Collaboration Meets Interactive Surfaces:
Walls, Tables, Tablets, and Phones

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ABSTRACT
This workshop proposes to bring together researchers who are interested in improving collaborative experiences through the use of multi-sized interaction surfaces, ranging from large-scale walls, to tables, tablets and phones.

The opportunities for innovation exist, but the tabletop community has not still completely addressed the problem of bringing effective collaboration activities using multiple interactive surfaces, especially in complex work domains. Of particular interest is the potential synergy that one can obtain by effectively combining different-sized surfaces.

Author Keywords
Collaboration, interactive surfaces, interactive walls, interactive tabletops, mobile multi-touch interaction.

ACM Classification Keywords
H.5.m. Information interfaces and presentation (e.g., HCI): Miscellaneous.

General Terms
Human Factors; Design;

INTRODUCTION
Large Scale Displays offer a unique visualization environment favorable to both individual and collaborative design tasks [1, 2]. During the last decade they became both affordable and easier to setup, providing highly immersive virtual environments with higher resolution and support for stereoscopic images. Combined with emerging input devices, these provide natural ways to interact with virtual content as well as enabling new applications to support collaborative engineering tasks as well as many other activities, which involve communication, coordination and cooperation [3].

Additionally, new devices have become available to enhance these interactions, including multi-touch tablets combining several sensors [4], non-intrusive tracking solutions based on depth cameras and other equipment. However, and despite this rapid technological advance, it still remains an unsolved problem how to bring effective collaboration capabilities to this myriad of heterogeneous interactive surfaces. Therefore, this workshop aims at bringing together the most advanced techniques, user interfaces, technological issues and other factors that are crucial in fostering co-located collaboration [5] and remote communication between users across different facilities simultaneously.

RELEVANCE TO THE TABLETOP COMMUNITY
The vast screen real estate, which is provided by large-scale interactive walls, presents novel ways to visualize and interact with data-rich models. In parallel to this technological revolution, interactive surfaces have also become widespread in different sizes and devices, including large-scale walls as well as the tabletop community, which has witnessed an increased usage of interactive tables, tablet-sized surfaces and mobile phones [6].

PROGRAM COMMITTEE MEMBERS
The program committee proposed is small but focused, as we expect to accept no more than twenty contributions (maximum). They are ordered alphabetically by first name:

- Alfredo Ferreira, IST / ULisbon / INESC-ID, Portugal
- Alberto Raposo, Pontifical Catholic University of Rio, Brasil
- Andrés Lucero, Nokia Research Center, Finland
- Bruno De Araújo, INRIA Lille Nord Europe, France
- Chris Rooney, Middlesex University, UK
- Frank Maurer, University of Calgary
- Hildegardo Noronha, M-ITI / UMa, Portugal
- Ian Oakley, UNIST, South Korea
- Luciano Soares, Institute of Education and Research, Brasil

- Nick Graham, Queens University, Canada
- Pedro Campos, M-ITI and INESC-ID, Portugal
- Petra Isenberg, INRIA, France
- Rachel Blagojevic, The University of Auckland, New Zealand
- Roy Ruddle, Leeds University, UK
- Sheelagh Carpendale, University of Calgary, Canada
- Saul Greenberg, University of Calgary, Canada
- Tony Tang, University of Calgary, Canada

NATURE OF THE WORKSHOP

Broadly speaking, we propose a highly dynamic workshop, based on design cases, brainstorming, affinity diagramming and sharing of results.

Workshop aims

This workshop aims to exchange experiences regarding collaborative user interface design techniques that were designed for, or adapted to people involved in all kinds of collaborative activities, either remote or co-located. Since many of these techniques are highly focused on specific target groups, a further aim is to extract general principles and to generate guidelines for bringing effective collaboration around interactive surfaces.

Who should attend?

We invite researchers and designers who have been involved in one or more design-oriented project(s) involving the study of collaborative activities around all sorts of interactive surfaces. After this workshop, a call for papers will be launched for a special issue (on the topic of the workshop) of a journal, which is yet to be specified.

Those wanting to attend will be required to submit a work-in-progress or position paper and may also submit if appropriate a short video of their work. The topics for the workshop would include:

- Design and evaluation of collaborative environments with interactive surfaces, either remotely or co-located;

- Collaborative applications on interactive surfaces for concrete domains, e.g. 3D visualization, mechanical engineering, medical visualizations, emergency response scenarios, etc.;

- Communication, cooperation and coordination as well as social protocols;

- Interactive surfaces to enhance spatial perception of content and/or support navigation during collaboration activities;

- Issues when moving from desktop-based collaboration to large-scale walls, tabletops and touch-based mobile devices;

- Physical navigation and collaborative sense making.

- Integration of different devices and surfaces for collaboration;

- Collaboration paradigms and user interface designs that address enhancement of collaborative activities using interactive surfaces and tabletops.

Requested length: We propose a one-day workshop (8 hours max.).

Room requirements: We are targeting a small workshop of around 20-30 participants, and therefore require a room capable of accommodating this figure. Additionally, we would need video-projection capabilities, whiteboard and post-it notes for brainstorming and affinity diagramming.

REFERENCES

1. Ed Lantz. 2007. A survey of large-scale immersive displays. In *Proceedings of the 2007 workshop on Emerging displays technologies: images and beyond: the future of displays and interaction* (EDT'07). ACM, New York, NY, USA.

2. Ricardo Jota, João M. Pereira, and Joaquim A. Jorge. 2009. A comparative study of interaction metaphors for large-scale displays. In *CHI'09 Extended Abstracts on Human Factors in Computing Systems* (CHI EA'09). ACM, New York, NY, USA, pp. 4135-4140.

3. Jan Klimke and Jurgen Dollner. 2010. Combining synchronous and asynchronous collaboration within 3D city models. In *Proceedings of the 6th international conference on Geographic information science*, Springer-Verlag, Berlin, Heidelberg, pp. 115-129.

4. Kelvin Cheng, Jane Li, and Christian Müller-Tomfelde. 2012. Supporting interaction and collaboration on large displays using tablet devices. In *Proceedings of the International Working Conference on Advanced Visual Interfaces* (AVI '12), Genny Tortora, Stefano Levialdi, and Maurizio Tucci (Eds.). ACM, New York, NY, USA, 774-775.

5. Andrés Lucero, Jussi Holopainen, and Tero Jokela. 2012. MobiComics: collaborative use of mobile phones and large displays for public expression. In *Proceedings of the 14th international conference on Human-computer interaction with mobile devices and services* (MobileHCI '12). ACM, New York, NY, USA, 383-392.

6. Andrés Lucero, Matt Jones, Tero Jokela, and Simon Robinson. 2013. *Mobile collocated interactions: taking an offline break together. interactions* 20, 2 (March 2013), 26-32.