

Distributed Virtual Worlds

Problems and Solutions



Presenter:

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Organization:

Overte e.V.

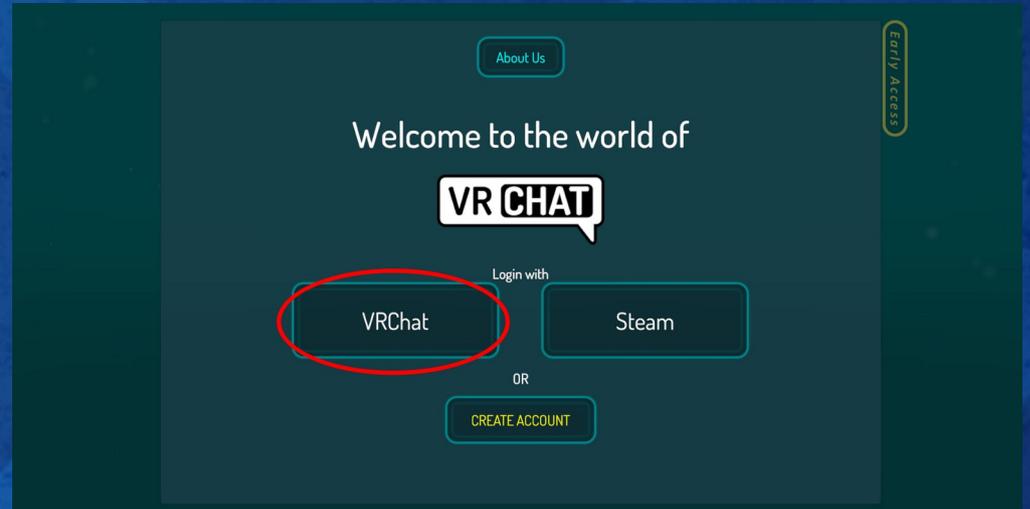
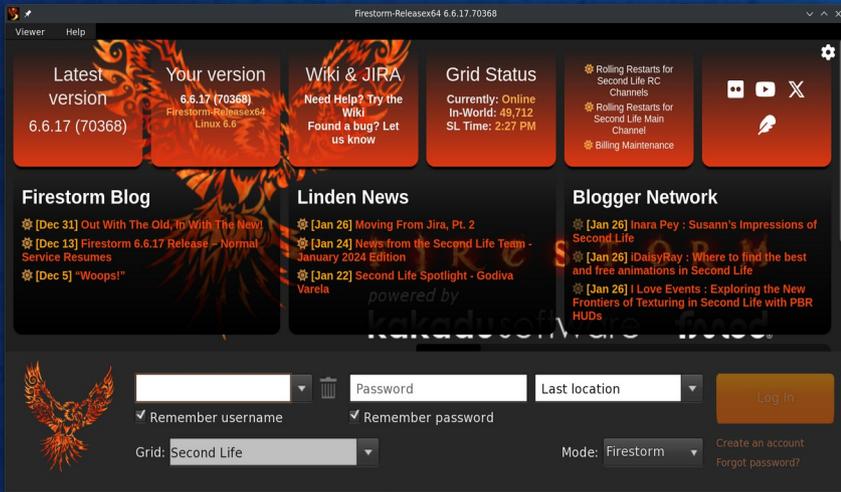
<https://overte.org>

Who am I?

- Software developer
- Chairman of Overte e.V. (non-profit)
- Developer of Overte



Most systems have something in common



It's a walled garden



Quick Look at Second Life

The screenshot displays the Firestorm viewer interface for version 6.6.17.70368. The interface is organized into several sections:

- Latest version:** 6.6.17 (70368)
- Your version:** 6.6.17 (70368) Firestorm-Release64 Linux 6.6
- Wiki & JIRA:** Need Help? Try the Wiki. Found a bug? Let us know.
- Grid Status:** Currently: Online. In-World: 49,712. SL Time: 2:27 PM.
- System Settings:** Rolling Restarts for Second Life RC Channels, Rolling Restarts for Second Life Main Channel, Billing Maintenance.
- Social Media:** Icons for Discord, YouTube, and X.
- Firestorm Blog:** [Dec 31] Out With The Old, In With The New!, [Dec 13] Firestorm 6.6.17 Release - Normal Service Resumes, [Dec 5] "Woops!"
- Linden News:** [Jan 26] Moving From Jira, Pt. 2, [Jan 24] News from the Second Life Team - January 2024 Edition, [Jan 22] Second Life Spotlight - Godiva Varela.
- Blogger Network:** [Jan 26] Inara Pey : Susann's Impressions of Second Life, [Jan 26] iDaisyRay : Where to find the best and free animations in Second Life, [Jan 26] I Love Events : Exploring the New Frontiers of Texturing in Second Life with PBR HUDs.

At the bottom, there is a login section with a Firestorm logo, a username field, a password field, a "Remember password" checkbox, a "Last location" dropdown, and a "Log In" button. Below the login fields, there is a "Grid:" dropdown set to "Second Life" and a "Mode:" dropdown set to "Firestorm". Links for "Create an account" and "Forgot password?" are also present.

Multi-User world



Worlds to Explore

World Map

NW N NE

W E

SW S SE

Legend

Me Go Home

Person **Events:**

Infohub General

Land Sale Moderate

land auction Adult

by owner

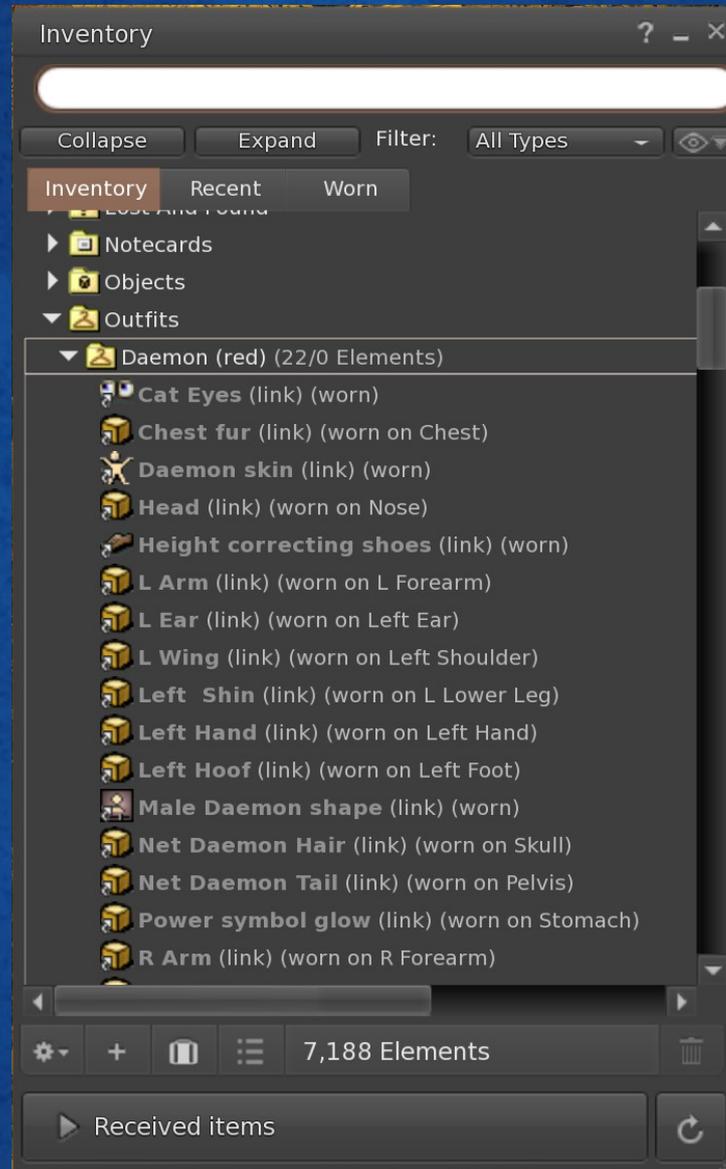
Find on Map

My Friends Online

My Landmarks

Location:

Inventory



User Accounts

Carbon Breed

2nd Life Feed Picks Classifieds 1st Life Notes

Name: Carbon Breed

Key: a155a27b-06a2-4d0e-8316-f20a2be75015 Offline



Birthdate: 01/23/2006 (18 years old; 6582 days)

Account: Resident Payment Info Used

Partner: None

About: Dude. I am a fox. How rad is that.
:V

Groups: **TrustNet**

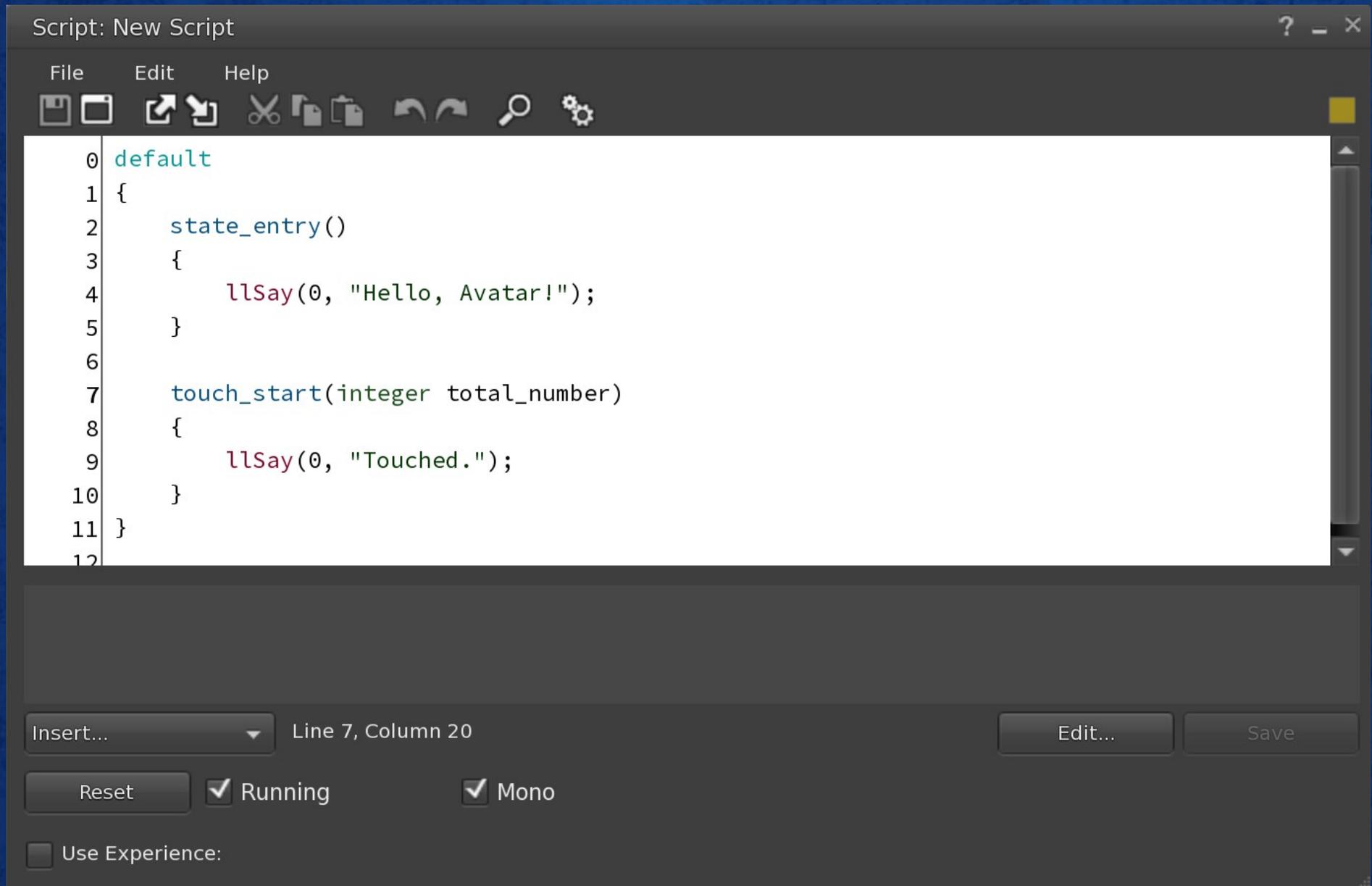
- * Heaven Scent *
- Club Metal Machina
- Crescent Moon Sanctuary
- DarkLife Players**

Share: Drop inventory item here.

Find on Map Offer Teleport Remove Friend

Pay Instant Message Block

Scripts



Script: New Script

File Edit Help

Icons: Save, Open, Copy, Paste, Undo, Redo, Find, Settings

```
0 default
1 {
2     state_entry()
3     {
4         llSay(0, "Hello, Avatar!");
5     }
6
7     touch_start(integer total_number)
8     {
9         llSay(0, "Touched.");
10    }
11 }
12
```

Insert... Line 7, Column 20 Edit... Save

Reset Running Mono

Use Experience:

What is **OVERTE**

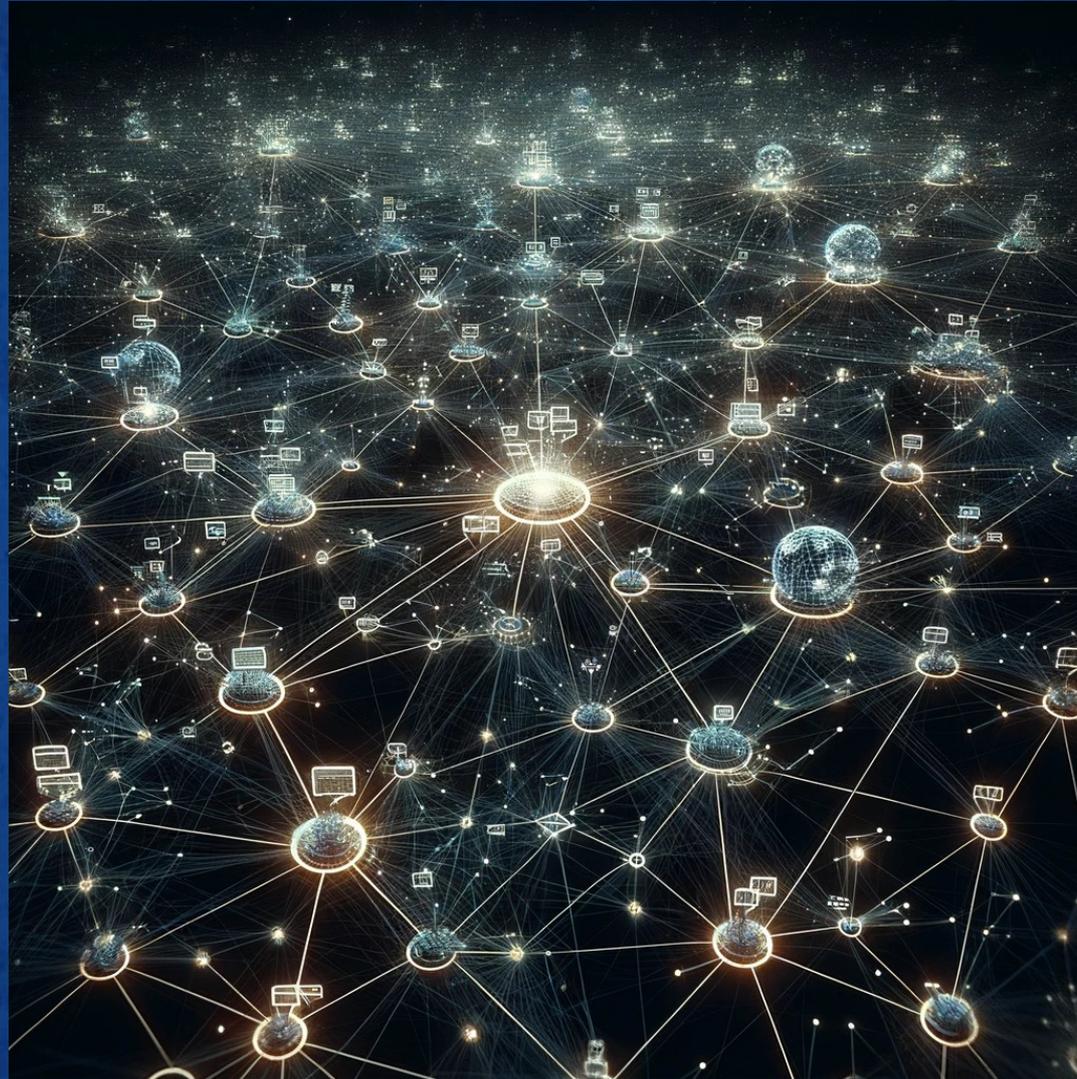
- A virtual world in the style of VR Chat, Resonite or Second Life
- Windows and Linux support
- Distributed architecture
- Scripting in JS (WebAssembly supported)
- Supported by Overte e.V., a non-profit



What makes us different?

- Decentralization.
- Distributed content hosting.
- No login required
- Scripting in JavaScript (V8)
- Desktop VR target
- No monetization/cryptocurrency/NFTs
- No lock-in

We look like the WWW



Decentralized infrastructure

- Servers run on any VPS
- Or from a personal computer with STUN



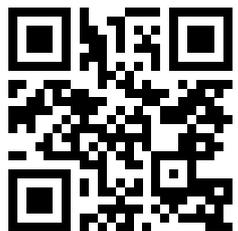
Benefits of Decentralization

- Hosting is troublesome
- We don't have to pay for it
- Users can adapt to their needs or jurisdiction
- We can't lock you out of your own creations
- You can use any resources you provide



Costs of Decentralization

- Users must seek a third party host
- Users must understand cloud hosting
- Personal servers may become unavailable
- Setup is non-trivial
- The world can't be coherent



Solutions for Decentralization

- Pre-made images for common hosts
- Packages
- Build script
- Hosting from home
- Possible future:
 - Server peering



Server Peering

- Servers establish links to each other
- And exchange content:
 - Sound streams
 - Textures
 - Messages (eg, chat)

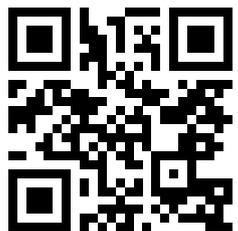
Distributed Content

- Content is hosted on any HTTP server
- Or on the actual server
- Clients simply receive URLs to download it
- Standard formats: glTF, PNG, JPG, etc.



Benefits of Distribution

- Hosting is legally troublesome
- We don't have to pay for it
- Users can adapt to their jurisdiction
- We can't lock you out of your own creations



Costs of Distribution

- Users must seek a third party host
- Content tends to disappear over time
- Standard content doesn't exist
- Hosting your own avatar is complicated



Content Loss

- Sometimes people leave
- Or host content on places that disappear
- A server may have links to many different servers, some of which may not be reliable



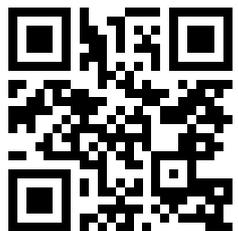
Content Protection

- Unlike everyone else, we don't have any
- We don't plan to have any
- We can't do it anyway
- We know some people don't like it
- But our design makes it impossible



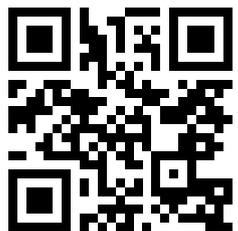
Solutions for Content

- Support for common hosts (eg. Dropbox)
- Maintenance tools
- WebDAV
- Future possibilities:
 - Public server backups
 - Temporary hosting of user assets on servers
 - Serving content from the client



Costs of distributed auth

- Content by default is anonymous
- Difficulties with moderation
- No global bans



Benefits of distributed auth

- Easy access – just start the client
- No central system you can be excluded from
- You can choose who to interact with



Solutions to distributed auth

- Anonymous access by default
- Authentication by fingerprint
- Federated authentication
- Future possibilities:
 - Federated moderation



Scripting Security

- Ask the users for permission
- Code signing with JAR files
 - Existing, simple standard
 - Existing tooling
 - Allows for multiple signatures



Questions:

<https://matrix.to/#/#overte:overte.org>



<https://overte.org>