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**Security Classification:**
- The security classification is unclassified for the report, abstract, and this page.

**Number of Pages:**
- The report consists of 26 pages.

**References:**
- The reference to the SSTC conference is mentioned under supplementary notes.
LifeWerx Goal:

Develop a functional and secure 3-D virtual collaboration environment to enhance the everyday professional work experience
Project Themes:

• In-house
• Secure
• Full internal control
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History of LifeWerx:

• Based on Project Wonderland, a Sun Labs open source virtual world
• Began with work on version 0.4.
Why Wonderland:

• Lack of product-based virtual worlds
• Sending data to third parties not viable
Early LifeWerx Developments:

• Wiimote feature
• Enhanced Avatar Configurator
• Access Control feature
Enhanced Avatar Configurator:
Access Control:
Some of the changes in 0.5:

• Java3d -> jMonkeyEngine
• MTGame multi-threading engine
• Automatic deployment control via JNLP / modular builds
• Web-based administrative interface
Some of the changes in 0.5:

• Module system
• Ease of administration
Comparison between versions:
Features we didn’t need to make in 0.5:

• Enhanced avatar customization
• Real-time security module
Desktop Sharing:

• What is desktop sharing?
• In 0.4 we built LifeShare, a standalone program to allow for desktop sharing
• Complex system involving VNC server, VNC->RDP bridge (via xrdp ported to Windows) and RDP clients
Architecture:
LifeShare Issues:

• Maintenance was difficult
• Integration challenges
• 0.5 offered a clean slate
The new LifeShare:

- Embedded VNC server
- Built-in proxies for security
- Wonderland’s Sun Application Server
- Custom plug-in to handle communication
Architecture Diagram:
LifeShare:
Recent Developments:

• Integrated VNC hooks
• Integrated SSH tunneling
• Stress testing
Stress testing:

![Graph: Frame rate vs Number of Viewing Clients]

- Frame rate (FPS) vs Number of Viewing Clients
- Blue line: Sharing Client
- Red line: Viewing Client Average

Graph shows a decrease in frame rate as the number of viewing clients increases.
Questions and Comments?