PUBLIC EYE - INVOLVING CITIZENS IN THE URBAN PLANNING PROCESS WITH AUGMENTED REALITY

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Inspired by the possibilities of the Augmented Reality framework PointCloud by 13th Lab we investigated opportunities for citizens to get involved in the urban planning process and visualize future architecture. Our concept utilizes the metaphor of coin operated binoculars you can find at typical POIs. These installations are supposed to provide an AR overlay over the area, show the future building(s) and give the viewer an idea of how they'll integrate in the existing neighbourhood. Further, these installations can be equipped with feedback options, e.g. rating the building or switching betwee multiple versions

CONCEPT

» *Augmented Reality* for presentation of future architecture.
» Allowing citizens to *participate* in the urban planning process.
» *Binoculars* metaphor to attract attention, no further apps required (see Figure 1).
» The installation will be equipped with a *digital camera* and/or a *smartphone*.
» *Public installations* distributed over an area (see Figure 2) to allow different point of views.

EASY ATTRACTION THROUGH DOMINANT APPEARANCE AND NO FURTHER BARRIERS!

TECHNIQUES

» Image targets as reference to identify the scene (feature detection). Orientations and position of the virtual camera can therefore be computed by the PointCloud API.
» Robust and fast SLAM image detection.
» Scene is modeled in the Unity Editor (see Figure 3).
» Masking out obstacles in the scenes, e.g. buildings between the viewer and the 3D model.
» Further enhancing realism through shadows or animations in the scene.

Figure 1
Mockup of a public installation.

Figure 2
Distribution over an area.

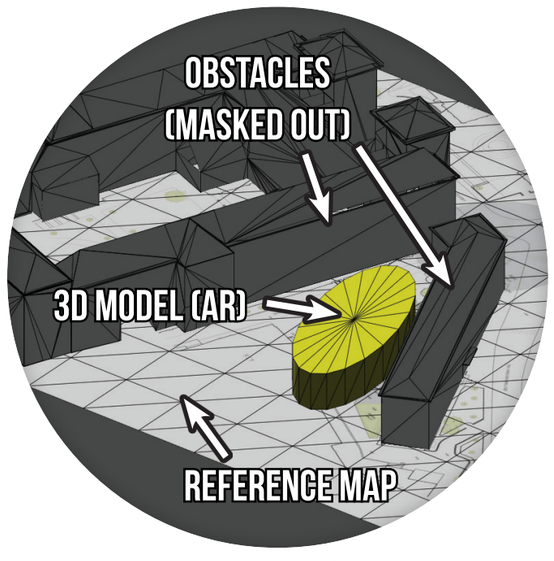

Figure 3
Scene in Unity Editor.

Figure 4
My3D goggles for demo.

DEMO

We prepared a model scene with an abstract map and buildings. This scene is modeled in Unity 3D and compiled to run on an iPhone 4S. The scene consists of several buildings (which will be masked out), car animations and a tree. To show the concept of the binoculars metaphor we use the Hasbro My3D device (see Figure 4), which is a pair of goggles where an iPhone can be attached and be used for virtual reality applications. Further to illustrate the citizens interaction the app has some a basic UI for user feedback.

Image credits: designed by vectorportal: http://qvectors.net/city-skyline/

CHALLENGES

Testing in real environments worked, however to adapt this concept to more complex scenarios, such as construction sites, more advanced techniques are required. The scenario is by nature very messy and complex and therefore it may be hard to find suitable image targets. Further we utilize the My3D binoculars for the demo. It is possible to render 3D stereoscopic images and perceive real 3D, however the limitation of one camera on the phone prohibits the use of this technique since two cameras are needed to get depth information.