

VRinHE

VIRTUAL REALITY IN
HIGHER EDUCATION

**Introduction to AR; terminology, types,
devices, applications in HE education**

Module 1

11.04.2023 | BRCCI



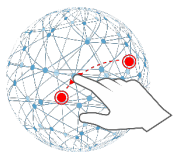
About the module

- Unit 1: Relevant terminology
- Unit 2: Types of augmented reality
- Unit 3: Devices for AR
- Unit 4: Application of AR in higher education

Introduction

- AR projects computer-generated elements (text, images, video) on top of the existing environment, making it an enhanced version of the real world.
- Along with virtual reality (VR) and Mixed reality (MR), it is one of the technologies of the future





Introduction Activity

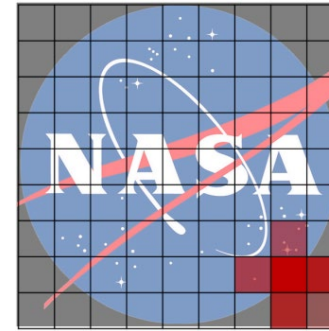
- Each of the trainees can share their previous experiences (whether professional or personal) with augmented reality
- Estimated time – 10 minutes



Unit 1: AR terminology



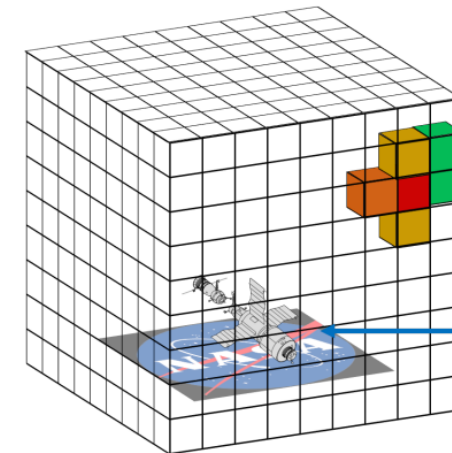
Software development kit



2D Heat map



Head-mounted display (HMD)



Camera positions:
- Warmer colors
indicate increased time

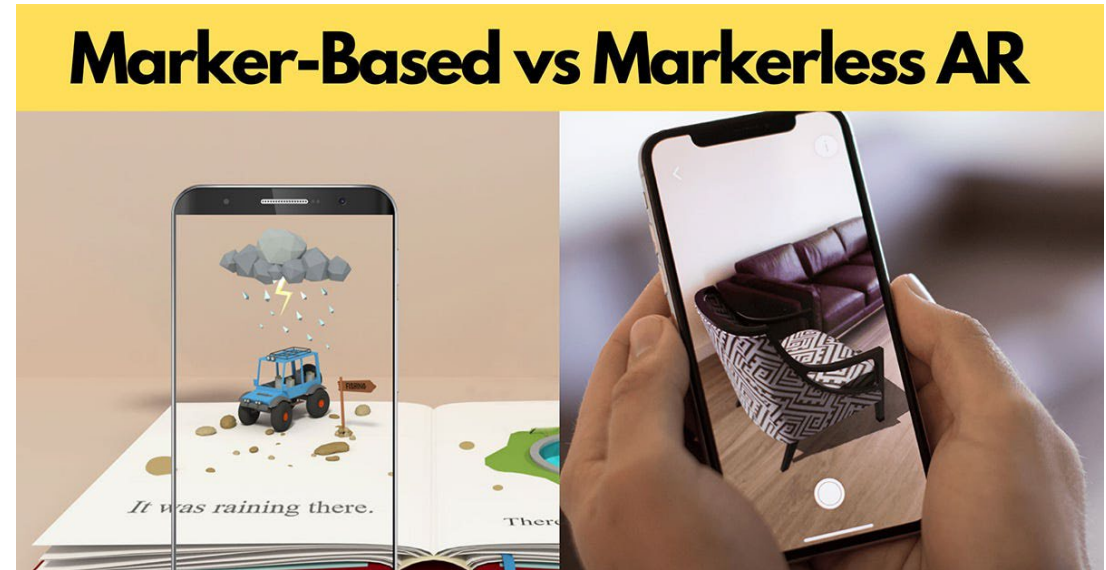
3D grid discretization
of the viewing space

Augmented content
inside the grid

3D Heat map

Unit 2: Types of AR

- [Marker-based AR](#) – uses image or pattern recognition in order for the augmentation to be triggered
- [Markerless AR](#) – it's not reliant on anything other than hardware features of the device, such as sensors, camera and processors. It can be location-based, projection-based (spatial AR) or superimposition.



Unit 3: Devices for AR



Smart glasses



AR headset



Mobile AR



Mixed reality headset

Hands-on activity

- Trainees will test the CoSpaces Edu application in order to get first-hand experience in AR
- They will run different AR scenarios
- Estimated time – 20 minutes

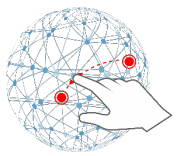


Unit 4: Applications of AR in higher education

- There are different educational fields, which can implement AR as part of the learning process



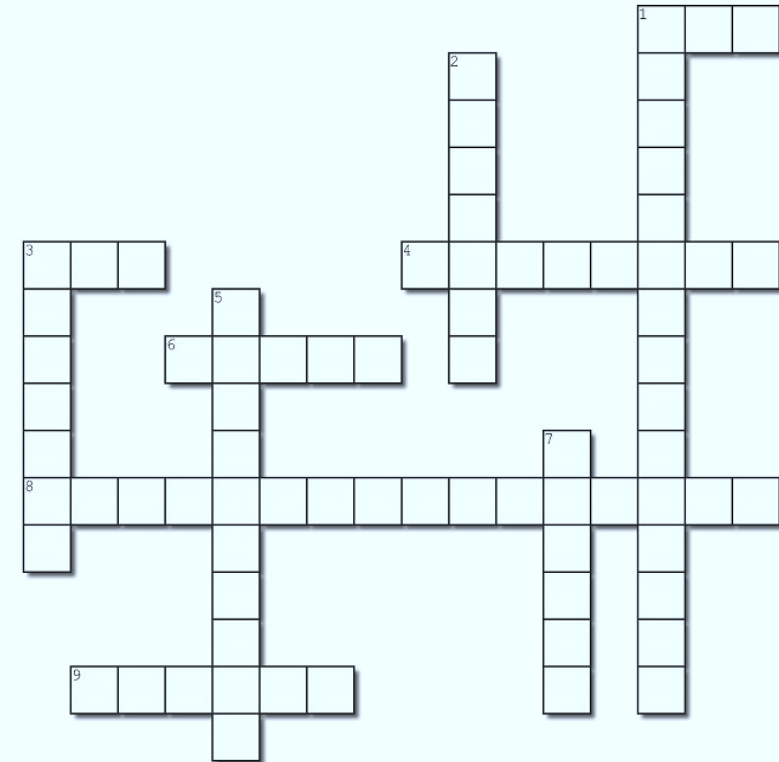
- Architecture and Interior Design – [video](#)
- Healthcare - [video](#)
- Different use cases - [video](#)



Assessment Activity

- Each trainee must solve a crossword puzzle, composed of AR terminology
- The trainers will hand them a printed version
- The goal is to assess how well the trainees have understood the material
- Estimated time – 10 minutes

Complete the crossword puzzle below

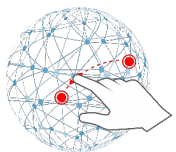


Across

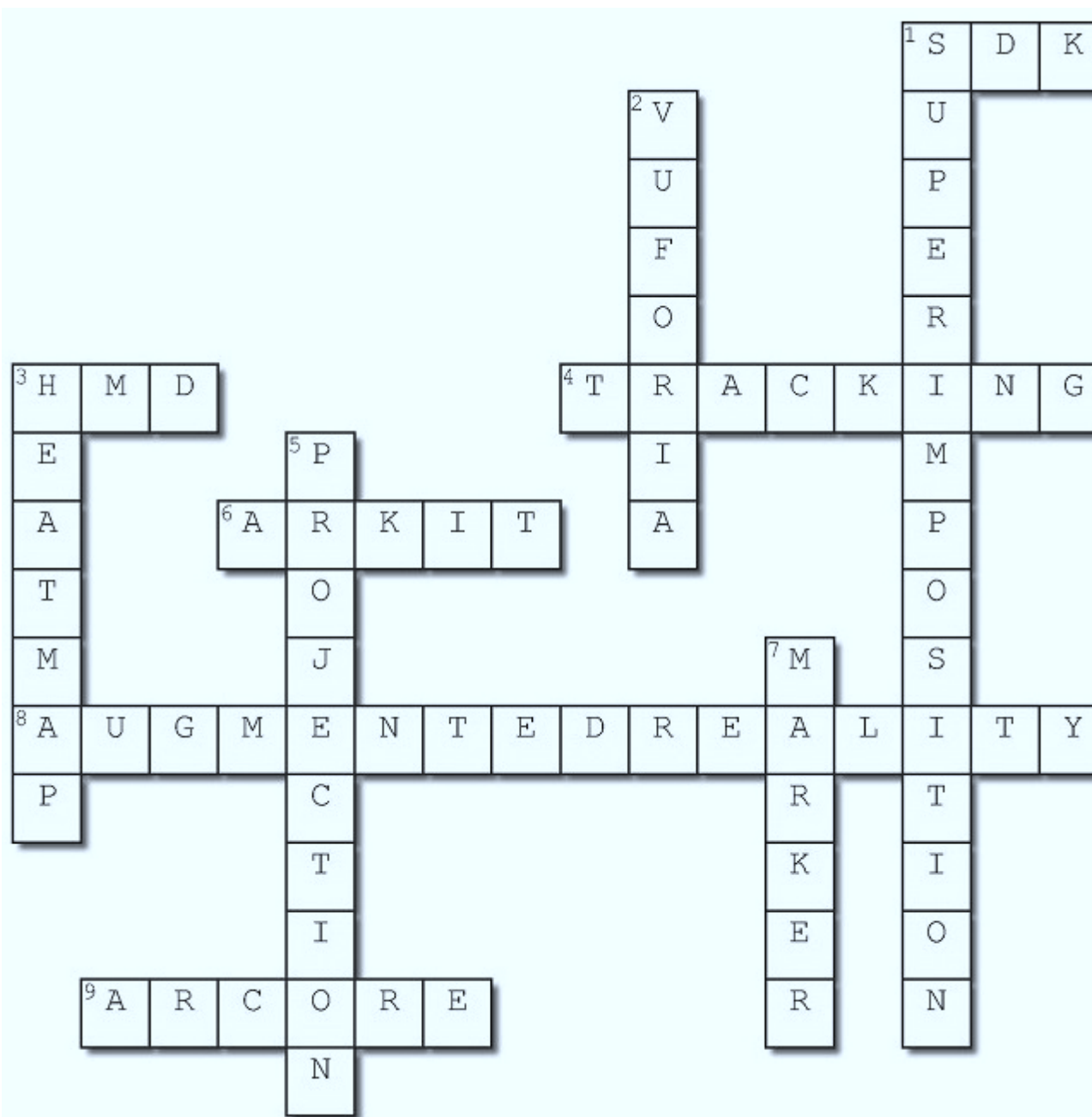
1. The software environment for creating AR
3. Device, which attaches to the head and projects virtual elements
4. Technique for following a specific part of the user's body in a digital environment
6. Apple's environment for creating AR
8. Projecting computer elements onto real-world environment
9. Google's environment for creating AR

Down

1. Method of partially or fully replacing an object with an augmented version
2. One of the most popular platforms for AR content creation
3. Tool, which shows which part of a scene the users looking at
5. Type of AR, also known as 'spatial AR'
7. Specific object, which triggers the display of AR content



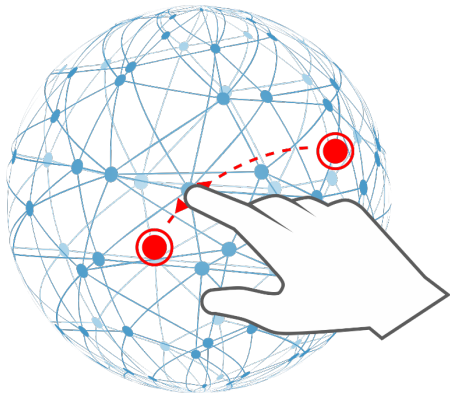
Answers



Reflection Activity



- The trainees will reflect upon the learned material and ask clarifying questions if necessary
- They will go into a discussion about the use of the technology in the field of higher education
- Estimated time – 10 minutes



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