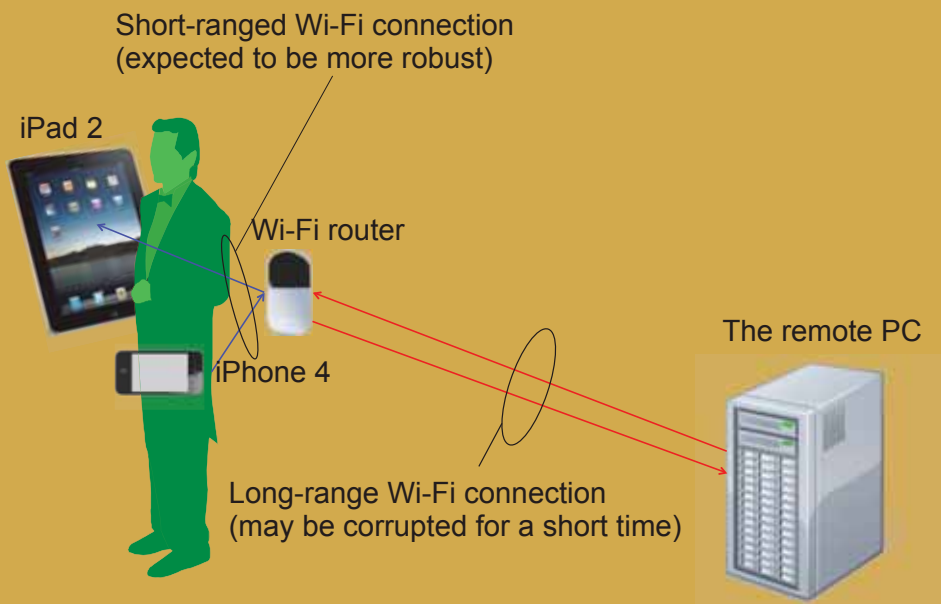# Handheld AR/AV indoor navigation and detailed information with contextual interaction

An experience with the AR/AV system:
The visitor is directed to search for the poster and obtain detailed information about the poster with the help of the system.

AR/AV SYSTEM

Short-ranged Wi-Fi connection
(expected to be more robust)

iPad 2

Wi-Fi router

The remote PC

iPhone 4

Long-range Wi-Fi connection
(may be corrupted for a short time)

SCENARIO

- Poster with three facets:
  a 3D object augmented with menus and buttons

- Guidance information to the poster

- Menus/Buttons attached to the poster vary
  according to the position of the visitor: distant/close to the poster

- Augmented Reality / Augmented Virtuality interaction

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Software Components

Software components running on an iPhone4, an iPad2 and a remote PC

OVERALL ARCHITECTURE
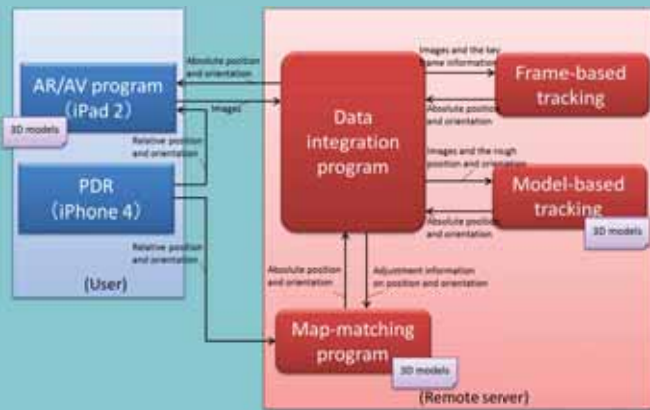
AR/AV WIDGETS

• Contextual menus and buttons depending on the distance of the visitor to the object of interest
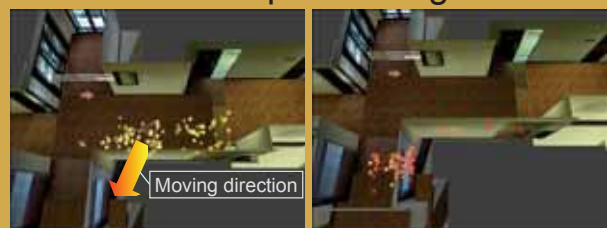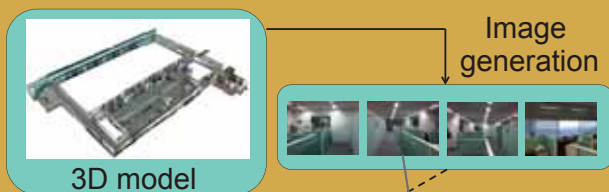
• Same widgets in AR and AV mode
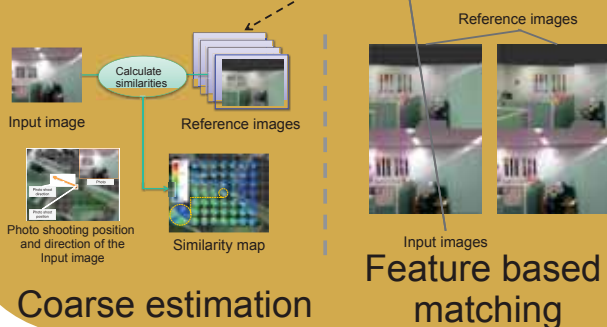

Distant Menu   Proximal Menu

3D MODEL for various applications

• 3-D model for image-based tracking

Image generation

3D model

Calculate similarities

Input image   Reference images

Reference images

Photo shooting position and direction of the input image   Similarity map

Coarse estimation

Feature based matching

Input images

• 3D model for map-matching

Moving direction

Before   After

• 3D model for Augmented Virtuality

Real image   AV view

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Project: AMIE
Augmented Mobile Interactive Experience

Keywords: Mobile Augmented Reality/ Augmented Virtuality, Localization/Registration Methods, AR Widget

http://amie.imag.fr/

GOALS AND APPROACH

• Making the real world interactive
  by defining contextual reusable widgets attached to real objects and places

• Sensor-Data fusion techniques for Localization/Registration

• Interaction techniques for augmented reality/virtuality

• Iterative user-centred design approach

FOUR PARTNERS

• AIST (National Institute of Advanced Industrial Science and Technology)

• Digital Electronics Corporation

• University Joseph Fourier, Grenoble 1

• Schneider Electric

COOPERATIVE RESEARCH PROJECT SUPPORTED BY

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