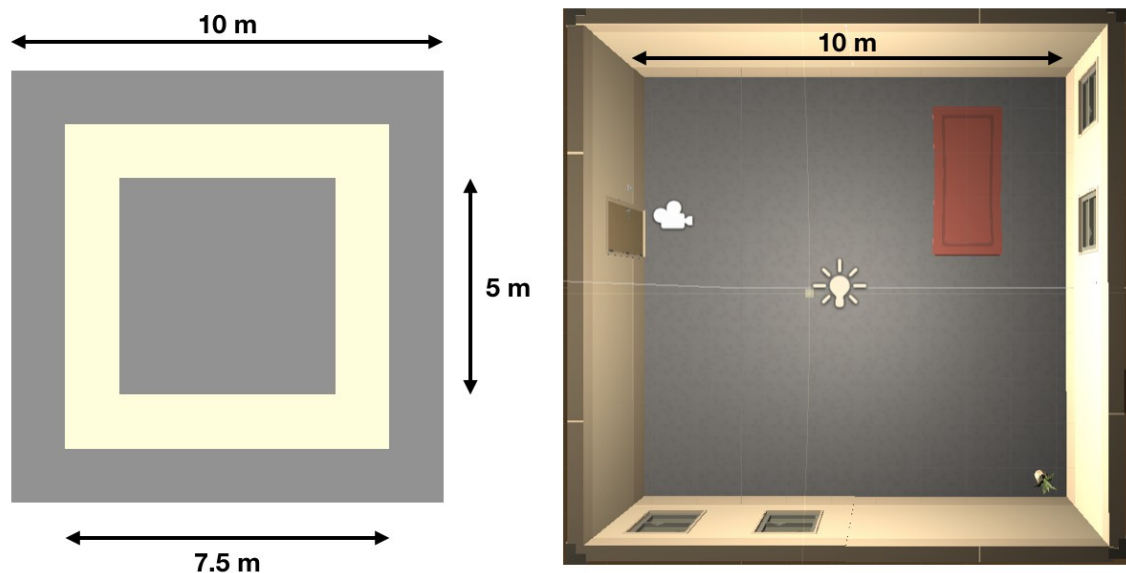


TD04 – Movement and navigation

I. Setup

- Download the TD42022-VRWalking Unity package from the course moodle
- Inside you should find a scene VRWalker. Open the scene.
- Switch to the game view window, and you should see a split screen. On the left is the real world with an avatar (which will be referred to as the **user**), and on the right is the virtual world, and the camera is the **player**.
- Play the scene and use the keys W, S, A, D. In the Game view, you should see the **user** move and rotate in the real world
- Scene dimensions : both the real and virtual scenes are square-shaped. The size of the larger grey area (10m * 10m) in the real scene is exactly the same as the virtual scene.



II. Real to virtual 1:1

- In the script `VRTranslate.cs`, complete the functions `translateCam` and `rotateCam` such that the movement of the virtual camera `playerCam` is identical to that of the user in the real world
- Play the scene and ensure that user's actions correspond to the camera viewpoint
- To have more realistic head movements, write a script that allows you to rotate the **user** and the **player** as a function of the mouse movement instead of A and D keys

III. Redirected walking – translation and rotation gain

- Recall that translation gain is defined as $T_{\text{Virtual}} / T_{\text{Real}}$ and rotation gain is defined as $R_{\text{Virtual}} / R_{\text{Real}}$
- Modify the functions `translateCam` and `rotateCam` such that the player movement is adjusted by the translation and rotation gain
- Set the translation and rotation gain to different values, and watch how the **user** actions map the **player** actions. Try the values from the presentation slides (CM05)

IV. Redirected walking – curvature gain

- Recall that curvature gain is defined as $1/R$ where R is the radius of the curvature
- Complete the function `curveCam` to implement curvature when the user is walking (hint: the movement speed of the user as a vector is calculated `playerReal.transform.forward * m_speed`)
- Set R to 22 and test the scene

V. Redirected walking – dynamic gain

- Based on today's lecture, think about how to limit the user's movement to an area without them perceiving it (i.e. the gain staying well within the ranges showed in the lecture).
- Test your theory by trying to limit the user to the white or smaller grey area in the real world

Rendu: submit your completed `VRTranslate.cs` script