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

Latest version
6.6.17 (70368)
Firestorm-Release64
Linux 6.8

Your version
6.6.17 (70368)
Firestorm-Release64
Linux 6.8

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

Firestorm Blog
[Dec 31] Out With The Old, In With The New!
[Dec 5] “Woops!”

Linden News
[Jan 26] Moving From Jira, Pt. 2
[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
Multi-User world
Worlds to Explore
Inventory
User Accounts

Name: Carbon Breed
Key: a155a27b-06a2-4d0e-8316-f20a2be75015
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.

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
default
{
    state_entry()
    {
        llSay(0, "Hello, Avatar!");
    }

    touch_start(integer total_number)
    {
        llSay(0, "Touched.");
    }
}
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