Multinational Working Group on Virtual Worlds

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Tri-Lateral Collaboration Group**

Tri-Lateral Focus Areas

Areas of Confluence/Convergence

A   Big Science as a Technology Driver

B   Innovative Applications Of Commercial Technology

Virtual Worlds – Social Network Models

A

B

Lead Country

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Virtual Worlds

- **Scope Statement:** With the explosion of worldwide access to Virtual Worlds (VW), users are rapidly moving beyond gaming and exploring how these worlds may be used to enhance and/or substitute for a range of activities that heretofore required physical presence. In the future they are projected to change the way activities such as education, collaborative actions, entertainment and politics are conducted. However, because many of these worlds (e.g. Second Life) are developed relatively independently of any particular purpose, they present an open environment in which users can create original digital resources and explore those created by anyone on the planet. Thus, they provide both an opportunity for the TriLat nations to exploit them and, just as likely, for others to use them to conduct nefarious activities.

- **Technology Areas of Concern**
    - Advances in VW technology, complexity and function
    - Advances in Wireless & Hard Wired External Interfaces
    - Advances In broadband access, especially mobile computing
    - Expansion of commercial and business activities in virtual worlds
    - Proliferation of tools for modeling and simulation
    - High power & cloud computing
    - Increase in on-line control of critical infrastructure and commercial operations

- **Key Strategic Questions:**
    - What are the defining characteristics of a VW and what are the implications of these characteristics for mass-collaboration at the scale of VWs?
    - How will advances in VW technology change how political and intelligence objectives are executed?
    - Can psychological and sociological behavior in VW be sufficiently correlated to real world behavior to allow using and interpreting WV activities?
    - What are future implications for cyber security and military operations given widespread and disparate use of WV's by different groups (industry, governments, VNSAs) and regions?
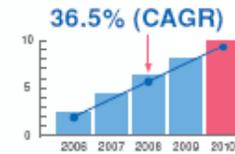
Emerging Technology
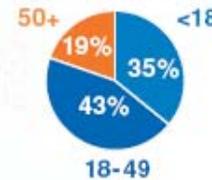**Tri-Lateral Collaboration Group**

QUICK FACTS

Number of online gamers worldwide:[7]

73 MILLION

Rate at which MMORPG economies are growing:[1]

36.5% (CAGR)

Average age of online gamers:[6]

27

Distribution of age:[2]

50+ 19%
<18 35%
43%
18-49

Game Player Gender:[5]

56% 43%

MALE **FEMALE**

"Real" money spent in 2006 by game players to acquire virtual assets or insights from other players:[4]
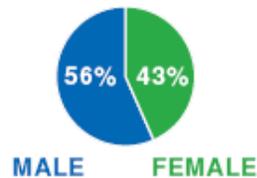
$1 BILLION

Average number of hours per week gamers spend playing online:[3]

22
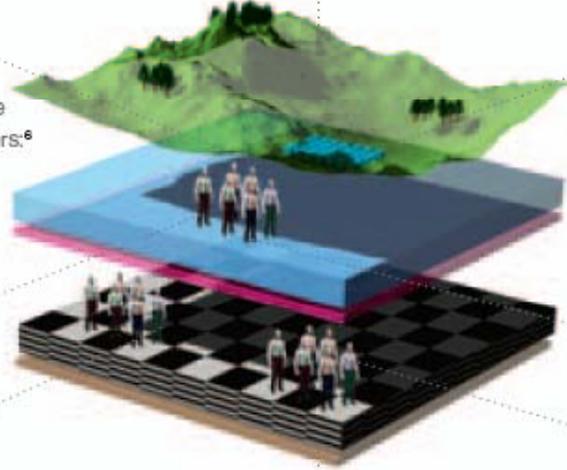
Technology Outlook

- **What are the technical aspects of Virtual World environments?**
    - What are the current worlds and their specific characteristics and capabilities?
    - What new capabilities are expected between now and 2010 (e.g., tactile, emotion)?
    - What impact of advances in technology (e.g., mobile bandwidth) have on VW characteristics and capabilities?

- **How are Virtual Worlds being used today?**
    - How they used to enhance/influence social interactions?
    - How are they being used commercially?
    - What Government (TriLat and others) programs are being conducted in or with VW's?
    - Do we know of any red use of VW's?

- **What are the possible new applications for VW's?**
    - Support of Political and Intelligence Objectives of the TriLat Nations
    - Aggression against TriLat Nations
        - How might the they be used to thwart our objectives?
    - Role in Cyber Security
        - What characteristics (good and bad) of cyber space translate to virtual worlds?

Scope of the Virtual World

Personal	Digital Buddy	Family	Group	Company	City	World
Corporate	CEO	Leadership Team	Department	Competitor	Industry	Market
Defense	Commander	Staff	Unit	Army	Battlefield	Theater
Intelligence	President	Cabinet	Government	Populous	Country	Alliance

3D Shooters … Right Here, Right Now.
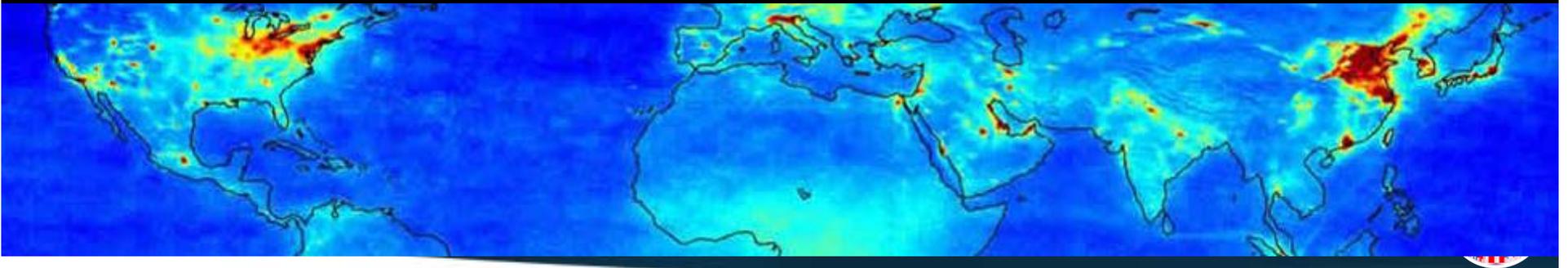Focus has been on very short time periods and very small virtual spaces.

MMOGs … Connect Past, Present, and Future.
Make other places and other times relevant to each other.

Virtual Worlds … Create Context, Connections, and History.
A digital world that is big enough to handle important issues.

US Research Samples

Organization	Summary
US Army RDECOM	Explorations of a new medium for collaboration and psychological treatment.
US Navy NUWC	Creation of Navy training and collaboration bases in Second Life
US Air Force AETC	MyBase project to create unified training portal and record keeping.
US DTRA	Experiments into hosting Second Life inside of military network.
US Army TRADOC	Creation of a combined recruiting and training portal in Second Life, Active Worlds, and Nexus
US Army National Guard	Creation of government owned VW product for training and collaboration (Nexus)
Univ of Florida	"Second China" explores use of AI characters in Second Life

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VW Technology Outlook

- Add NPC/AI characters to the virtual world
- Integrate with learning management for training applications
- Create secure infrastructure to support real operations
- Identify a real operational or training application
- Address conflict between user created content and the natural evolution of game product quality
- Integrate video teleconferencing into VW
- Create workable VW user interface for detailed avatar control

User Needs for IT Systems

Information — Collection and display of daily data feeds. News feeds and Blogs.

Office — Reading, Creating, and Managing office documents.

Maps — Viewing and Navigating maps and geographic data.

Social — Maintaining and Using Social Networks.

Entertainment — Delivering Entertainment. Movies and Music.

Games — Interactive, Immersive Entertainment.

Virtual Worlds — Representing and Integrating Large World Data Sets.

Integrated Source Data

Reliable Information

Real World Data

Perceived Data

Extrapolated Data

Virtual World
- Place
- People
- Purpose

Data & Models for All

Time

OR

COAA

Training

Intel Analysis

Vignettes for "What if?" excursions

Government Applications

	Federal	**Military**	**Intelligence**
Collaboration	Coordinated Departments	Mission & Planning	Multi-agency Analysis
Data Sharing	Integrated e-Government	Common Operating Picture	Common Knowledge
System Integration	Unified Citizen Portal	C4I Systems	CM, Sensor, Analysis

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Games create models appropriate for the purpose and environment.
Simulations try to use one model for every object. Uniqueness from data values.

Virtual Worlds need many heterogeneous models with an infrastructure that can enable them to work together. Similar to work that has been done on Agent standards.

Virtual World Data & Models

Data – Consistent, Integrated, Dynamic
About terrain, vegetation, cityscape, building interiors

Models – Heterogeneous, User Supplied, Modifiable
Of object behavior, communication networks, human behavior, group dynamics

Agency to manage, provide, and set standards for the data, models, and infrastructure in the Virtual World – Mapping and Simulation expertise needed

Conclusions

- Virtual Worlds are growing and creating a permanent place for themselves in research, technology, entertainment, and collaboration

- Proliferation of use will lead to their use for political and military actions

- Government interest is warranted based on national security