Nailing the reality with GeoMedia: location-aware multimedia tags

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Outline

확대

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

Internet

Stationary user

HTTP requests
XML / Map image

Mobile client

HTTP requests with coordinates
XML / Multimedia data

Google Maps

Web frontend

Map Builder
Content Uploader
Content Optimizer

Locations
Users
Stickers

Activity Inference and Prediction
Positioning (GPS, GSM, Wi-Fi)
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

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