



IPCity Summer School
21.09. – 25.09.2009

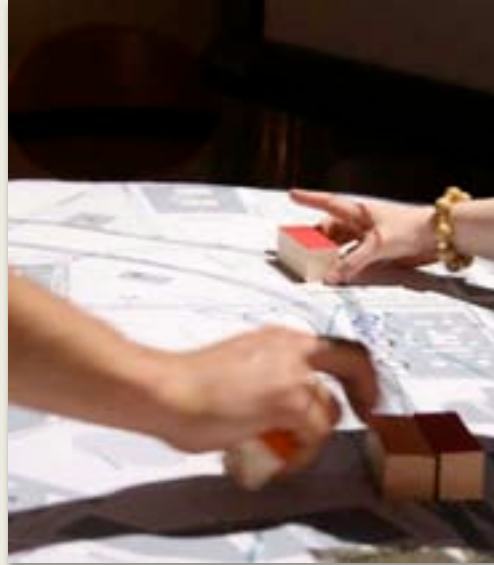
Urban Renewal Workshop

What is the ColorTable?

- The Colortable is a
 - tangible user interface, designed for creating mixed reality scenes in medium-sized urban planning contexts.
 - allows assigning content to colored tokens and positioning them on a map.
 - composes a scene that is visualized on the fly on a three dimensional projection
- Goal: integrate all stakeholders in urban planning / renewal scenarios



What did we do in the Urban Renewal Workshop?

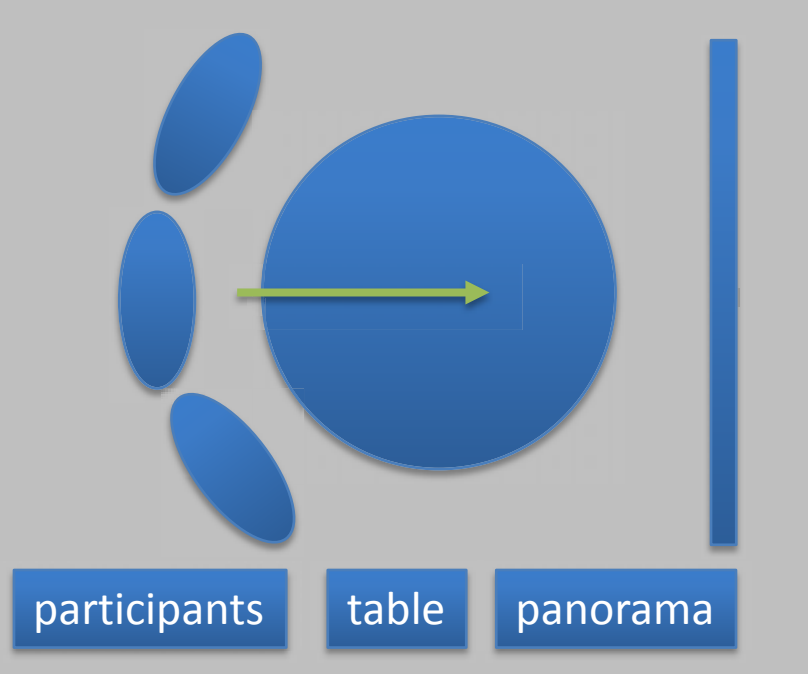


1. day: get to know the ColorTable System, showaround at Karlsplatz, develop scenario
2. day: prepare raw materials: contents, map, panorama sight, implement the scenario, user observations
3. day: analyze observations, impressions, user interview, results / conclusions

Agenda

- Introduction: Urban Renewal Workshop
- **Spatial Arrangement**
- Content & Materials
- People
- User Interaction
- Results

Spatial arrangements



Spatial arrangements: Position of the people



- People always stay at the same place at the table – no changing of positions
- Used their space / their color in front of them
- Asked others to interact for them, if they could not reach the space
- Turn away from the table to get the content cards
- Could not see the tokens, which were on the other side of the table
- Participants used what was available close to them

Spatial arrangements:

Position of the content cards/ attribute cards – tokens



- Pre-selection of the cards – putting cards on the table to get an overview
- Content cards and attribute cards distributed among all participants
- Collected cards in ones hand – others didn't have the chance to take them
- Cards in the hand, too close to the RFID reader were accidentally read
- Put tokens on top of the table because there was no other space near the participants

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Content & materials

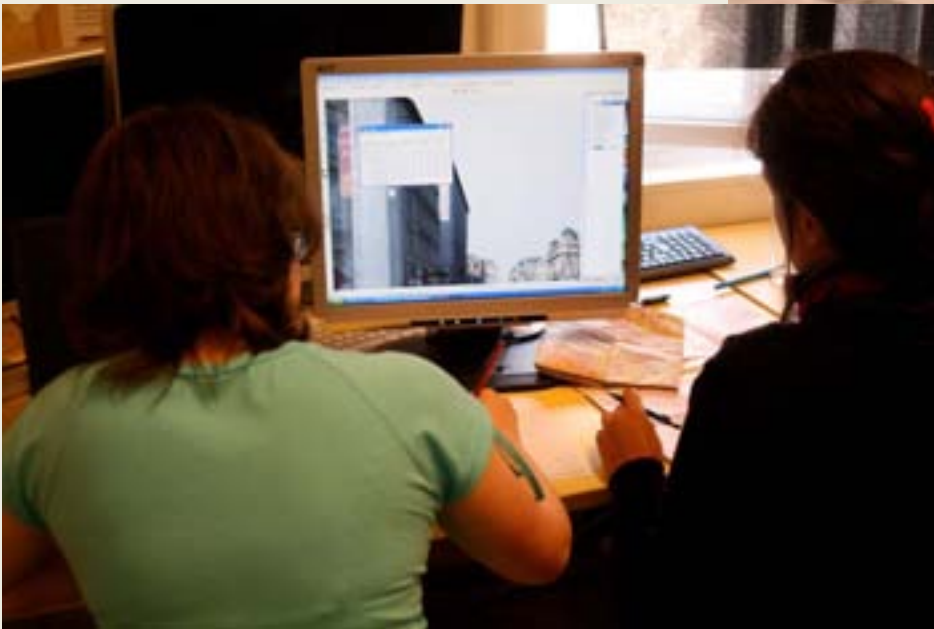


MAPS and CONTENT CARDS

From preparation to use

Content & materials

- Preparation of the maps
 - Definition of the planning area
 - Finding, printing, cutting, placing on the table
 - Scaling, coordinates



Content & materials

- Preparation of the content cards
 - Examination of the existing contents + arrangement to themes
 - Definition of the needed images
 - Making them ready: cutting, scaling
 - Printing, cutting with scissors, placing the RFIDs, scaling, putting the images into the system
- 7 persons: half a day!
- App. 20 new cards



Content & materials

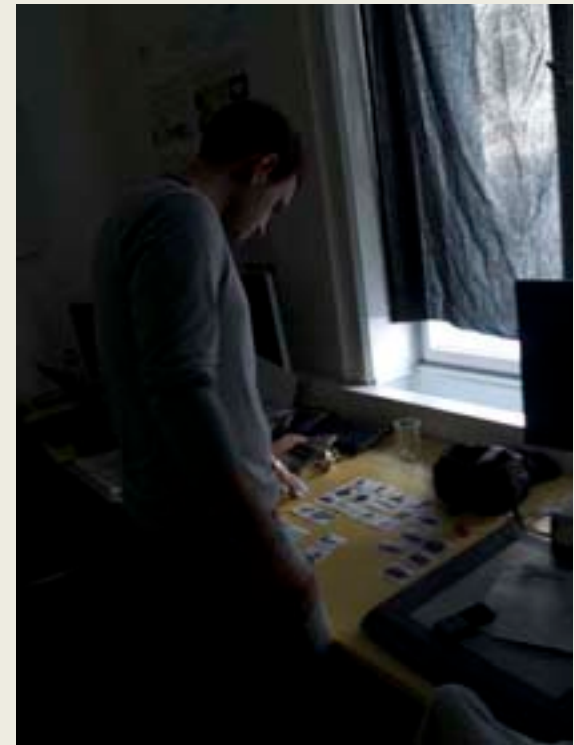
Workshop/usage

- Maps
 - Larger map & detailed map
 - Scale!
- Content cards
 - Own cards vs. „old cards“
- Connection between the map and cards



Content & materials

- Arrangement of the cards
 - Examination of the existing contents + arrangement to themes

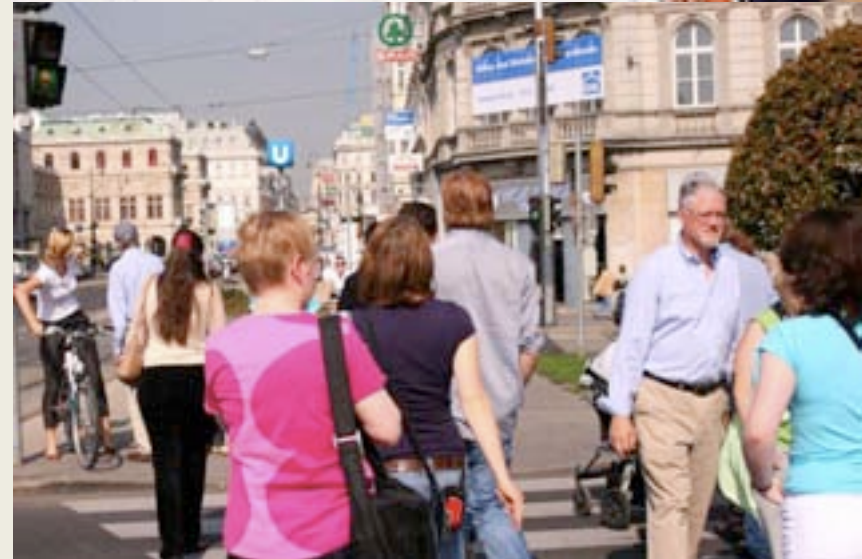


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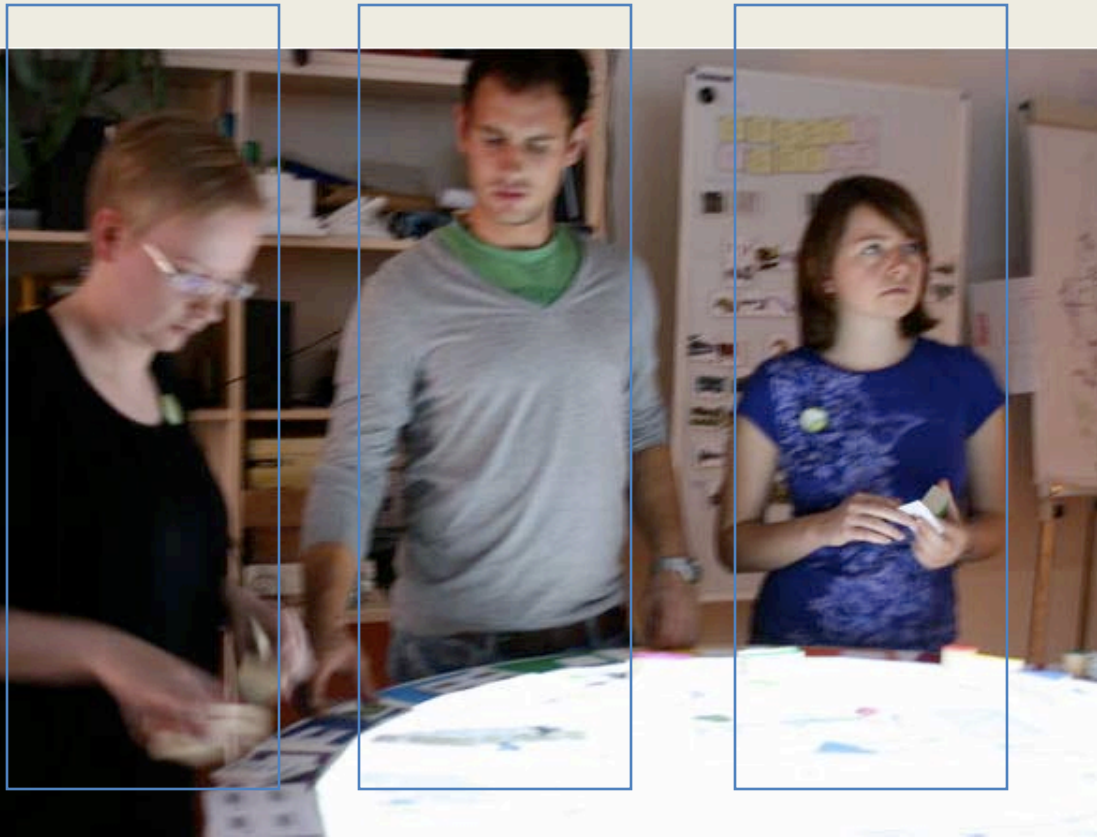
People; collaboration and interactions among participants

Initial fieldwork and collectively produced content and material for the workshop as collective reference points and shared experience. A good thing for collaboration and shared understanding of the site and issues for ideation.



People; collaboration and interactions among participants

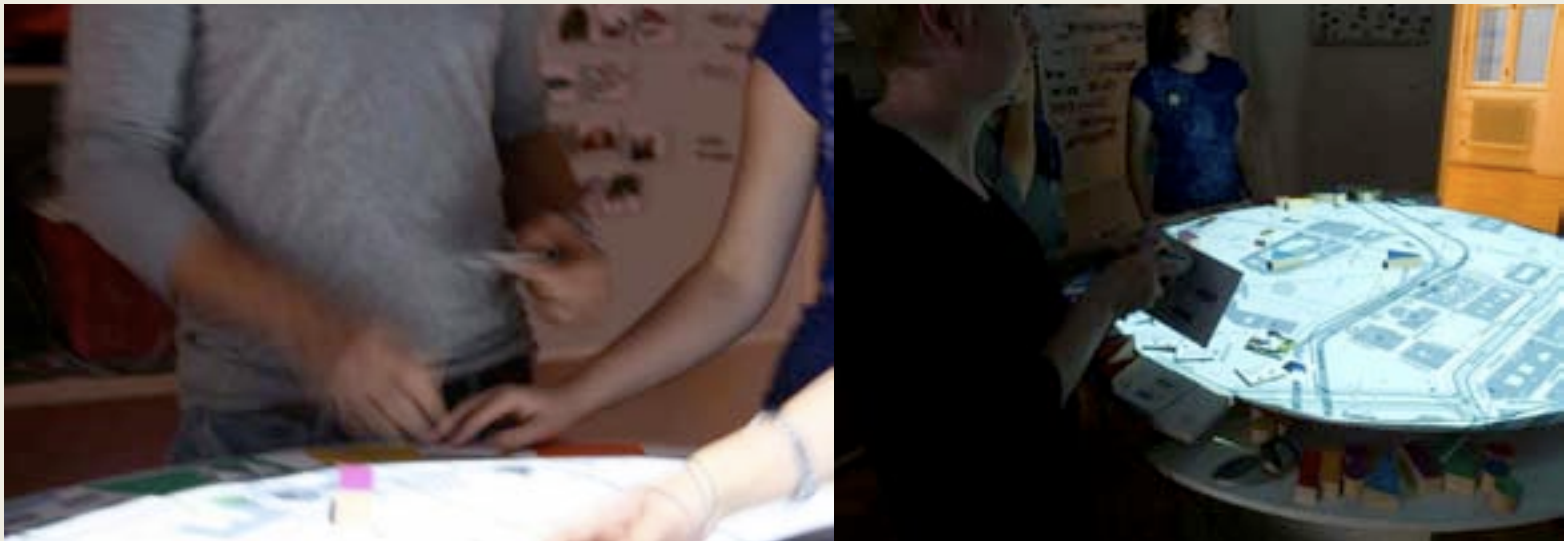
Orientation fronting the panorama projecting. Not much collectively or participatory work going on. Mainly individually initiatives...



People; collaboration and interactions among participants

BUT: interactions did occur!

The different roles where one could change the direction of the view by rotating a wheel and another could freeze the panorama



People; collaboration and interactions among participants

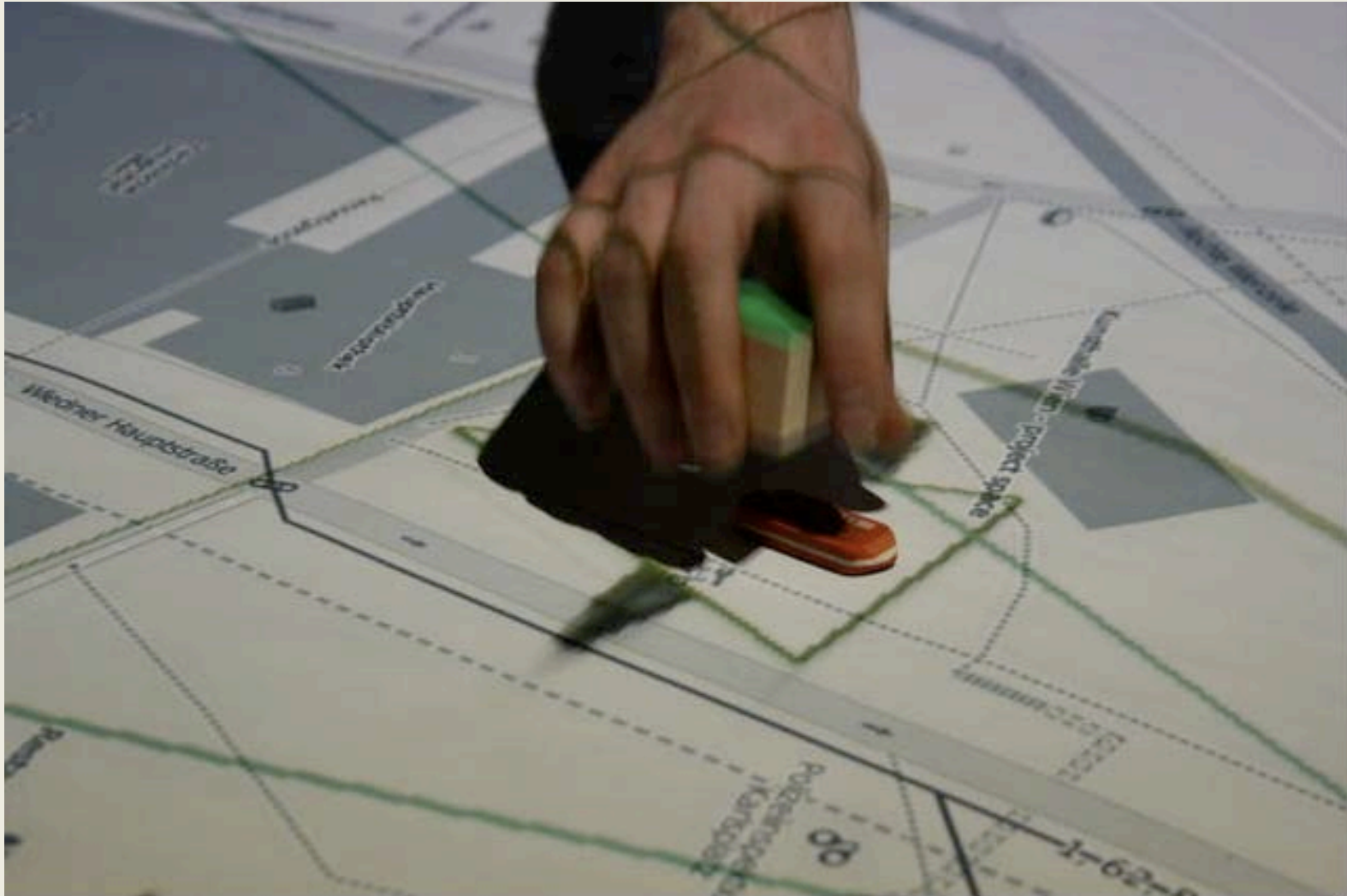
Problems and barriers made people talk and they started to interact and guide each other



People; collaboration and interactions among participants



People; collaboration and interactions among participants



People; collaboration and interactions among participants



People; collaboration and interactions among participants

Capturing and explaining:

Showing “the big lines” and areas at the map, with a gesture. but it does not stay at the map and thus not present in the minds of the rest of the participants.

Contrary to a drawing made to explain a technical feature which is a fast and easy way to communicate.



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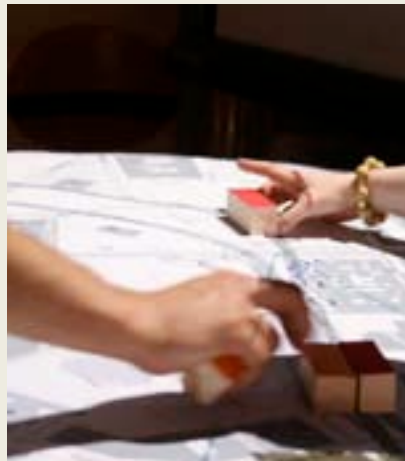
User Interaction

- How does the user interact with the system?
- What is his performance with particular tasks? How efficient / effective is he when using the different interaction (tangible interface) facilities?
- Which interactions went well?
- What difficulties / uncertainties in usage be observed?



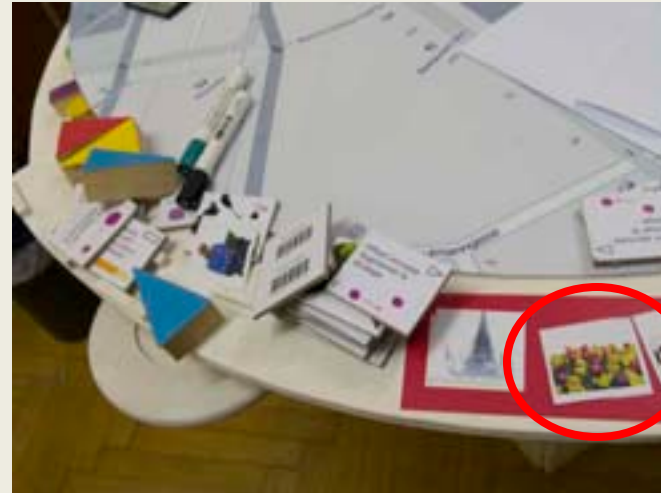
User Interaction

- How does the user interact with the system?
 - Indirect interaction mode: User controls the system with tangible objects
 - Input: wooden bricks in various forms (rectangle/triangle/circle)
 - Output: Wallpaper-Display, Mixed-Reality Content



User Interaction

- What is the users performance with particular tasks?
- General observations:
 - Round table setting and TUIs facilitate collaboration
 - Simultaneous interaction of multiple users with the system possible (vs. e.g. mouse desktop / setting)
 - TUIs relatively inaccurate, leads to user frustration
 - Bad UX due to many technical / setup issues
 - TUIs for some tasks very fitting / for others rather un-intuitive



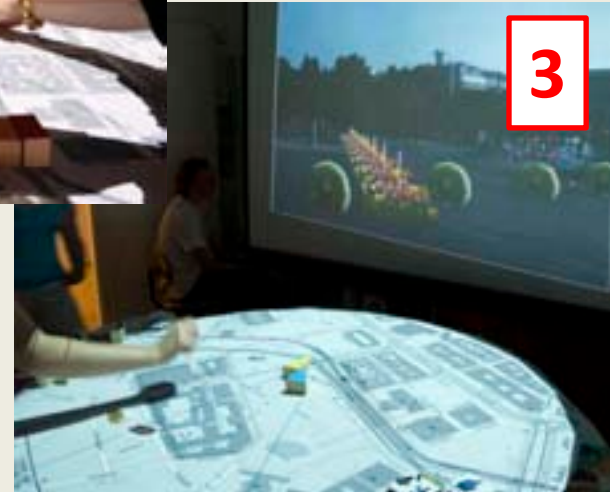
User Interaction

- Which interactions went well?
 - Content freeze very good interaction mode to confirm current milestone by whole group
 - Some tasks required interaction between the users (“could you pass me the card?”, “could you move the scene to the left?”)
 - Panorama view very positive to get an overview of the scene



User Interaction

- Where can difficulties / uncertainties / failures in usage be observed?
 - Indirect input method (select card, place TUI, observe result on screen) sometimes confusing and increases the area for potential errors
 - Shaping grounds was difficult, required boundaries not understood by user
 - VR objects not visible (behind other objects, wrong place, too small or too big)
 - Too many cards => long searching
 - RFID-technology tracks over larger distances => system takes unintentional inputs by user



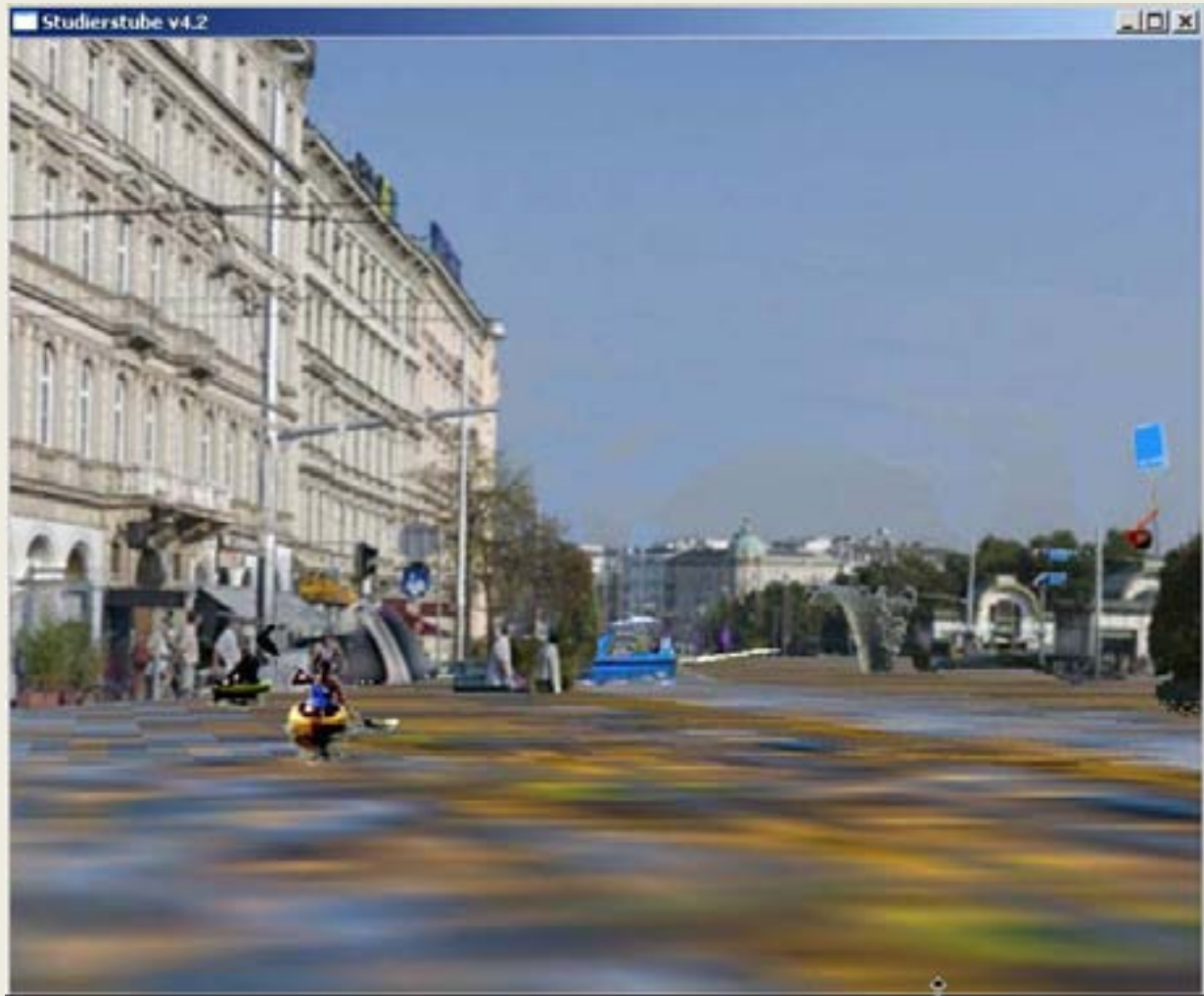
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pano



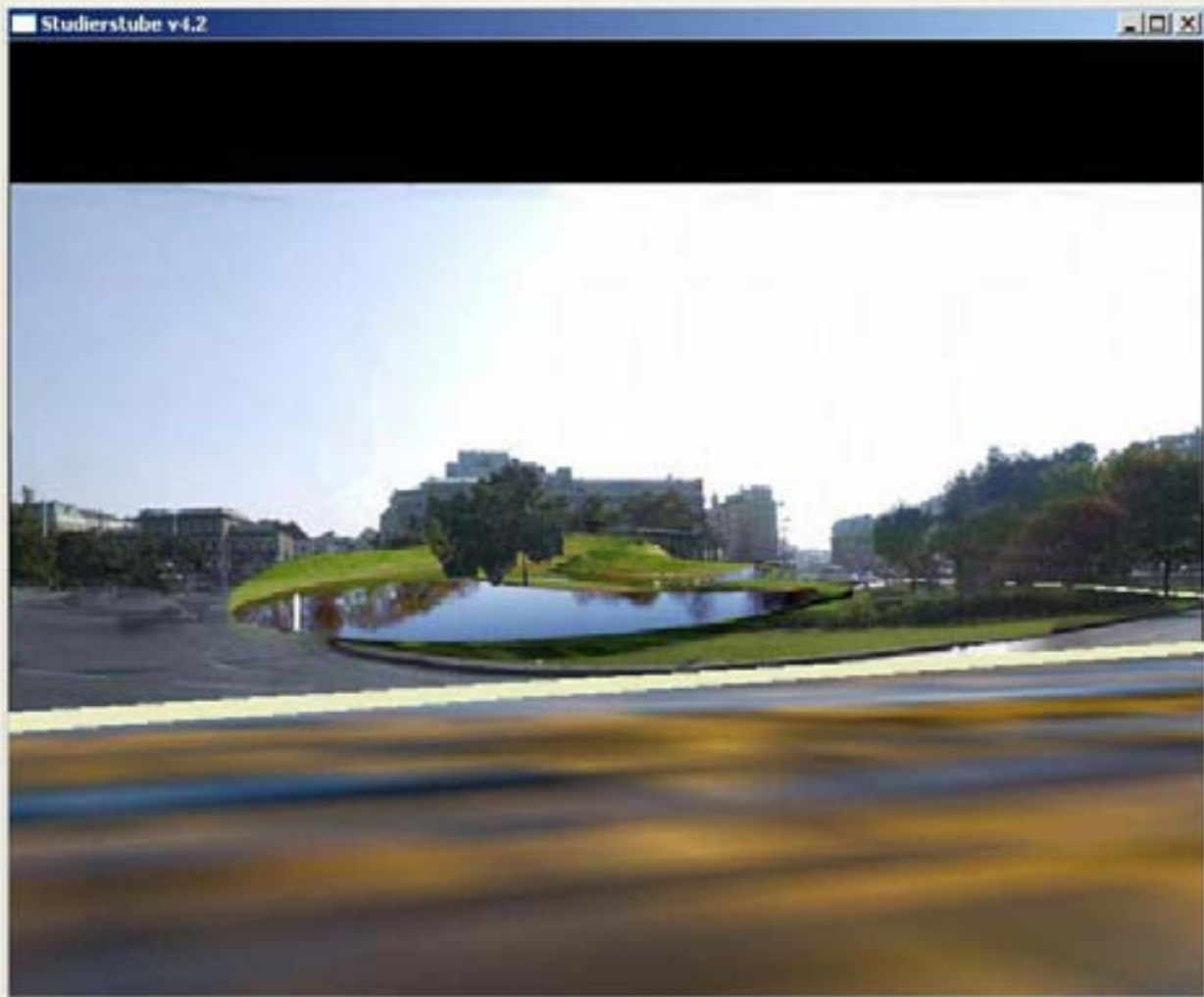
Results



Results



Results



Results



Pros and Cons

- (+)
 - Table Setting and TUIs facilitate collaboration
 - No technical knowledge required for usage
 - Mixed reality environment provides realistic ambience of the result setting
- (-)
 - Tracking issues, objects not found, bad recognition
 - Low performance computers => slow response => bad UX
 - Problems with multiple texture
 - Non-intuitive input methods (function of different shapes, mapping of cards to TUI to function on screen, cards to increase/decrease size and offset)
 - Preparation of setting and raw materials takes a lot of time and effort (5 people, 1.5 days)

Conclusion: ColorTable overall a high potential concept/idea, however technology is not ready yet. Wait for much more performant tracking technology and further shaping of UI for many specific functions (e.g. increase/decrease, setup materials, etc.) required.

...



Thank you!

BACKUP

Panorama Creation Process

- Panorama (background)
 - Choosing Place on crossroad
 - Making Photos (97) – 3 rows of 360°
 - Stitching by program
 - Retouching/modife in Photopanint (cars, traffic, electrical ...)
 - Resize (576px height)
 - Export => .jpg
- Deep map (grayscale) of panorama
 - Divide panorama to 8 layers (Photoshop)
 - We need Plan of Karlsplatz with position of photographing
 - We need Scale of plan and scales of maps on CT
 - Measuring of distances on plan (from our position to every interesting/important point)
 - Remapping distances: plan (0,32 .. 80 mm) => real (4..1000 m) => RGB values (1..255)
 - Photoshop - coloring values
 - Export => .png

Results

