Midterm Presentation

deti · universidade de aveiro
departamento de eletrónica,
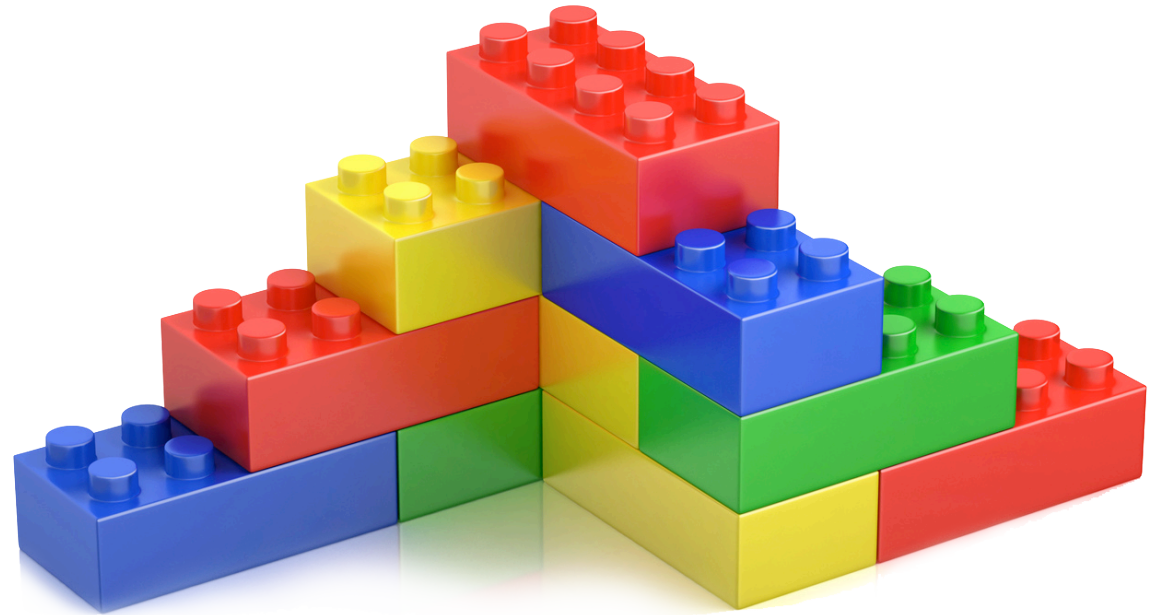telecomunicações e informática

Project Conceptualization

Project Title: Virtual and Augmented Reality (VR & AR) for collaborative tasks

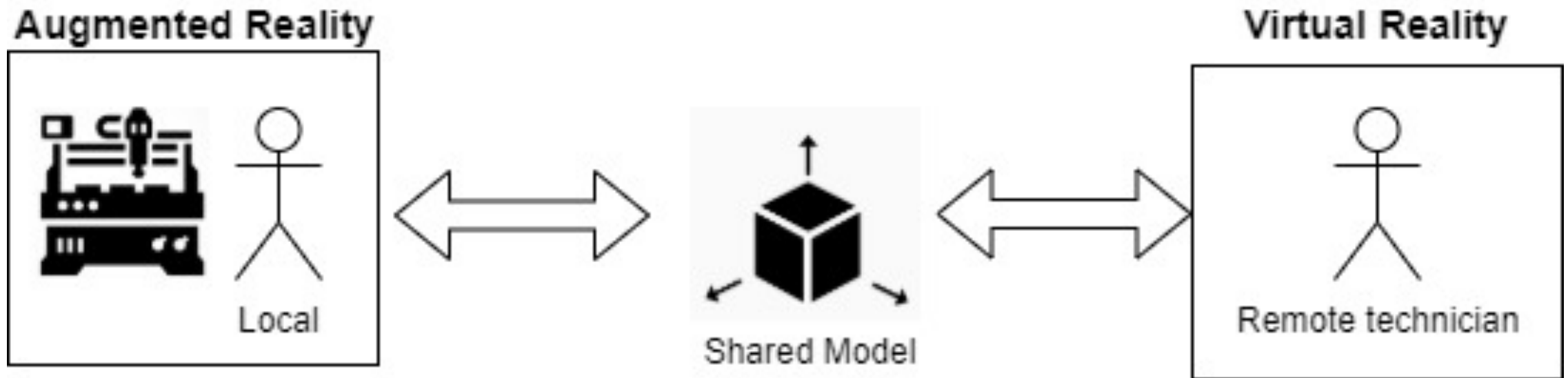**Group:** Miguel Fonseca & João Barroso

Introduction

Virtual and Augmented Reality (VR & AR) for collaborative tasks

- João's Dissertation

  - Remote Collaborative Tasks

  - AR & VR

- Lego Case Study

Project Vision

Virtual and Augmented Reality (VR & AR) for collaborative tasks

Augmented Reality

Local

Virtual Reality

Remote technician

Shared Model

Project Objectives

Virtual and Augmented Reality (VR & AR) for collaborative tasks

Focus mainly on remote user:

- Integrate different devices

- Evaluate different interactions methods

- Understand advantages and disadvantages (context-based)

➢ Ensure local user understand all instructions

Personas

Virtual and Augmented Reality (VR & AR) for collaborative tasks

Bob	
Bob	• Age 18-65 • Maintenance, assembly, disassembly, repair • Basic or null knowledge • He is facing the real objects
• Difficulty to solving a complex problem • Need help to complete tasks.	• Use a device to see AR instructions given by remote user.

Alice	
Alice	• Age 18-65 • Provide assistance to complete tasks • Advanced knowledge • She has virtual objects to represent real objects
• She doesn't have access to the real environment. • Needs an easily way to give instructions • Needs to know if the requested task has been performed	• Use VR technology to recreate real environments. • Use desktop or android projetor

User Stories

Virtual and Augmented Reality (VR & AR) for collaborative tasks

- As a **local user** (Bob), I want to receive instructions remotely for add and remove the right pieces in correct place.

- As a **local user** (Bob), I want to send a completed task confirmation to the remote user

- As a **remote user** (Alice), I want to send instructions to local user for that I need first connect to him

- As a **remote user** (Alice), I want to know if the task has been successfully completed or not by the local user

Storyboards
Virtual and Augmented Reality (VR & AR) for collaborative tasks

Send Instruction (Remote User)
Connect to local user ➜ Select piece ➜ Put Piece in right place ➜ Send instruction
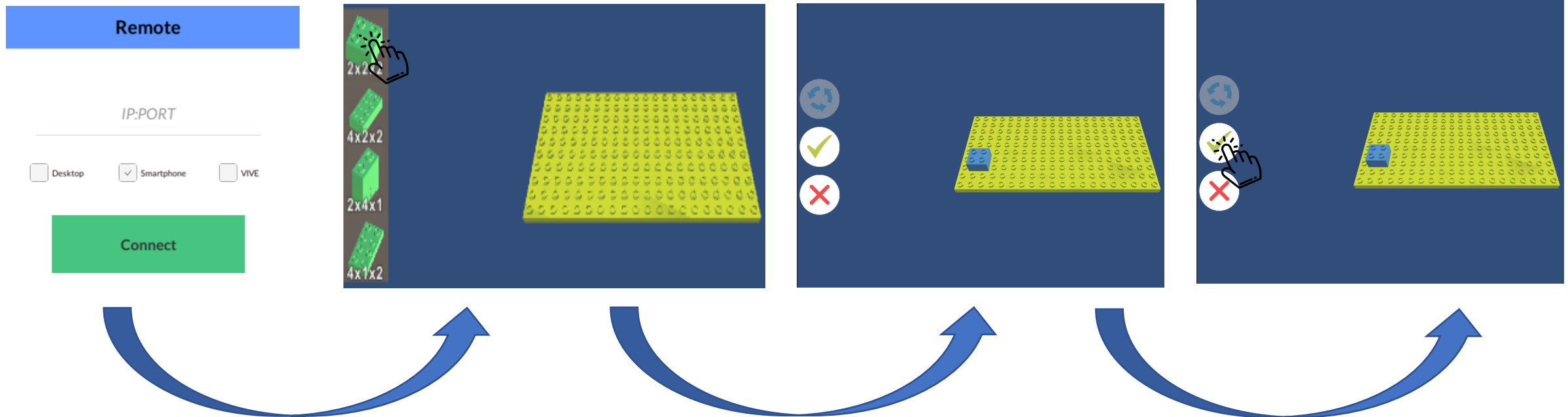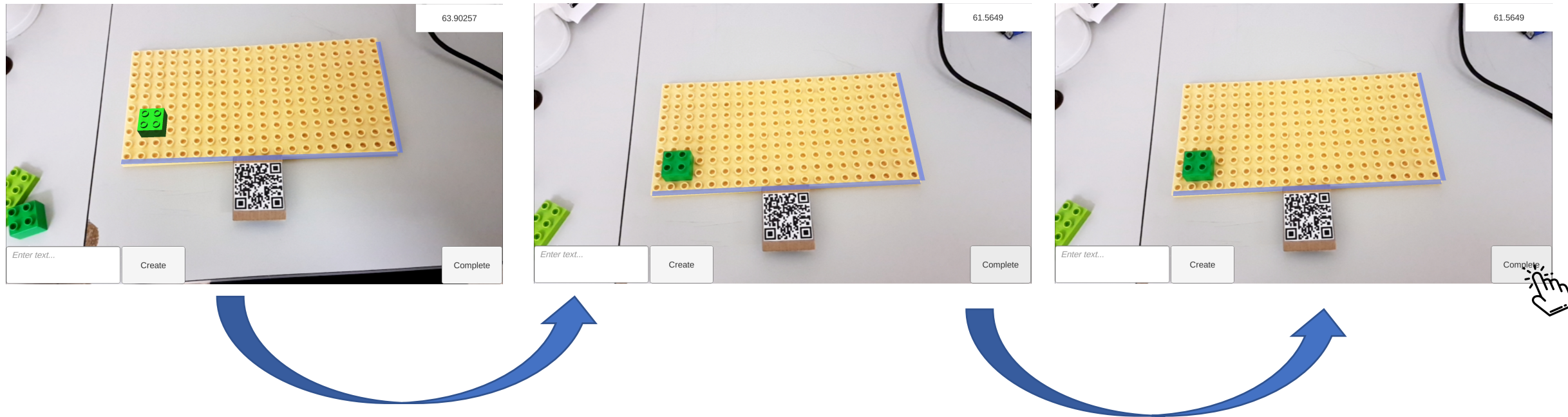
Storyboards

Virtual and Augmented Reality (VR & AR) for collaborative tasks

Receive Instruction (Local User)

Show animation for put a piece ➔ Put Piece in right place ➔ Confirm

Requirements

Virtual and Augmented Reality (VR & AR) for collaborative tasks

- Quality requirements - Platform compatibility, Testability, Accessibility

- Functional Requirements:

  - **Remote**: Add, rotate, remove pieces, confirm and cancel instruction, select multiple pieces, receive notifications, change camera perspective, connect to local;

  - **Local**: Receive and show instructions from remote, queue of instruction and notify user remote when task is done;

Project Constrains

Virtual and Augmented Reality (VR & AR) for collaborative tasks

- How the instructions will be presented to the local user;

- How remote user can easily interact with the system to
  give instructions;

- How must network communication will be work (the type
  of piece, position (xx, yy, zz), rotation);

- Deny put pieces outside work base

- Pieces height

- AR alignment

Project Situation

Virtual and Augmented Reality (VR & AR) for collaborative tasks

- Communication end-to-end

- Remote sends instructions to local

- Remote has multiplatform (desktop and touch projector)

- Local visualize instructions using AR

- Local confirms/denies the task execution

Next Steps

Virtual and Augmented Reality (VR & AR) for collaborative tasks

- Improve communications between remote and local user

- Align AR

- Improve touch system (Sony projector)