openwonderland

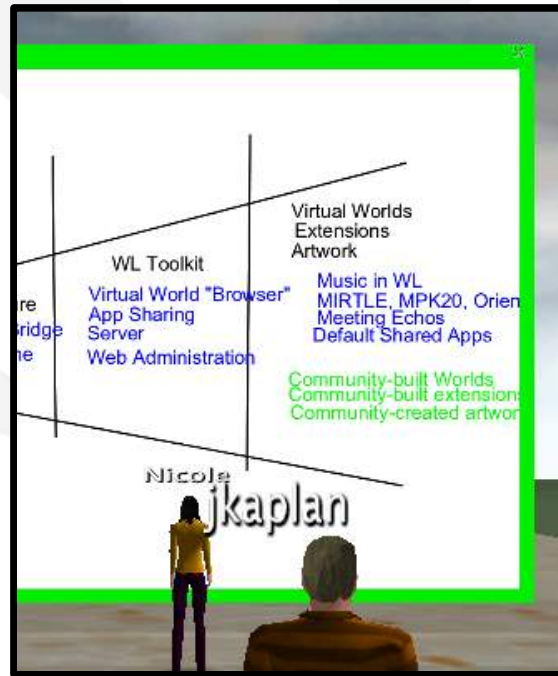## 3D Virtual World Platform

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What is Open Wonderland?

## 100% Java, free, open-source toolkit for creating 3D immersive virtual worlds

Brief History

- Started in 2007 in Sun Labs

- Challenge from VP of Eco Responsibility
  - > "Let's build our next building in the virtual world"
  - > MPK20 – Sun's Virtual Workplace

- Darkstar needed a demo

- Lots of interest in behind-the-firewall, app sharing

- Major reimplementation, Dec 2008 (v04 $\rightarrow$ v05)

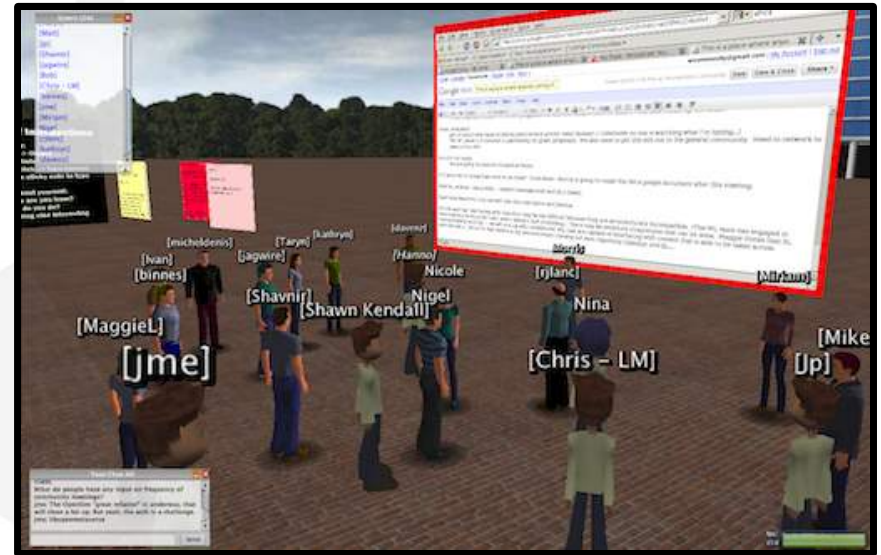- January 2010 – Oracle acquisition of Sun
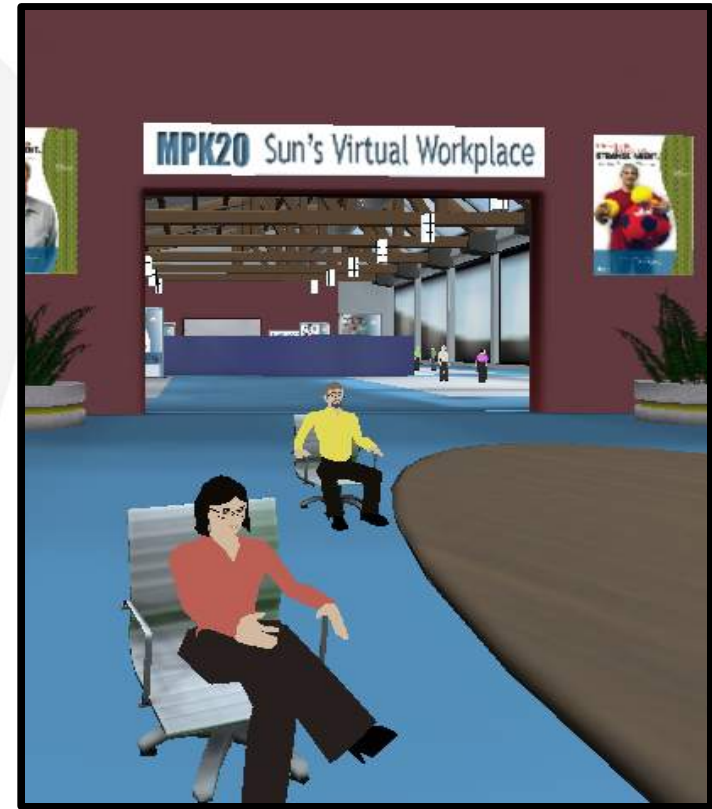
Open Wonderland Foundation

- Mission
  - > Govern open source project
  - > Set direction
  - > Community management
  - > Documentation
  - > Education & Training
  - > Technical support
  - > Bug fixing
  - > Software updates that benefit community
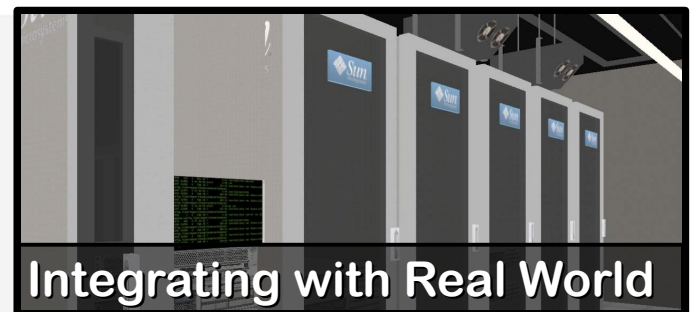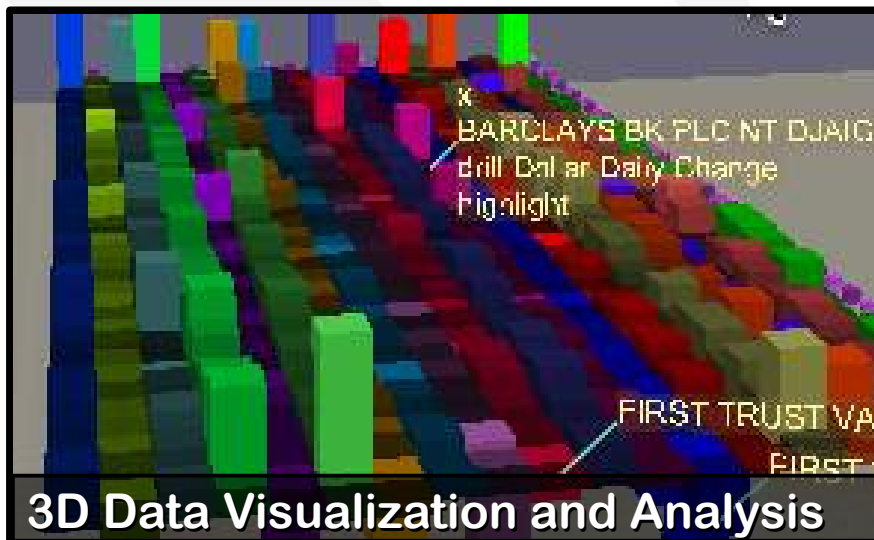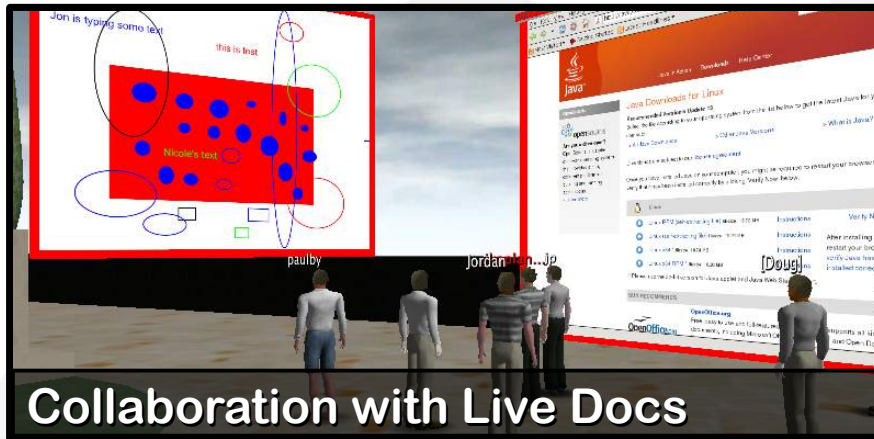- Not a service organization
  - > No work for hire
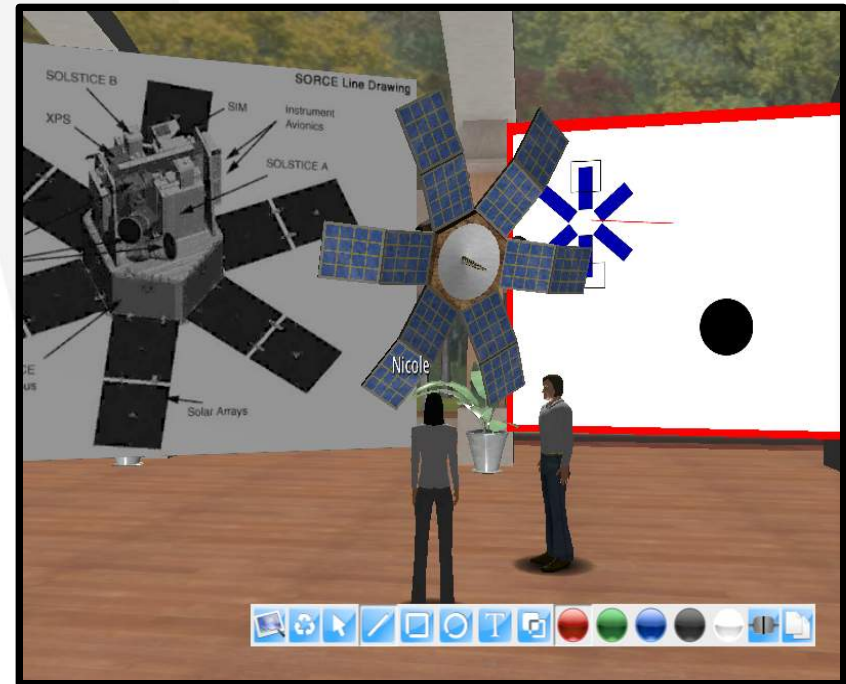
Vibrant Open Source Community

- Improvements since "independence"
  - > Code repository moved to Google Code
  - > Forum moved to Google Groups
  - > Blog moved to WordPress
  - > New Facebook, Twitter, and Wikipedia presence
  - > New community wiki
  - > New IRC chat channel
 - > Weekly in-world developer sessions and bi-weekly community meetings
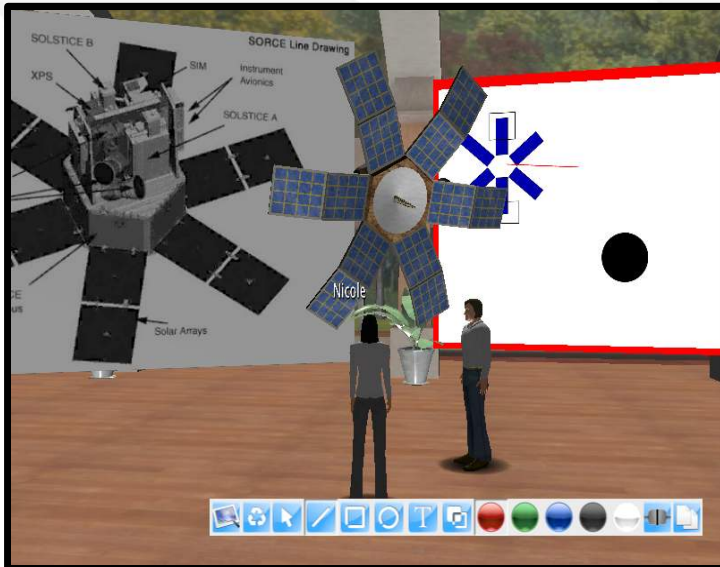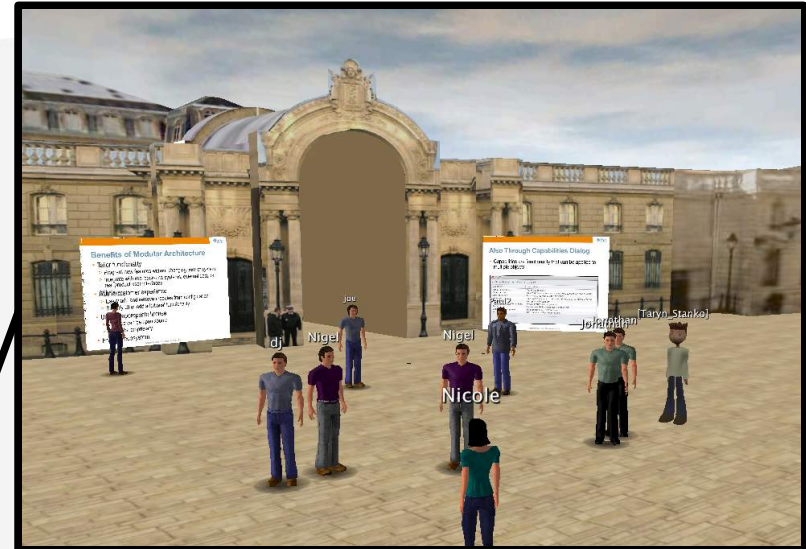

- V0.5 Preview 4 TODAY!

Use the Toolkit to Build Worlds for...

Collaboration with Live Docs

3D Data Visualization and Analysis

Simulation

Mixed-Reality Interactions


Integrating with Real World

Vision

- ## 3D Web
  - > Federated, specialized virtual worlds
  - > Common way to express behavior across platforms (Java mobile code)
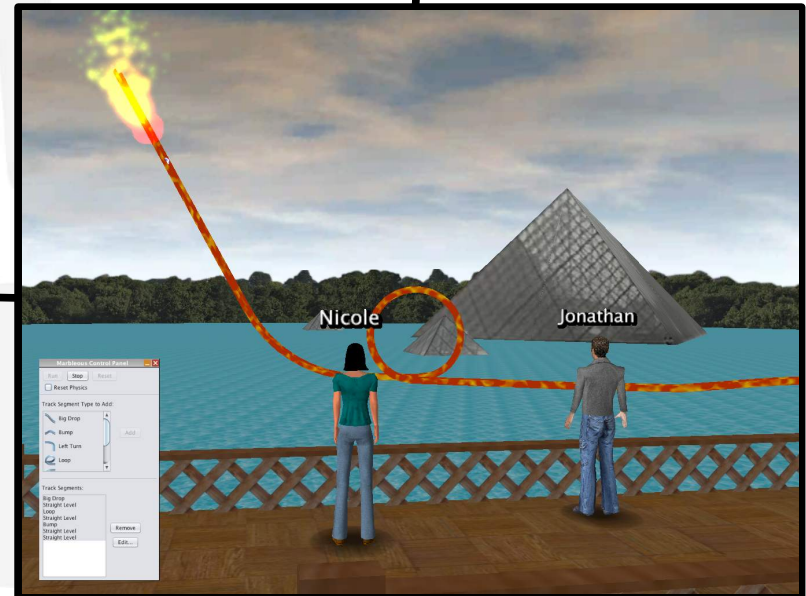
Wonderland Core Features

- Application Sharing
  - > Unmodified X11 application and collaboration-aware Java applications

- Immersive Audio
  - > Includes mix of recorded and live audio, range of audio fidelities, individual volume control, audio recording, and audio applications such as the virtual microphone and cone-of-silence

- Telephone Integration
  - > Includes dial-in, dial out, and connecting avatars with telephone audio
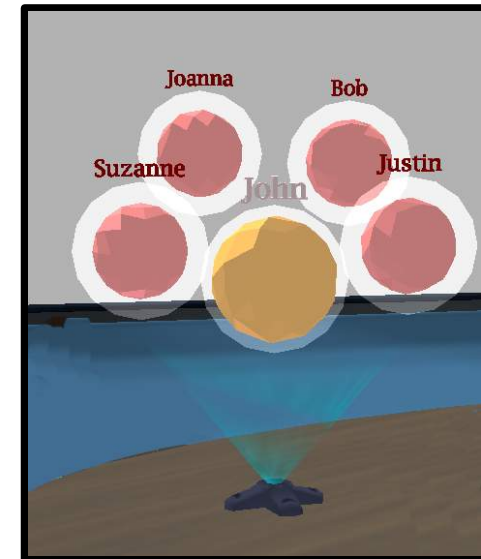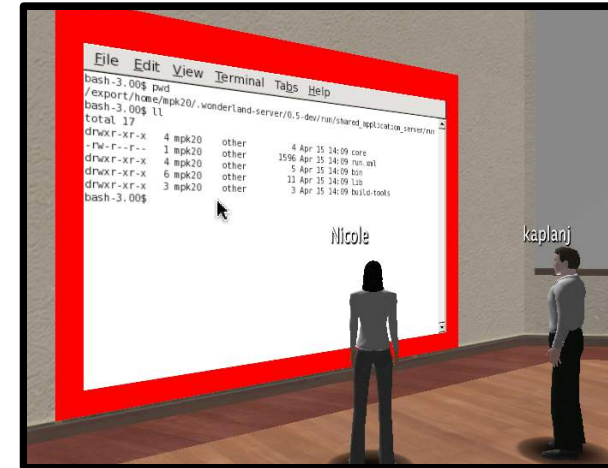
3D World Assembly

- Open art path for 3D
  - > Import Collada 3D models
  - > Uses industry-standard tools
    - Photoshop, GIMP
    - SketchUp, Maya, Blender
  - > Direct import of .kmz models created with Google SketchUp
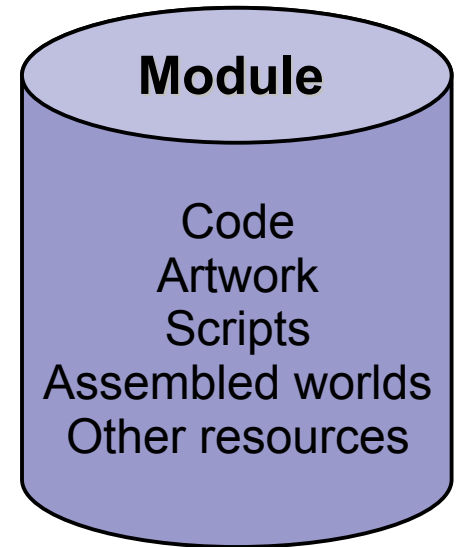- Move and resize objects using in-world tools
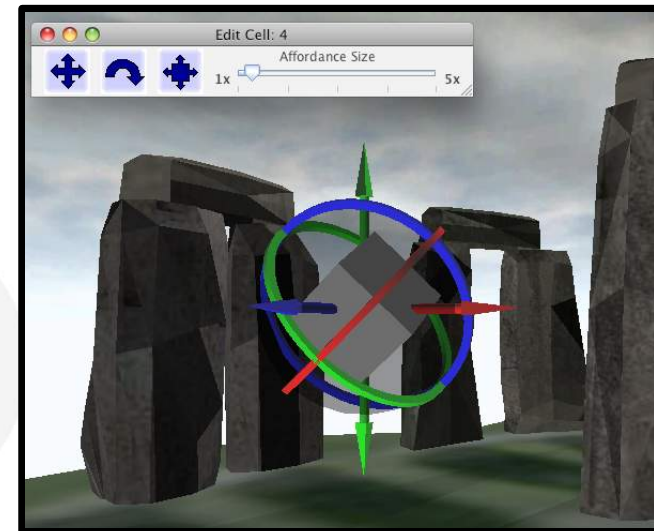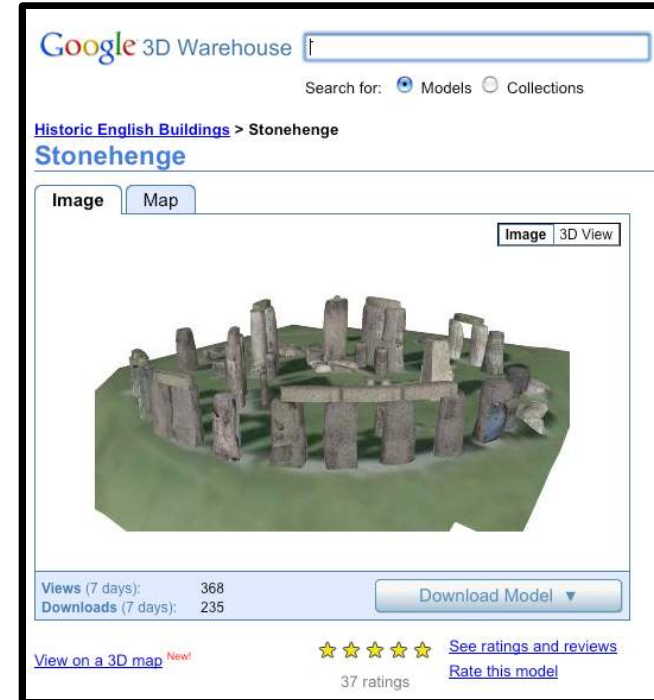
Content Creation

- Drag-and-Drop
  - > Mime-type scheme
    - .gif, .jpg, .png, .pdf, .kmz, .svg, ...
  - > Application launches on drop
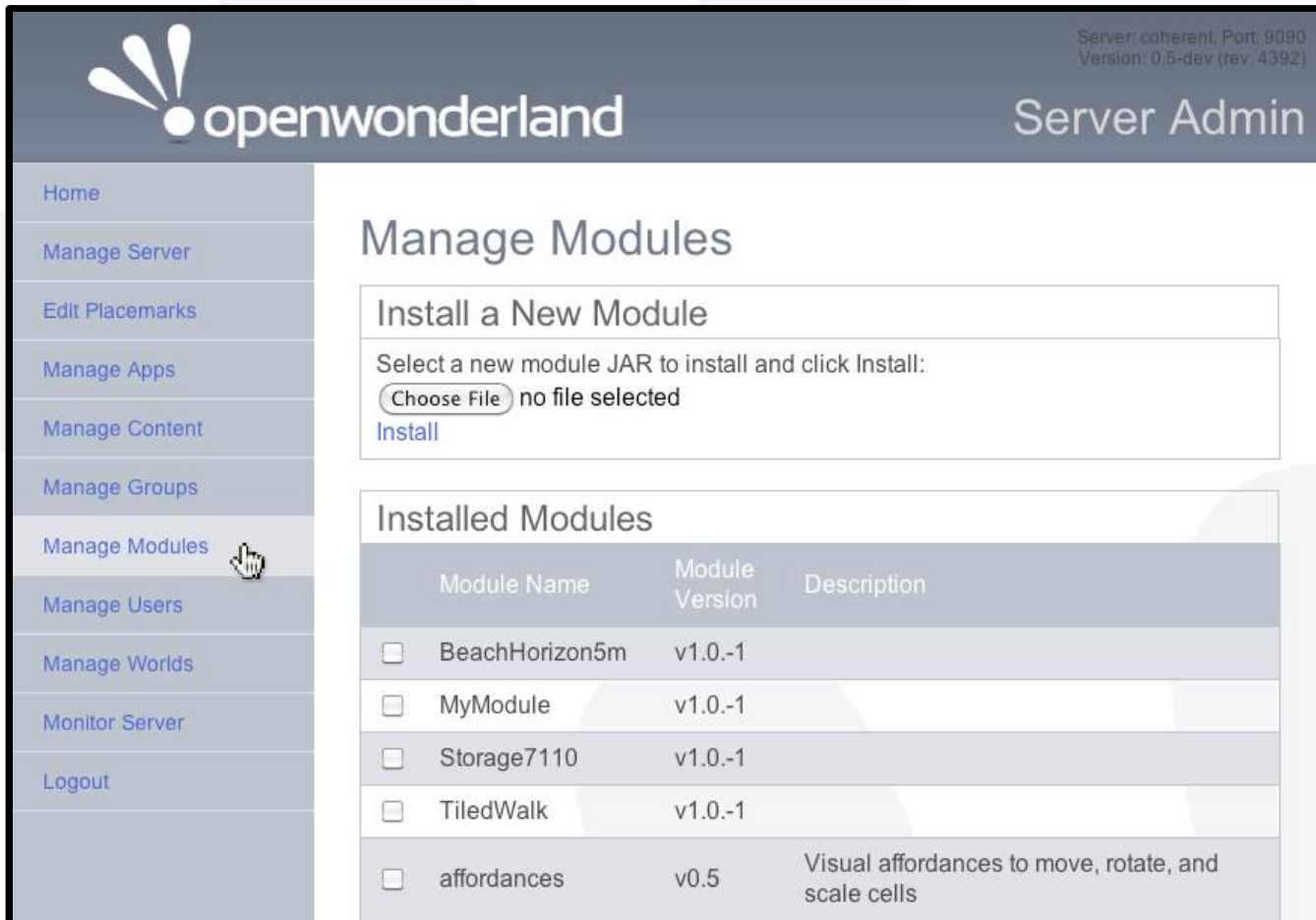- Dynamically add interactive content using insert dialog
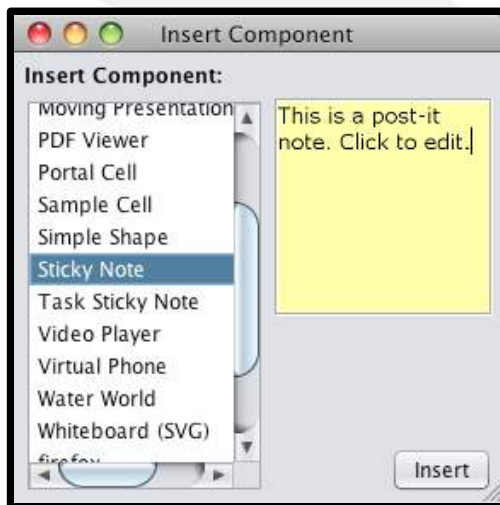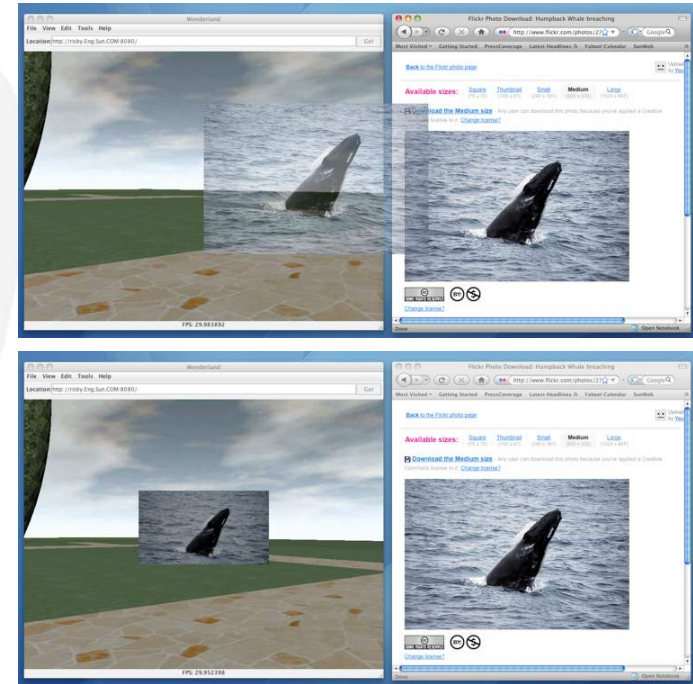
Modules for Extensibility

Module

Code
Artwork
Scripts
Assembled worlds
Other resources

- Modules akin to "plug-ins"

- Mechanism for packaging & sharing Wonderland extensions
    - > Can contain code, artwork, audio, scripts, web management and web services
    - > Also world configurations for sharing whole worlds
    - > Deliver art assets via embedded HTTP server
    - > Packaged as archive (jar) files

- Modules can depend on other modules

Web-based Admin Console

- Add / remove modules from web UI

Module Warehouse

- Browse
- Share
- Comment
- Rate

In-world Access to Modules

- Three primary places modules appear to end users

- Modules can add functionality to Insert Object palette

- Allows users to create multiple instances

Modules can add Menu items

- New functionality appears in menu hierarchy
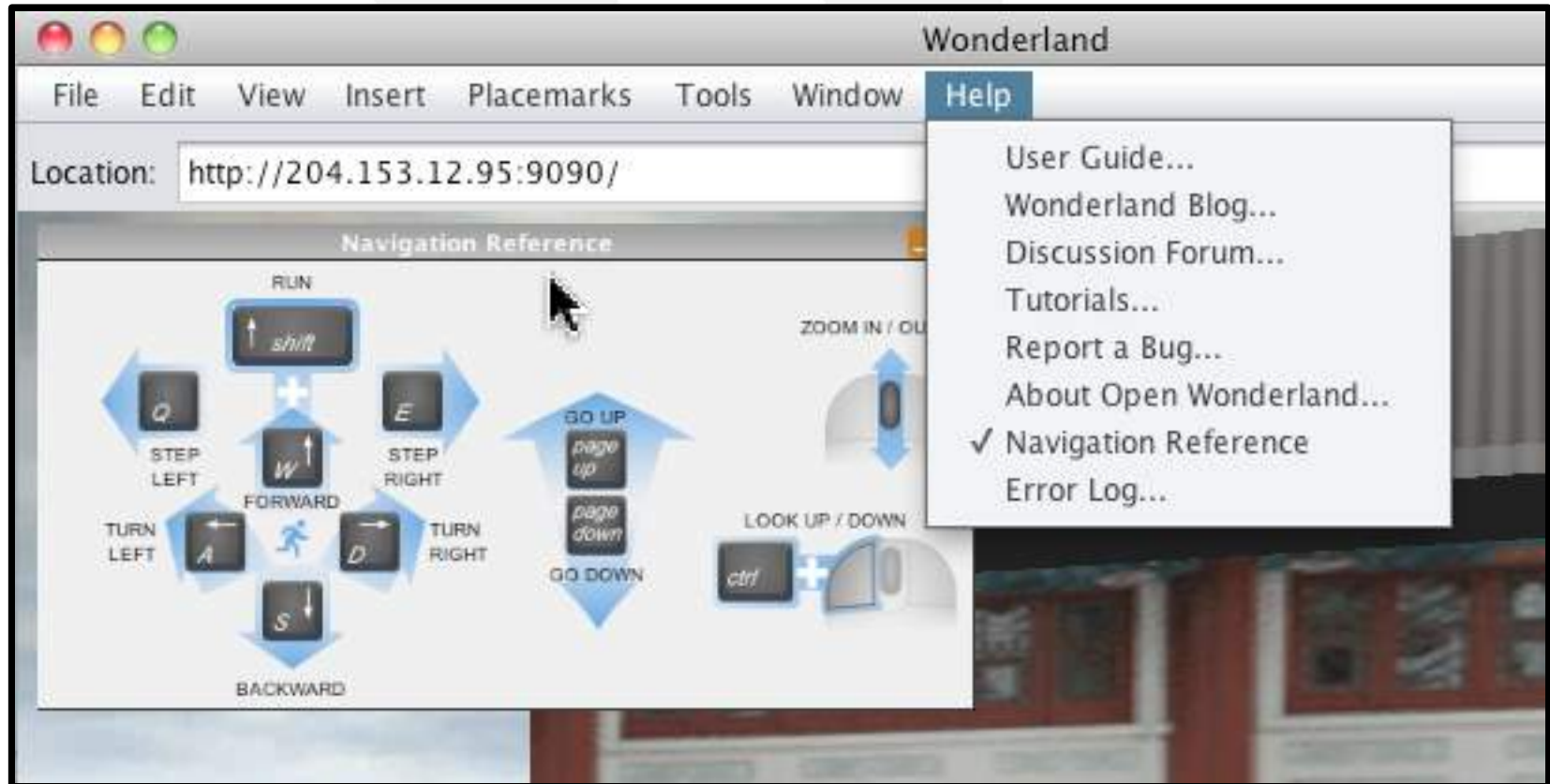
Also Through Capabilities Dialog

- Capabilities are functionality that can be applied to any in-world object

- Each can optionally include a property sheet

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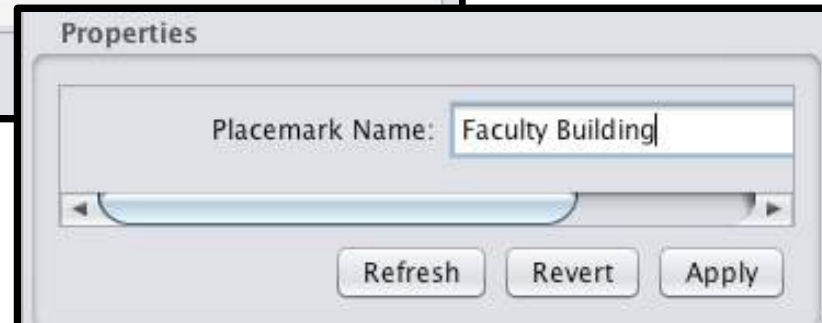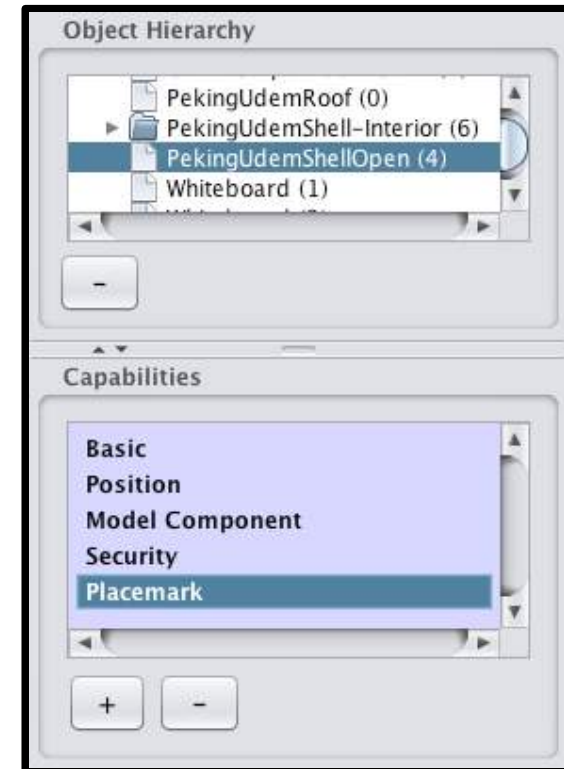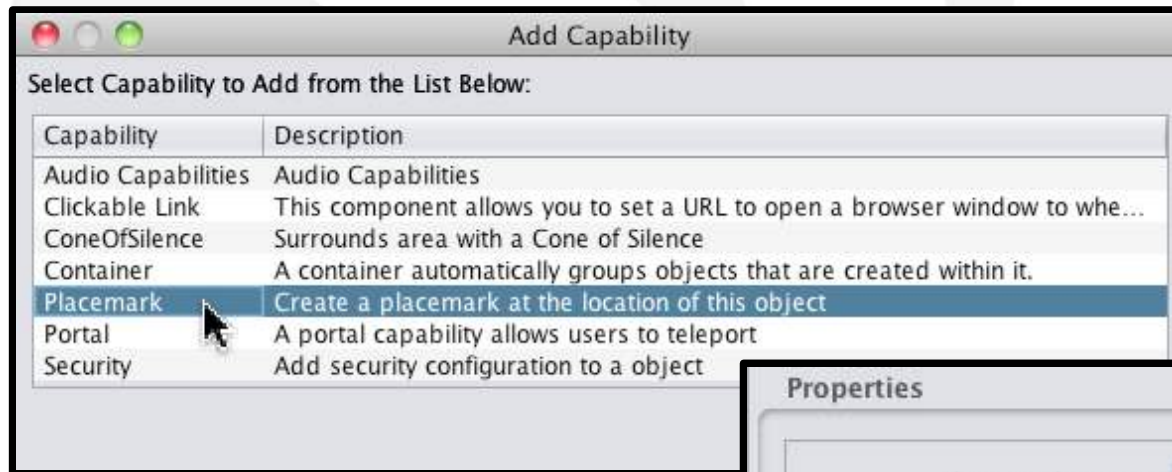
Capability Examples

- Audio
  - > Add recorded audio or audio stream

- Container
  - > Group objects; contained objects inherit properties
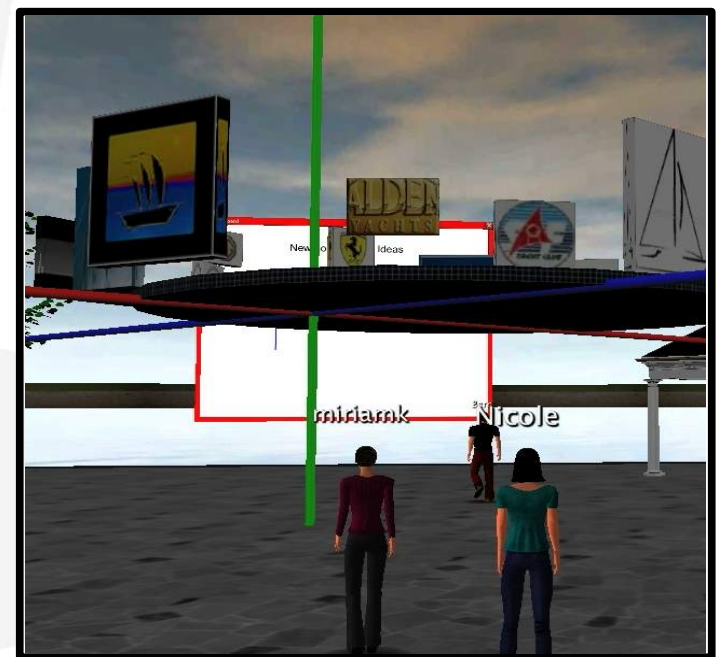
Security

- Authentication
  - > Database, LDAP, *SSO*
- Object-level security
- Cone of Silence

Team member's view

Visitor's view

Benefits of Modular Architecture

- Tailor functionality
  - > Program new features without changing core of system
  - > Integrate with real back-end systems, external data, or real product user interfaces

- Refine user experience
  - > Easily add and remove modules from configuration
  - > Simplify UI or add additional functionality

- Use the appropriate license
  - > Modules can be open source
  - > Or can be proprietary

- Enables ecosystem

Learn More

- Other Wonderland-related talks and workshops
  - > Electromagnetism – Friday 2:00pm
  - > Behind the Firewall Workshop – Saturday 2:00pm
  - > Music Browser – Sunday 9:30am
  - > Medical Training – Sunday 9:30am
  - > Future of Immersive Ed Panel – Sunday 10:00am
  - > MiRLTE, SIMiLLE, +Spaces – Sunday 12:30pm
  - > Wonderland World-Building Workshop – Sunday 2:00pm
    - Bring your own laptop!
    - Please install current version of Java

Open Wonderland Resources

- **Open Source Project Site**
  - > http://OpenWonderland.org
  - > Download: binary, source code, examples
  - > Learning: architecture, roadmap, FAQ
  - > Community: latest news/blogs, forums, mailing lists
  - > Tutorials, technical articles, troubleshooting
  - > Suggestions for student projects
- **WonderBlog - Official Wonderland Blog**
  - > http://blogs.openwonderland.org
- **Facebook and Twitter**
  - > http://facebook.com/openwonderland
  - > http://twitter.com/openwonderland - use hashtag: #openwonderland

Wonderland Ecosystem

Engine Extensions
(AI, physics, ...)

Services
(Software distribution, hosting, world creation)

Art Tools
(Maya, Blender, Sketchup, Softimage)

Avatar Tools
(3rd party avatar designers, custom graphics, accessories, animations)

Client
- 3D Engine
- Art Import
- Avatars
- Scripting

Art Warehouse
(Google 3D warehouse, other art repositories)

Asset Repositories
(WebDAV, module storage, artwork, video)
Storage

- Asset Management
- Modules
- Security
- Monitoring & Management
- **Web Server**

- Darkstar Server
- Voice Bridge
- Shared App Server
- Chat Server

External Data
(Sensors, telemetry, web services)

Software Development
(Netbeans plugin, ...)

Authentication / Authorization
(OpenSSO, Java.net, custom integrations)

Learning Management Systems
(Class content integration, login integration)

Economy
(Micropayment providers, inventory management)

Systems Management
(Deployment management, Performance monitoring)