Designing Virtual Interactive Objects to Enhance Visitors' Experience in Cultural Exhibits

Andrea Antonio Cantone [1], Matteo Ercolino [1], Marco Romano [2], Giuliana Vitiello [1]

[1] _Department of Computer Science, University of Salerno, Fisciano, Italy_
[2] _Faculty of Political Science and Psychosocial Studies, Università degli Studi Internazionali di Roma—UNINT, Italy_

Introduction

In recent years, the use of modern technologies has grown significantly.

The most innovative technologies have led to a disruption in the way of life, both positive and negative.

The modern increase in the complexity and innovation of technology has created some challenges.

New way of learning

It's possible to use technology?

New way of learning

It's possible to use technology?

It's more difficult to teach something to people who are used to excessive use of technology

Marc Prensky. 2001. Digital Natives, Digital Immigrants Part 2: Do They Really Think Differently? On the Horizon 9, 6 (nov 2001), 1–6.

Augmented Reality (AR)

➤ Overlay of digital elements.

➤ Use of phones or AR glasses.

➤ Preservation of contact with concrete reality.

Cultural environments
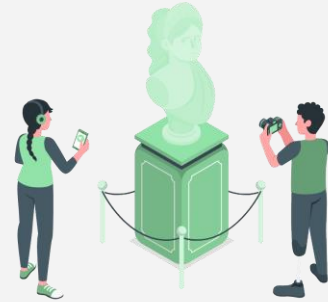
New challenges

➢ Increasing engagement

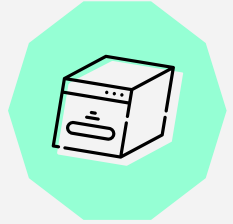➢ Increasing interest

➢ New styles of exposure

New problems

➢ Do not forget the educational objective

➢ Do not divert the user's attention

Requirements

Some of the main requirements

Simplicity
The system should be simple to use and should require no more than training before use

Integration
The system must integrate into the exhibition, not replace it

User attention
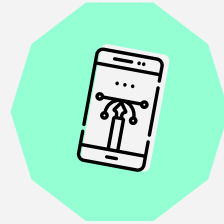The system should avoid overly capturing the user's attention

Interaction
The system must satisfy the need for user interaction
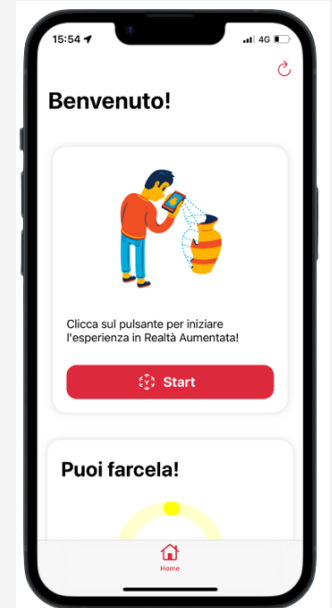
Scenario
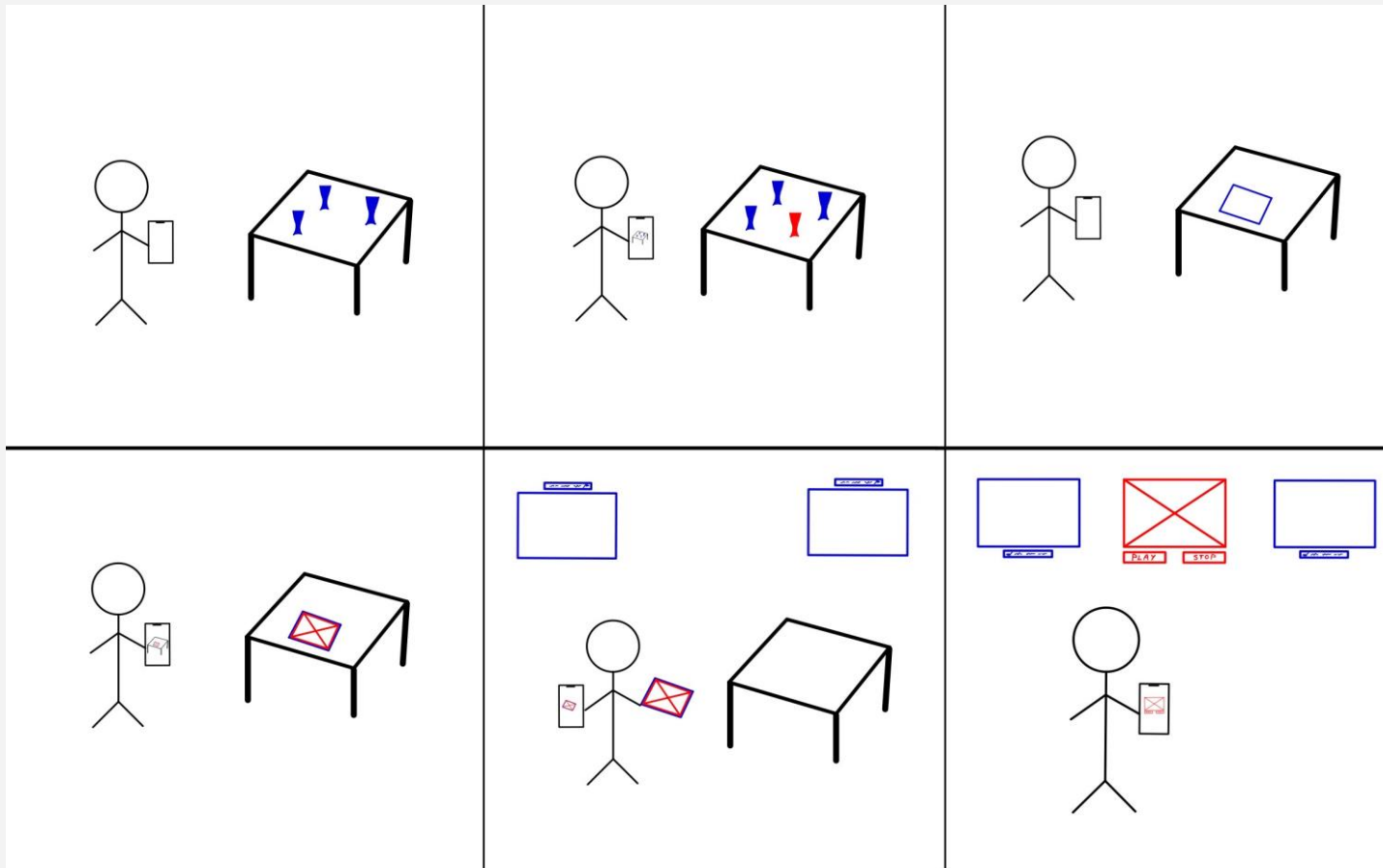
The application

The iOS app allows us to integrate AR elements into the exhibition organized for the 150th anniversary of the Serie A1 Rari Nantes water polo team, with the aim of increasing visitor engagement and interest in the exhibition.

The application

Coaching screens explain how to rotate the device to begin the experience. When the coaching is finished, a Focus Square is shown, that allows the users to better understand what they are framing and what planes (horizontal or vertical) or markers have been identified.
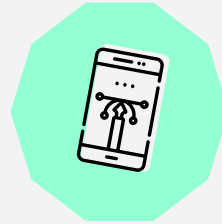
Interactive Virtual Objects

Three different types of interactive virtual objects
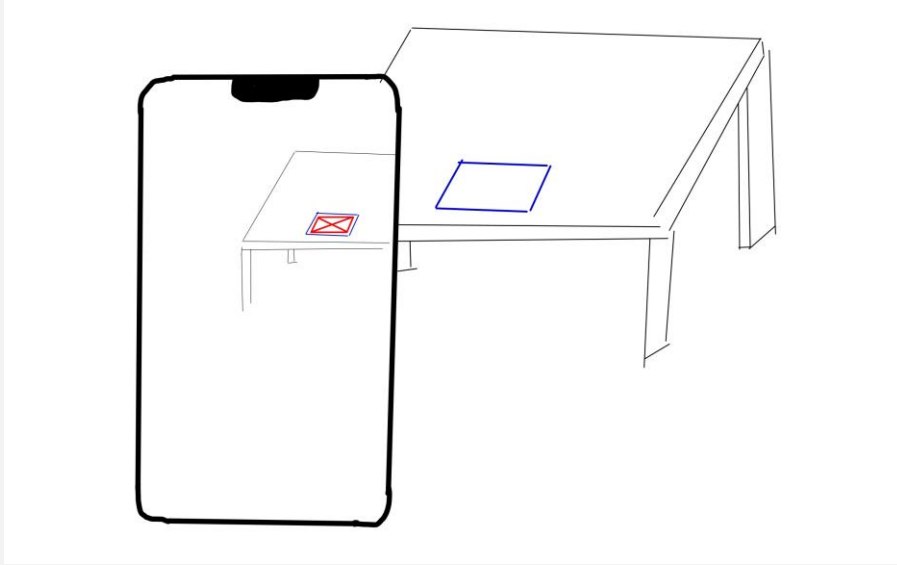
Meta-artifact

Multimedia virtual object

Virtual toy

Interactive Virtual Objects

Meta-artifact

A mix of virtual and physical object.

It is a physical object that is augmented to be able to provide multimedia content.
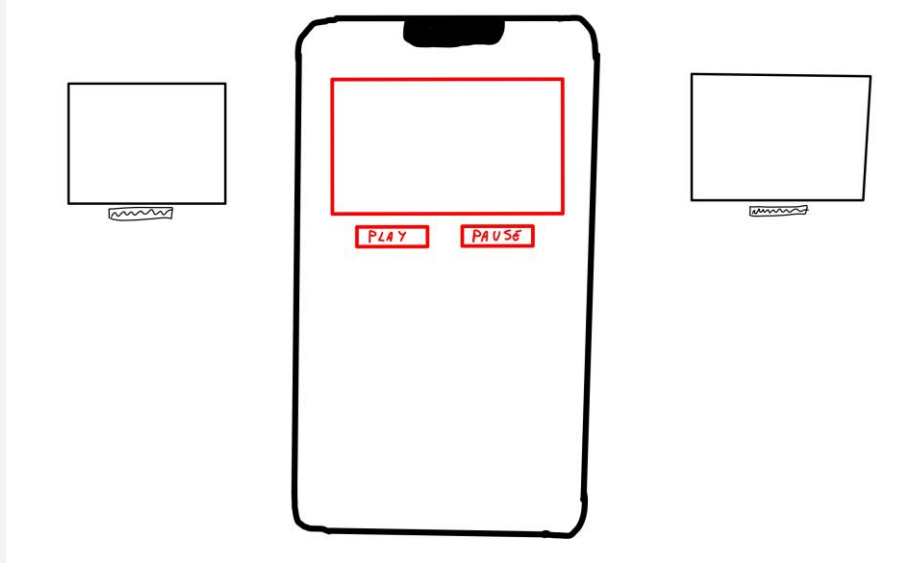
Interactive Virtual Objects

Meta-artifact

The meta-artifact is represented by a card with a marker printed on top of which an image is placed via AR.

Two albums were created, containing photos of the team's lineups from 1964 to 2000 and from 2000 to 2022.

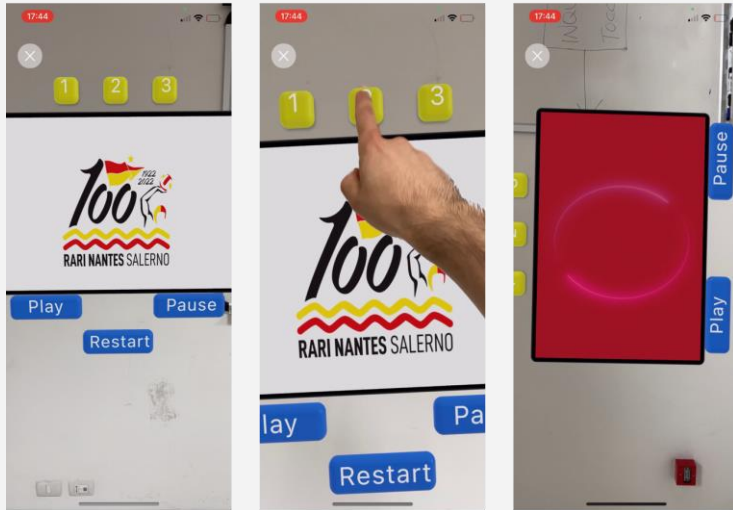# Interactive Virtual Objects

Multimedia Virtual Object

An object place in the physical environment, on a wall or on a marker, and has characteristics that make it similar to a physical object.

It is interactive and offers multimedia content.

Interactive Virtual Objects
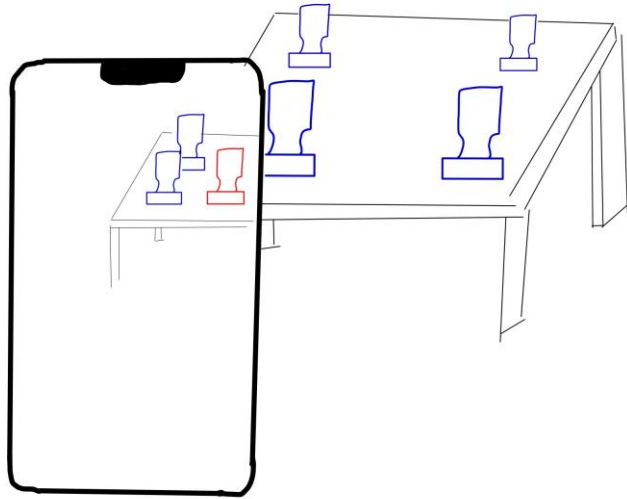
Multimedia Virtual Object

A virtual screen has been created on which to show three videos in high resolution.

In addition, several virtual buttons have been created to control the video being played and other buttons to choose which video to show.

Interactive Virtual Objects

Virtual toy

It consists of a virtual object related to the exhibition positioned in the real environment, which offers interactivity but no multimedia content.

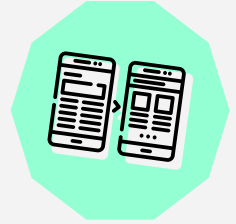# Interactive Virtual Objects

Virtual toy

A water polo ball was created that at the touch of the user begins to bounce on the table set up for the exhibition or on the floor.
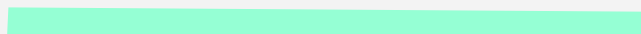
Conclusion and future work

- ➢ iOS application designed to increase visitor engagement and interest in cultural environments

- ➢ First feedback obtained in a lab exhibition

- ➢ Analyze the data collected from other exhibitions

Thank you for your attention!

Designing Virtual Interactive Objects to Enhance Visitors' Experience in Cultural Exhibits

Andrea Antonio Cantone, Matteo Ercolino, Marco Romano, Giuliana Vitiello

acantone@unisa.it