





Module 6: Online collaboration tools in Virtual Reality: The case of Mozilla Hubs





VR chatroom designed for every headset and browser, but it is also an open-source project that explores how communication in mixed reality can come to life. Step inside one of our virtual rooms or build one from the ground up.







Mozilla Hubs Specs

Windows, Mac and Linux (via browsers)Android, Safari, iOS (via browsers)Oculus Rift, Windows Mixed Reality, or HTC VivePico Neo 2, Oculus Quest and Oculus GoSamsung Gear, Google Cardboard.







Browser -> Virtual Reality!







Custom and public Avatars.







Separate Virtual Worlds/Rooms







Built-in engine (Spoke)







Spoke vs VRChat (Unity)







Spoke vs VRChat (Unity)







Spoke vs VRChat (Unity)

VRChat allows for sophisticated worlds design and development.

Mozilla Hubs focuses on simplified worlds. Still, it supports worlds of increased complexity.







Let's join a room!









































One hand uses the keyboard to move, the other moves the mouse around to direct the movement





























 \square





 \bigcirc

Chat





Let's create our own!

















Set your password	
vlasiskasapakis@gmail.com <u>Change email</u>	
Password	Password requirements At least 8 characters Not your email address Not a commonly used password
Repeat password	 Stay safe — don't reuse passwords. See more tips to <u>create strong</u> passwords.
How old are you?	
Why do we ask?	
Practical knowledge is coming to your inbox. Sign up for more:	
Be safer and smarter online	
Test new Firefox products	
Take action to keep the internet healthy	
Create account	



































2 Numbers for 2D Graphics and **3** Numbers for 3D Graphics!













https://hubs.mozilla.com/spoke





Spoke moz://a make your space

Create 3D social scenes for Hubs





















Right Click (Pressed) to Look Around Mouse Wheel (Zoom) Left Click (Pressed) to Select







💙 Hierarchy 👻 🌐 VlasisWorld Skybox 🐓 Directional Light a Spawn Point 🍃 Floor Plan 😧 Terrain_Crater1.glb Scene Preview Camera Properties Enabled: 🗸 Sectie P Visible: \checkmark Transform 10,00 0,00 5,00 0,00 -26,50 0,00 σ×: 1,00 Z: 1,00 1,00

Select Item

Change Position, Rotation & Scale





Spawn Point = Position where users appear!







Huge Collection of Assets!







Select and hit "Delete" to remove...









Click to place & Esc to release







Change Position, Rotation, and Scale







Search for Sketchfab models



















Be very careful about Polygons and Lights, they increase computational power requirements!

Performance Check				
Low	Polygon Count: 49.330 Triangles We recommend your scene use no more than 50,000 triangles for mobile devices. Learn More			
Low	Materials: 5 Unique Materials We recommend using no more than 25 unique materials in your scene to reduce draw calls on mobile devices. <u>Learn More</u>			
Low	Textures: ~144 MB Video RAM, O Large Textures We recommend your textures use no more than 256MB of video RAM for mobile devices. We also recommend against using textures larger than 2048 x 2048. Learn More			
Low	Lights: 1 Lights While dynamic lights are not enabled on mobile devices, we recommend using no more than 3 lights in your scene (excluding ambient and hemisphere lights) for your scene to run on low end PCs. Learn More			
	Cancel Publish Scene			





Visit your world!







Co-funded by the Erasmus+ Programme of the European Union























Invite others via link!



Invite





Add a point light (Select it, click in scene, and hit ESC!) -> Change Color, Intensity and Range







Add a GIF the same way!







Add a sound the same way!







Download a .glb 3D model and extract it to a folder







Use My Assets -> Upload -> Your model to upload it







≡	() World V	Bottom V 😈 0.5m V 90° V	⊞ ◀ 0,00 m ►		Open in Hubs Publish to Hubs
🗖 Viewport			🖿 Lit 🗸	🚏 Hierarchy	
				Skybox	
		2		🕴 Directional Light	
				🌡 Spawn Point	
	and the second second		Halle C.	🗢 Floor Plan	
				👩 Scene Preview C	amera
				🔥 Floor_OneSided	_2x2_Base 1
	a top			🗑 🏟 Gearbox Anin	nation 🔥 📘
	TAR			🌻 Point Light	
[LMB] Orbit / Select [MMB] Pa	in [RMB] Fly [F] Focus [Q] R	totate Left [E] Rotate Right [G] Grab [ESC] Deselect All	A TOPAL	≢ Properties	
Accete	My Assets	Search assets	Search by Mozilla Hubs Privacy Policy Unload		
Elements	Tags			Audio	
My Assets	All			Dynamically loads audio.	
Architecture Kit	Models			Audio Url:	https://assets-prod.reticulum.io/hubs-sc
Rock Kit	Images			Controls:	
Sketchfab	Videos				
Bing Images	Audio			Auto Play:	
Bing Videos		cyber.glb		Loop:	Ø
Hubs Sound Pack				Override Audio	
Tenor GIFs				Settings:	





Place it in the scene! (Select it, click in scene, hit ESC)

≡ ⊕ 2 t	() World V	Bottom V U 0.5m V 90° V	⊞ ◀ 0,00 m ►		Open in Hubs Publish to Hubs	
Viewport			🖿 Lit	~	😵 Hierarchy	
					📥 Skybox	
					Directional Light	
					🛓 Spawn Point	
	and and and		Summer Street		🗢 Floor Plan	
					Scene Preview Camera	
	77114				■ ■ Floor OneSided 2x2 Base 1	
				Point Light		
and the						
[LMB] Orbit / Select [MMB] Pa	in [RMB] Fly [F] Focus [Q] Ro	ttate Left [E] Rotate Right [G] Grab [ESC] Deselect All			Properties	
Assets	My Assets	Search assets	Search by Mozilla Hubs Privacy Pol	icy Upload		
Elements	Tags				Model	
My Assets	All				A 3D moderni your scene, loaded iron a GETF ORE of the.	
Architecture Kit	Models				Model Uri: https://uploads-prod.reticulum.io/files/e	
Rock Kit	Images				Loop Animation: Select	
Sketchfab	Videos					
Bing Images	Audio				Collidable:	
Bing Videos		cyber.glb			Walkable:	
Hubs Sound Pack					Cast Badana 🔲	
Tenor GIFs					Cast shadow.	
8					Deceive Shadows	





You can also upload images...







And videos!











The European Commission support for the production of this publication does not constitute an endorsement of the contents which reflects the views only of the authors, and the Commission cannot be held responsible for any use which may be made of the information contained therein. Project number: 2021-1-BG01-KA220-HED-000032128





THANK YOU!

FIND OUT MORE: www.vr-in-he.eu

GET IN TOUCH: contact@vr-in-he.eu

UNIVERSITY

of NICOSIA









