# Mobile and Personal Projection (MP²)

**Raimund Dachselt**

User Interface and Software Engineering Group, University of Magdeburg, Germany
dachselt@acm.org

**Matt Jones**

FIT Lab
Computer Science
Swansea University, UK
always@acm.org

**Jonna Häkkilä**

Nokia Research Center
Tampere, Finland
Jonna.Hakkila@nokia.com

**Markus Löchtefeld**

German Research Center for Artificial Intelligence (DFKI)
Saarbrücken, Germany
markus.loechtefeld@dfki.de

**Michael Rohs**

Media Informatics group,
University of Munich, Germany
michael.rohs@ifi.lmu.de

**Enrico Rukzio**

paluno: The Ruhr Institute for Software Technology, University of Duisburg-Essen, Germany
enrico.rukzio@uni-due.de

## Abstract

The emergence of mobile and personal projection devices promises new ways to display and interact with content while the user is mobile, and offer new opportunities and challenges for HCI. This workshop[1] aims to formulate fundamental research questions around this emerging field and provides a venue for discussion for researchers and practitioners working in this area. We will focus on new interaction techniques, applications, personal projection devices, interaction design, multi-user aspects, multi-modal user interfaces and social implications. Our aim is to foster the evolution of a mobile and personal projection community.

## Keywords

Projection, personal, mobile, interaction.

## ACM Classification Keywords

H5.2. Information interfaces and Presentation: User Interfaces – input devices and strategies.

## General Terms

Design, Human Factors.

## Introduction & Motivation

Mobile and personal projection interfaces are no longer fiction and have received considerable attention recently.

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[1] http://www.mhci.uni-due.de/mp2/

Integrated pico-projectors in mobile and wearable devices could make mobile projection ubiquitous within the next few years. Walls, desks, floors, ceilings, t-shirts or palms will act as projection surfaces for these kinds of new devices.

These technological developments offer new opportunities and challenges for novel forms of interaction. Virtual displays can extend beyond physical device boundaries and augment existing objects. There are also new opportunities for spontaneous multi-user interaction. However, issues such as lighting conditions, privacy, and social acceptability also come into play.

We will bring together researchers and practitioners who are concerned with design, development, and implementation of new applications and services using personal mobile and wearable projectors in their user interfaces. The workshop aims at conveying hands-on experience with current state-of-the-art technology and prototypes through demonstration sessions and encourages discussion about future research topics.

## Related Work

Several projector phones and mobile phones with built-in projectors are already commercially available, have been demonstrated, or are announced [4]. It is expected that such projector phones will be integrated in many of the next generation mobile handsets. Initial research in the field of mobile projection has focused on creating distortion free projection as well as first interaction techniques [3]. Furthermore, we have seen initial research towards the integration of pico-projectors and cameras into various wearable systems, such as pendants, headsets, or wristwatches. These lead to new form factors, interaction techniques, and applications. The mobile projection and camera units have a great potential to overcome some

limitations of mobile and wearable devices, especially their limited input- and output capabilities [5]. They offer a large projection area or are able to project virtual interfaces where multiple people can spontaneously interact with it [1]. Besides novel interaction techniques, new social implications also arise from ubiquitous projection [2]. Moreover, there is also increasing interest in embedding pico-projectors into environments relating to cars, public transport, and future lighting systems.

## Objectives

The workshop will provide an open forum to share information, results, and ideas on current research on mobile and personal projection. The participants will explain, demonstrate and discuss their current research with others in order to receive feedback, criticism and ideas for future work. Concrete selected questions, ideas and concepts will be addressed in various group sessions in which the participants will work on topics such as a design space for mobile and personal projection; user interface, interaction design and application sketches; paper prototypes; or ad-hoc studies using the provided mobile and personal projector hardware. The results of these group sessions will be discussed with all workshop participants. Finally, we will discuss future research areas, challenges and the potential for mobile and personal projection in order to lay the foundations for a research agenda in this field.

## Workshop Topics

The workshop looks for contributions on the following and related topics:

- Applications and interaction techniques for mobile and wearable projection.
- Personal projection in augmented reality.

- Interaction with projected interfaces.
- Projector phones and wearable projectors.
- Multi-user interactions and applications.
- Multimodal and personalized (mobile) interfaces.
- New application areas of mobile projection.
- Social implications when interacting with projected interfaces.
- Artistic and unusual ways to utilize mobile projection.
- New forms of interaction with the environment.

## Research Questions

Mobile and personal projection is at a relatively early stage of research. Reflecting this state, the workshop specifically addresses the following fundamental research questions:

- What are the unique properties and affordances of mobile and personal projection? What are suitable interaction metaphors?

- What are core application domains that benefit the most from the usage of mobile and personal projection? What are the application contexts and usage requirements that support mobile and personal projection?

- What are suitable interaction techniques for mobile and personal projection? How can gestures be incorporated? How should visualizations be structured? How can the projected virtual and real images of objects coexist? What is the role of augmented and mixed reality?

- What is the social impact of mobile and personal projection technologies? How can users manage privacy when using mobile and personal projectors? How does

public behavior change with the introduction of mobile and personal projection technologies?

- How can spontaneous co-located collaboration be supported by mobile and personal projection technologies? How can designs support the exchange of media items between mobile projector phones?

- What are suitable strategies and methodologies for evaluating mobile and personal projection interfaces? What aspects impact the user experience?

## Acknowledgements

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