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## Mobile Augmented Reality for Tourists

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**LBS2011**, Vienna, 21.11.2011

# Joanneum Research

## Some facts

- Headquarters in the City of Graz
- Applied Research and Development
- NON-profit & NON-university
- More than 430 employees
- Owned by the province of Styria



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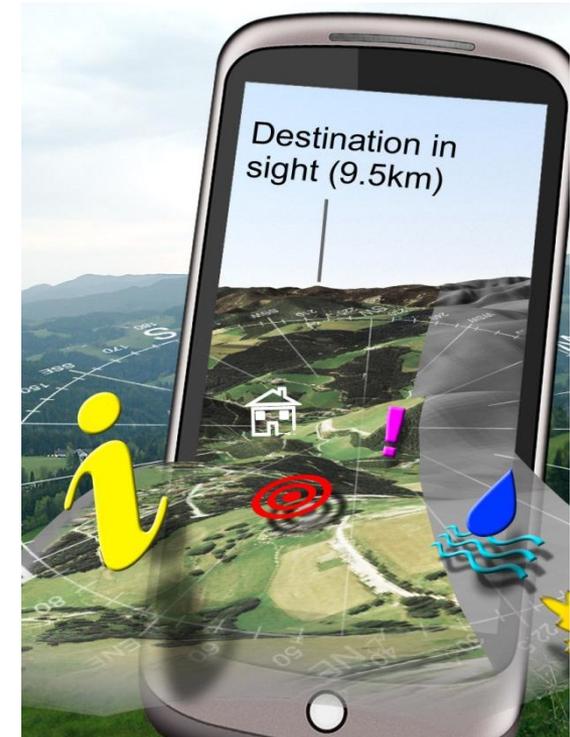
# AR Navigation for Graz



- Public transport integrated pedestrian navigation
- AR Navigation with audio and tactile response
- Real-time vehicle locations and on-board p2p services for accurate navigation assistance

# Project MARFT

- Mobile Augmented Reality for Tourists
  - 2009 - 2012
  - Main Use-Case: Alpine Hiking Scenario
  - Demonstration: El Escorial, Joglland
- EUROSTARs Project
  - Co-funded by EC and BMVIT
- Project partners
  - CCCOM Anderson&Moser GmbH
  - Moviquity (Spanish SME)
  - Joanneum Research



# Motivation

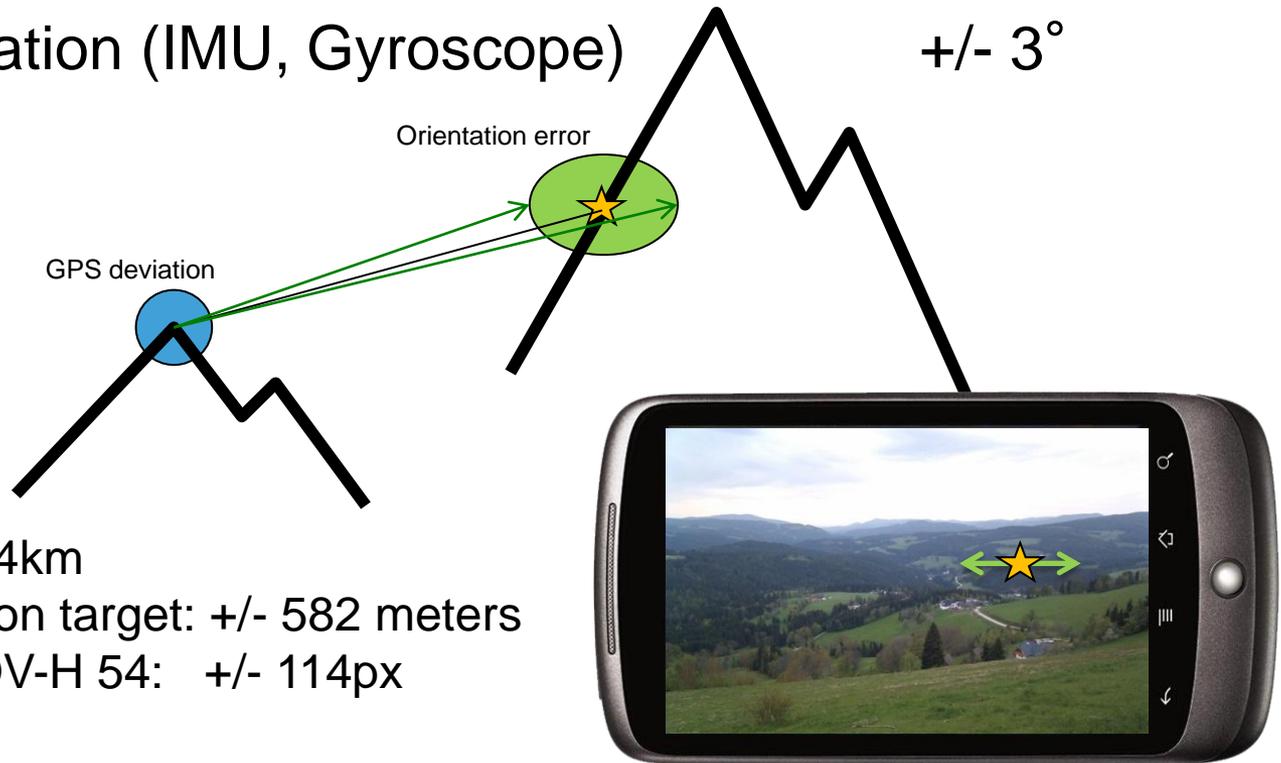
- Layar, Junaio, Wikitude, ...
- Intuitive user interface for spatial information
- Focused on a playful user experience
- With some weaknesses...
  - Low augmentation accuracy
  - No consideration of visibility
  - Online service

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# Why are current AR apps inaccurate?

- Positioning (GPS, WiFi, Cell) +/- 20m
- Digital compass +/- 8°
- Orientation (IMU, Gyroscope) +/- 3°



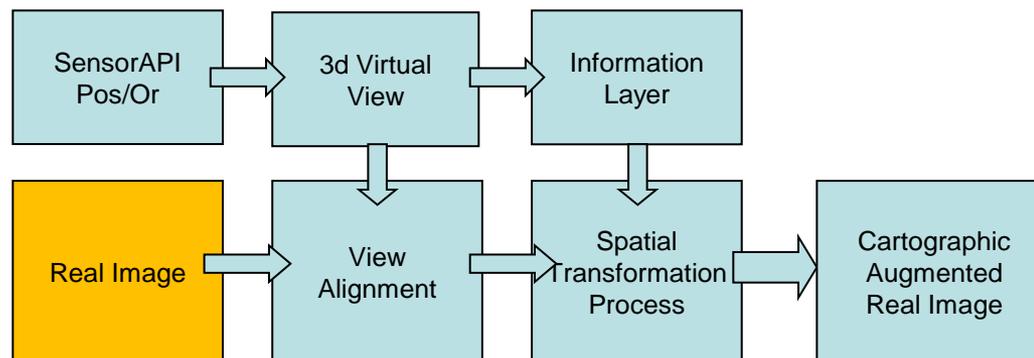
Distance: 4km  
 Deviation on target: +/- 582 meters  
 800px, FOV-H 54: +/- 114px

# Aims of the MARFT system

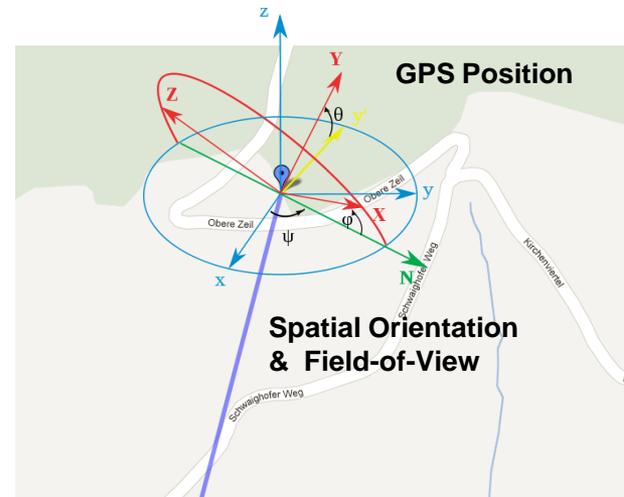
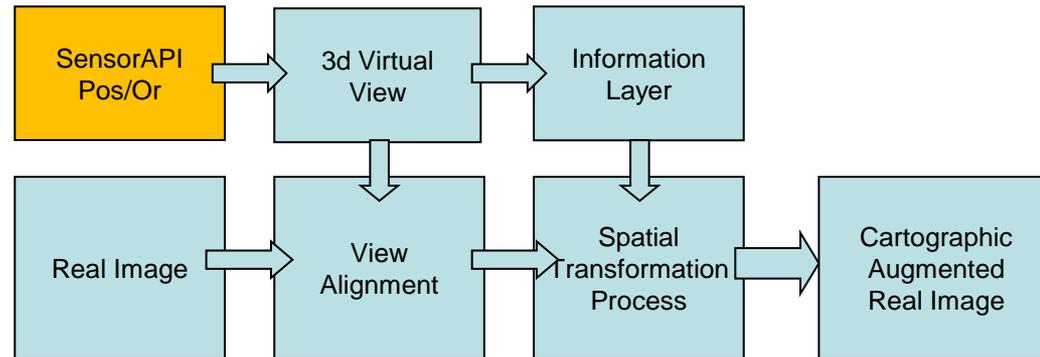
- Augmentation with cartographic accuracy
- Safety relevant and professional applications
- Consideration of visibility
- Offline usage possible
- Community integration



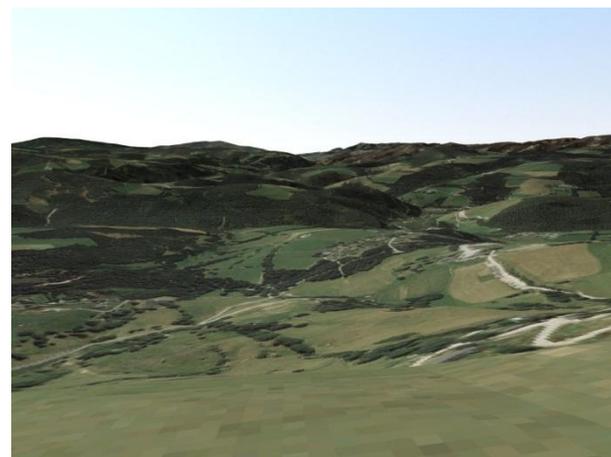
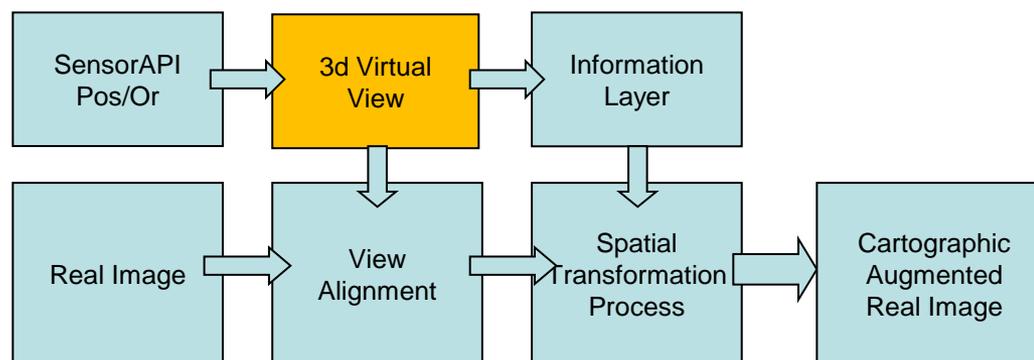
# MARFT Workflow 1/5



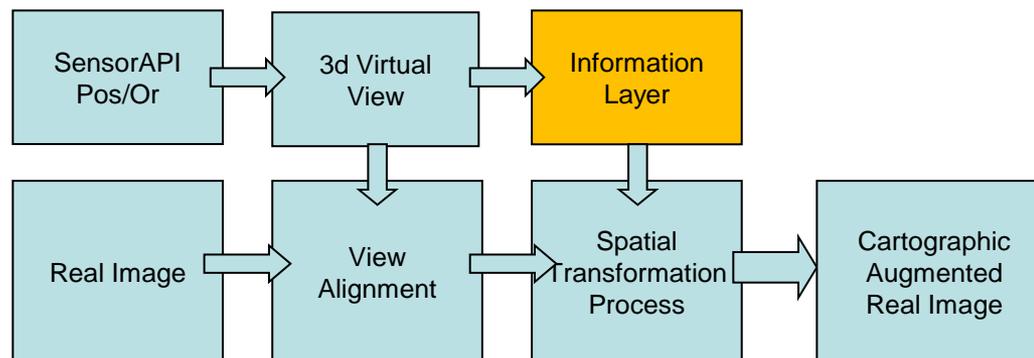
# MARFT Workflow 1/6



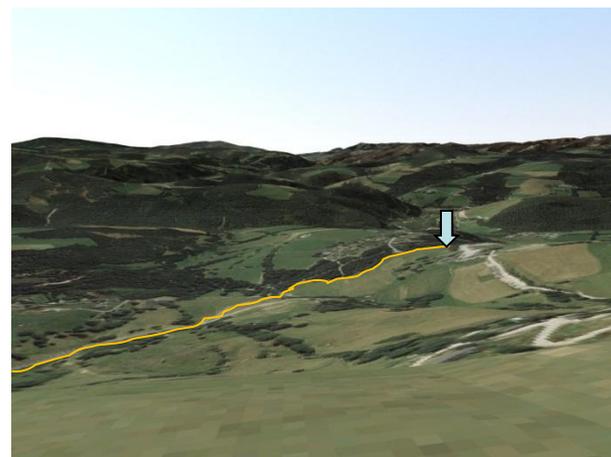
# MARFT Workflow 2/6



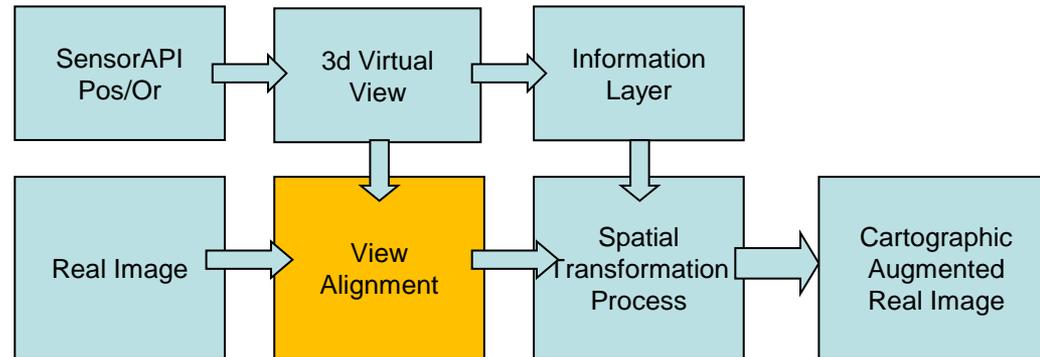
# MARFT Workflow 3/6



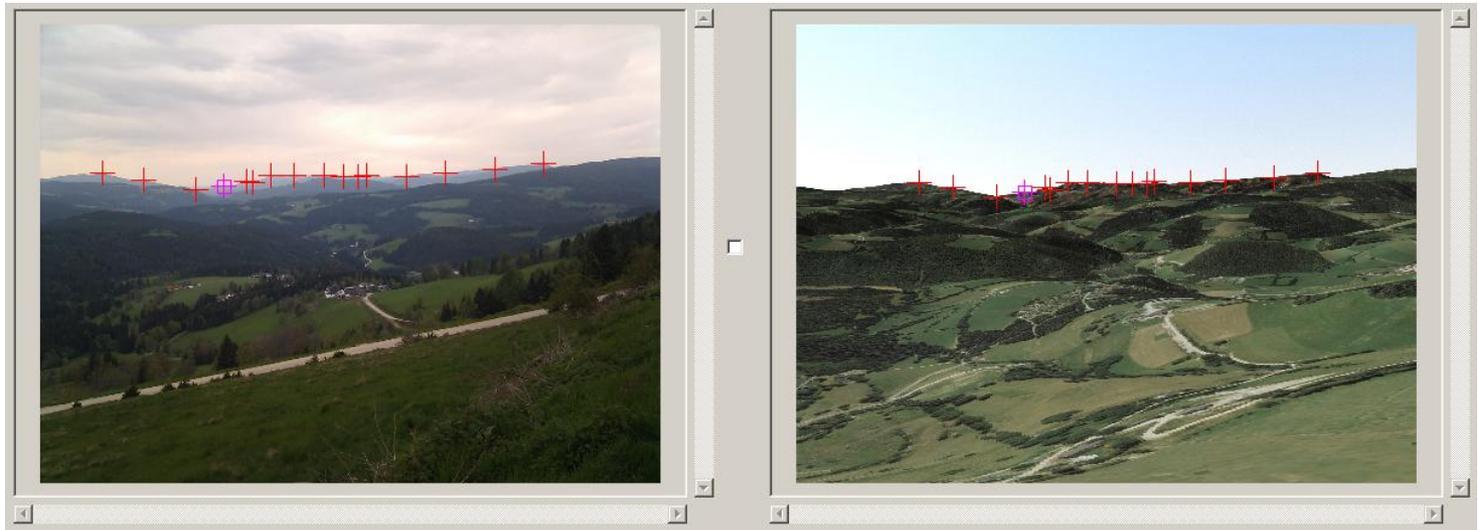
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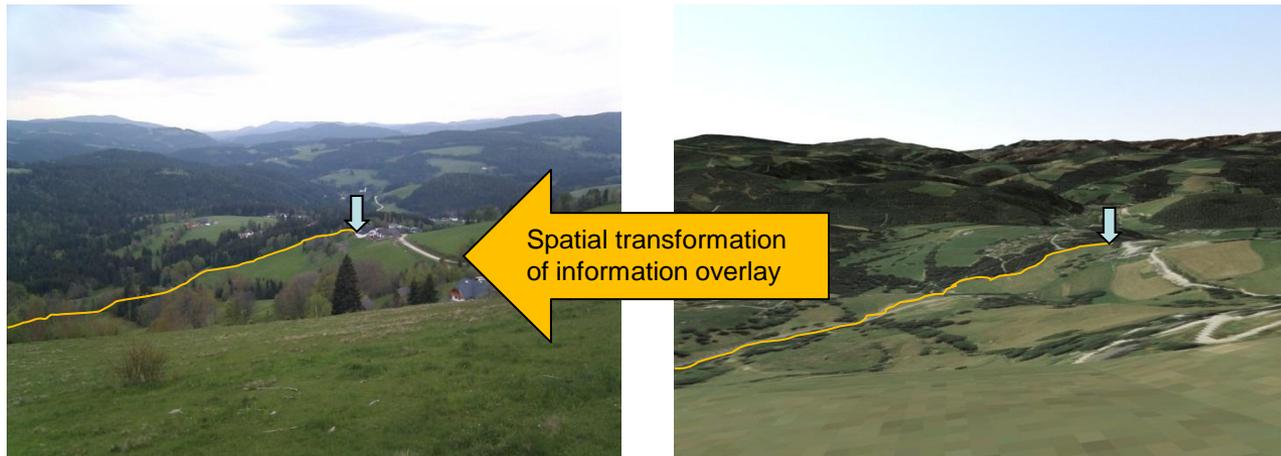
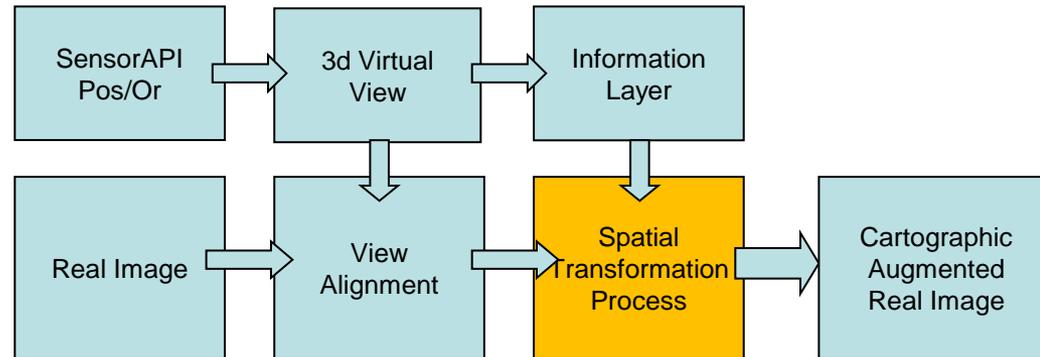
# MARFT Workflow 4/6



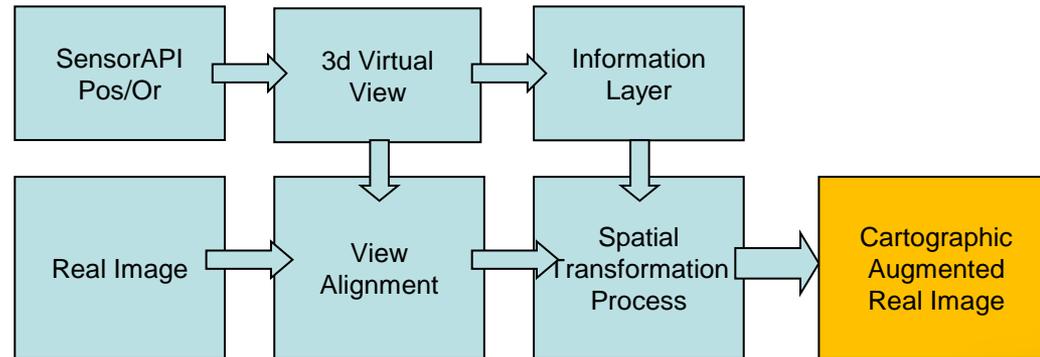
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# MARFT Workflow 5/6



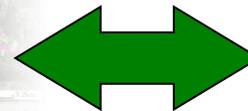
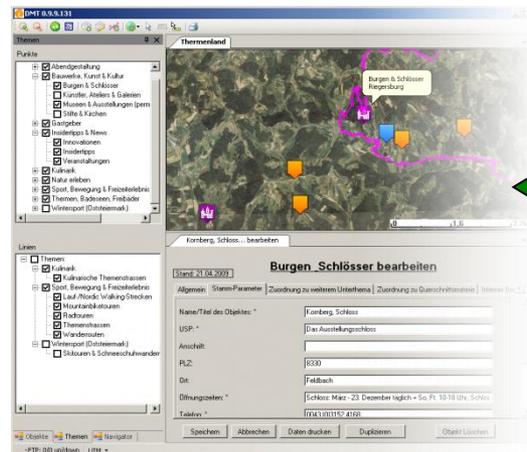
# MARFT Workflow 6/6



# Complete MARFT System

- End Users
  - Web-Presentation and Mobile-App
  - Maps, Search, MM-Data, Social Web Integration
- Service Providers
  - Distributed geo-Content Management
  - Mobile Data Acquisition
  - Anonymous User Behaviour Analyses

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α TRADITION of INNOVATION



# Questions?

Joanneum Research – Beyond the State of the Art!

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