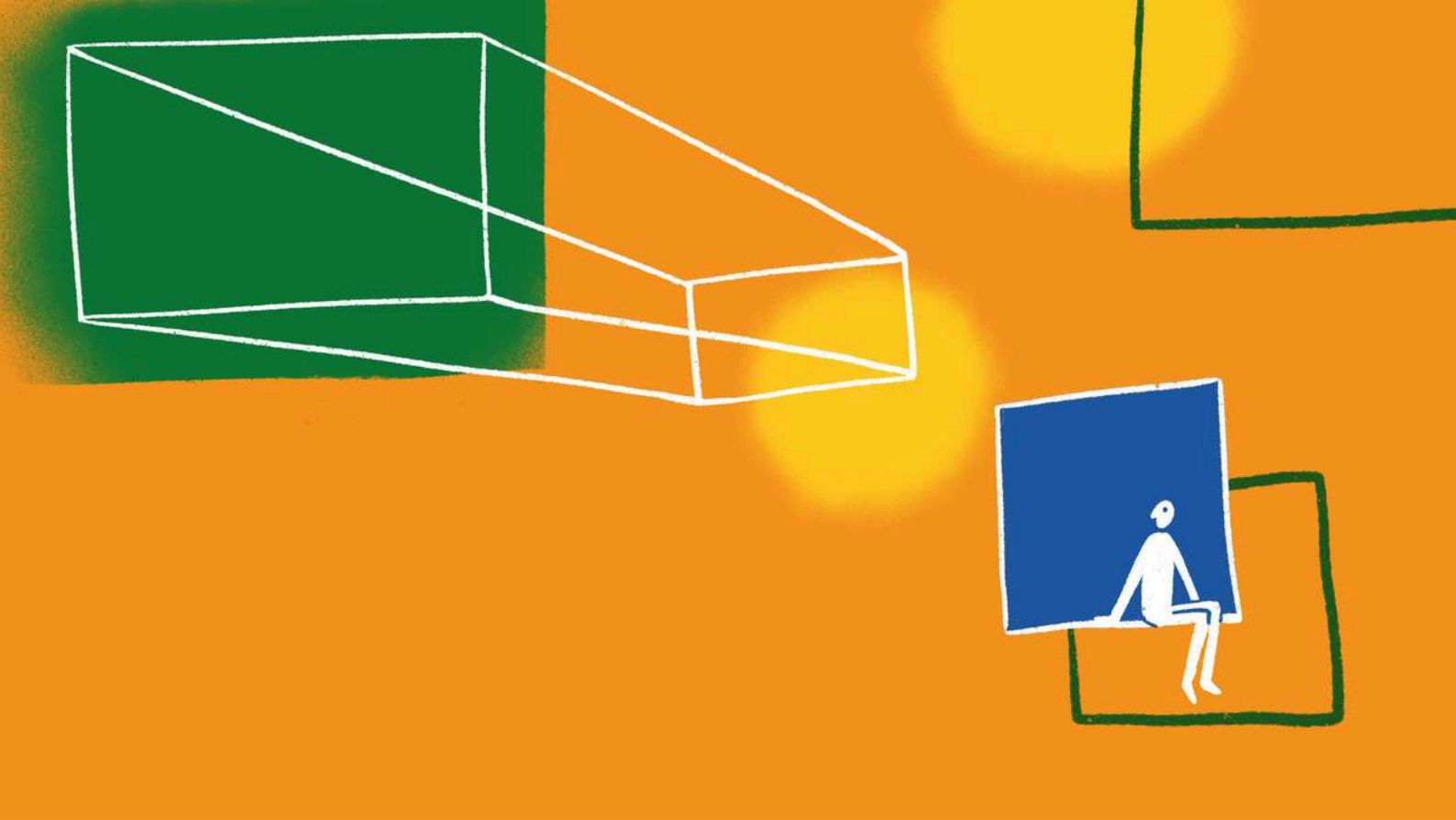
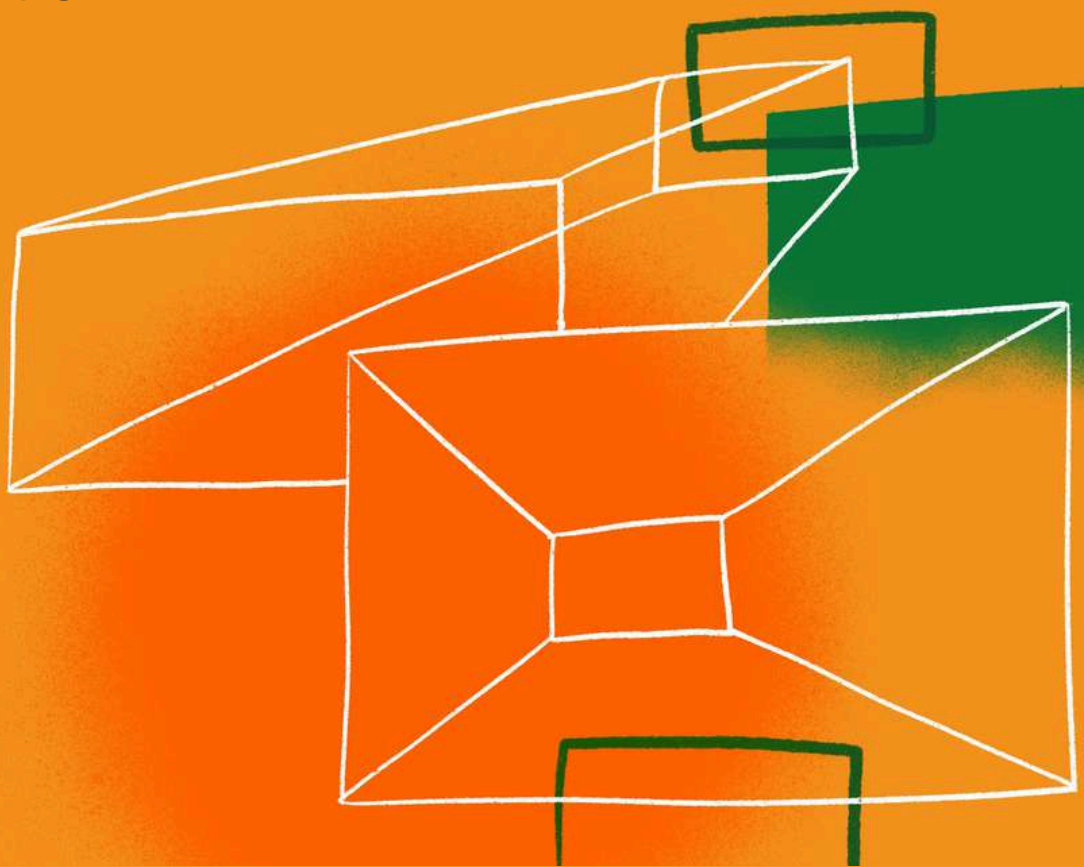


CHAPTER 5

Hands-on example with Spatial



This chapter guides the reader through the creation of a virtual micro-museum in Spatial starting from an empty room. The goal is to carry out the technical steps and to understand the curatorial and accessibility logics that make a digital exhibition effective.

The selection of this platform is motivated by four key factors:

- **Accessibility:** It works directly through a web browser, without the need to install specific software on users' computers.
- **Cost:** It offers a free usage plan with features that are more than sufficient for the implementation of high-quality educational projects.
- **Immersiveness:** It fully supports fruition through Virtual Reality (VR) headsets, offering a higher-level immersive experience.
- **Versatility:** It allows importing and managing a wide range of multimedia formats, including three-dimensional models.

At the end, the user will know how to: open an account and create an empty room, upload 3D models, images, audio with transcript and video with subtitles, add interactive triggers to guide the visitor along a coherent path, and finally publish and share the space while read- ing the basic statistics to iterate on the content. A recent PC/Mac and a good connection are required; a VR headset is optional. This chapter is structured as an operational guide. By following the instructions provided, any user, even without prior technical skills, will be able to configure a digital environment, upload content to it, and make it accessible to a defined audience. To practice, it is useful to have a small set of assets: a lightweight .glb model, three high-resolution images, a short audio with transcript, and a video with subtitles. A metada- ta.xlsx file helps maintain consistency among titles, credits and UNESCO tags. The naming convention (MUSED_<Collection>_<Object>_<Type>_vYYYYMMDD) prevents confusion among versions and facilitates the reuse of materials.

OPEN ACCOUNT AND CREATE AN EMPTY ROOM

The first stage of the process consists of configuring the user account and generating the three-dimensional workspace.

1 Access to the Platform: Launch a web browser (e.g., Google Chrome, Mozilla Firefox) and go to **https://www.spatial.io.**

2 Start of Registration: Locate and select the “Sign Up” or “Login” button, usually placed at the upper right corner of the homepage. The platform offers several registration modes: via an email address and a password, or by linking an existing account (Google, Microsoft, Apple). It is recommended to use an institutional email address to ensure orderly project management and facilitate future collaborations.

3 Account Verification: If you choose to register via email, the system will send a verification message to the address provided. You must open this message and click the confirmation link to activate the account. This step is mandatory for security.

4 Creating a New Space: Once logged in, you will be redirected to the “dashboard,” the main control panel. From here, locate and select the “+ Create a Space” button. The system will present a series of templates (pre-configured models). A template is a starting 3D environment already furnished. For the purpose of a museum, it is advisable to select an option such as “Gallery” or “White Room.”

5 Initial Configuration and Access: Assign a descriptive name to the space (e.g., “MUSED – Cultural Heritage Exhibition”) and confirm creation. Uploading a 1920×1080 cover image will make the space recognizable in preview. A short description explains purpose and curation, while standardized tags and taxonomies (including UNESCO references where relevant) make content searchable. At the beginning it is prudent to keep the space Private or Unlisted, so the experience can be tested before publication. A small logo in the welcome panel strengthens visual identity, provided that minimum contrast for readability is respected.

6 After a brief loading, the user will be projected inside the empty 3D space, ready for the setup phase. Before making a final choice, it is advisable to enter different templates to explore their size, wall arrangement and type of lighting. A large environment is suitable for an exhibition with many objects, while a smaller space can highlight a few significant works.The template choice can also be changed later.

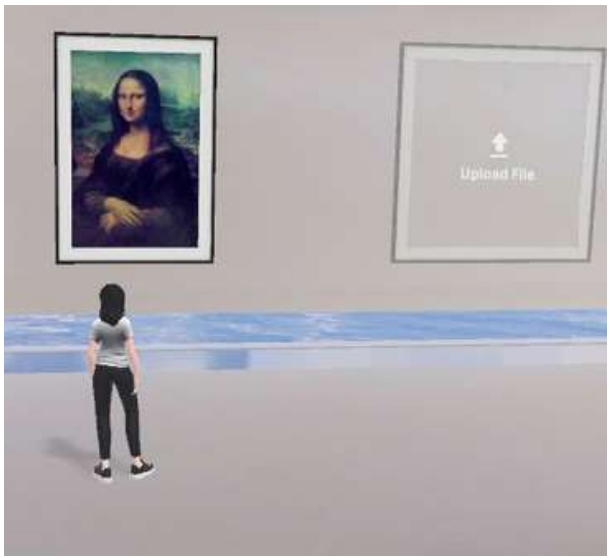
UPLOAD OBJECTS AND MEDIA

With the virtual space ready, the next step is the import of digital content (“assets”), prepared according to the indications of Chapter 2 of the Toolkit. To add content, use the “+” button (usually labeled “Add Content”) in the interface. This will open a dialog window to select files from your computer.

Images (JPG, PNG formats): Once uploaded, these files are displayed as framed pictures. By selecting them with the mouse, transformation handles appear that allow moving, resizing and rotating for precise positioning on walls.

3D Models (GLB, GLTF formats): These are standard file formats for three-dimensional ob- jects, optimized for web performance. An imported 3D model appears as a solid object in the space. It can be positioned freely, for example on pedestals already present in the template or imported separately as additional 3D models.

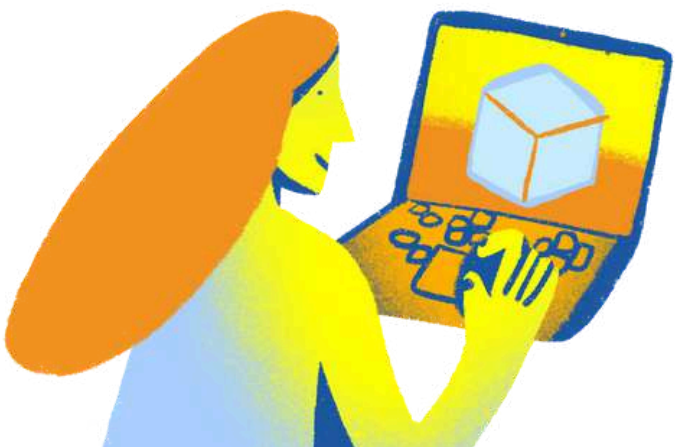
Video (MP4 format) and Audio (MP3 format): Video files are automatically inserted on virtual screens, whose dimensions can be modified. Audio files, on the other hand, have no direct visual representation but are associated with objects to be played through interaction.



Respecting the size limits

(3D ≤ 20 MB; video ≤ 100 MB; images ≥ 1200 px) ensures fast loading and stability.

If the scene is heavy, polygons and textures should be optimized or video duration reduced; small adjustments often significantly improve fluidity.



ADD TRIGGERS AND INTERACTIONS

This stage is crucial for transforming the space from a static showcase into a dynamic experience. Interactivity is based on a “cause-effect” logic: a trigger is the action performed by the visitor, while the action is the resulting event.

- **Informative hotspots:** These are clickable points that open cards or media. Placing them near the object they refer to helps visual association. Short texts (90–120 words) and simple language increase comprehensibility for diverse audiences.
- **Multimedia triggers:** Associating the opening of an audio file or a detail image with a hotspot allows differentiating the depth of information: those who wish to explore further can find additional materials without weighing down the basic path.
- **Waypoints and guided path:** A sequence of 4–6 stops proposes a structured visit. Explicit numbering (1→2→…→n) avoids logical jumps and helps those who access for the first time to orient themselves, especially in VR where the space can be disorienting.
- **Welcome and rules panel:** Placed at the spawn point, it explains in 70–90 words how to move (keys, teleport), how long the visit lasts and where to find accessible content. This initial information reduces interface anxiety and makes the experience more inclusive.
- **Integrated accessibility:** Alt-text for key images makes the content interpretable by assistive technologies. Ample contrast prevents visual fatigue. Short text blocks facilitate reading. Avoiding automatic movements protects those sensitive to motion sickness. Audio and video must always have textual alternatives.

Photography on Freepic

CONFIGURING INTERACTIVITY THROUGH TRIGGERS

Below is a common use case: associating an audio narration with an image.

- **Target Object Selection:** Inside the virtual space, click the image to which you want to associate the audio. The selected object will be highlighted, usually with an outline or a selection box.

- **Access to the Interactions Panel:** With the object selected, look in the inter- face for an option or icon related to interactivity (often labeled “Add Interac- tion,” “Triggers,” or represented by an icon such as a magic wand).

Definition of Trigger and Action: In the panel that opens, you must configure two main parameters:

1. **Trigger (Cause):** Select from the list the “On Click” option (when the user clicks).

2. **Action (Effect):** Select from the list the “Play Audio” option (play an audio file).

- **Linking the Media File:** After selecting the action, the system will ask you to specify which audio file to play. Select the desired MP3 file from your comput- er. Save the configuration. From this moment on, every visitor who clicks on that image will trigger playback of the linked audio file. This same logic can be applied to start videos, show informational texts or link to external websites.

Before publication, it is essential to check each interactive element:

Is the object that initiates the interaction clearly visible and logically positioned?
Is the chosen activator (“On Click,” “On Proximity,” etc.) intuitive for the visitor?
Is the reaction (“Play Audio,” “Open Link,” etc.) consistent with the object and the educational intent?
Is the linked media file (audio, video, text) correct and functional?

PUBLISH, SHARE, VIEW STATS

The final stage consists of making the exhibition space accessible to the public and analyzing usage data to evaluate its impact.

Visibility and Publication Settings: Locate the "Share" button, usually placed at the top right. This will open a panel to manage access permissions.
The standard options are:

- **Private:** Accessible only to the creator and to collaborators invited via email. Useful during the setup phase.
- **Anyone with the link:** Accessible only to those who have the direct URL.
  It is the recommended option to share the project with a class or defined group.
- **Public:** The space becomes publicly searchable on the Spatial.io portal and indexable by search engines. After selecting the desired option, confirm to publish the space and generate the unique sharing link.
- **Sharing the Link:** Copy the generated URL and distribute it through the chosen communication channels (e.g., school register, email, school website).
- **Monitoring and Statistics (Analytics):** Platforms like Spatial.io provide a data analysis section for published spaces. By accessing this section from your dashboard, you can view quantitative metrics that help understand audience behavior, including:

Number of Unique Visitors: How many different people visited the space.
Average Session Duration: The average duration of a visit.
Interactions: Which objects received more clicks or attention. The analysis of these data is fundamental to assess the effectiveness of the exhibition and to guide the design of future virtual shows.

To facilitate access from **mobile devices**, it is highly recommended to **convert the sharing link into a QR code**. A QR code is a matrix image that, when framed with a smartphone camera, automatically redirects the user to the corresponding web address. This code can be printed on informational materials, posters or displayed in physical places (e.g., the school notice board) to create an immediate bridge between the real and the virtual environment.

MINI-TROUBLESHOOTING (8 COMMON ISSUES)

- **3D model out of scale:** If the object appears enormous or microscopic, adjust the scale and verify the export units (meters or centimeters). Aligning this aspect prevents repeated adjustments in the scene.
- **Floating object:** An incorrect pivot makes the object appear suspended. Correct it in the 3D software or, in the scene, use the “Snap to floor” option to lay it on the ground.
- **Heavy scene or lag:** Polygons and textures that are too detailed slow down fruition. Reducing geometric complexity, compressing images and limiting videos to ≤ 60 seconds significantly improves performance.
- **Muted audio:** Before looking for complex errors, check system volume and browser permissions. In any case, the transcript allows access to information even if the audio does not start.
- **Missing subtitles:** If subtitles do not appear, check the .srt file (UTF-8 encoding and correct timecodes). If support is lacking, you can embed the text in the video, maintaining good readability.
- **Unclickable hotspot:** It is often hidden by other elements or too low/high. Bringing it to 1.4–1.6 m, increasing the activation radius and avoiding overlaps makes it more usable.
- **Teleport blocked:** Invisible colliders or non-“navigable” surfaces prevent movement. Removing obstacles, enlarging the floor collider and verifying navigation solves it in most cases.
- **Collaboration permissions:** If a colleague does not see the editing options, they likely do not have the correct role. Keeping Owner for those who co- ordinate and assigning Editor only to trusted reviewers prevents unwanted changes.