

# Visual End User Configuration of Hybrid User Interfaces

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## Abstract

Hybrid user interfaces are a promising paradigm for human-computer interaction, employing a range of displays and devices. However, most experimental hybrid user interfaces use a relatively rigid configuration. Our demo explores the possibilities of end users configuring the setup of a hybrid user interface, using novel interaction techniques and visualizations, based on a shared augmented reality.

**Keywords:** Hybrid User Interfaces, End User Programming, View Management, DWARF.

## 1 Introduction

In hybrid user interfaces [3], information can be spread over a variety of different, but complementary, displays, and users interact through a potentially equally varied range of interaction devices. In the unplanned, everyday interactions that we would like to support, we would not know in advance the exact displays and devices to be used, and how they would be configured, or even the users who would be involved. In fact, all of these might even change during the course of an interaction. To make this possible, our demo explores how end users might control: *Which* information is displayed on which screen, and at what size, orientation, and position it is presented. *What* input devices control which information. *Who* can see which information. *How* information objects behave dynamically.

## 2 Demo Description

Our demo has two parts:

1. *A running hybrid user interface that can be simultaneously manipulated by several attendees.* Several input devices are used to interact with virtual objects on multiple displays.
2. *An augmented reality configuration tool that is presented on head-worn displays.* This component allows a user to adjust the characteristics of the hybrid user interface in the ways mentioned in Section 1.

For example, two interacting users might be engaged in the following simultaneous interactions: *Zoom:* One user em-



**Figure 1. Relationships between physical and virtual objects in AR. (mock up)**

plays a physical dial to adjust the zoom-factor of a virtual model projected on a tabletop surface. *Rotation:* A second user manipulates a 6DOF-tracked device to rotate a virtual object on a shared display screen. *Share:* The first user shares information that is displayed on his personal handheld display by copying its contents onto the shared screen. We control and visualize these relationships through information overlaid on the world using see-through headworn displays. Compared to earlier examples of hybrid user interfaces [3, 4], our focus is the control of the relationships by the end user. To realize this scenario, we build upon several previously developed technologies [1, 2].

## References

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