MR Spatial Sync

The **Spatial Sync** add-on for SimLab Composer allows you to perfectly align your virtual 3D content with your real-world physical space. This is essential for **Mixed Reality (MR)** experiences, where a full virtual interior (like a new kitchen layout) needs to sit accurately within your actual room — or where a single virtual model (like a PC case) needs to sit exactly on your real desk.

Prerequisites

Before launching the add-on, organize the content you want to see in Mixed Reality:

> [!IMPORTANT]
>
> Grouping: All objects that you want to appear in Mixed Reality must be placed inside a **single group**. The group can have any name

---

1. The Setup Wizard

Open the **Add-ons** menu, navigate to the **MR tab**, and launch **Spatial Sync**. After the introduction window, the wizard will guide you through these steps:

1. **Alignment Mode:** Choose what you want to align with your physical space:
   - **Single Object** — align one model to a real object.
   - **Room Scale** — align a whole interior to your room.

   This choice decides which parts of the MR Component are kept, so **it cannot be changed later in the wizard**.

2. **Select Group:** Choose the group that contains the models you want to align in MR. Any group name is accepted.
3. **Corner Alignment:** A yellow sphere appears at the center of the scene, at the world origin (`0, 0, 0`). Move your 3D objects so that one of their corners sits exactly on this sphere.

   > [!IMPORTANT]
   > Do not move the sphere. It is a fixed reference point at 0,0,0 — only the objects in the scene should be moved.

4. **Avatar Placement:** Position the avatar at a natural starting point, such as the room's entrance.
5. **Rotation Guide:** A gizmo appears with four planes, one facing each direction — **two red** and **two green**. Rotate the gizmo until the **two green planes** align with your 3D objects. This is how the MR experience knows the correct rotation of those models. Both plane pairs are purely visual references; the green pair is simply the one you match to your objects.
6. **Filter Non-MR Objects:** Select any objects that should **not** be visible in Mixed Reality (e.g. placeholder walls, structural guides, or background environments) and click **Next**.
7. **Setup Finished:** A confirmation window lets you know the MR Component has been set up successfully. Close the wizard — your scene is now ready to be launched in Mixed Reality.

---

2. Real-World Alignment (In VR/MR)

Once you launch the experience on your headset in Mixed Reality mode, follow these steps to sync the scene.

Your reference point depends on the alignment mode you chose in the wizard:

Alignment Mode	Reference point in MR
Room Scale	The **yellow sphere** at the center of the scene.

Alignment Mode	Reference point in MR
Single Object	A small **directional gizmo** replaces the sphere. It works exactly the same way, but is smaller and has pointed rectangular handles for each axis, for more accurate placement of small objects.

> [!IMPORTANT]
>
> Controls: In SimLab VR Viewer, the **Trigger** is used for grabbing, and the **Grip** is used for events and triggering actions.

- **Positioning:** Use the **Trigger** to grab the sphere (or the directional gizmo) and place it at the **exact physical corner** of your real room — or on the **real object** — that you chose during setup. Press the **Grip** button to set it.
- **Rotating:** A rotation gizmo will appear. Grab and rotate it until the **green planes** perfectly overlap your **real physical walls** (Room Scale), or match the orientation of the **real object** (Single Object).
- **Finalizing:** Press **Apply** to bring the objects into view. If the alignment looks correct, click **Confirm** to save the position.

Adjusting the alignment afterwards

If the position or rotation ends up slightly off, there is no need to restart. While still inside the experience you can:

- Grab the sphere (or directional gizmo) again and adjust its position.
- Re-grab the rotation gizmo and adjust the rotation.

Summary Table: Alignment Tools

Tool	Action in VR	Purpose
Yellow Sphere (Room Scale)	Grab with Trigger & place at corner	Sets the "Anchor Point" for the room.
Directional Gizmo (Single Object)	Grab with Trigger & place on the real object	Same anchor role as the sphere, with per-axis handles for precise placement of small objects.

Tool	Action in VR	Purpose
Rotation Gizmo	Grab & Spin	Matches the virtual orientation to the real space.
Green Planes	Visual Reference	The pair you align with your models / real walls.
Red Planes	Visual Reference	Mark the remaining two directions. Reference only — they have no function of their own.
Confirm Button	Click to Save	Locks the virtual scene to your real space.

Why use Spatial Sync?

- **Precision:** Ensures virtual furniture, renovations, or single products are viewed at the correct scale and position.
- **Flexibility:** Two alignment modes cover both a full room-scale interior and a single small object placed on a real surface.
- **Ease of Use:** Replaces complex manual coding with a simple "grab-and-place" mechanic.
- **Persistence:** Once confirmed, the virtual content stays locked to the real world for a stable walkthrough — and can still be re-adjusted at any time without leaving the experience.

Watch this tutorial to learn more

https://www.youtube.com/embed/s_Wq9Dm054k

Revision #9
Created 2026-01-07 13:33:32 UTC by Khalid Abu Eid
Updated 2026-08-27 13:26:26 UTC by Ahmad Qasim