IPCity

Integrated Project on Interaction and Presence in Urban Environments

FP6-2004-IST-4-27571

ipcity.eu

Call for Participation
Deliverable D1.6

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Abstract and Intended Audience

This is the draft of the IPCity Deliverable D1.6 – Call for participation containing the text of the Competitive Call for spring 2007. While the final version of the call was published by the EC and through the IPCity web pages, as well as in a short form in several national newspapers, this corresponding deliverable was primarily used to allow a formal submissions of the first call text draft to the EC.

Abstract and Intended Audience

1   Introduction

During the first year of IPCity, the consortium has covered a lot of ground in terms of analyzing the research field and working with end-users in fieldwork to identify in more details the required technical research to address end user needs. IPCity requires technologies which allow the construction of easy and intuitive user interfaces. This requirement applies to both stationary and mobile user interfaces.

As one of the emerging requirements we have identified the need to perform interaction based on physical maps. Maps of user's environment will be an essential ingredient in several Showcases, since maps provide the necessary overview and allow a user to relate ones actions to the environment. It was found that augmenting maps is therefore a very relevant interaction that should be studied and built upon. The MR Tent developed for the Showcase "Urban Renewal" will include an interface table for tangible interaction. This interface table should be turned into a "map table" by placing a physical map on this table which is tracked with computer vision methods. Likewise, pocket maps provided to spectators will be used as tangible interaction devices in all Showcases, for example in Showcase "Large Scale Events" where users should be able to use their camera cell-phone as a mobile Augmented Reality device using computer vision based tracking on the cell-phone.

A second technical requirement is the provision of model based outdoor tracking from naturally occurring features. All the showcases that involve outdoor users can benefit from a tracking source that is really accurate. This is currently becoming feasible through model based computer vision tracking. While IPCity already contains research on feature based computer vision tracking, model based computer vision tracking would complement this to provide the required solutions for the different situations occurring within the individual showcase. This tool should be complemented with an outdoor model based tracker (preferably working as a hybrid with the already existing INS/GPS sensors).

To address these needs, an additional partner with world-class expertise in computer vision based interfaces is required. This partner must have demonstrated experience in particular with real-time tracking methods and with implementing computer-vision techniques efficiently on mobile computer hardware. The partner should also have worked on Mixed Reality applications, since the specific requirements of computer vision for Mixed Reality differ from other fields of computer vision, such as e.g., computer vision from industry automation.

2   Competitive Call Text

IPCity (FP-2004-IST-4-27571) is a EU funded Sixth Framework program Integrated project on Interaction and Presence in Urban Environments. The research aim of the IPCity project is to investigate analytical and technological approaches to presence in real life settings using mixed reality (MR).

After the first year of this project, the need for computer vision-based user interfaces was identified. This should include technologies for computer-based interaction with physical maps and map/model-based tracking. The project is looking for a new partner with outstanding computer vision and augmented reality expertise that is able to develop core technology in these directions. The required technologies are summarized as follows:

1. ***Augmenting paper maps***: for urban planning situations, paper maps are appropriate because they provide a high-resolution, yet large-scale view of the environment. However, these maps lack dynamical information such as locations of moving vehicles or simulation results. An augmented map should be developed which combines both static information on physical maps and dynamical information using projector-based augmentation information.

2. ***Handheld map tracking***: similar to the augmented paper maps, a portable map tracking algorithm should be developed which allows augmentation on handheld devices rather than direct augmentation on physical maps.

3. ***Model-based outdoor tracking***: we are looking for robust model-based computer vision outdoor tracking algorithms which are complementary to existing GPS, INS, and feature-based computer vision tracking. Based on rapid acquisition techniques of 3D models of the environment, robust tracking should be developed, which runs on handheld devices (i.e. ultra-mobile PCs, smartphones).

These technologies require basic research and should at least be available for two different showcases in the project. The integration into showcases used for end-user evaluation requires solutions that perform at frame rate and with satisfying robustness.

Expected duration of participation: from July 2006 till December 2009 (30 months)

Maximum budget: € **200 000** (to be confirmed by the Management Board)

Restrictions on participation: for the proposed tasks we search for excellent research partners with outstanding scientific reputation in the field of computer vision-based user interfaces and mixed reality.

Deadline: May, 3rd 2007, 17:00 (CET)

Please, also find this information on the project's webpage

http://www.ipcity.eu

Acknowledgements and Further Information

For further information regarding the IPCity project please visit the project web site at:

ipcity.eu