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# Collaboration Meets Interactive Surfaces: Walls, Tables, Tablets, and Phones (CMIS)

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**Abstract**

This workshop proposes to bring together researchers who are interested in improving collaborative experiences through the combination of multiple interaction surfaces with diverse sizes and formats, ranging from large-scale walls, to tables, tablets and phones. The opportunities for innovation exist, but the ITS, CSCW, and HCI communities have not yet thoroughly addressed the problem of bringing effective collaboration activities together 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 (HCI)]:  
Miscellaneous.

**General Terms**

Design; Human Factors

### Introduction

Large scale displays and interactive surfaces offer a unique visualization environment favorable to both individual and collaborative design tasks [?, ?]. During the last decade these devices have become both affordable and easier to setup, providing highly interactive environments with high resolution and support for stereoscopic images. Combined with emerging input devices, these provide new ways to interact with content as well as enabling new applications to support collaborative engineering tasks as well as many other activities, which involve communication, coordination, and cooperation [?].

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

Following the success of the workshop on Collaboration meets Interactive Surfaces (CMIS) co-located at ITS 2013 [?], we will host another workshop at ITS 2014 in Dresden, Germany. In the 2013 edition of the workshop, a total of 27 participants attended. Participants exchanged experiences regarding collaborative user interface design and evaluation techniques involving interactive surfaces, either remote or co-located.

### Relevance to ITS Community

The vast screen real estate, which is provided in large-scale interaction environments 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, from large-scale walls to small tablets. Indeed, the ITS and HCI communities witnessed, in recent years, an increased usage of large display walls, interactive tabletops, tablet-sized surfaces, and mobile phones [?].

### Topics of Workshop

Topics of the workshop to be covered include, but are not limited to:

- Design and evaluation of collaborative environments with interactive surfaces, either remotely or co-located;
- Collaborative applications on interactive surfaces for different domains (e.g. 3D visualization, mechanical engineering, medical visualizations, emergency response scenarios, meeting rooms);
- 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;
- Integration of different devices and surfaces for collaboration;

- Physical navigation between different devices;
- Collaboration paradigms and user interface designs that address enhancement of collaborative activities using interactive surfaces and tabletops;
- Collaborative sense making and visual analytics with different interactive surfaces and devices.

### Organizing Committee

The following people form the organizing committee of the workshop.

- **Craig Anslow** is a Postdoctoral Research Fellow at the University of Calgary, Canada. His research interests include multi-surface environments, emergency operations centres, and engineering novel visual analytics applications.
- **Pedro Campos** is an Assistant Professor at the University of Madeira, Portugal. His research interests include interaction design, augmented reality, natural interaction for modelling, and museums and cultural heritage.
- **Alfredo Ferreira** is an Assistant Professor at the Instituto Superior Tecnico, Universidade de Lisboa, Portugal. His research interests include 3D shape analysis and retrieval, multimedia information retrieval, natural user interfaces, augmented reality, and immersive environments.

### Program Committee

The Program Committee (PC) for the workshop will review papers and help promote the workshop in the ITS, CSCW, and HCI communities. The following people have agreed to serve on the PC:

- Scott Bateman - University of Prince Edward Island, Canada
- Rachel Blagojevic, Massey University, New Zealand
- Robert Biddle, Carleton University, Canada
- Sebastian Boring, University of Copenhagen, Denmark
- Nick Graham, Queens University, Canada
- Uta Hinrichs, University of St. Andrews, UK
- Petra Isenberg, INRIA, France
- Joaquim Jorge, Technical University of Lisboa, Portugal
- Judy Kay, University of Sydney, Australia
- Harald Reiterer - University of Konstanz, Germany
- Markus Rittenbruch, Queensland University of Technology, Australia
- Johannes Schoening, Hasselt University, Belgium
- Stacey Scott, University of Waterloo, Canada
- Tony Tang, University of Calgary, Canada

### Activities and Format

Table 1 outlines the activities of the one-day workshop. In the first session will have welcome and introductions by all attendees, followed by an invited talk by Sheelagh Carpendale from the University of Calgary. After the morning break the second session will have include talks of workshop papers from attendees. Lunch will follow to allow attendees to meet and mingle. In the third session more workshops papers will be presented then attendees will split into groups based on themes related to the goals of the workshop. Once the groups have been formed discussions will happen amongst attendees. The fourth session will have groups report back about their discussions and closing remarks from the organizing committee as well as feedback from attendees.

Time	Activity
0900–0930	Welcome and Introductions
0930–1030	Invited Talk by Sheelagh Carpendale (University of Calgary)
1030–1100	Morning Break
1100–1200	Presentation of Workshop Papers
1200–1330	Lunch Break
1330–1500	Presentation of Workshop Papers Group Exercise, split into groups based on themes from the workshop
1500–1530	Afternoon Break
1530–1700	Discuss Themes in Groups - Reports from Groups - Closing remarks from organizing committee

**Table 1:** Workshop Activities