A Meta-design Approach to Interactive Spaces
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- Findings
Interactive Spaces and Meta-design

- Interactive surfaces, smart devices and specific kinds of software can be combined to support collaborative design.

- The combination of interactive space and meta-design helps to demonstrate the benefits and limitations of supporting collaborative creativity with an interactive space.
  - Hardware components alignment with software and communication structure
  - Pursuing the principles of meta-design to establish a socio-technical environment that adapts itself to the needs of its “inhabitants.”
Meta-design Principles for socio-technical systems
(Fischer and Herrmann 2011)

- **Fluid transition** between design for use and design in use.

- **Cultures of participation**: where several roles and stakeholders can contribute with respect to their interests.

- **Empowerment for adaptation and evolution** by helping end-users or their supporters (software-developers, administrators, power-users, facilitators etc.) to modify a software design with respect to their needs.

- **Underdesign**: representations of solutions (e.g. models or prototypes) do not only include determined specifications but also preliminary, incomplete or imprecise specifications
Creativity Barometer – a Design Case

(Herrmann et al. 2011)

• Conducting surveys to continuously understand and assess the climate of a company’s creativity support.

• Allowing companies to periodically repeat surveys and get instant feedback continuously.

• Evaluated with a desktop-based web browser. It was successfully used in 4 companies where for instance 99 employees produced 2673 answers in September 2011

• Exploring unobtrusive ways to support employees answering questions en passant, e.g. with smart phones.

(Within the last 5 days my colleagues encouraged me to develop new ideas)

Agree

1 2 3 4 5 6 7

send answer
Creativity Barometer – Going Mobile

Goal
• To redesign the Creativity Barometer for mobiles
• Using it as en passant as possible
• Emphasizing the experience aspect

Test case
• An interplay between an interactive space with a large screen and a design-software environment
• An interactive space helping various types of users to develop and visualize their expectations
• Adapting a design-software environment, i.e. MikiWiki immediately and continuously in the context of its usage to meet the needs of the user-designers more adequately
ModLab – an Interactive Space

Institute of Applied Work Science at the University of Bochum
ModLab – an Interactive Space
MikiWiki – a Meta-design Environment
Drawing Nugget

Content page

Format page

Data page
Adapting MikiWiki for the Interactive Wall

- A set of moveable panels to support direct manipulation and to fully exploit the large interactive wall.

- Nuggets were adjusted proportionally e.g. the touch area, font size, menu bar size etc. to match the large screen.
Evolving the *Drawing* Nugget

1. page nugget
   - `testsketch1`
   - `sketchboard`

2. drawing nugget
Sandbox for Tinkering

- [In02] “It was quite nice that we didn’t jump from tool to tool to do different things. Brainstorming feels more like a different tool, starting from a simple GUI. We just tried what we had there to achieve what we wanted. It really felt like a little playground, when you had many possibilities. [...]”

- [In09] “It’s fast, you can directly show your ideas, and improve them. If I have an idea and I show it to another person, and then the other person could say, ‘Yeah this is good or bad, but I think it would be better...’ - the other person can directly show me what he means.”
• “Borrowing” the brainstorming phase elements for the final output phase
• Visualizing “look and feel”
Visual Comprehensibility

- [In03] “I think what was cool is that it has possibility to show you all three phases we had during the process. Ideas were still there, I think part of because we have a large screen. We had ideas on the left side, and kind of image browsing we did in the middle, and when we did our mockups, we still could look at weird [ideas from previous phases]... I could see there were lots of ideas.”

- [In12] “It helped me a lot, because it was very ‘anschaulich’ [the German for ‘visually comprehensible’]. You have everything in front of you. I have an overview, and at the same time, that’s kind of structured and clear. You can be creative, because you have all these tools, you can draw, you can use the signs, you have colors...”
Supporting participants in creating and sharing design ideas via different means.
Reciprocal Acceleration of Creativity

- [In01] “The drawing nugget was very useful, because of that, seeing for example someone was developing and evolving ideas, just by looking at what he was doing on the wall. It was very inspiring to develop own ideas.”

- [In06] “I was stuck with my old ideas, I couldn’t get away from it. It’s more about cognitive problems... Later on, the fact was that they [other participants] created different ideas, all different ideas of how the system could look like. This helped me look over the edge of my ideas, looked at problems from different perspectives...”
Seeds - Coping with Blank Space Syndrome
Conclusions

• Since each interactive space is unique, software must be adapted to the available components.

• A meta-design approach to explore interactive space - adaptation of software copes with changes that occur in both technological development and user requirements, such as:
  – Reflecting upon the users’ needs for noting down and visualizing their ideas, supporting the user with a mode of reciprocal acceleration of creativity.
  – Issues such as cold start and dominant participants caused creativity blocking, but can also be eased via providing seeds during the meta-design phase.