

# Second Workshop on Engineering Patterns for Multi-Touch Interfaces

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## ABSTRACT

Multi-touch gained a lot of interest in the last couple of years and the increased availability of multi-touch enabled hardware boosted its development. However, the current diversity of hardware, toolkits, and tools for creating multi-touch interfaces has its downsides: there is only little reusable material and no generally accepted body of knowledge when it comes to the development of multi-touch interfaces. This workshop is the second workshop on this topic and the workshop goal remains unchanged: to seek a consensus on methods, approaches, toolkits, and tools that aid in the engineering of multi-touch interfaces and transcend the differences in available platforms. The patterns mentioned in the title indicate that we are aiming to create a reusable body of knowledge.

## Author Keywords

Multi-touch, Engineering Patterns.

## ACM Classification Keywords

H5.m. Information interfaces and presentation (e.g., HCI):  
Miscellaneous.

## General Terms

Design, Human Factors

## THEME, GOALS, AND RELEVANCE

The theme of this workshop series is “engineering multi-touch interfaces”, with the main focus on methods, approaches, toolkits, and tools for developing actual multi-touch interfaces. The current body of work is mainly tailored toward a specific hardware platform, or relies on platform specific toolkits. In contrast with engineering WIMP (or single touch) interfaces, there is no established work on transcending the diversity in hardware and software platforms. To name a few challenges posed by multi-touch that remain relevant:

- Different hardware platforms often provide different ways to specify the touch data, using different levels of detail (e.g. a set of 2D coordinates, a set of ovals, the actual touch shape, pressure, etc.).

- The form factor and orientation of multi-touch devices strongly influence the user experience. Horizontal tabletops, for instance, afford collaborative work and support annotation tasks, whereas vertical displays are more appropriate for reading and presentation purposes. Mobile multi-touch devices require a completely different user interface.
- Each tracking technology (FTIR, DI, capacitive sensing, etc.) comes with its own advantages and drawbacks, and strongly influences the enabled interaction styles. For example, while capacitive sensing allows the use of thin displays, detecting markers of tangible interfaces is a hard task.
- Text input on multi-touch devices is still an open problem.

The main goal of this workshop is to reach a consensus on methods, approaches, toolkits, and tools that aid in the engineering of multi-touch interfaces and transcend the differences in available platforms.

A secondary goal is to establish a series of re-occurring workshops covering this theme. As the user base and available software for multi-touch platforms is still increasing and reaches for maturity, this workshop series can provide regular updates on the current state of the art for engineering multi-touch interfaces, as well as foster a community working on this topic.

## FORMAT

Specialists from the field that are involved in the development of multi-touch interfaces are invited for the workshop, including software developers, interface designers, tool(kit) builders, hardware manufacturers and researchers. Our goal is to facilitate a combination of presentations, demonstrations, discussions and community building.

Candidate participants submit a short paper or a position statement. The short paper describes experiences, ongoing work or results related to the workshop’s topic. Video demonstrations are encouraged. A position statement describes requirements or issues the participant encounters

when engineering multi-touch interfaces, as well as desirable solutions from the author's point of view.

The workshop will start with brief introductory talks from each participant, followed by a review and discussion of topics emerged from position papers. If possible, we would like to start with a set of experience reports, describing engineering issues with current multi-touch platforms. Next, participants will be split in discussion groups structured around the core topics provided in the papers and statements. Afterwards, the groups will report back to the plenary forum.

#### ORGANIZATION

*Kris Luyten* is a professor at Hasselt University, affiliated with the Expertise Centre for Digital Media (EDM). His main research interests are context-aware user interfaces, user interface description languages, model-based and user-centered interface development, multi-touch interaction, mobile guides, ubiquitous computing, and social and collaborative software.

*Davy Vanacken* is a research assistant and PhD student at Hasselt University, affiliated with the HCI group of the Expertise Centre for Digital Media (EDM). His main research interests include modeling interaction, collaborative systems, and multi-touch user interfaces.

*Malte Weiss* is a research assistant and PhD student at RWTH Aachen University. His research focuses on haptic feedback and tangible user interfaces on tabletops.

*Jan Borchers* is a full professor of computer science and head of the Media Computing Group at RWTH Aachen University. With his research group, he explores the field of human-computer interaction, with a particular interest in new post-desktop user interfaces for smart environments, ubiquitous computing, interactive exhibits, and time-based media such as audio and video.

*Miguel Nacenta* is currently a post-doctoral fellow at the iLab, University of Calgary. His research is focused on new form factors for interaction such as tabletops, large displays, and mobile devices and on how to combine them together to create useful multi-display environments.

#### PARTICIPANTS

We aim for participants with various backgrounds, though our main goal is to gather participants who are involved in the different stages of the design, creation, realization, and deployment of multi-touch interfaces. We expect most participants to have a design or engineering (technical) background.

#### WORKSHOP CONTENTS

This year, the workshop program consists of seven contributions. These contributions cover a wide variety of issues typically encountered when engineering multi-touch interfaces. The presented research ranges from different hardware platforms (from iPhone interaction to large surfaces) over support for multi-user configurations and situations to interaction techniques and reusable frameworks:

- Konstantinos Chorianopoulos, Ioannis Leftheriotis, and Panagiotis Pandis. *Design of Scalable Collaborative Multi-touch Screens.*
- Tobias Hesselmann, Susanne Boll, and Wilko Heuten. *Towards an Integrated Process for Interactive Surface Application Development.*
- Dietrich Kammer, Dana Henkens, Jan Wojdziak, and Georg Freitag. *Formalization and Combination of Touch and Point Interaction.*
- Michele Marchesoni and Cristina Costa. *Augmenting natural interaction in projective capacitive displays with tangible interfaces.*
- Paolo Olivo, Damien Marchal, and Nicolas Roussel. *Software requirements for a (more) manageable multi-touch ecosystem.*
- Fabio Paternò, Carmen Santoro, Lucio Davide Spano, and Flavio Zaccaro. *Modelling Multi-Touch UIs in Mobile Devices with MARIA.*
- Chenjun Wu, Yongqiang Qin, Yue Suo, and Yuanchun Shi. *uTableSDK - Enabling Rapid Prototyping of Window-based Applications on Interactive Tabletop.*