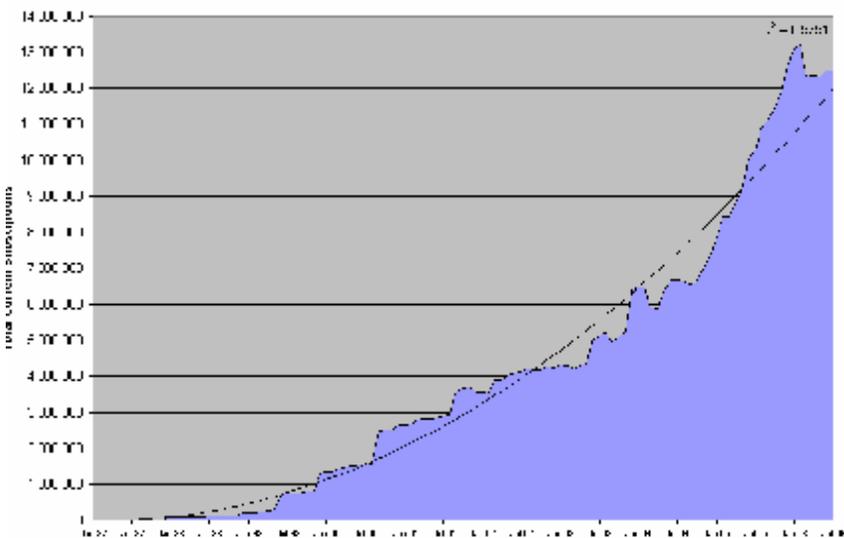# *3D Internet*

Boas Betzler
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02/14/2007

Times have changed and virtual worlds are expanding in subscriptions and beyond traditional games

Total MMOG Active Subscriptions

and IBM is getting in the game in a big way.

News&Insights

VIRTUAL WORLDS

PALMISANO GETS A SECOND LIFE

IBM is embracing the world of avatars— and other big companies are, too

BY STEVE HAMM

I'S NOT EVERY DAY THAT YOU hear the captain of a $90 billion multinational gleefully bragging about his alter ego in the online world. But these days, so-called virtual worlds are all the rage, and IBM Chief Executive Samuel S. Palmisano is about to make his mark as the first big-league CEO to appear in a virtual-world setting. "I have my own avatar," boasts Palmisano. He likes the sound of that so much that he says it again: "I have my own avatar."

Actually, Palmisano has two avatars—a casual Sam and a buttoned-down one—who exist in Second Life, the most popular of a handful of newfangled 3-D online virtual worlds. It's the square Sam, complete with Palmisano's signature eyeglasses and dark suit, who will be taking a virtual stage in a virtual version of China's Forbidden City on Nov. 14.

This isn't all fun and games. IBM foresees a sizable business in providing the software, computers, and chips that power 3-D worlds, and in advising clients on how to take advantage of them to market or sell products. At a real-life town hall meeting for 8,000 employees in Beijing's Great Hall of the People, Palmisano will announce just before his virtual escapade

that IBM is setting up a new organization to pursue the business. It's one of a handful of initiatives he'll lay out that emerged from an online "innovation jam" the company held for worldwide employees and business partners in September. All told, Big Blue plans to spend $100 million on these projects.

WIMBLEDON IN 3-D
IBM'S FORAY IS the latest sign that the virtual world phenomenon is going mainstream. Until recently, Linden Lab's Second Life had mostly been a playground for individuals who enjoy exploring, communing with like minds, and setting up virtual mom-and-pop businesses.
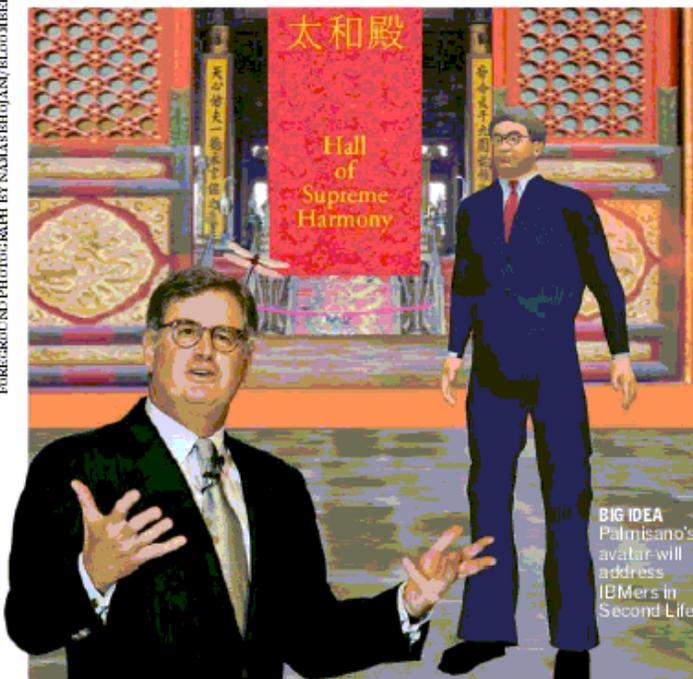
In the last few months, though, all sorts of established companies have been planting their flags. They're marketing goods, trying to sprinkle coolness on their brands, and testing new kinds of online meetings. About 40 corporations have established themselves on Second Life, which has gone from zero members to 1.2 million in just three years. Among them are Sony BMG Music Entertainment, Reebok, Starwood Hotels & Resorts, and Reuters, which assigned a reporter full-time to hang out and chronicle the goings-on.

IBM stumbled into virtual reality thanks to the curiosity of British IBM software strategist Ian Hughes (avatar: ePredator Potato), who is a longtime PC gamer. Hughes started raving about virtual worlds on his internal IBM blog and, before long, IBM scientists and programmers worldwide were buying virtual islands in Second Life and using them for group collaboration or solving computer science problems.

Hughes on Nov. 7 led a guided online tour of Second Life that showed just how diverse virtual reality can be. Stops included a replica of the Wimbledon tennis club, where Hughes runs 3-D replays of actual championship games, an IBM meeting center, a Reebok store, and (whoops!) a casino complete with virtual naked female avatars. "Being the Internet, you never know what you'll find!" quips Hughes.
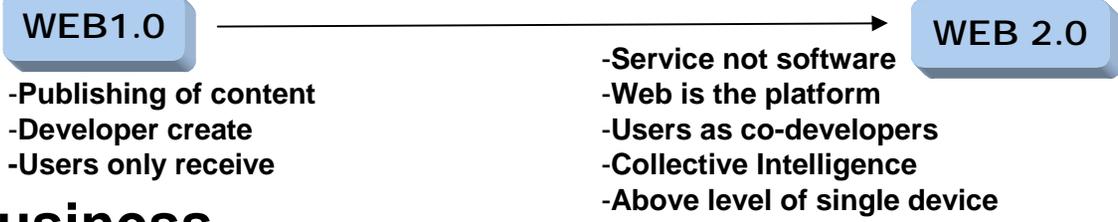
The most impressive locale on the tour was the scale replica of The Forbidden City being created by IBM designers, which will be the scene of Palmisano's virtual debut. The setting was unfinished, but designers had rendered a platform, chairs, and podium. The visitors' avatars wandered around and tried out the chairs, until they were unceremoniously kicked offline. The reason: IBM needed to rehearse the Palmisano appearance. Apparently, in virtual reality it's tricky for those avatars to get their applause just right. ∎
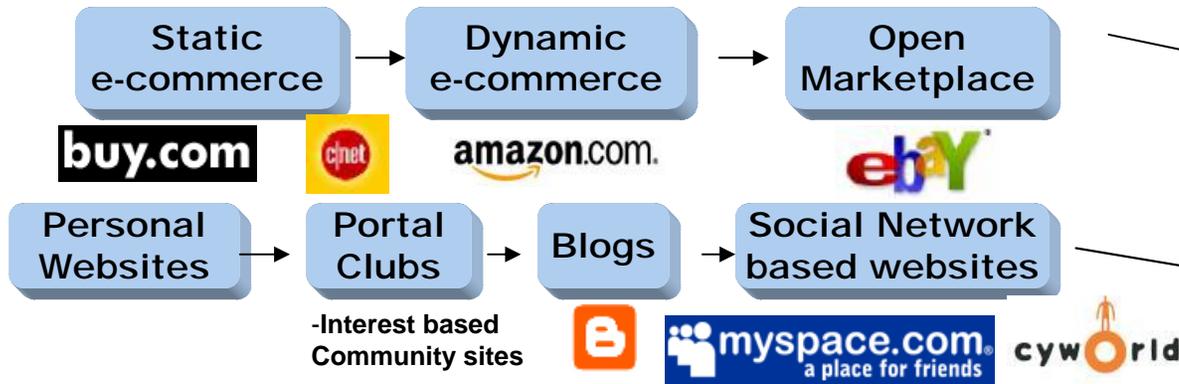
BIG IDEA
Palmisano's avatar will address IBMers in Second Life

Web

WEB1.0 → **WEB 2.0**

-Publishing of content
-Developer create
-Users only receive

-Service not software
-Web is the platform
-Users as co-developers
-Collective Intelligence
-Above level of single device

e-Business

Static e-commerce → **Dynamic e-commerce** → **Open Marketplace**

buy.com   cnet   amazon.com.   ebay

Personal Websites → **Portal Clubs** → **Blogs** → **Social Network based websites**

-Interest based Community sites

myspace.com a place for friends   cyworld

v-Business

Realtime Presence aware Social Network

Online Games

MAPQUEST   msn Virtual Earth BETA   Google Earth

Text Mud Dungeons & Dragons → **MMORPG** → **MMOG with UCC** → **Advanced MMOG**

- Text based online Role Playing games

-Small map
-Limited actions

LINEAGE

-Larger map
-User created contents

SECOND LIFE

-Large map
-Physics, Light Engine
-Advanced Game play

Online gaming

Graphics

2D → **2.5D** → **3D** → **Advanced 3D** → **Free Form 3D**

- Parallel
- Scroll Game

- 2D with sense of height and space

- 3D Simple Objects Limited Environment

- 3D World with Physics & AI Engine

- Extended Map, free form game play

Realistic 3D graphics

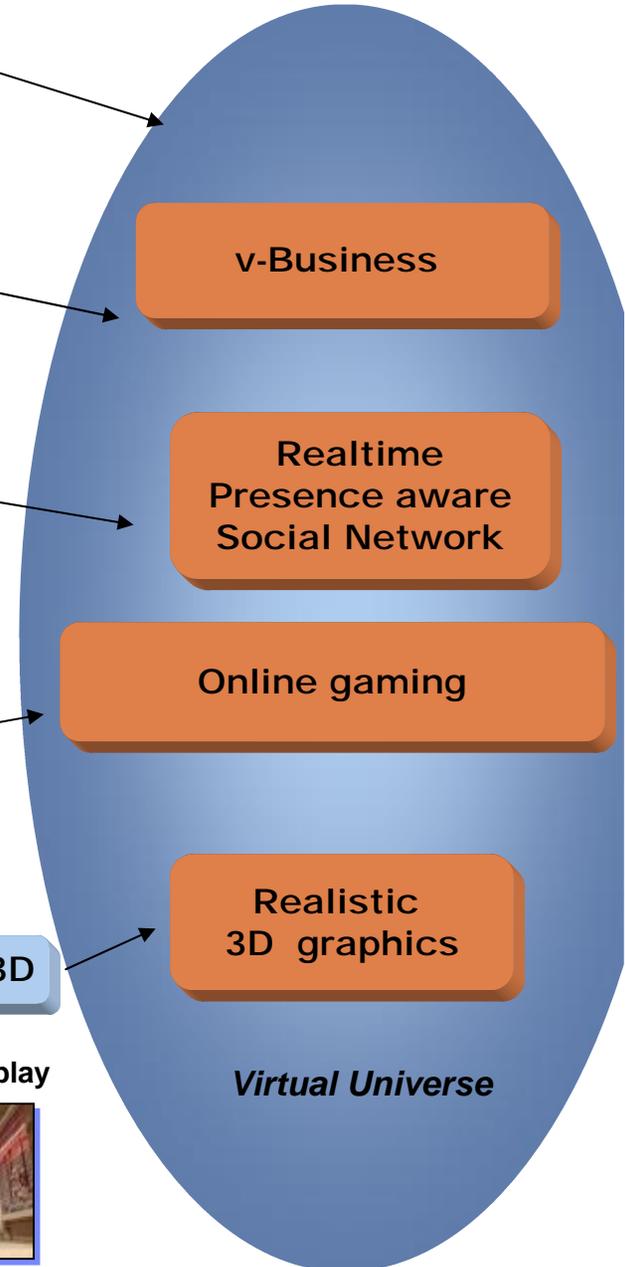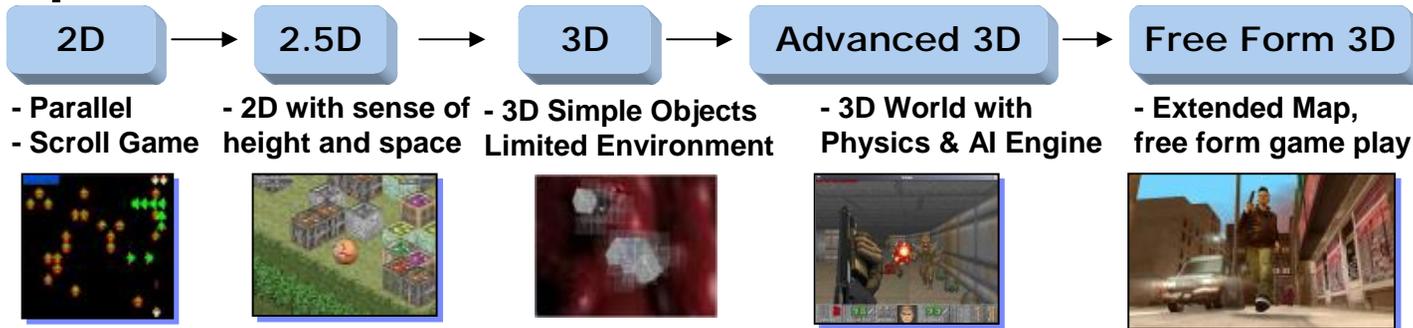*Virtual Universe*
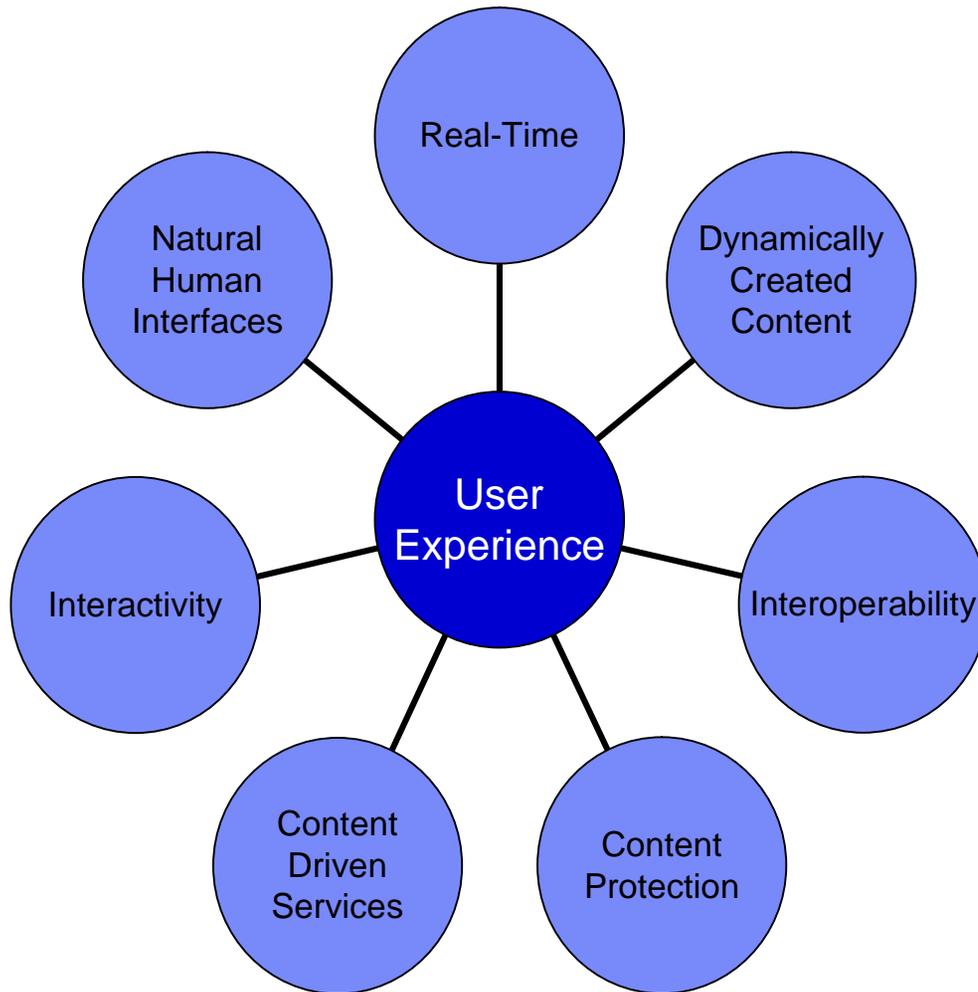
Multi-Dimensions to the Evolving User Experience

§ **Natural Human Interfaces**
- Virtual Interfaces
- Advanced Audio and Video
- Haptics

§ **Real-time**
- Immediate Response
- Interactive or with content

§ **Dynamically Created Content**
- Policy and Personalization Driven
- Distributed/enabled via new business models

§ **Interoperability**
- The Promise of Anytime/Anywhere
- Hybrid devices WAN/LAN

§ **Content Protection**
- Manage end users and owners use of conten

§ **Content Driven Services**
- Rich content access and broadband delivery

§ **Interactivity**
- Collaboration
- Social Environments

The quality of the user experience in a virtual world is a combination of the fidelity of the world rendering, the degree of real-time social interactivity and fidelity of the world model

§ The immersiveness of the experience for the user is a factor of all three qualities

§ Synchronous social interactivity in a *natural* and *compelling* environment is a major customer value of VWs that was missing from the previous waves of 3D web and which may have contributed to its failure

§ The hardware and network is now capable of supporting a high level of experience
for the user, and is expected by the consumer

§ Fidelity of rendering and social interactivity are increasingly commoditized

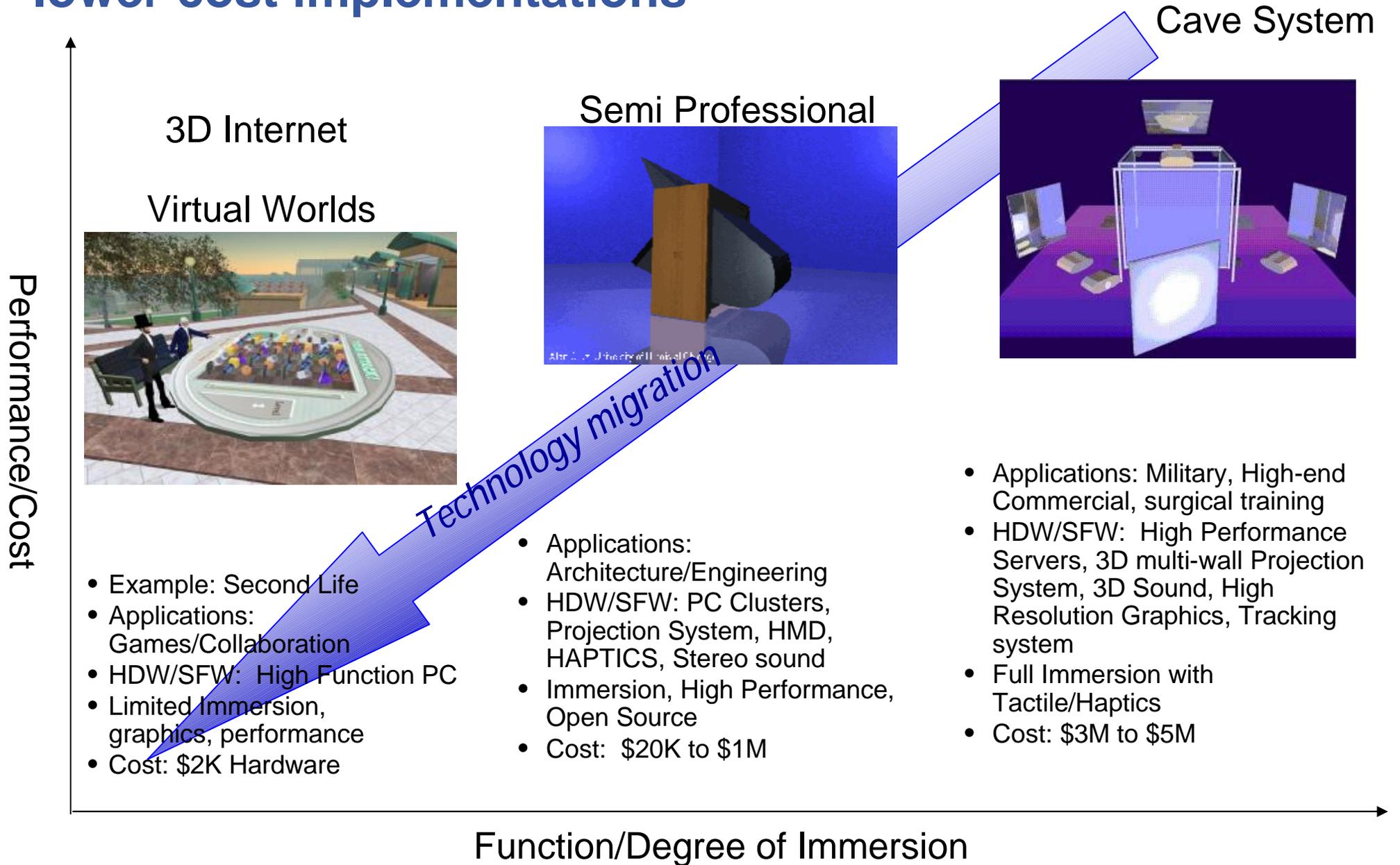**Degree of Synchronous Social Interaction (collaboration)**

Fidelity of the World Model
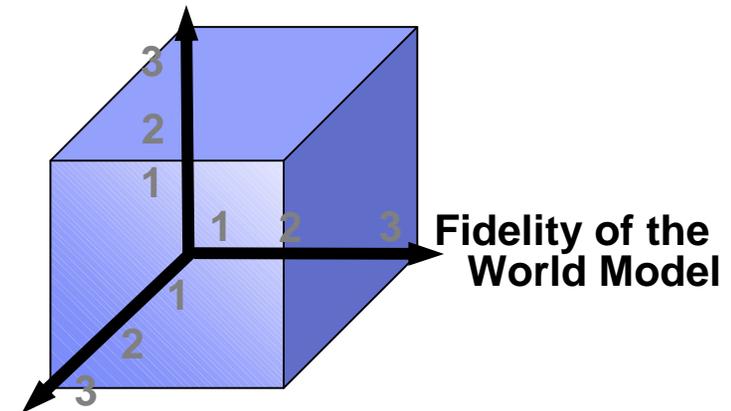
1=low, 3=high

Fidelity of the Rendering*

* rendering here means visual, aural and other senses such as haptic feedback

In Time, we see that immersive solutions will drive to lower cost implementations

Cave System

Semi Professional

3D Internet

Virtual Worlds

Performance/Cost

Technology migration

- Example: Second Life
- Applications: Games/Collaboration
- HDW/SFW: High Function PC
- Limited Immersion, graphics, performance
- Cost: $2K Hardware

- Applications: Architecture/Engineering
- HDW/SFW: PC Clusters, Projection System, HMD, HAPTICS, Stereo sound
- Immersion, High Performance, Open Source
- Cost: $20K to $1M

- Applications: Military, High-end Commercial, surgical training
- HDW/SFW: High Performance Servers, 3D multi-wall Projection System, 3D Sound, High Resolution Graphics, Tracking system
- Full Immersion with Tactile/Haptics
- Cost: $3M to $5M

Function/Degree of Immersion

3D Internet Application Areas

Online Gaming

Shopping, Commerce, Media & Entertainment

Virtual Meeting and Collaboration

Science and Healthcare Research

Learning and Training

Simulation and Visual Design
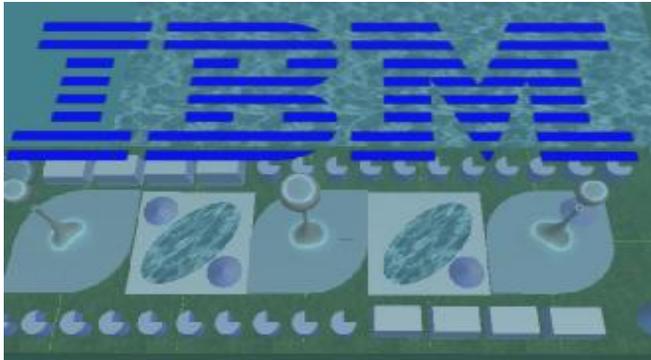
IBM Today in the Virtual Universe
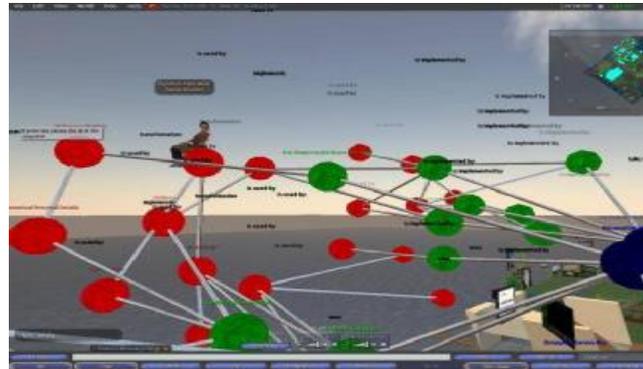
SOA HUB

3D Jam at Almaden
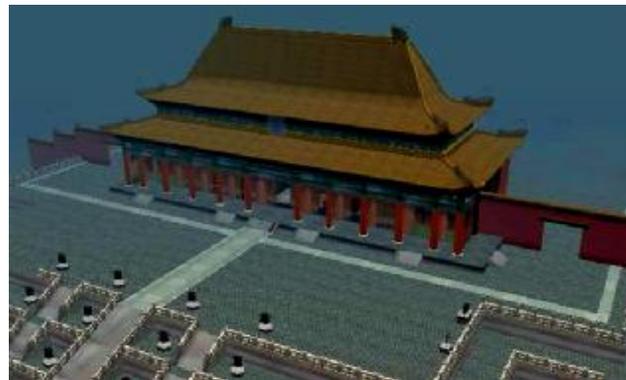
Sears Retail

Innovation Island

Complex 3D Models

Greater IBM Alumni

Australian Open

Forbidden City

Help Desk

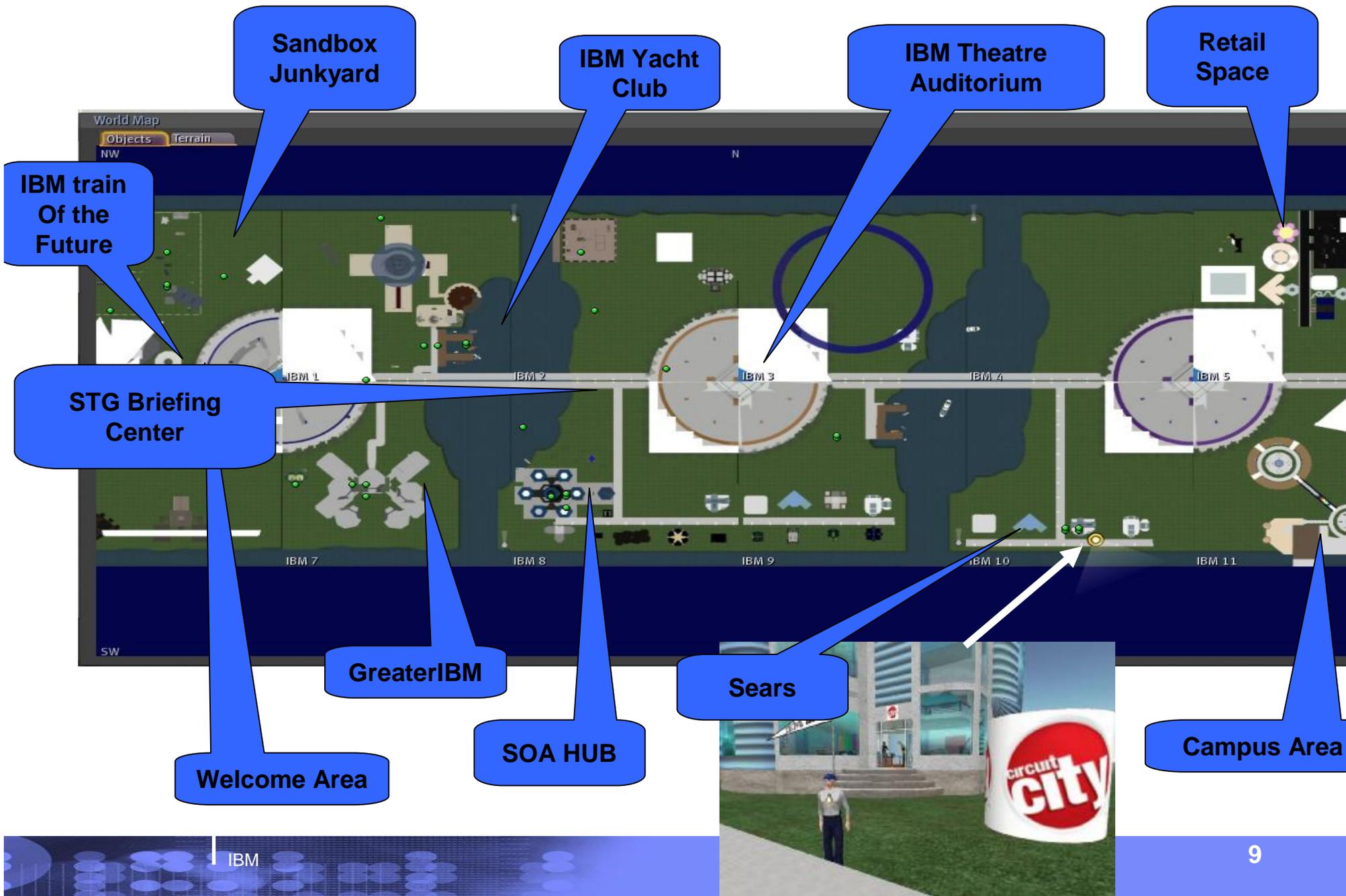# IBM Islands in SecondLife

Sandbox Junkyard

IBM Yacht Club

IBM Theatre Auditorium

Retail Space

IBM train Of the Future

STG Briefing Center

GreaterIBM

Sears

SOA HUB

Welcome Area

Campus Area

Linden Lab January 2007

Total Population

Land Size
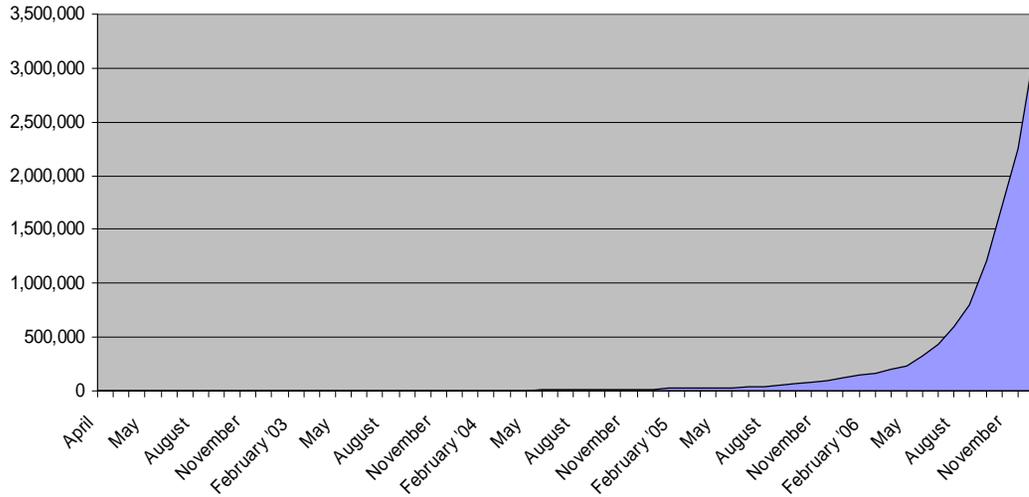
- Mainland
- Islands
- Total Size
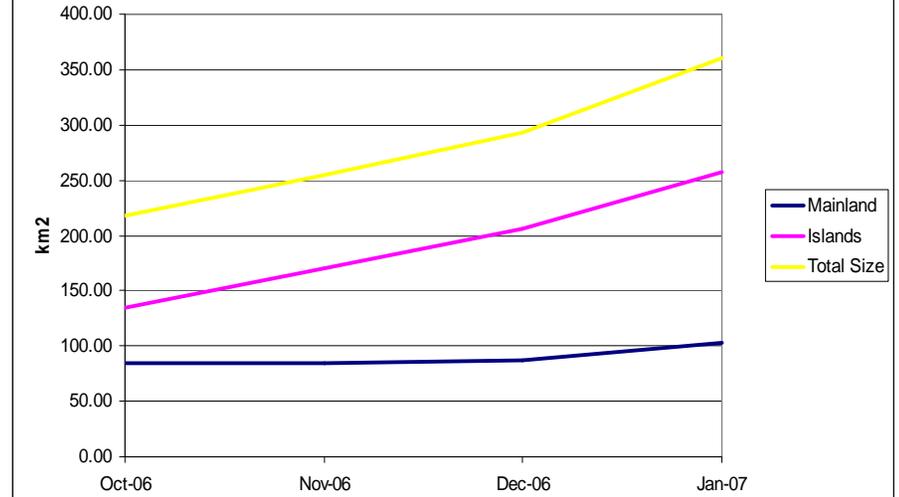
Self reported age by % of active

- 13-17 (Teen Grid), 1.24%
- 18-24, 27.46%
- 45 +, 11.52%
- 35-44, 21.00%
- 25-34, 38.78%

Legend:
- 13-17 (Teen Grid)
- 18-24
- 25-34
- 35-44
- 45 +

% of Residents

- Japan, 1.29%
- Switzerland, 1.29%
- Australia, 1.48%
- Italy, 1.93%
- Belgium, 2.63%
- Canada, 3.30%
- Brazil, 3.77%
- Spain, 3.83%
- Netherlands, 6.55%
- United Kingdom, 8.09%
- Germany, 10.46%
- France, 12.73%
- United States, 31.19%
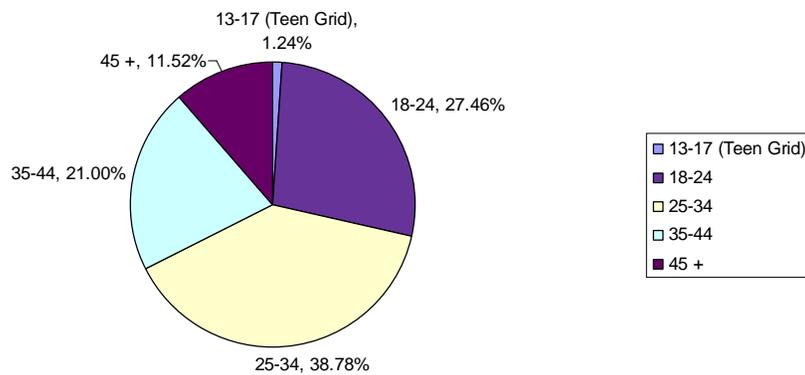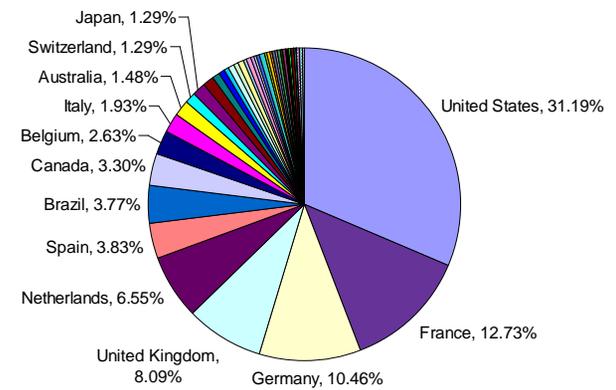
IBM In The Virtual Universe

Key Press Coverage

Media	Jun	Jul	Aug	Sept	Oct	Nov	Dec
BusinessWeek							
BBC							
cnet NEWS.com							
REUTERS							
3PointD.com							
AP Associated Press							

Google: IBM "v-Business"   27,000 hits IBM "3D Internet" 41,600
Yahoo: IBM "v-Business"   9,800 hits IBM "3D Internet" 25,100

Technology

Microsoft

Sun
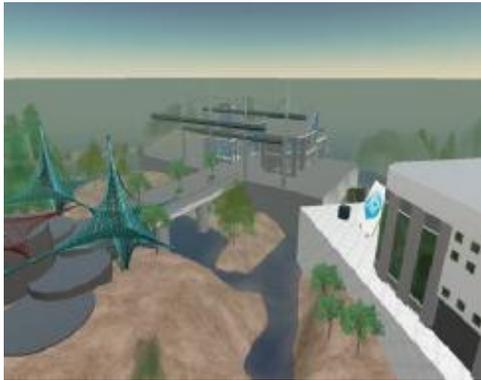
Sony

Intel

Education

Harvard

New Media Consortium

New York University

Automotive

Nissan

Pontiac

Scion

Toyota

Marketing

Crayon
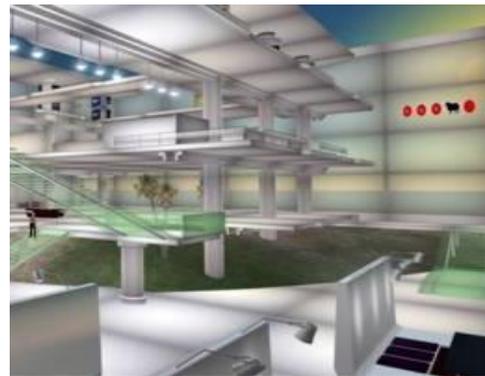
BBH

Leo Burnett

Charity and Government

Mark Warner

Cancer Society

NOAA

UN Against Poverty

News and Media

FOX

CNET

Popular Science

BBC

Infinite Mind

Wired Magazine

Reuters

Big Brother

Entertainment in the Virtual Universe

Duran Duran

Suzanne Vega

U2

MLB

Other areas we are using the Virtual Universe

Collaboration

Education

Meetings

3D Jam

Content Services Platform

Business Services

Business Intelligence	Accounting billing	Advertising mgt
OSS / BSS	Scheduling	Rights mgt

Content Services Platform
PORTAL, Hosting, delivery, tools

Editing	Collaboration Conferencing	Ad Insertion
Aggregation	Index Search	Adaptation
Transcoding	Repository / Archive	Protection

Content services

Television

Movies

Phone

Music

IM (text, video)

Web Content

Commercial content

Games

End-user content

Cable

IPTV

IMS

CDN

Download

Physical networks

Distribution

Set-top box, home server

Phone

Cell phone

Hand-held players

PCs

Game consoles

Public displays

Virtual World Platform Blueprint

Create	Manage	Simulate & Interact

World Editing

Scripting

Composing

Animation

3D models

Video

Text

Image

Audio

Animation

Asset Conversion Pipeline/ Build

Content Management/ Source Control

Multi-repository Search Middleware

Digital Rights System

Business Rights System

World State

Rendering

State Replication

Physics

AI

Platform Services Repository, hosting, management, provisioning

Lobby Services

Proxy/ Edge server

World Aggregation

Streaming Media Server

Delivery Encryption

WAN/ LAN

Set-Top Box

Other Devices

PC

Console

Application Integration Middleware

Business Support Systems, Operational Support Systems

Rich Media Creation	VW Content Creation	Asset Management	Protection	World Server Infrastructure	Hosting and Delivery	Client Devices

There is a common architectural pattern across all virtual world applications - consisting of real-time event driven, parallel simulation engines
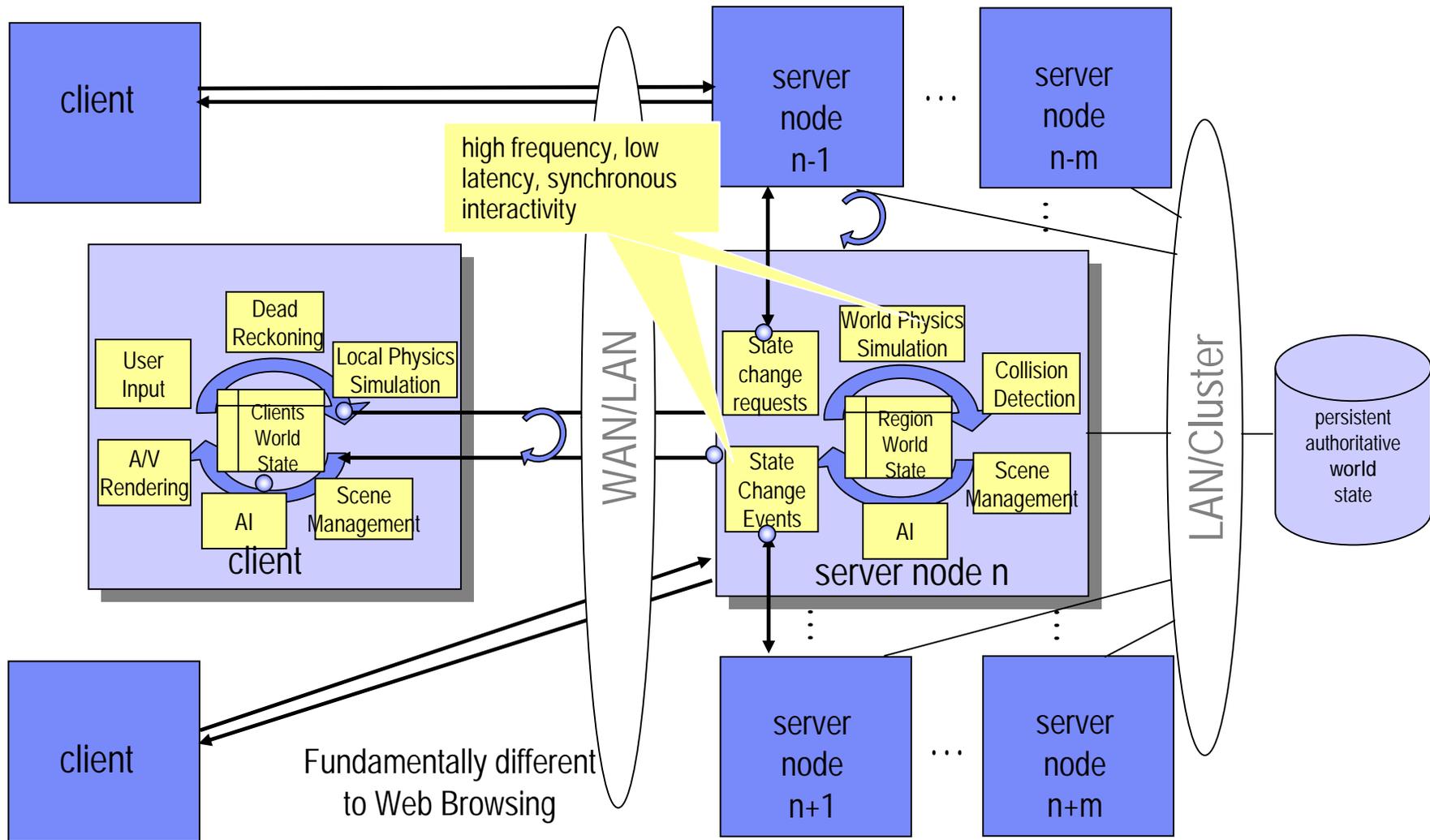
Client requests currently fall into 3 categories

§ Phase 1

- Awakening awareness

- "What is it?"

§ Phase 2

- Increasing interest

- "Tell me more. . . "

§ Phase 3

- Virtual Visualization

  § "Show me how"

  § "Do it for me"

Phase 1 addresses initial questions on virtual worlds

- § Awakening Awareness
  - The "What" phase
    - § "What is a virtual community"
    - § "What is IBM doing in a virtual community"
    - § "What are the things my company can do in/with a virtual community/world"
    - § "Why should I care"
  - Methods of awareness -
    - § Media awareness
    - § Word of mouth
    - § IBM's announcement
  - How to handle -
    - § Prepared handout or deck (short)
    - § Short conference call to explain some of the details

Phase 2 progresses to a deeper discussion

§ **Increasing Interest –**

- The "Tell me more" phase

    § What are the different kinds of things I can do in a virtual community?

    § What are the specific things my company can do in the virtual community?

    § What would my company look like?

    § Show me some examples of how this works

- Methods of Awareness

    § Media awareness

    § Additional interest from first phase

    § More detailed conversations with interested clients
    - ü Face to face meeting
    - ü Second Life meeting

- How to handle

    § More detailed document – paper or deck

    § Potential basic prototype that show how it works – (e.g. demo of how IBM is set up)

    § More detailed conversations with interested clients
    - ü Face to face meeting
    - ü Second Life meeting

Phase 3 results in a virtual presence

§ **Virtual Visualization –** this can be accomplished two ways

- "Show me how"

   § Develop a prototype for my company

   § Define strategy on developing a virtual community

   ü Strategy engagement
   ü "How-to" plan on getting started
   ü Basic plan to give clients "big picture" activities, skills and dollars required (checklist)

   § Base SOW

   ü Keep it simple
   ü Prototyping expense based on complexity of requirements, technology required, etc

- "Do it for me"

   § Develop prototype for my company

   § Define strategy on developing a virtual community

   ü Strategy engagement
   ü "How-to" plan on getting started
   ü Detailed plan to give clients "big picture" activities, skills and dollars required (checklist)
   ü Set up project to establish virtual community and manage the implementation of it