

# Developing an Interactive Tabletop Application for ‘Creative Interpretation’ in Art Museums

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**Abstract:** This paper presents the design and implementation of an interactive application - TACTEC - for multi-touch tables in art museums. With focus on visitor participant experiences we propose an application that promotes visitors engagement through the development of creative activities using interactive technologies.

**Keywords:** visual art, engagement, design, art museum

## Introduction

Gallery interactives integrating multitouch surfaces, games, and kinetic technologies are increasingly introduced as interpretive resources in art museums (Kidd, 2014; Pierroux & Ludvigsen, 2013). The TACTEC application (Pinto, 2013) was similarly designed for casual visitors to explore and interpret art using an interactive tabletop, as a walk-up activity in a large art museum in Portugal, focused on the work of Hieronymus Bosch. In contrast to simple browsing activities, TACTEC aimed to engage visitors in collaborative and creative processes by applying visual arts perspectives on learning and interpreting art to the interaction design. The design was further informed by what is now substantial and mature research on tabletop interactives (Dillenbourg & Evans, 2011; Müller-Tomfelde *et al.*, 2010), including studies of collaboration among casual users in ‘walk-up’ settings in museums and other public spaces (Müller-Tomfelde *et al.*, 2010; Rogers, Lim, Hazlewood, & Marshall, 2009). These studies emphasize the need to balance user guidance with allowing users to interact freely with the interface, supporting naturalness and simplicity in the gesture-based interactions, and providing an aesthetically appealing design that is accessible on all sides and highly visible in the surroundings (Iraola & Romay, 2010; Müller-Tomfelde *et al.*, 2010). Recently, tabletop applications that integrate creative ‘making’ activities are being explored (Smørdal *et al.*, 2014; Liu, 2013).

## Methods

TACTEC was tested in a lab Centro de Computação Gráfica (CCG) setting, and in the reception area of the museum Sociedade Martins Sarmento, Guimarães (SMS) (Fig. 1, left). The main feature of the interface was a large canvas with a menu that allowed users to navigate and select among nine categories of images from Bosch’s paintings to create new compositions (Fig. 1, right). Users could then publish and comment on their compositions – as well as those of others – using a *Facebook* plugin. User studies were conducted in lab (two sessions) and museum settings (one session) using a questionnaire, direct observations, and video recordings supplemented by field notes. Usability issues were the focus of the lab studies, with individuals completing a series of closed tasks during a period of 13-15 minutes. Thirteen young people participated in the third session at the museum (SMS), with more open-ended tasks, choosing to spend approximately twice as much time.



Figure 1. Tabletop in reception area (left) and TACTEC interface (right)

## Analysis

Images and posts published by users on *Facebook* were analyzed using methods from the visual arts, e.g., color,

form, symmetry, proportion, symbolism, to evaluate the ways in which users may have been sensitive to general issues of composition, and to Bosch's visual language in particular. Users' comments on images posted on Facebook frequently described experiences that were personal and positive, e.g., "I started by making an image with elements I didn't like very much, it was simple and without an explicit meaning. But the process captured my imagination and I created this image, with more elements that have meaning for me." Responses to the (same) questionnaire applied in all three trials (n=24) were evaluated on a five point Lickert scale. A total of 39 questions were posed regarding demographics, usability, prior knowledge of Hieronymus Bosch's art, general interests in art, and the interface design. In questions dealing with users' interest, engagement and interpretation of Bosch's work, responses indicated that participants in the study made new observations (4.08), valued the exploratory aspect of the experience (4.3), and were generally positive to the menu design featuring visual elements 'deconstructed' from Bosch's paintings (3.5). Participants were in large agreement (4.3) that interaction with the application had provided them with a deeper understanding of Bosch's work, and had created a sense of intimacy between user, content and the composition of his paintings.

## Conclusions and implications

Findings from this testing in lab and museum settings informed a new round of development, and interaction studies were conducted with casual users at a walk-up installation of TACTEC in a different museum location. We are currently analyzing these data. Based on the user testing reported in this poster, and on preliminary analysis of visitor interactions in a natural setting, we suggest that interactive tabletops designed with rich visual content, a low level of guidance, and the opportunity to share compositions with others on a social media platform may engage group collaboration in creative activities in art museums.

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