Survey of Virtual Worlds

with focus on

Learning and Instruction

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Introductory Class
Intended for newcomers to Virtual Worlds

1. Conceptual
   - Characteristics and Constructs
   - VW vs. other 3D immersive technologies
   - When to use / when not to use

2. Compare & Contrast
   - VW taxonomy
   - Capabilities, business models, fidelities, architectures

3. Virtual Worlds as an Instructional Platform
   - Instructional Designs
   - Examples
   - Hands-on with a Virtual World
Survey of Virtual Worlds

The Movement from

2D to 3D

(Web 1.0 → Web 2.0 → 3Di)

Access → Find → Share → Participate → Collaborate → Co-Creator

Google, Netscape, eBay, YouTube, Wikipedia, World of Warcraft

Conceptual

3D
- Animated
- Information Density

Social
- Real-time
- Interactive

Affordable
- Technologically Efficient
- Scalable
Conceptual

Geo-Spatial

Object Manipulation

3D
Animated
Information Density

Social
Real-time
Interactive

VW

Affordable
Technologically Efficient
Scalable

User Created, Empowered, Autonomous

Global, Anywhere, Anytime

VW AIR
Conceptual

3D
- Animated
- Information Density

Social
- Real-time
- Interactive

Affordable
- Technologically
- Efficient
- Scalable

Web Conferencing, Chat, Conference Calls

High-End Simulators, VTCs
CAVES, Web 2.0, M&S Software
Experience

Most Virtual Worlds are:
- Avatar-enabled
- Persistent
- Sense of Space
- Co-Create
- Multi-user
- Real-time

The Best Virtual Worlds Create:
- Presence
- Co-Presence
- Immersion
- Flow

* The Suspension of Disbelief *
Purposes

• Conferencing & Collaboration
• Rapid Prototyping & Design
• Training & Education
• Skill building & Practice
• Data Visualization & Analysis
• Showcasing & Outreach
Compare & Contrast

Choice Depends on:

- Goals
- Fidelity Requirements
- Audience
- Security
- Experience

Caution!
Examples

Second Life
Web.Alive
OpenSim
Teleplace
Unity3D
Blue Mars
US Nexus
Taxonomy Comparison

- **Core Purpose**
  - Collaboration, Building, Training

- **Accessibility**
  - Thick client, Thin client, Browser
  - Security (Application and Content)

- **Architecture**
  - Cloud, Secure, Hosted, Distributed

- **Development**
  - Built-in tools, Import/Exportability, Vendor proprietary
  - Avatar customization

- **Business Model**
  - Free, Buy-to-Own, Rent, License per Client, Annual Maintenance

- **Scalability**
  - Avatar Load
Second Life

• **Core Purpose:**
  – Build-centric; World Built by the World

• **Accessibility:**
  – Thick Client; many open source versions
  – Mac and Windows; Browser in beta

• **Architecture:**
  – Public Cloud; globally available

• **Development:**
  – Built-in SDK and CDK
  – Prim-based - import/export limited

• **Business model:**
  – free for presence; nominal cost for persistent building (~$2.5K annually)

• **Scalability:**
  – ~40-50 concurrent users per region
  – No Inter teleporting; single global cloud
Web.Alive

• **Primary Purpose:**  
  – Collaboration/Conferencing

• **Accessibility:**  
  – Browser based plug-in; port 443 only
  – Windows Client

• **Architecture:**  
  – Inter-teleporting across instances
  – Enterprise Installation

• **Business Model:**  
  – ~$10k/Server, $600/client license
  – Annual Maintenance fees

• **Development:**  
  – 3D modeling standards (collada-based);
  – easy import/export capability (.ase and .iwo formats)
  – CDK/SDK included

• **Scalability:**  
  – Max number of concurrent users in environment: 150-180
Open Sim

- **Core Purpose:**
  - Build-centric

- **Accessibility:**
  - Enterprise Instancing

- **Architecture:**
  - Reverse engineered instance of SL
  - Thick Client; many open source versions including SL clients

- **Business model:**
  - Free
  - Open-Source

- **Development:**
  - Built-in SDK and CDK
  - Prim-based - import/export limited

- **Scalability:**
  - ~40-50 + concurrent users per region
Teleplace

- **Core Purpose:**
  - Workforce collaboration, Training
  - Arbitrary, simultaneous application sharing

- **Accessibility:**
  - Thick Client, Browser-based (2Q2011)

- **Architecture:**
  - Client / Server, behind-the-firewall or hosted, private spaces, encrypted communications

- **Development:**
  - Pre-built templates of spaces, drag-and-drop content, COLLADA import, Python API, integration with MS SharePoint

- **Business model:**
  - Software subscription based on number of users

- **Scalability:**
  - Modular server architecture with scalability by adding additional server modules
Unity 3D

• Core Purpose:
  – 3D Development Tool

• Accessibility:
  – Windows, Mac; Free download

• Architecture:
  – Client independent or server hosted

• Business model:
  – Free; open-source
  – Enterpris-for-cost option

• Development:
  – Java JDK
  – iPhone/iPod/iPad, Mac, PC, Web, Wii, Xbox 360, Android, PlayStation3 (beta)

• Scalability:
  – Developer driven
Blue Mars

- **Core Purpose:**
  - World built by Third party developers

- **Accessibility:**
  - Public Cloud; globally availability

- **Architecture:**
  - Thick Client; Windows only

- **Development:**
  - No CDK / SDK
  - standard 3D models for free import/export capability

- **Business Model:**
  - Avatar and experiencing are free
  - persistent building/presence costs are size/concurrent user dependent

- **Scalability:**
  - Max concurrent users in region: 1000's
Role of Skill Level

Skill $\rightarrow$ Engagement $\rightarrow$ Performance
An individual’s level of engagement is a statistically significant predictor of an individual’s performance.
Open-ended & creative opportunities to perform yield levels of creativity, engagement, & innovation within immersive platforms, unexpected and far beyond that of traditional instructional settings.
Research Findings

Engagement & Performance

Control

Loss of Time

Goals & Feedback

Autotelic
References

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  - Enterprise Guide to Virtual Worlds

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  - [www.metanomics.net](http://www.metanomics.net)
Questions?

Hands-on