

Virtual worlds and blended reality



Photo credit: www.ewels.info

Foresight Vision Weekend
November 3-4, 2007

Melanie Swan
MS Futures Group
Palo Alto, CA
415-505-4426
m@melanieswan.com
www.melanieswan.com

Summary, virtual worlds...

- have become routine as a platform for human activity
- like other newtech, are complementary and category defining
- exemplify increased visual data, interactivity and blended reality trend
- are not new, but are more likely to persist this time

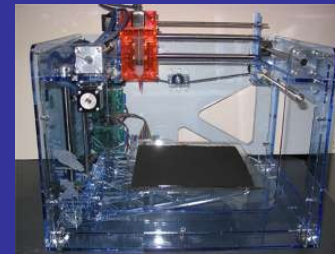
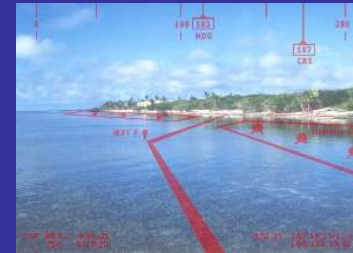


Agenda

- Metaverse overview and roadmap review
- Virtual worlds
- Second Life
 - Demographics
 - Activities
 - Governance
 - Economy
 - Advanced applications
- **LIVE DEMO: UK National Physical Laboratory's Nanotechnology Island sim in Second Life**

Metaverse overview

- Demand for streaming video, data visualization and 3D data display
- Detailed capture of reality
 - Geospatialization
 - Life capture
- Augmented reality
- Simulation
- Persistent virtual worlds
- Fab labs, 3D printing
- Virtual reality 2.0
- Mixed reality, blended reality

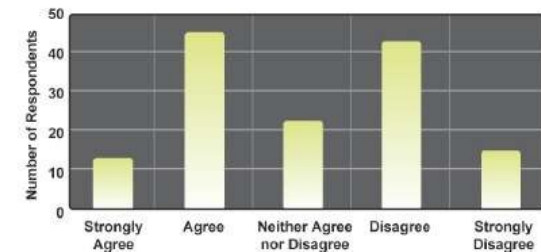


Metaverse roadmap: pathways to the 3D web

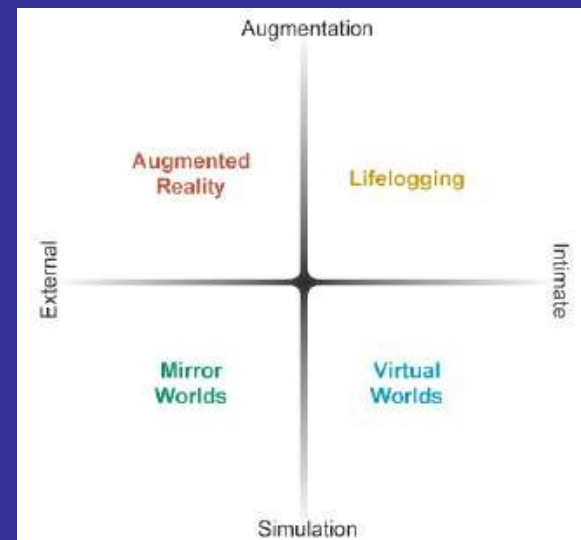
- Metaverse Roadmap Summit, SRI, May 2006
- A synthesis of survey questions into narratives
 - Industry conditions
 - Forecasts
 - Issues and questions
 - Problems and indicators
- Does not include collaborative identification of problems, solutions and key milestones

1. In 2016, U.S. law will require U.S.-based 3D world providers to employ any of a variety of third-party 'verified' digital identity systems.

Summit Survey
N = 30
Mean = 3.10



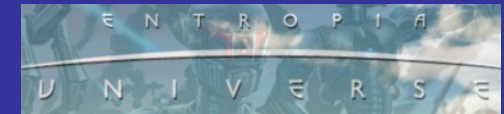
Website Survey
N = 136
Mean = 2.99



Sources: <http://metaverseroadmap.org>

Virtual worlds

- Definition: 3D online persistent world with a sense of presence and simultaneous experience in context
- Examples (over 30 worlds):
 - Second Life
 - ActiveWorlds
 - Entropia Universe
 - There
 - MultiVerse
 - Vast Park
 - Metaplace
 - Club Penguin (pre-teen)
 - WebKins (pre-teen)



Source: <http://www.virtualworldsreview.com>

Virtual world vs. MMORPG



← World

← Game

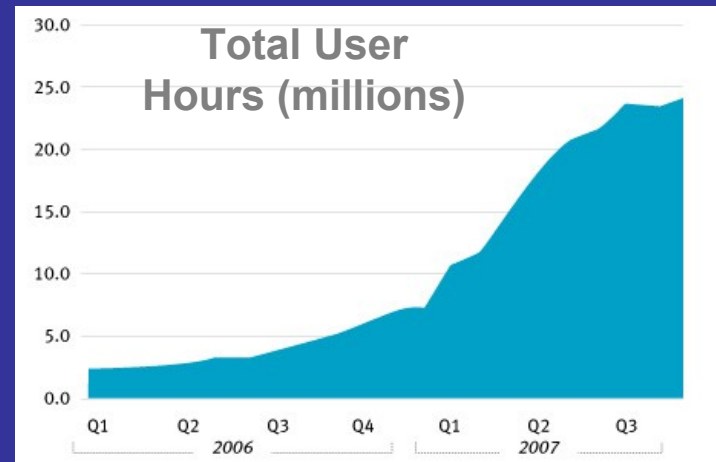
Source: Liana Holmberg, Linden Lab

Second Life is the biggest virtual world

- 40,000 concurrency (at any time)
- 450,000 active users (last 7 days)
- 1.4 m active users (last 2 months)
- 10.6 m total accounts

- 2 m assets created per day
- 35 TB of user-created data
- 800,000 unique items sold or traded per month
- 500 events per day
- 15 m concurrent scripts
- 10 Gbps peak bandwidth

Source: Linden Lab



Source: <http://secondlife.com/whatis/economy-graphs.php>

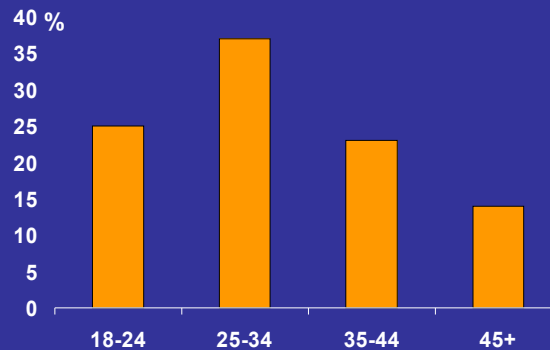
Diverse Second Life residents

Source: Liana Holmberg, Linden Lab

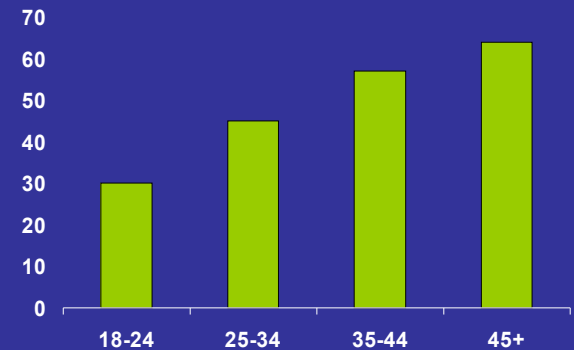


- 43% female
- 60% international
 - Top 5 countries: US, Germany, Brazil, Japan, UK

Resident market share by age tier



Average monthly hours by age tier



Entertainment

Traditional brands come in-world



HBO



Scarlett Johansson



CBS "CSI NY"



MTV "Virtual Laguna Beach"



NBC "The Office"

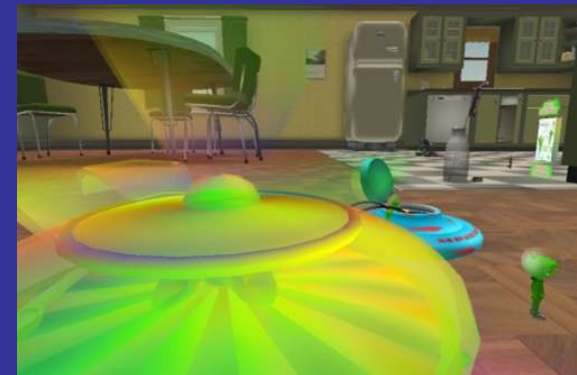


Showtime "The L Word"

Rise of virtual world brands



Rezzable.com "Black Swan"



Rezzable.com "The Greenies"

Business



IBM



Dr. Dobbs Life 2.0 Conference



Cisco



H&R Block



Motorati SpokesAvatar:
caLLie cLine



Preen Principal:
Aimee Weber



Best Buy's
Geek Squad



Preen

Academia, museums, non-profits



Princeton



Art Gallery



Science Friday



International Spaceflight Museum



Computer History Museum



American Cancer Society
Relay for Life

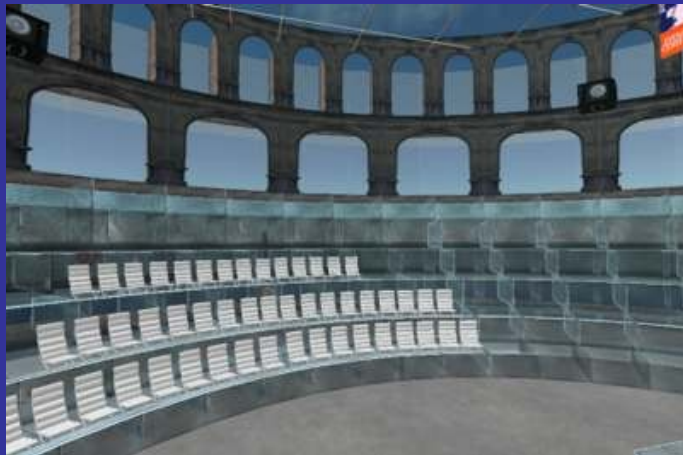
Government, politics and collective action



US Congress



US Congress – hot topic legislation



European Community



Campaign HQs



Davos protest

People come to Second Life to...

- Interact, enjoy, experience, relax, explore, entertain, earn
 - Collaborate, recruit, conduct business
 - Build, create, prototype, model, simulate, test
 - Learn, teach, demonstrate
-
- **Examples**
 - U Denver has a \$250,000 grant to build a nuclear reactor in-world
 - IBM spending \$100 m on virtual worlds, \$10 m in SL
 - Nanorobics – a medium intensity chair-based workout
 - New Babbage - a "steampunk" community
 - 7 page list of science places in SL

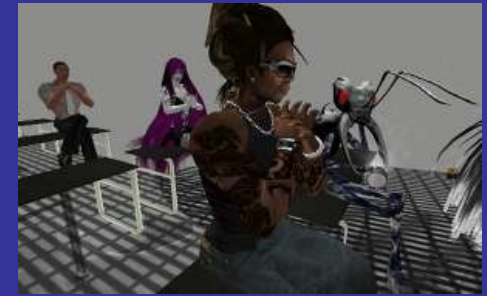


Second Health Operating Theatre, SciLands Sim



City of Arcadia CA Water Treatment Plant, Etopia Sim

Interact



Build objects and structures



Design neighborhoods and sims



Dublin

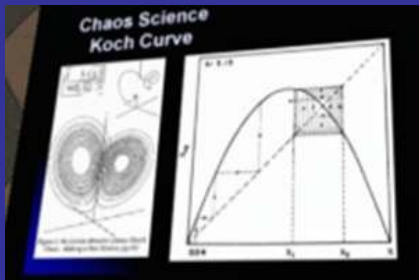
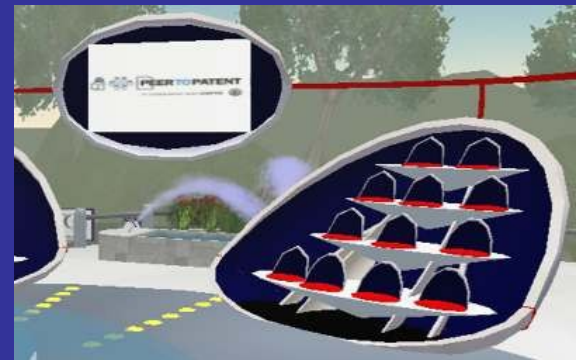


Second Health, SciLands Sim

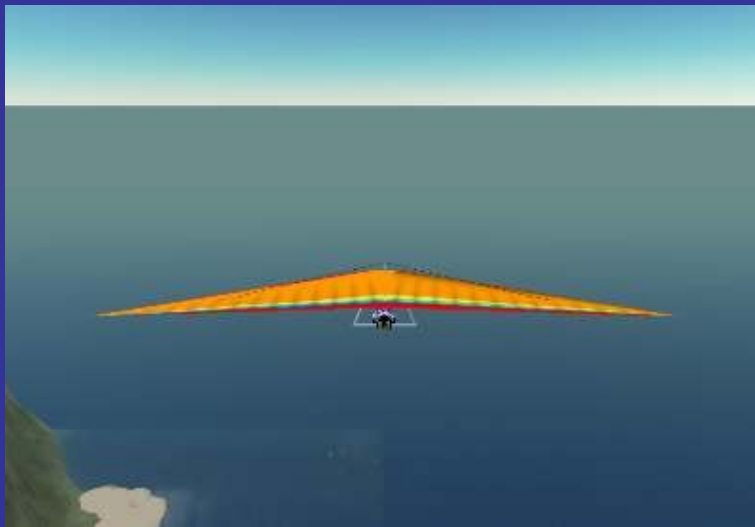


34 island multinational cross-disciplinary
SciLands science complex

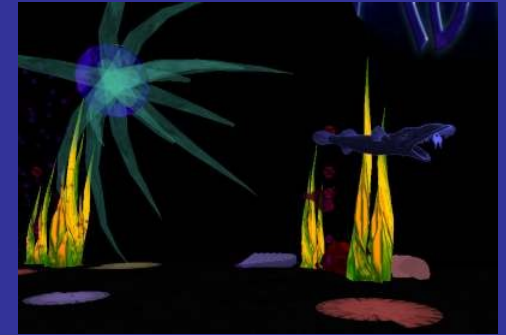
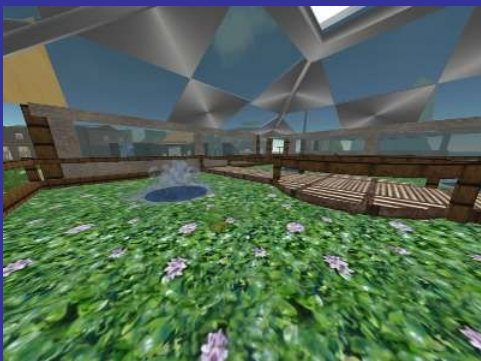
Learn and collaborate



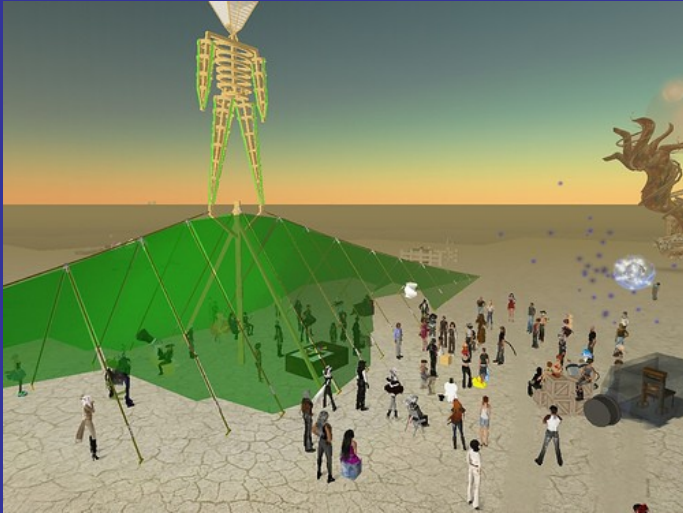
Have fun



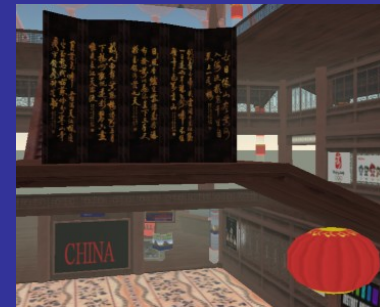
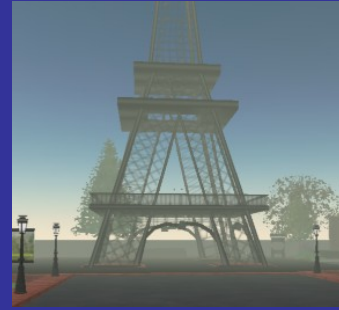
Relax



Imitate life



Be a virtual tourist



Technical details

- Linden Scripting Language (LSL)
 - Event-driven and states, not object oriented
- Havok 4 physics engine
- Primitives, assets and lag
- Open-source initiatives
 - Client exists
 - Server TBA
 - Standards and portability
- Security

```
Script: Pilot Verification Script
key avatar;
vector pos = <0.0, 0.0, -0.5>; //adjust the position to fit object -n
//nonzero in at least one direction or script will not work!
rotation rot = <0.0, -0.2, 0,1>; //adjust rotation (1 in any vector gi
ves 90 deg)

default
{
    state_entry()
    {
        llSitTarget(pos, rot);
    }
    changed(integer change)
    {
        avatar = llAvatarOnSitTarget();
        if(change & CHANGED_LINK)
        {
            if(avatar == NULL_KEY)
            {
                // You have gotten off
                llStopAnimation("sit");
                llReleaseControls();
                llResetScript();
            }
        }
    }
}
```

Linden Scripting Language



Griefer attack

Legal issues

- Key rules
 - Terms of Service Agreement
 - Community Standards
 - Privacy Policy
 - DMCA Policy
- Recent cases
 - Eros, LLC v. Doe (pending)
 - Copyright infringement, rollback copies, 50 copies sold for ~\$2,250 total
 - Marc Bragg v. Linden Lab (settled Oct 2007)
 - Unfair land acquisition through landbots (~\$8,000)



Self-governance

- Land covenants
- Self-governing Sims
 - Confederation of Democratic Simulators (CDS), est. 2004
 - Constitution and Code of Law
 - Sims: Neufreistadt and Colonia Nova
 - Metaverse Republic, est. 2007
 - Judiciary, parliament, executive



Representative Assembly

Sixth RA: 4 February 2007 - 31 July 2007

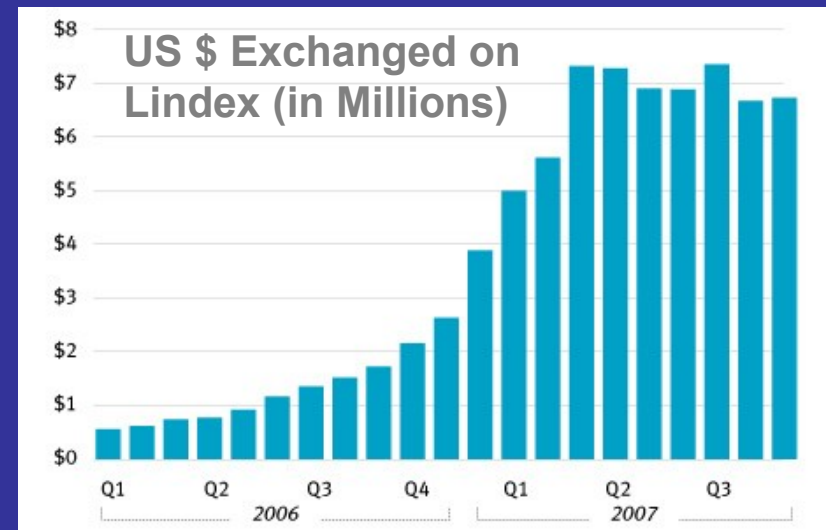
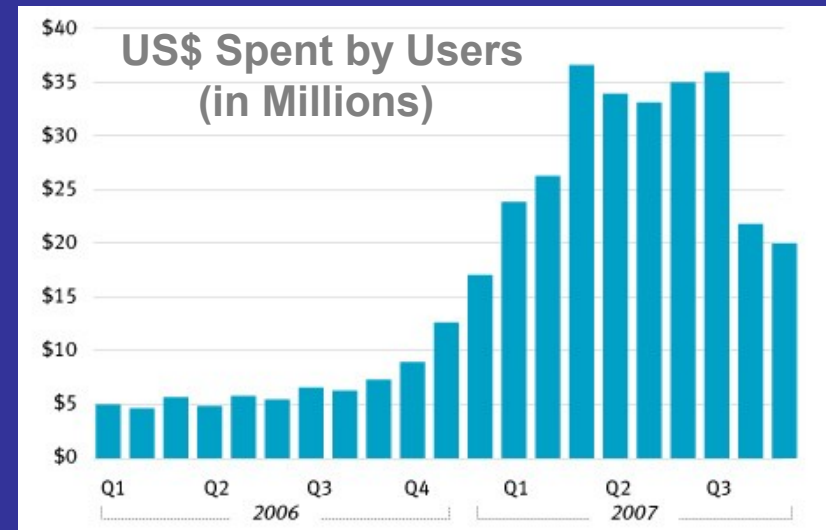
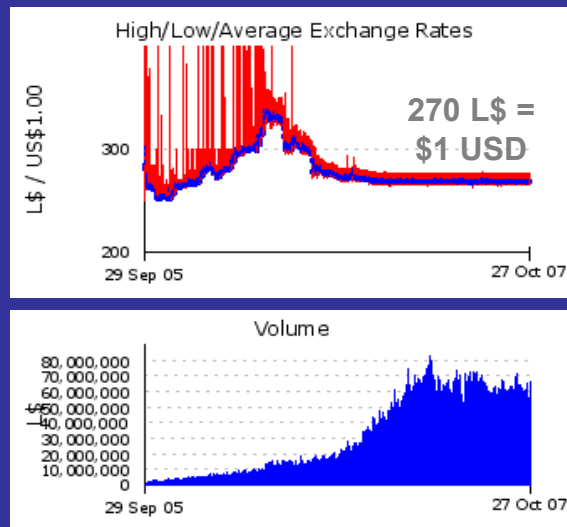
Name	Party
Claude Desmoulins, Leader	DPU
Justice Soothsayer	DPU
Patroklus Murakami	CSDF
Publius Crabgrass	SP
Michel Manen	CARE

Sources: <http://slcde.info>, <http://neufreistadt.info>,
<http://neufreistadt.info/id25.html> (Constitution),
<http://colonianova.wordpress.com>, gwynethllewelyn.net,
<http://www.metaverserepublic.org>



Currency: Linden\$

- Monetary policy
- LindeX exchange operated by Linden Lab
 - Buy: USD \$.30 transaction fee
 - Sell: 3.5% transaction fee

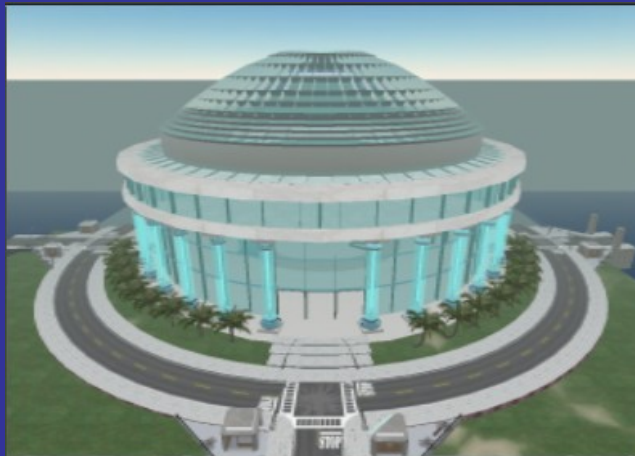


Economy

- Reuters
- Banks
- Stock markets
 - SL Capital Exchange (US, 20 listings)
 - World Stock Exchange (Australia, 15 listings)
 - VSTEX (Italy, 7 listings)
 - Ancapex (US, 3 listings)
- Financial exchange platforms
- Tax

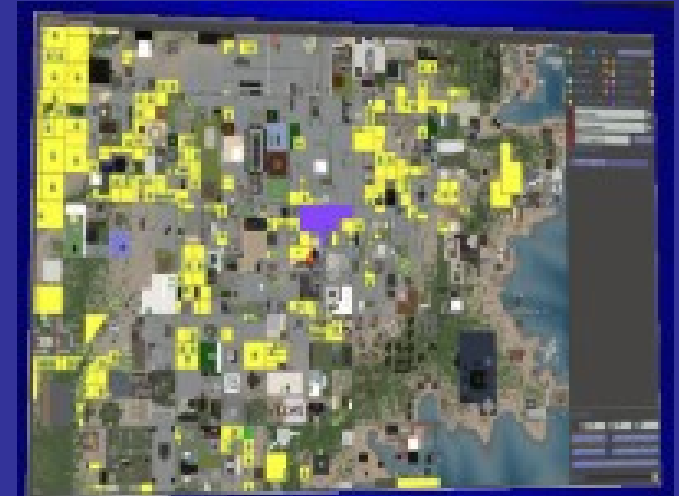


Source: <http://secondlife.reuters.com>

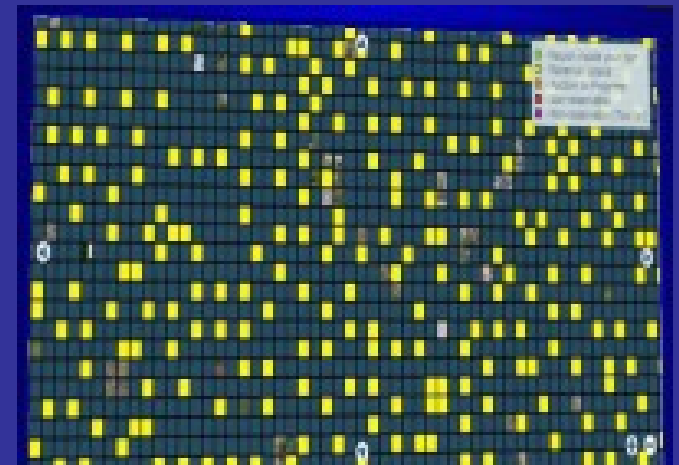


Land can be purchased or leased

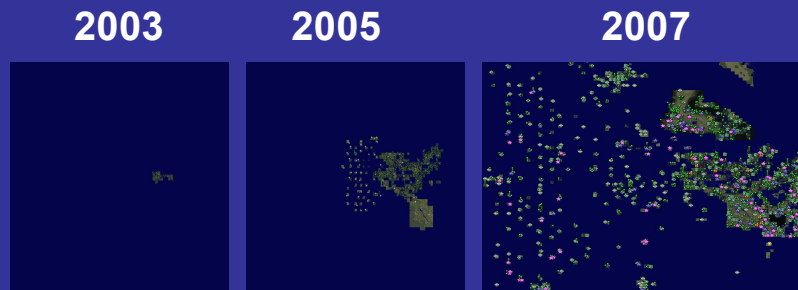
- Purchase raw land via auction or resident-developed land
 - Premium membership required (\$9.95/mo)
 - USD \$13 / \$5 monthly for 512 m
 - USD \$1,675 / \$295 monthly for 65,536 square meter island
- Rent resident-developed land



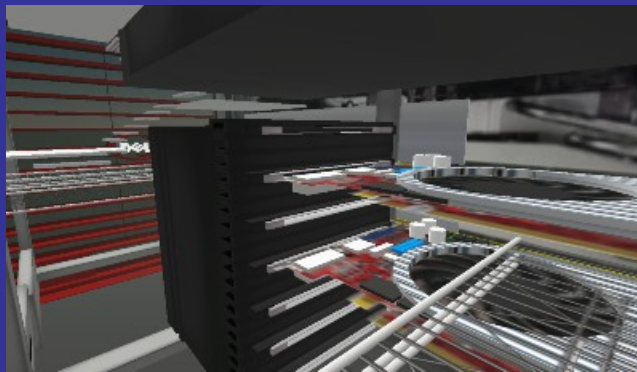
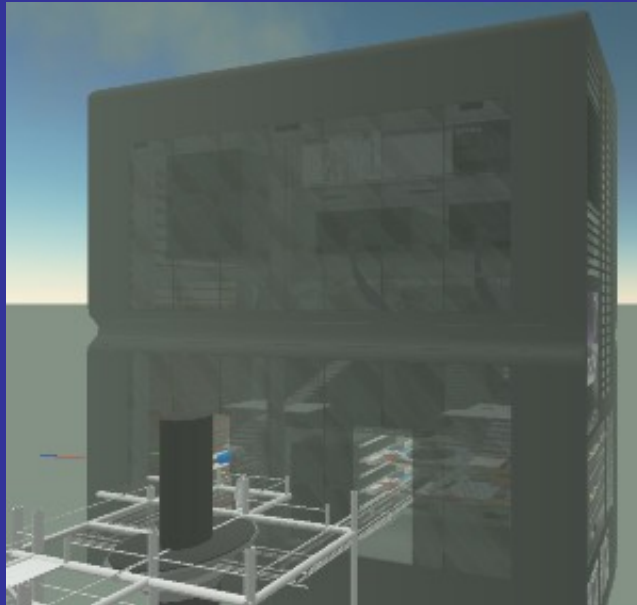
Available plots



Available island areas



Advanced: use of scale



Dell XPS



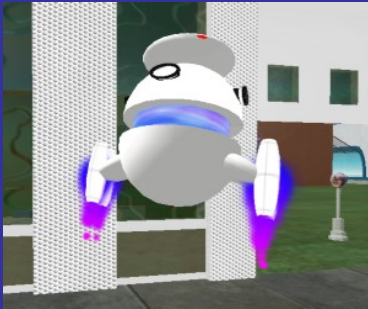
Carbon nanotube



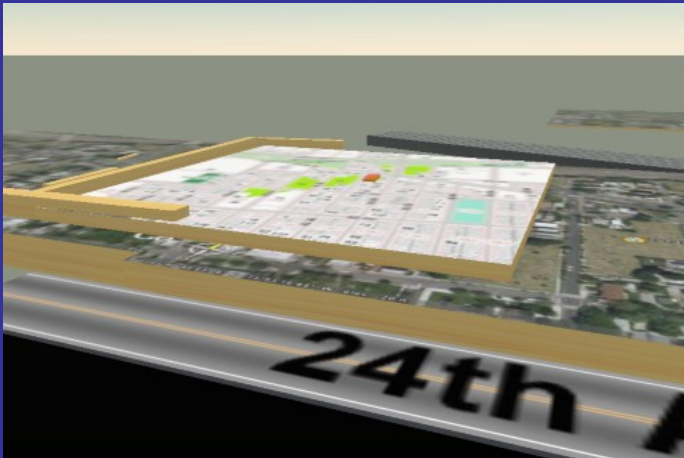
Genetic structure

Advanced data apps

- Tools: HUD, BlogHud, scripted objects
- Greeter Bots, Landbots



Greeter Bot



Urban planning mashup: Brooklyn

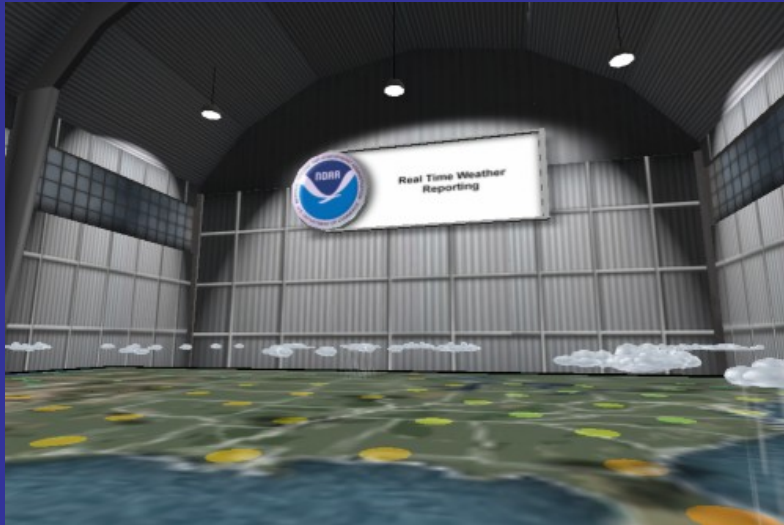


Dynamic Internet data displays

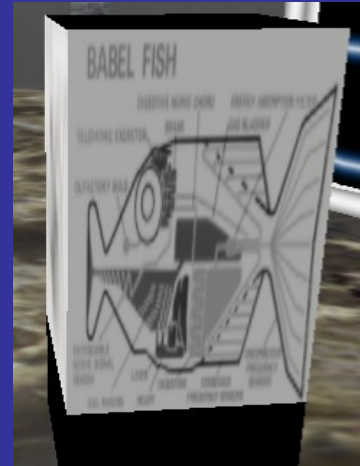


GeoGlobe

Advanced data apps



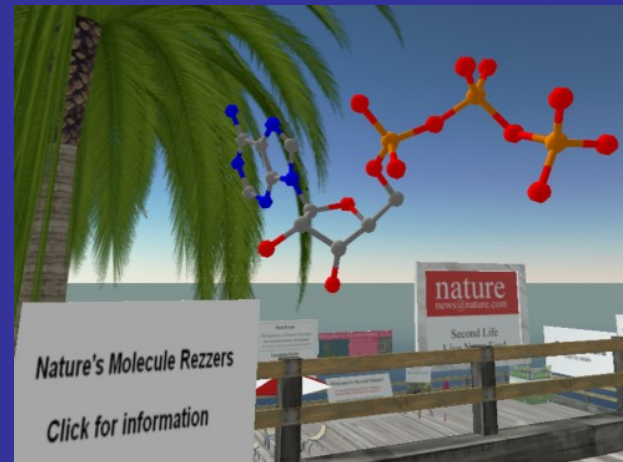
Real-time NOAA weather data



Babel Fish chat translator



Real-time LAX airport traffic



Molecular rezzers

Advanced data apps

- Artificial intelligence, artificial life
- Genetic algorithms



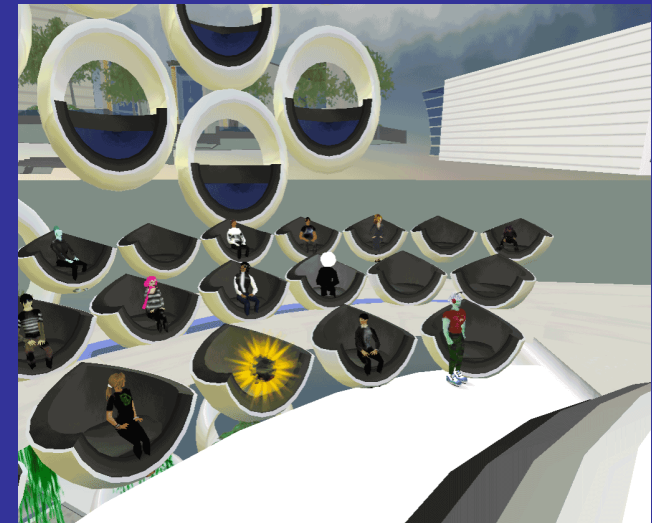
Svarga Artificial Life Ecosystem



Intelligent pets



Eolus real-time monitoring



Visual representation of identity information

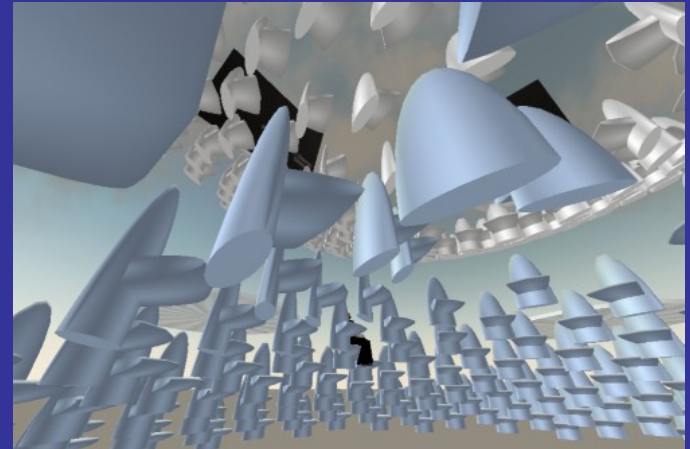
Virtual worlds: emerging so far

- Step 1: Replicate the physical world
- Step 2: Diverge, experiment, extend
- Identity porosity and exploration
- Visual homogeneity: avatar and object
- New forms of communication, collaboration emerging
- Mainstream social reaction
 - Different and offensive compared with other leisure activities
 - Save travel expenses vs. electricity consumption



Virtual worlds: what's next?

- More activity
 - Worlds, participants, hours, content
 - 1990s: website
 - 2000s: sim presence
 - Interactive entertainment
- More structure
 - Open source initiatives
 - Security, legal, economic initiatives
- More tools
 - Search, directories
 - Uniquely identified objects
 - Geotagged photos
 - Virtual world archiving



Summary, virtual worlds...

- have become routine as a platform for human activity
- like other newtech, are complementary and category defining
- exemplify increased visual data, interactivity and blended reality trend
- are not new, but are more likely to persist this time



Thank you



Photo credit: www.ewels.info

Slides: <http://www.melanieswan.com/presentations>
Virtual Worlds



Provided under an open source Creative Commons 3.0 license
<http://creativecommons.org/licenses/by-nc-sa/3.0/>

Melanie Swan
MS Futures Group
Palo Alto, CA
415-505-4426
m@melanieswan.com
www.melanieswan.com

Resources

- Getting started in Second Life
 - http://sl.nmc.org/wiki/Getting_Started
- Second Life SLURL Directories
 - <http://nbhorizons.com/list.htm> (companies)
 - <http://npsl.wikispaces.com/Tenant+Directory> (non-profit commons)
 - <http://edumuve.com/tour/> (international locations)
- Event listings
 - <http://secondlife.com/events>
 - <http://nanoisland.wordpress.com> (re: Second Life Nano Sim)
 - <http://www.nanodave.com> (re: Second Life Nano Sim leader)
- News, blogs, etc.
 - <http://secondlife.reuters.com/>
 - <http://www.virtualworldsreview.com/>
 - <http://pollywogpress.com/>
 - <http://www.metaversemessenger.com/>