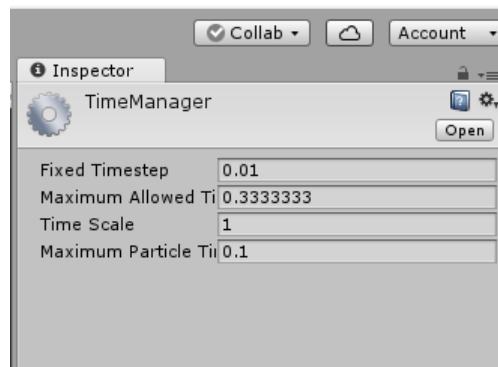


Programming Vuforia in Unity: some advices

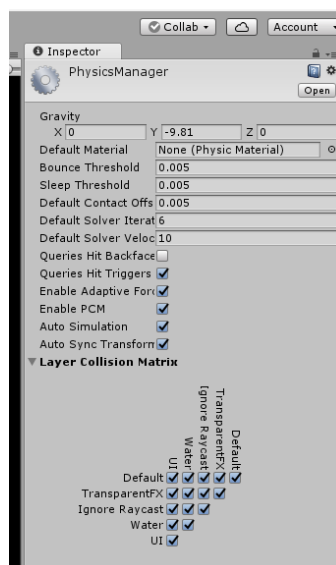
J. Vezien – Nov 2019

Programming a game in Unity is relatively easy. Using Vuforia is also ok, if you are a bit careful. But setting up a full AR game combining Vuforia with the Unity physics engine is sometimes frustrating. Here are some tips:

- Set the scale properly: Vuforia markers will be in centimeters, and will appear at their true scale in Unity, where the unit is... the meter by default. So make your models at the proper scale, or downscale them by the correct amount if they are tracked objects (that is, daughters of a Vuforia marker)
- This implies that the physics engine must work at small scales... and it doesn't by default ! So you need to:
- Set the time factors (in “Settings→ Time” menu):

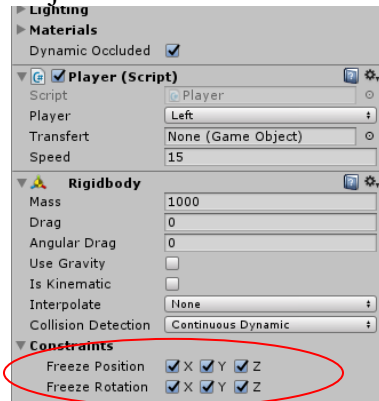


- Set the physics settings ((in “Settings→ Physics” menu):

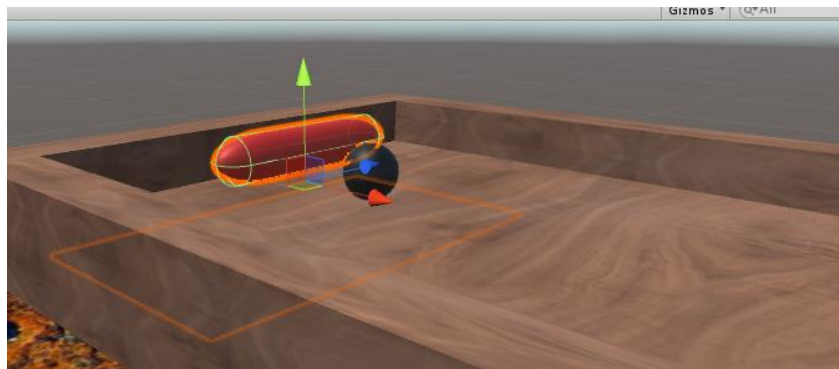
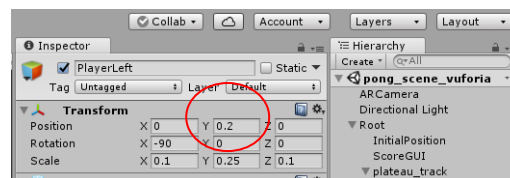
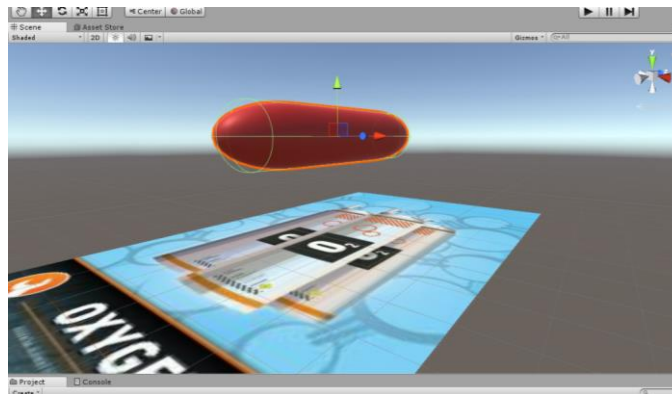


- Give your objects the right properties:

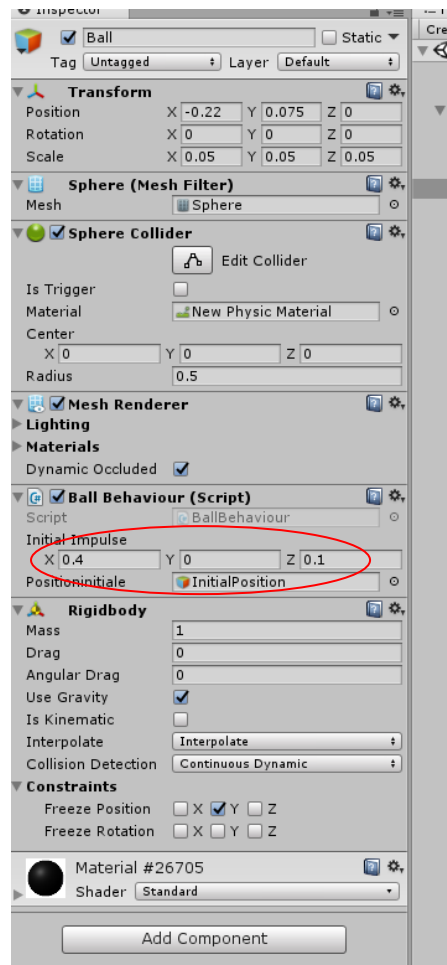
- Objects should be fixed relative to their respective markers:



- Beware of relative object placements. For example, objects attached to markers on the ground should be placed slightly above, especially if another marker is linked to a playground with some thickness:



- Any moving object (with proper scale !) should be fast enough to produce good collisions, but not too fast:



In conclusion, making physics work in AR can be a bit tricky. In Unity, things were setup to allow games to work correctly at “human” scales (dimensions in the meter to kilometer range), with relatively high speeds (1m/s is already fast for a small object). However, marker-based AR is not yet easily done (practically) with these dimensions. Things need to be scaled-down a bit, but this is not default behavior. Caution advised.