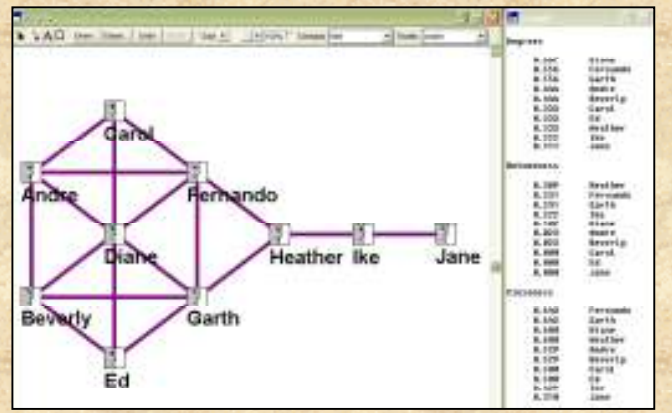
Creating Conversations in Virtual Worlds



Jeanne Holm, Tom Soderstrom, and Charles White
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January 17, 2008

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Generations Share Differently

- 1930-50's era generation
  - Focus on society
  - Friendships are forged through adversity

- 1960-70's era generation
  - Focus on community
  - Friendships forged through identification with a cause

- 1980-90's era generation
  - Focus on the individual
  - Friendships forged through individual goal accomplishment
- 2000's era generation
  - Focus on common interests
  - Friendships are created or thrive virtually…

- This leads us to the need to share across generations and communicate in different modalities

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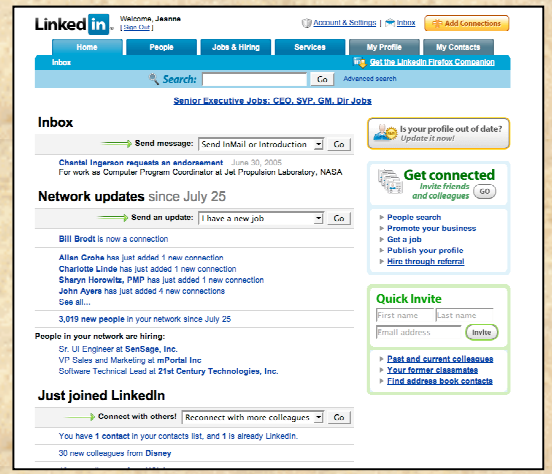
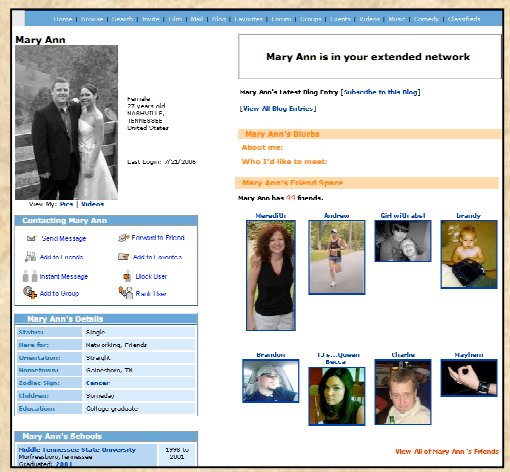
Making Traditional Networks Explicit

- A variety of tools today allow people to enter, track, and expand their social network
- The best of these allow many people to interact online and to allow social networks to connect and combine
- LinkedIn (www.linkedin.com) and Facebook (www.facebook.com) provide online social networks





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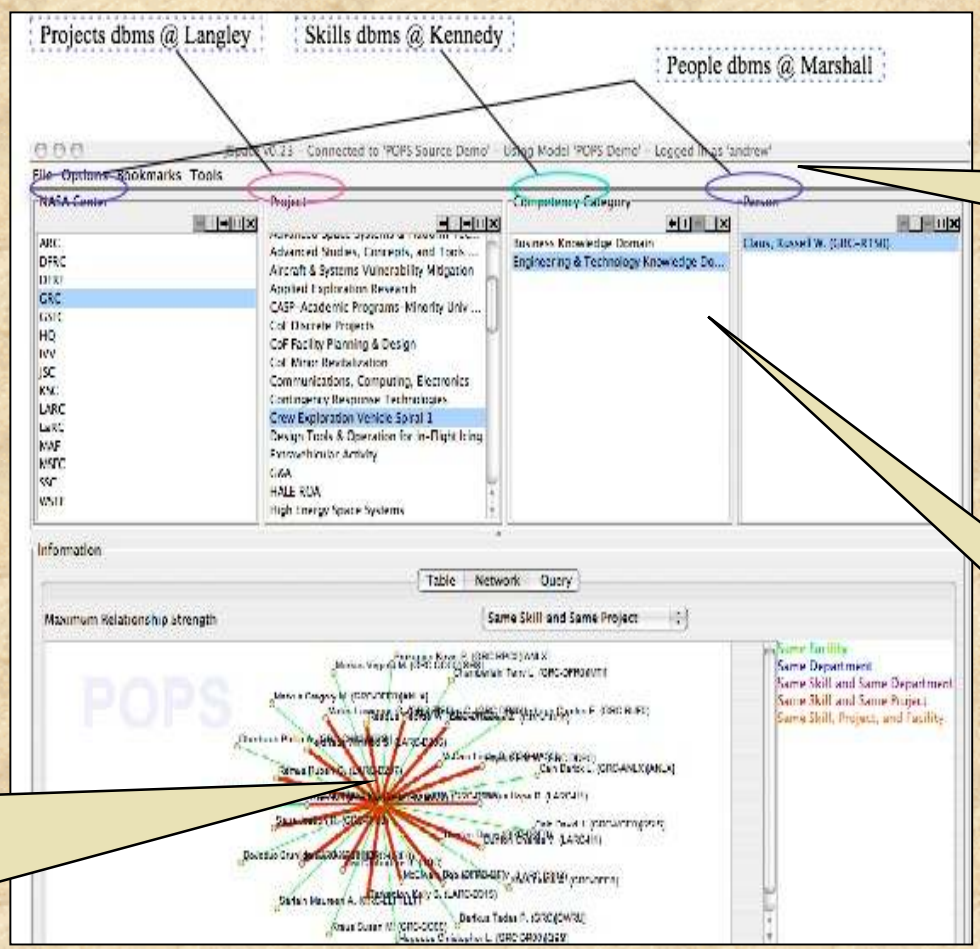
Finding NASA Experts via Social Networks



Pulls expert attributes from existing systems

Sort and browse location, project, and expertise

Social network map shows possible experts in relation to searcher

- POPS (People, Organizations, Projects, and Skills), led by Andy Schain

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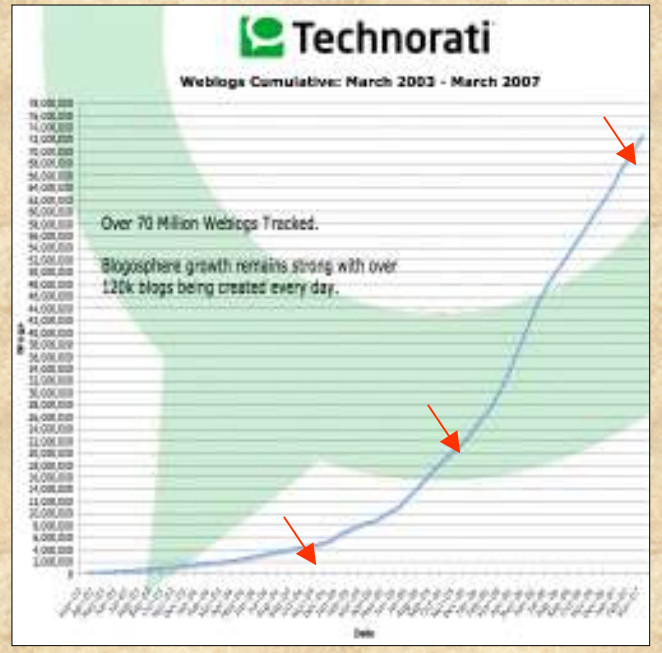
Numbers in the Web 2.0 Landscape

- 1 new blog per second (1.5M posts/day)
- 21% of blogs are active (15M in March'07)
- 3,200 hits on Wikipedia to 1 on Encarta
- Growing Photobucket.com, Kodakgallery, Flickr



- 4% of visits edit Wikipedia (the older generation)
- 75% of visitors to Wikipedia and YouTube are male
- YouTube passes Yahoo and Google in video searches

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Making the Network Matter

- Social networks are critical to organizations retaining and enhancing their critical knowledge yet have been left to grow organically
  - Undocumented growth puts your company at risk if key people leave
  - Networks can be the primary means of doing business (China--guangxi)
- Social and intellectual capital is developed through reciprocity
  - The way in which social networks are instantiated reveals the ways in which social capital is realized, such as friendship (one to few) vs. virtual communities (one to many)
- Trust is built over time and shared experiences
  - Personal experience ("I know you")
  - Shared experience ("We both worked on the same project")
  - Transfer of trust ("We know the same person who trusts us")
  - Shared values ("We agree to operate by the same rules")
- Given all the emphasis on knowledge sharing, there's a counterbalance with security of information (legal and personal)
  - Will this be used against me or my organization for competitive advantage?

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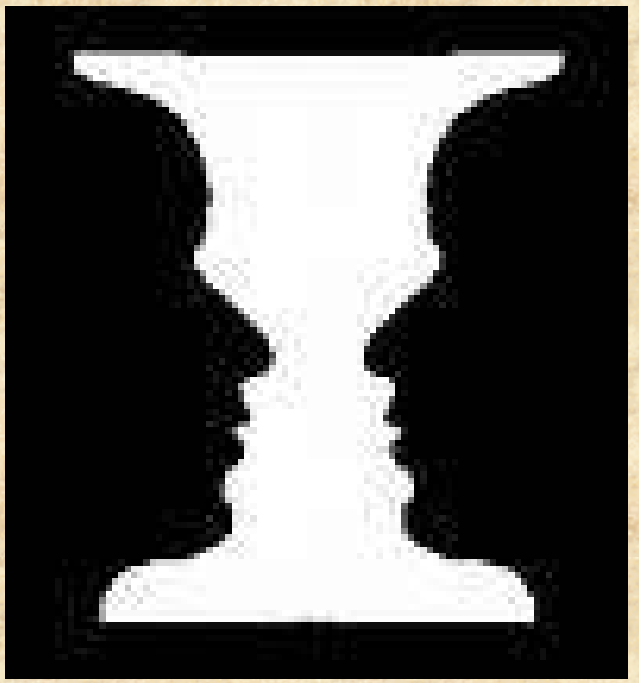
Paradigm Shift

- A radical departure from what you are used to "seeing"



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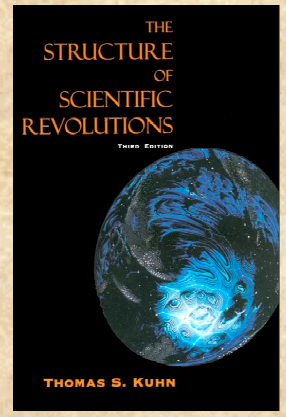
Defining the Competitive Edge

- One of the most powerful aspects of understanding social networks in an organization or field is to see how to connect several together
- Historically, innovation and breakthrough ideas and technologies occur at the edges and boundaries of networks
- Thomas Kuhn's *The Structure of Scientific Revolutions* describes such radical innovation as a paradigm shift
  - Astronomy: Ptolemy to Copernicus
  - Biology: Creation to Darwinian evolution
  - Politics: English monarchy to Magna Carta
- Where will your innovation occur?
- "Networks of the Moment"



When Is It Too Much?

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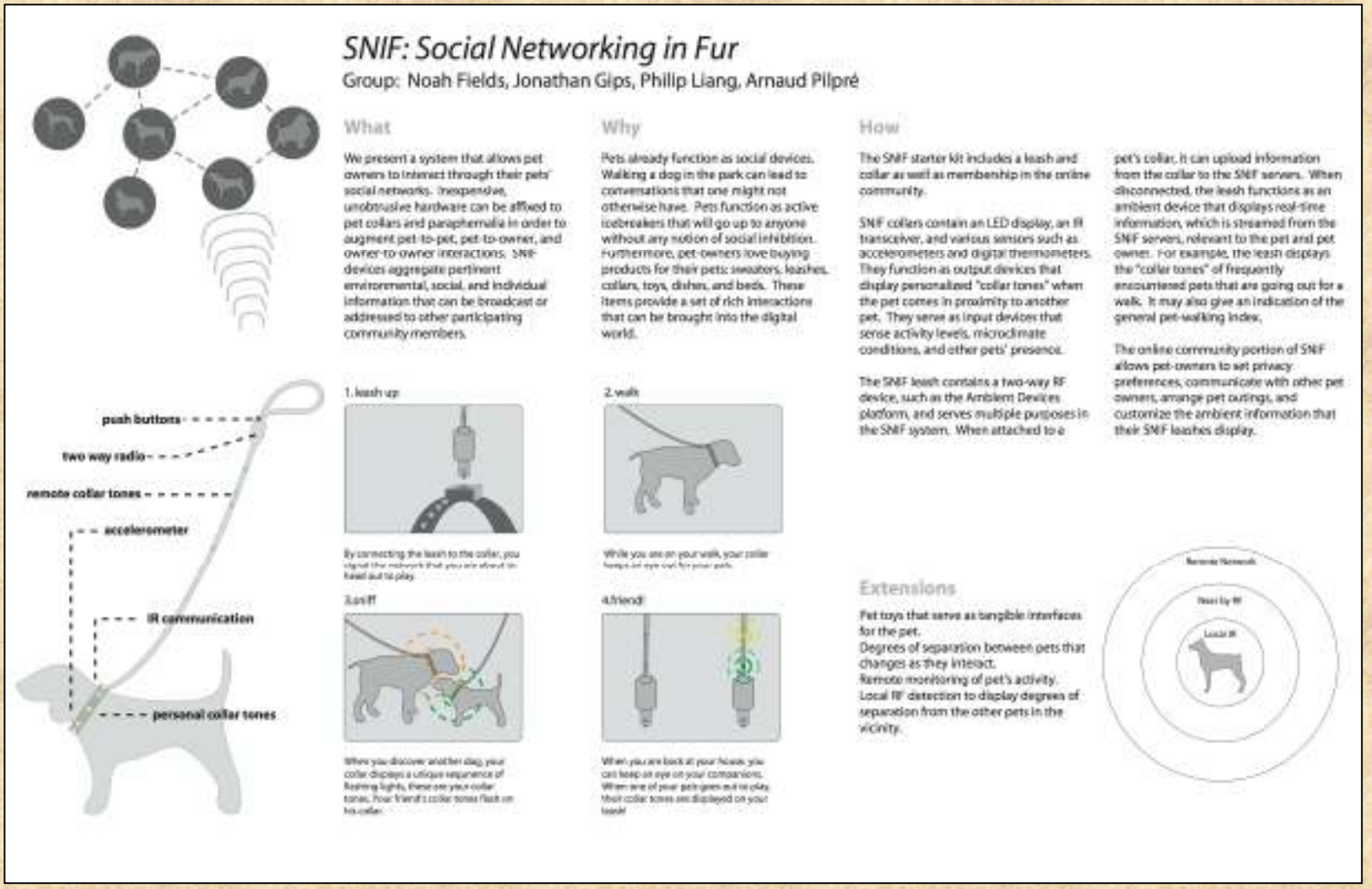

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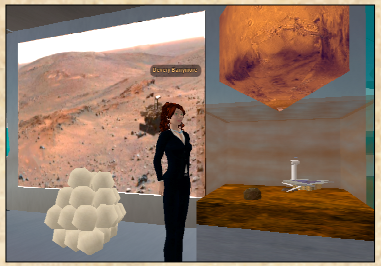
Virtual Worlds and Web 2.0

- Virtual worlds are 3D immersive, persistent environments where people meet, interact, make friends, and accomplish tasks
- In part, NASA's presence in the Second Life metaverse arose from the President's Commission on Implementation of U.S. Space Exploration Policy
- Overall impression of Web 2.0 adoption
  - Management wonders why we should do this
  - Young engineers wonder when we will do this
  - Mashups on demand for new insight
  - Software as a service
  - Richer, more interactive sites
  - Emphasis on increased productivity
  - Increased mobility, virtualization, and security questions
  - More and faster sharing and collaboration



Survey of NASA, FFRDCs, aerospace companies, and industry in spring 2007 by Tom Renfrow and Tom Soderstrom (JPL)

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What Are Our Others Doing?

- Real Life Government in Second Life group and activities
  - NOAA, NASA, State Department, Office of Management and Budgets, Swedish Embassy, Centers for Disease Control, National Institutes of Health, Library of Congress, and more
  - Citizen participation and services
- Aerospace industry (The Aerospace Corporation, International Spaceflight Museum, University space programs, Honeywell)
  - Marketing and sponsor engagement
  - Research and development for immersive collaboration
  - Global engineering teams

- General industry
  - Support for distributed workforce for meetings and collaborative work (decreased costs, increased employee satisfaction)
  - Marketing and sales

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What is NASA Doing?

- NASA notes that virtual worlds are an important space for action and has an agency-wide team for "NASA Immersive Synthetic Environments" (includes SL, virtual worlds, and gaming)
- NASA has four thrusts for virtual worlds
  - Mission support (modeling and simulation, collaboration, proposal development, and more)
  - Outreach (public engagement and participation)
  - Education (K-12 learning)
  - Training (internal)
- Activities in Second Life
- Current SL activities include
  - Explorer Island
  - NASA CoLab
  - Launch operations training
  - Modeling and simulation for Constellation Lunar Program
  - Celebrate NASA and Explorer 1 50-year anniversaries
  - Conference/event support and planning

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Virtual Spaces for Conversation

- Use of virtual worlds for sharing knowledge has evolved
  - Initial concepts for accessing static information via models, games, displays
  - Led into the development of avatars that allowed person to person and group sharing
  - Evolved yet again but in many ways was still constrained to be 3D visualizations and social networking, but augmented by with IM and email list serves
  - Now the combination of structured approaches to look at the way in which we construct physical virtual spaces and manage events and information sharing within them allows real interaction for decision making

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Phase 1: Running a Virtual Meeting

- One to many
- Meeting space
- Not much better than teleconference or dataconference
- Meetings included:
  - Just NASA people = teleconference (meeting and training)
  - Invitation to the public = conference or exhibit with greater sense of involvement (outreach and edutainment)

Phase 2: Hosting and Sharing a Virtual Event

- Few to many
- Conference venue, speaker(s) to audience
- Starts to allow better interaction (e.g., Wired NextFest)
- Avoids some travel otherwise required
- Allows presence in places not otherwise possible (like Mars)

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Phase 3: Attending a Virtual Rocket Launch

- Humans and robots to many
- Recreates real-life models, robots, and places
- Begins to make people really feel they are part of the NASA experience that cannot be replicated by other collaboration technologies
- Leads the way for modeling and simulation for mission support
- Captures the excitement and involvement of a shared activity*

I'm standing here in real life with tears in my eyes. I never thought I'd be able to attend a NASA launch and I feel like I'm really there.
--Second Life Attendee at Phoenix Launch

* http://www.sondasespaciales.com/index.php?option=com_expose&Itemid=36&album=251

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Phase 4: Virtual Workshops

- Many to many
- Creates a shared physical and virtual space for collaboration with people in virtual and real worlds
  - Blurs the line between your physical and virtual presences
- Example: International Workshop on Managing Knowledge for Space Missions
  - Held portions concurrently in real life and Second Life
  - Presenters in both venues, participants in both venues
  - Allowed more international participation than otherwise possible

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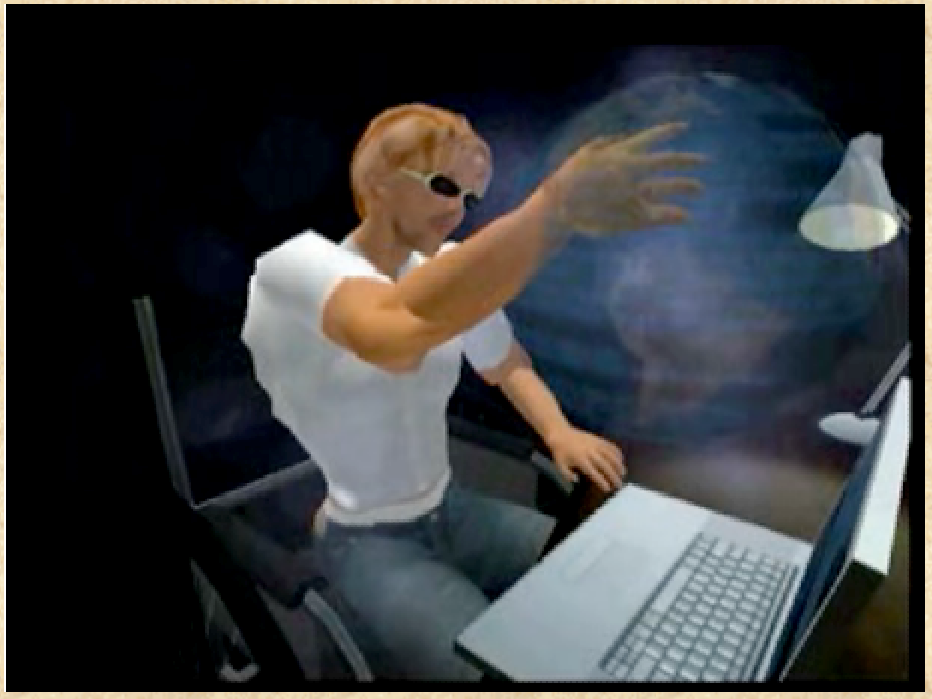
Phase 5: Community Space for Sharing

- Networked community or organization
- Allows exploration and interaction amongst members of the community without moderation
- Used for virtual engineering
- Provides venue for quick brainstorming (e.g., NASA mission concepts with partners and the public)
- Could include cyber-greeters to have an "always open" personal presence even when staff are away

Phase 7: What's Next?

- Virtual worlds create a way of interacting with others that transcends the bounds of physical spaces
- The structure of these worlds creates the types of conversations that occur and information that is shared in such spaces



http://www.youtube.com/watch?v=U6D9K9xTmt0

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