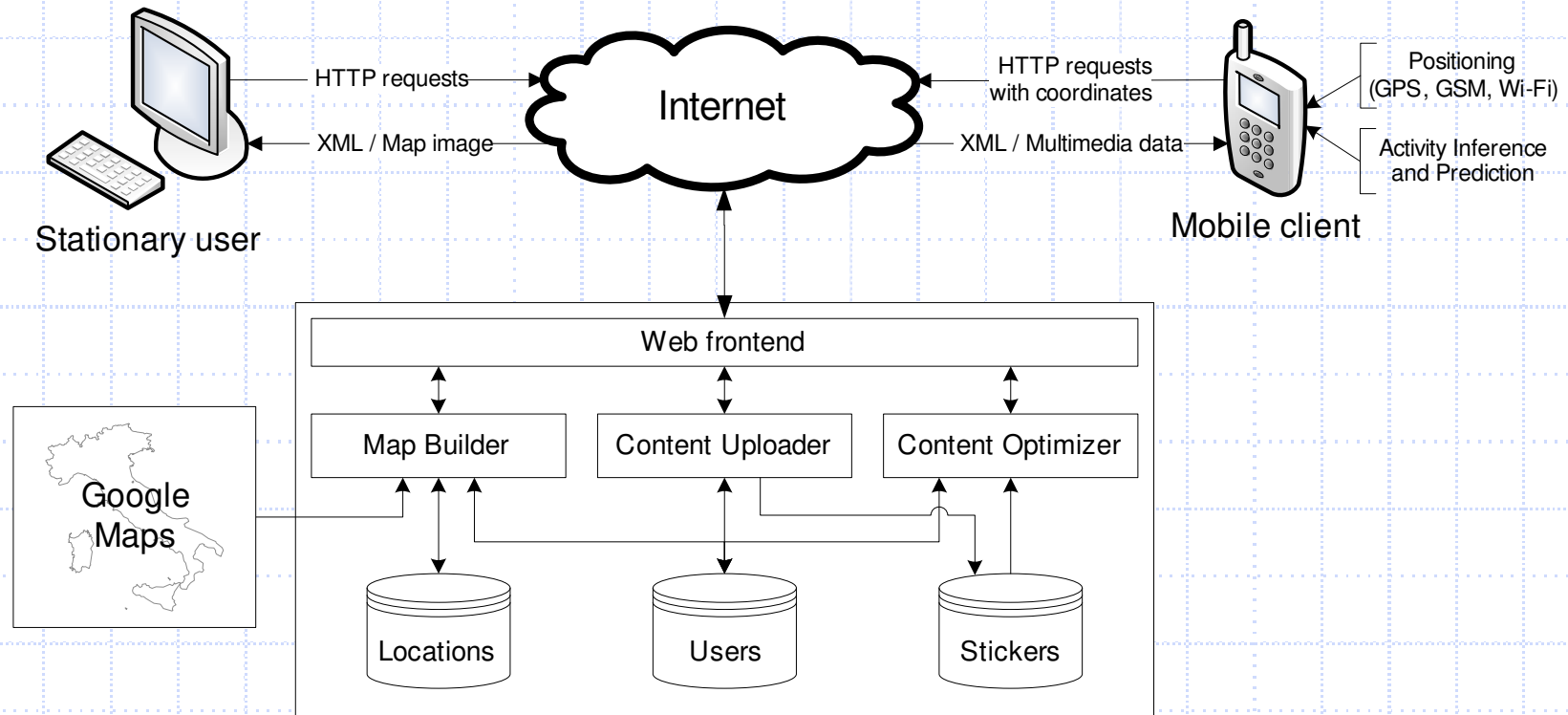
- Create content
- Attach virtual notes to map

## ◆ Mobile users

- Carry location-aware devices (cellphones)
- Receive virtual notes to their devices



# GeoMedia system: architecture



+5550000 - DefaultColorPhone  
MIDlet View Help

**Sun**  
microsystems

Signal strength, battery, and other status icons.

**Piazza del Duomo**

- A view from Panorama Center
- The Duomo of Trento
- Feste Vigiliane 2006 - Music performance

Back View

Navigation pad and numeric keypad.



[upload file](#) [hide sidebar](#)

A view from Panorama Center [edit](#) [remove](#)

The Duomo of Trento [edit](#) [remove](#)

[Click to download \(video, 517 kB\)](#)

Feste Vigiliane 2006 - Music performance [edit](#) [remove](#)

# GeoMedia: implementation

## ◆ Stationary side

- Google Maps interface
- Apache Tomcat & Struts web front-end

## ◆ Mobile side

- Java ME application
- Java Location API & GPS (PlaceLab planned)
- Wi-Fi, 3G or GPRS connectivity

# Conclusion

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- ◆ GeoMedia system
  - Location-aware multimedia notes
  - Optimization for mobile devices
  - Privacy of the user location
  - Work in progress