I-Room: A Virtual Space for Intelligent Interaction

An intelligent environment which acts as a knowledge aid to support collaborative teleconferences and meetings

Austin Tate
AIAI, University of Edinburgh

Ai Austin
Virtual University of Edinburgh

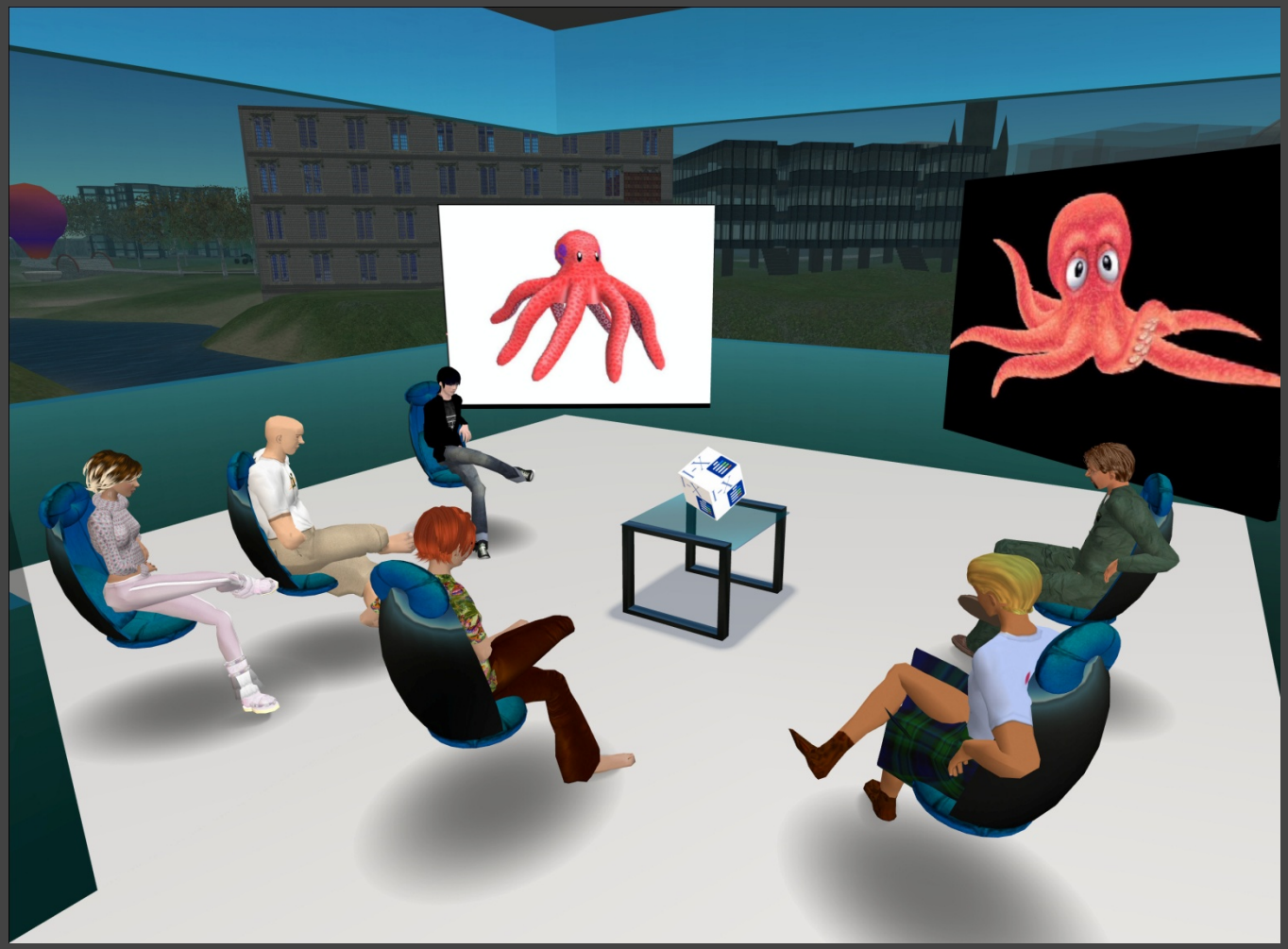
OpenVCE

I-Room: A Virtual Space for Intelligent Interaction

Low cost, simple setup, mixed-reality meetings spaces

I-Room: A Virtual Space for Intelligent Interaction

Distributed collaborative team support for production and review in the creative industries

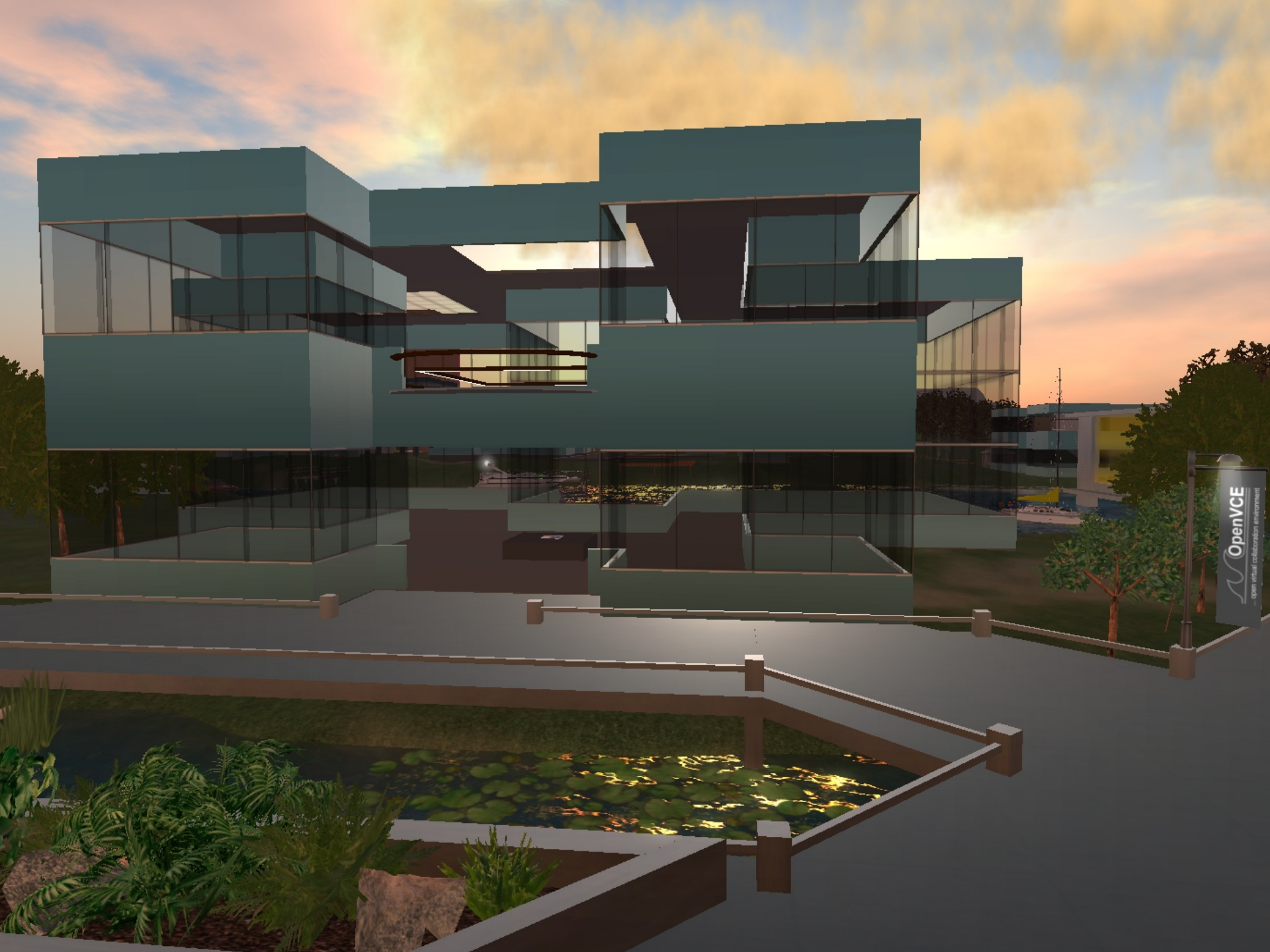


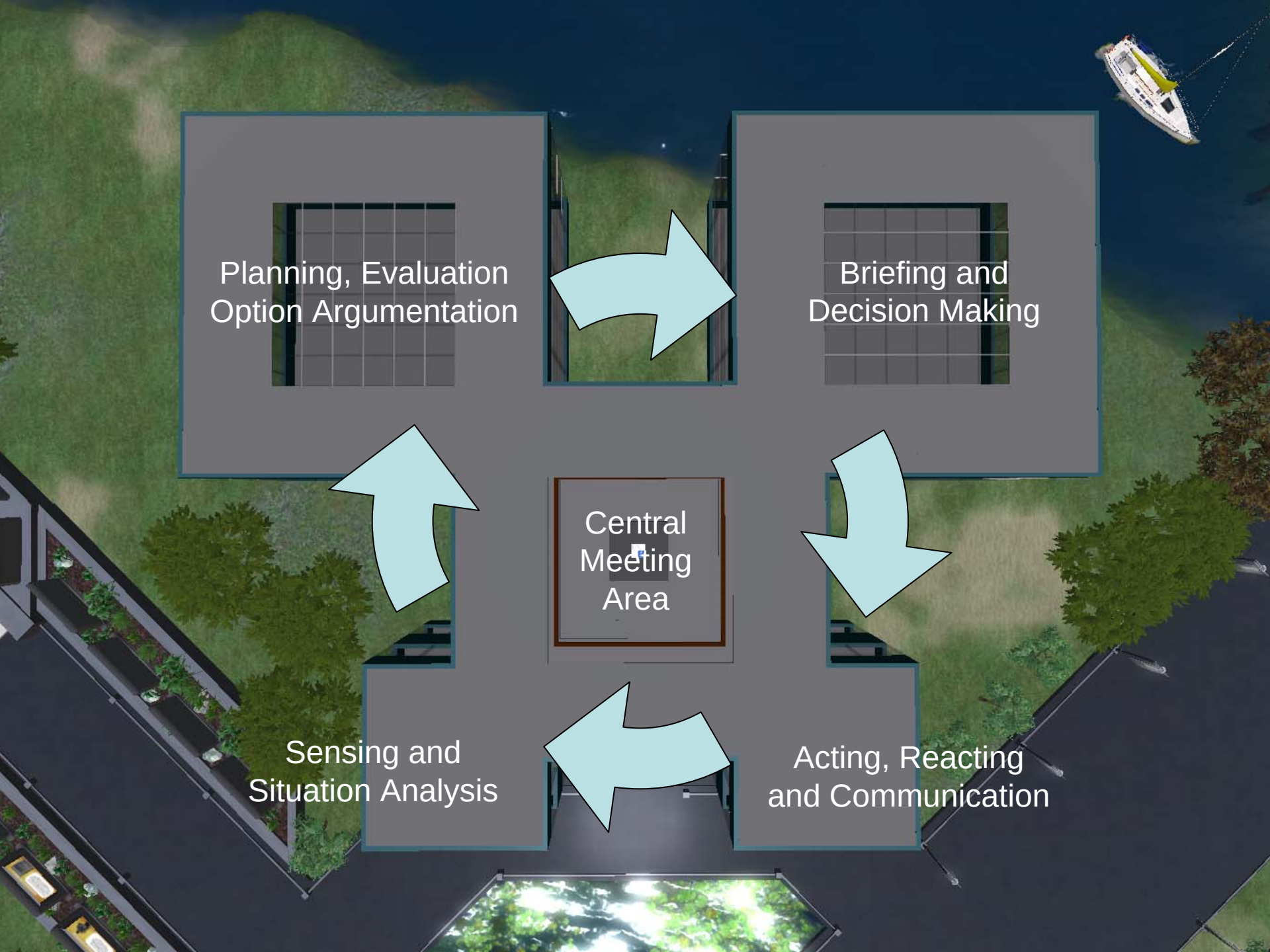
I-Room: A Virtual Space for Intelligent Interaction

Tutorial and commercial spaces

I-Room: A Virtual Space for Intelligent Interaction

Operations Centres, Brainstorming Spaces, Team Meeting Rooms, Training and Review Areas


OpenVCE
open virtual collaboration environment


Planning, Evaluation
Option Argumentation
Briefing and
Decision Making
Central
Meeting
Area
Sensing and
Situation Analysis
Acting, Reacting
and Communication


Second Life
File Edit View World Tools Help Advanced
VCE 132, 62, 22 (PG) - I-Zone
7:01 AM PDT
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Search
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Menu/Help
aiaiaustin (Ai Austin): #openvce I-Room Helper and I-Chat linkup now work to I-Zone rather than previous I-Room
aiaiaustin (Ai Austin): #OpenVCE MEET-4 strats at 2:30pm EDT for event reception - noSL Voice in Use - Text Only
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AIAI Gerhard Tomorrow
OpenVCE Karma Luckstone
OpenVCE JeffD Anda
OpenVCE Ai Austin
OpenVCE Brooks Appletor
OpenVCE Keg Runner
OpenVCE Skye Gears
OpenVCE Aura Atlass
Vue Associate SP Pizzicato
aiaiaustin (Ai Austin): #openvce MEET-4 event reception available - event URL is http://tr.im/openvcemeet4
aiaiaustin (Ai Austin): #openvce 3d-space-alt feed will be switched off to allow use of servers for harmonie Web tests for MEET-4
aiaiaustin (Ai Austin): #openvce MEET-4 now starting at http://tr.im/openvcemeet4
Twitter - SLTweets HUD
Twitter Status - #openvce
Twitter feed on #openvce
Skye Gears: Austin, your voice is noisy and not clear
Stand Up
Local Chat
Say
Gestures
Talk


Problem Dimension #4
Knowledge/Skills
NUS RidgeCat Member
Dragon Qendra
OpenVCE
Gerhard Tomorrow (Away)
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SP Pizzicato
OpenVCE
Ai Austin
Annoying Melody
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Jayson Gearhead
Ed Overland
No Phobos
OpenVCE Event Reception
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Chat Relay
I-Room Helper (off)
Acknowledged
Eleni Lubitsch
Stand Up
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Say
Gestures
Talk
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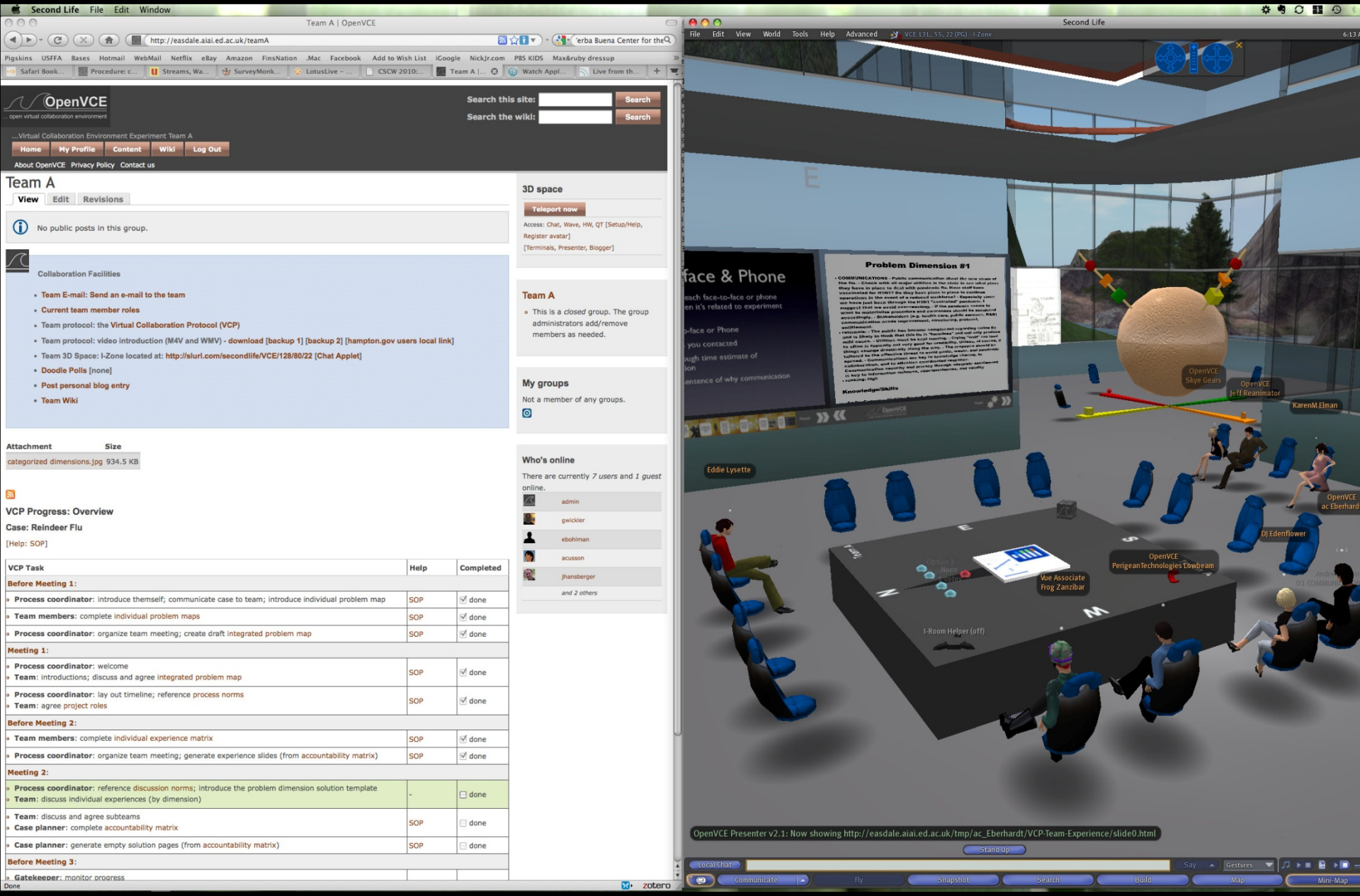
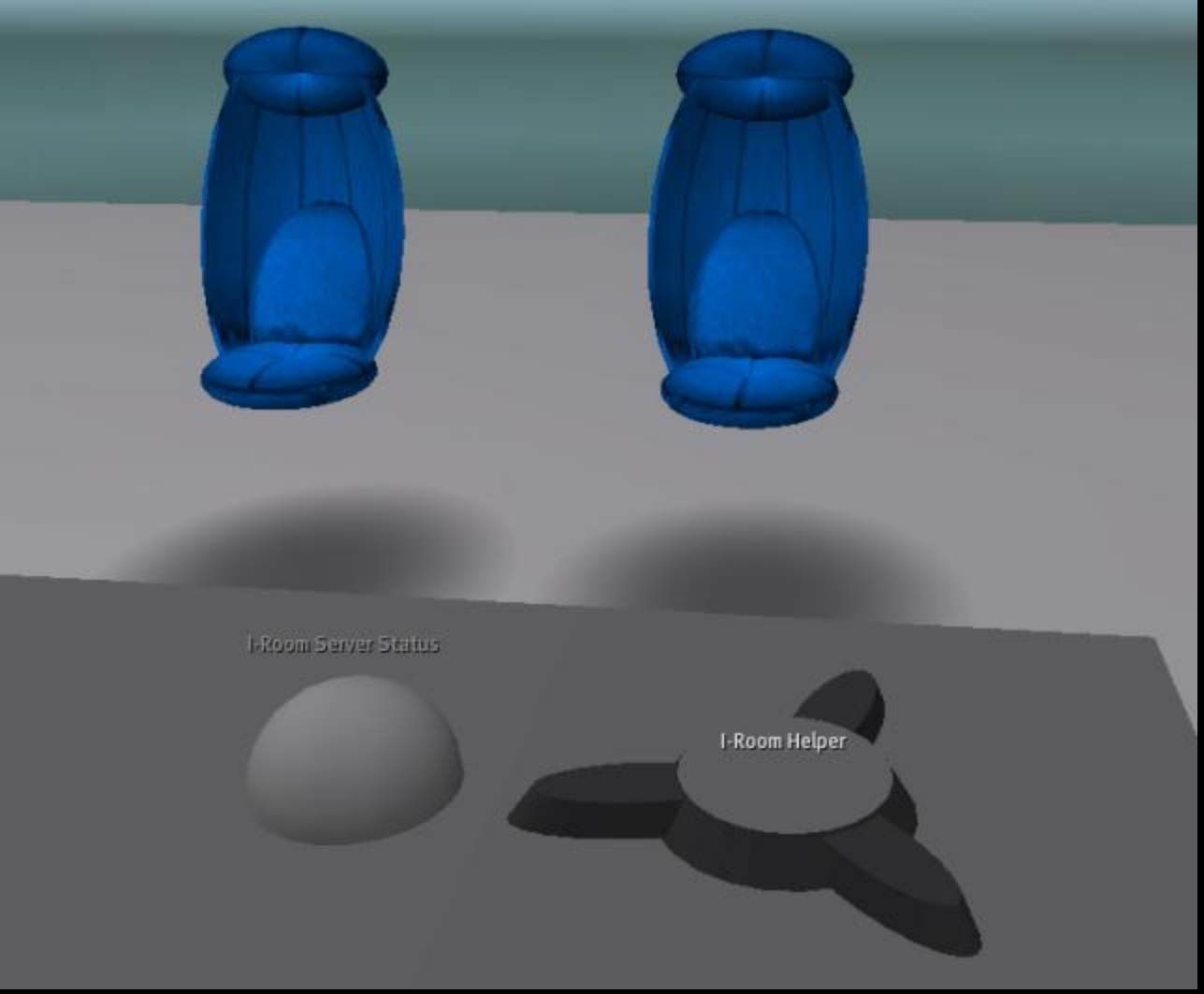
Second Life
Me
Communicate
World
Build
Help
Advanced
Develop
L$ 74,777
Buy L$
9:46 AM PDT
I-Zone, VCE - General
Search
I-Room: A Virtual Space for Intelligent Interaction
Trinity Rooney
Diana Grizot
Firery Broome
Owner
Theo Outlander
WorkingRelationships
Deb Quintessa
OpenVCE
Ai Austin
Tonito Alderson
RL <--> SL Scripter
AI Supercharge
Owner
Viking Zinner
Vue Associate
SP Pizzicato
Sato Michinaga
Academy of HRD
Rachelle Munro
Member
Pamela Varthader
Member
Joelle Yalin
Honda SL Design Team
JohnFrej Herzfeld
Light Sequent
Innovator
Serious Starsider
DougCaldwell Unplugged
OpenVCE Event Reception
Open University UK
Gardy Flux
Acknowledged
Anders Wildcat
Clear Clickers
Chat Relay
I-Room Helper (off)
Team A
Anders Cronstadt
AO OFF


Second Life File Edit Window
Team A | OpenVCE
http://easdale.aiai.ed.ac.uk/teamA
OpenVCE
... open virtual collaboration environment
Search this site:
Search the wiki:
Search
...Virtual Collaboration Environment Experiment Team A
Home
My Profile
Content
Wiki
Log Out
About OpenVCE Privacy Policy Contact us
Team A
View
Edit
Revisions
No public posts in this group.
Collaboration Facilities
Team E-mail: Send an e-mail to the team
Current team member roles
Team protocol: the Virtual Collaboration Protocol (VCP)
Team protocol: video introduction (M4V and WMV) - download [backup 1] [backup 2] [hampton.gov users local link]
Team 3D Space: I-Zone located at: http://slurl.com/secondlife/VCE/128/80/22 [Chat Applet]
Doodle Polls [none]
Post personal blog entry
Team Wiki
Attachment
Size
categorized dimensions.jpg 934.5 KB
VCP Progress: Overview
Case: Reindeer Flu
[Help: SOP]
VCP Task
Help
Completed
Before Meeting 1:
Process coordinator: introduce themself; communicate case to team; introduce individual problem map
SOP
done
Team members: complete individual problem maps
SOP
done
Process coordinator: organize team meeting; create draft integrated problem map
SOP
done
Meeting 1:
Process coordinator: welcome
Team: introductions; discuss and agree integrated problem map
SOP
done
Process coordinator: lay out timeline; reference process norms
Team: agree project roles
SOP
done
Before Meeting 2:
Team members: complete individual experience matrix
SOP
done
Process coordinator: organize team meeting; generate experience slides (from accountability matrix)
SOP
done
Meeting 2:
Process coordinator: reference discussion norms; introduce the problem dimension solution template
Team: discuss individual experiences (by dimension)
-
done
Team: discuss and agree subteams
Case planner: complete accountability matrix
SOP
done
Case planner: generate empty solution pages (from accountability matrix)
SOP
done
Before Meeting 3:
Gatekeeper: monitor progress
3D space
Teleport now
Access: Chat, Wave, HW, QT [Setup/Help, Register avatar]
[Terminals, Presenter, Blogger]
Team A
This is a closed group. The group administrators add/remove members as needed.
My groups
Not a member of any groups.
Who's online
There are currently 7 users and 1 guest online.
admin
gwickler
ebohlman
acusson
jhansberger
and 2 others
Done
zotero
Second Life
File Edit View World Tools Help Advanced
Problem Dimension #1
OpenVCE Skye Gears
OpenVCE Jeff Reanimator
KarenM Elman
Eddie Lysette
OpenVCE ac Eberhardt
DJ Edenflower
OpenVCE PerigeanTechnologies Lowbeam
Vue Associate Frog Zanzibar
I-Room Helper (off)
OpenVCE Presenter v2.1: Now showing http://easdale.aiai.ed.ac.uk/tmp/ac_Eberhardt/VCP-Team-Experience/slide0.html
Stand Up
Local Chat
Say
Gestures
Communicate
Fly
Snapshot
Search
Build
Map
Mini-Map


I-Room Server Status
I-Room Helper

Home Office JOC

File New Edit Tools Help Test

Issues

	Description	Annotations	Priority	Action
	Consider how to handle newcomers		Normal	

Activities

	Description	Annotations	Priority	Action
▼	**hold-meeting I-Room-Demo**		Normal	**Refine using hold-meeting**
▼	**start-meeting I-Room-Demo**		Normal	**Refine using start-meeting**
	welcome-participants I-Room-Demo		Normal	Done
	note-apologies I-Room-Demo		Normal	Done
	agree-end I-Room-Demo		Normal	Done
	agree-previous-minutes I-Room-Demo		Normal	Done
▼	**address-action-items I-Room-Demo**		Normal	**Refine using address-action-items**
	discuss-action "Davie Munro" "Obtain Security Service Input"		Normal	
	discuss-action "Ai Austin" "Read Ops Pineapple Briefing"		Normal	
	address-agenda-items I-Room-Demo		Normal	
	discuss-any-other-business I-Room-Demo		Normal	
	finish-meeting I-Room-Demo		Normal	
	setup-next-meeting		Normal	

JOC I-Room Process Panel
Based on I-X Technology

Home Office JOC

File New Edit Tools Help Test

Issues

Description	Annotations	Priority	Action
Consider how to handle newcomers		Normal	

Activities

Description	Annotations	Priority	Action
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agree-end I-Room-Demo		Normal	Done
agree-previous-minutes I-Room-Demo		Normal	Done
address-action-items I-Room-Demo		Normal	**Refine using address-action-items**
discuss-action "Davie Munro" "Obtain Security Service Input"		Normal	
discuss-action "Ai Austin" "Read Ops Pineapple Briefing"		Normal	
address-agenda-items I-Room-Demo		Normal	
discuss-any-other-business I-Room-Demo		Normal	
finish-meeting I-Room-Demo		Normal	
setup-next-meeting		Normal	

- Done
- N/A
- Escalate to Cabinet Office
- Pass to MoD
- Pass to OGD
- Delegate to Local Government
- Delegate to Emergency Services
- Delegate to Security Service
- Carry to next meeting

JOC I-Room Process Panel
Based on I-X Technology

<I-N-C-A> Framework

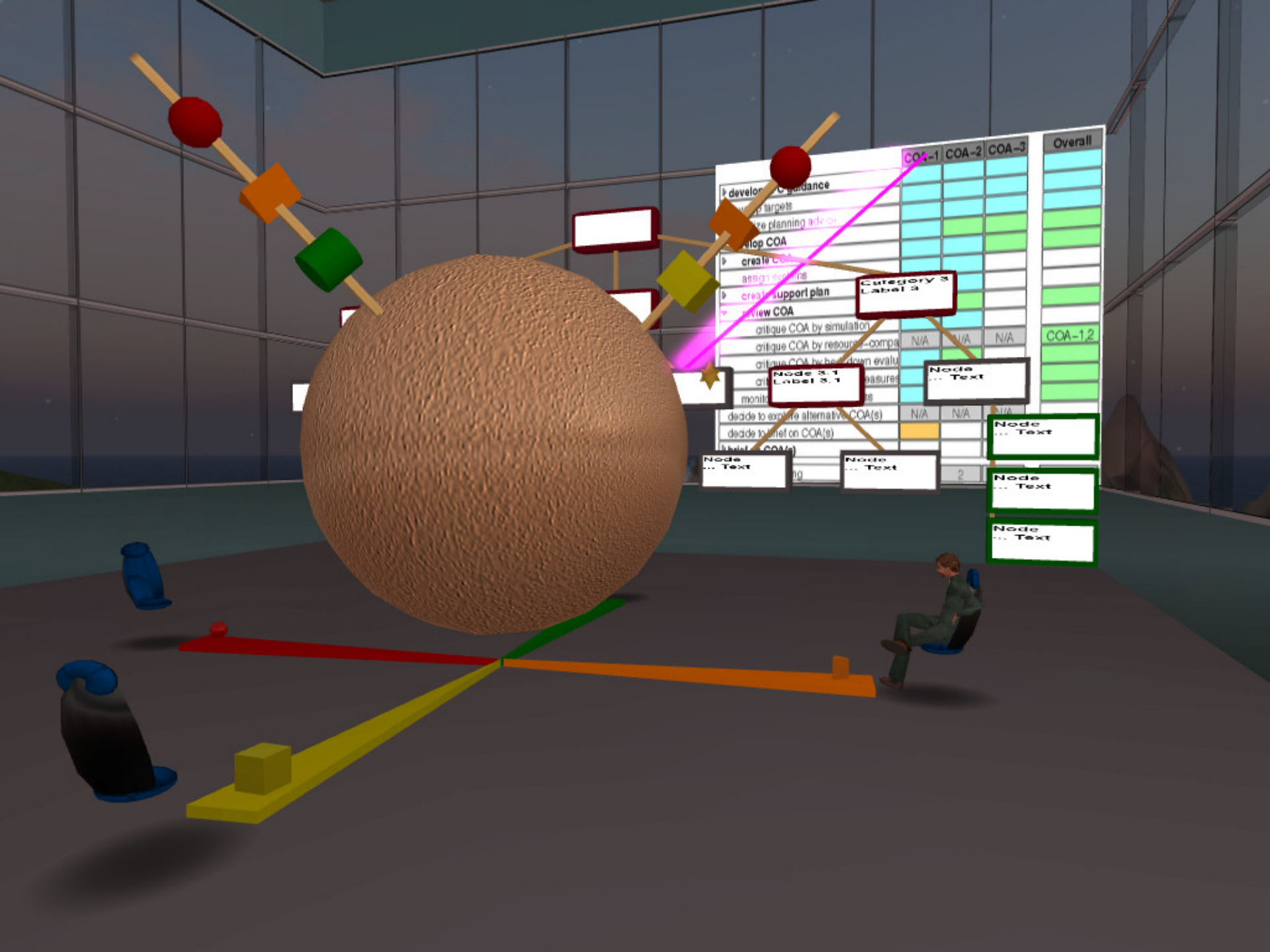
- Common conceptual basis for sharing information on processes and process products
- Shared, intelligible to humans and machines, easily communicated, formal or informal and extendible
- Set of restrictions on things of interest:
  - I Issues e.g. what to do? How to do it?
  - N Nodes e.g. include activities or product parts
  - C Constraints e.g. state, time, spatial, resource, …
  - A Annotations e.g. rationale, provenance, reports, …
- Shared collaborative processes to manipulate these:
  - Issue-based sense-making (e.g. gIBIS, 7 issue types)
  - Activity Planning and Execution (e.g. mixed-initiative planning)
  - Constraint Satisfaction (e.g. AI and OR methods, simulation)
  - Note making, rationale capture, logging, reporting, etc.
- Maintain state of current status, models and knowledge
- I-X Process Panels (I-P^2) use representation and reasoning together with state to present current, context sensitive, options for action

Mixed-initiative collaboration model of "mutually constraining things"

I-P^2 aim is a Planning, Workflow and Task Messaging "Catch All"

- Can take ANY requirement to:
  - Handle an issue
  - Perform an activity
  - Respect a constraint
  - Note an annotation
- Deals with these via:
  - Manual activity
  - Internal capabilities
  - External capabilities
  - Reroute or delegate to other panels or agents
  - Plan and execute a composite of these capabilities (I-Plan)
- Receives reports and interprets them to:
  - Understand current status of issues, activities and constraints
  - Understand current world state, especially status of process products
  - Help user control the situation
- Copes with partial knowledge of processes and organizations


I-Zone RB, VCE (103, 36, 22) - General
Search
https://wave.google.com/wave/?nouacheck&pli=1#res
Google wave preview
Navigation
Inbox
All
By Me
Requests
Extensions
Settings
Trash
Spam
SEARCHES
FOLDERS
Contacts
Austin on the wave
Search contacts
Dave Usually Online
Michael waving for IDEA lab
Robert Stalking Fun
J
Public
chris.walton@googlew
geetikas@googlewave
Manage contacts
Inbox 1 - 11 of 11
New wave
in:inbox
Follow
Unfollow
Archive
Inbox
Spam
A wave for wavers in Informatics@Edinburgh
2:38 pm
5 msgs
~ OpenVCE Wave This wave is now showing
12:35 pm
9 msgs
Invite others to Google Wave – Google Wave is
12:27 pm
1 msg
Uses of Google Wave in the classroom – ... Ho
Feb 26
99+ of 147
Drupal Wave – ... This would be totally awesome!
Feb 11
62 of 66
BAD WOLF opensim IAR library – ... big categories
Feb 11
6 of 8
Hi Dave, trying the Wave between us. – I also think
Jan 10
3 msgs
Profile -- Austin Tate – Austin Tate on the wave
Dec 14, 2009
1 msg
Austin Tate's Test Wave – Use this wave to try
Dec 14, 2009
1 msg
Welcome to Google Wave – Click the links below t
Oct 25, 2009
1 msg
Extensions Gallery – Google Wave extension
Sep 30, 2009
1 msg
Save search
Austin | Feedback | Terms | Privacy | Help | Sign out
Reply
Edit
Playback
Unfollow
Archive
3 more
You gave everyone access.
You, Michael and 4 others:
12:31 pm
OpenVCE Wave
This wave is now showing for Second Life Viewer 2.0 users in the I-Zone@VCE (SW corner) and editable by those who have Google Wave logins.
This is the OpenVCE Wave
View it with Firefox, Safari, Chrome or Second Life viewer. For Internet Explorer use Chrome Plug-in
WaveID w+VRFLywzMA
Do you plan to come back into this Wave?
Yes
No
Austin Tate
Michael Fourman
Leo
Dave Fliesen
Kyle Usbeck
JeanRicard Brock
OpenVCE AI Austin
Map
Satellite
Hybrid
Terrain
Tags: OpenVCE
Austin Tate
AIAI, University of Edinburgh
Click here to chat.
Speak
Gesture
Move
View


COA-1
COA-2
COA-3
Overall
develop COA
create support plan
review COA
critique COA by simulation
critique COA by resource-comp
N/A
N/A
N/A
COA-1,2
decide to explore alternative COA(s)
decide to brief on COA(s)
Category 3
Label 3
Node 3.1
Label 3.1
Node
... Text
Node
... Text
Node
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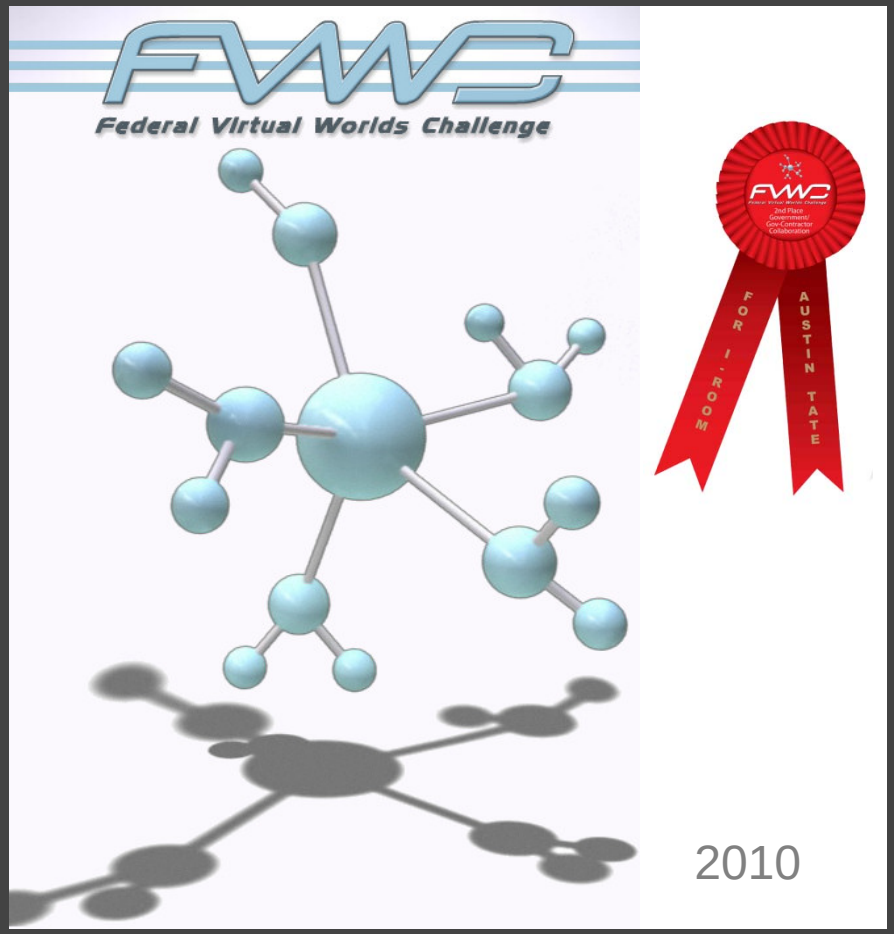
I-Room: A Virtual Space for Intelligent Interaction

More information and papers at http://openvce.net/iroom

YouTube video at http://openvce.net/iroom-tour



OpenVCE

I-Room: Further Technical Detail

- Mixed Initiative Task Support
- I-Room Underlying Concepts
- I-X Task Support
- Further Images
- FVWC 2010 Larger Version
- Proposal for work on “Language Games” for interaction protocols for virtual collaboration

I-Room: Mixed-initiative Collaboration

Truly distributed mixed initiative collaboration and task support is the focus of the I-Room, allowing for the following tasks:

- situation monitoring
- sense-making
- analysis and simulation
- planning
- option analysis
- briefing
- decision making
- responsive enactment

I-Room: Underlying Concepts for Effective Collaboration

Underlying the use of the I-Room for collaboration and its ability to link human participants to a range of computational services and intelligent systems support are the following concepts:

- A mixed-initiative collaborative model for refining and constraining processes and products;
- Principled communication based on sharing issues, activities/processes, state, event, agents, options, argumentation, rationale, presence information and reports through the <I-N-C-A> ontology;
- The use of the <I-N-C-A> ontology also for representing the products that are developed during meetings and through the collaborative process;
- The use of I-X Technology and its suite of tools to provide task support;
- The use of issue-based argumentation, through the use of the Questions-Options-Criteria (QOC) methodology and links to the Compendium sense-making tool;
- The use of agent presence models as in instant messaging;
- The use of I-X “I-Space” to support awareness of agent context, status, relationships within an organisational framework, capabilities and authorities;
- The use of an “I-World” of discovery of relevant agents and services, along with their capabilities, authorities and availability;
- The use of the “Beliefs-Desires-Intentions” (BDI) model of agents and their relationship to world state, context and other agents.
- The use of external shared repositories of processes, products, media and other resources.
- These technologies, methodologies and ontologies will form the platform on which the research can be based.

I-Room: I-X Task Support

I-X is a suite of tools designed to aid in processes that create or modify one or more “products” (such as a document, a plan, a physical entity or even some desired changes in the world state). The I-X approach involves the use of shared models for task-directed communication between human and computer agents.

An I-X agent (or system of agents) carries out a process, which leads to the production of (one or more alternative options for) a product. The I-X agent/system considers this synthesised artefact to be represented by a set of constraints on the space of all possible artefacts in the application domain. This provides a common conceptual basis for sharing information on processes and process products. It is intended to provide a framework that is shared, intelligible to humans and machines, easily communicated, as formal or informal as the situation demands, and extendible.

The underlying conceptual information-sharing model on which I-X is based is the <I-N-C-A> (Issues-Nodes-Constraints-Annotations) ontology which represents a set of restrictions on processes or products:

- Issues: e.g. what to do? How to do it?
- Nodes: e.g. include specified activities or product parts
- Constraints: e.g. temporal, spatial, or on resources
- Annotations: e.g. rationale, provenance, progress

To move towards achieving the goals of the collaboration, an I-X agent or system repeatedly moves through cycles of handling issues and managing domain constraints. To do this, a number of differing ‘mixed-initiative’ collaborative processes can be invoked, including:

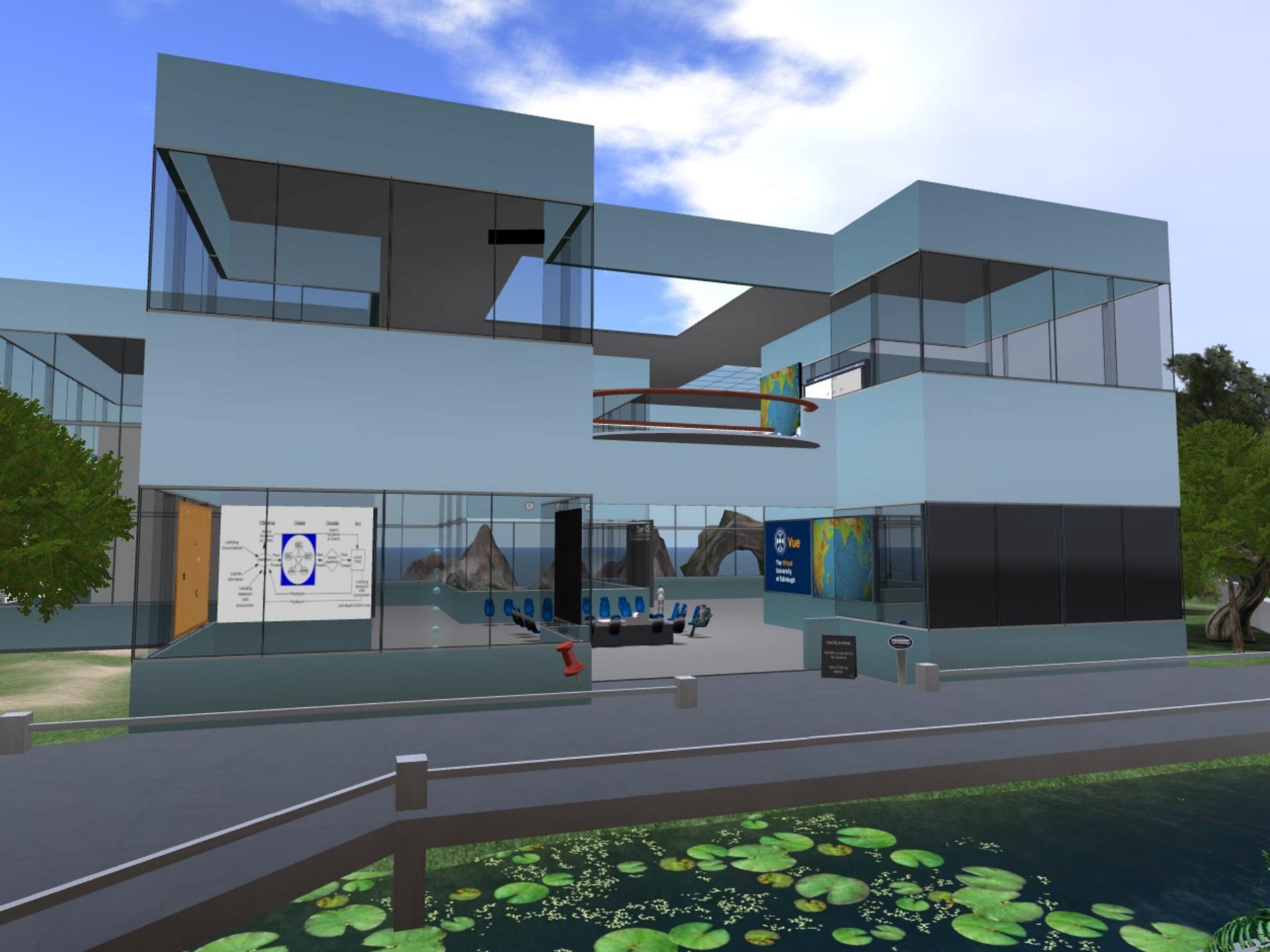
- Issue-based sense-making, e.g. such as the gIBIS approach with its 7 question types
- Activity planning and execution
- Constraint Satisfaction, using AI and OR methods, or simulation
- Note-making, rationale capture, logging, reporting

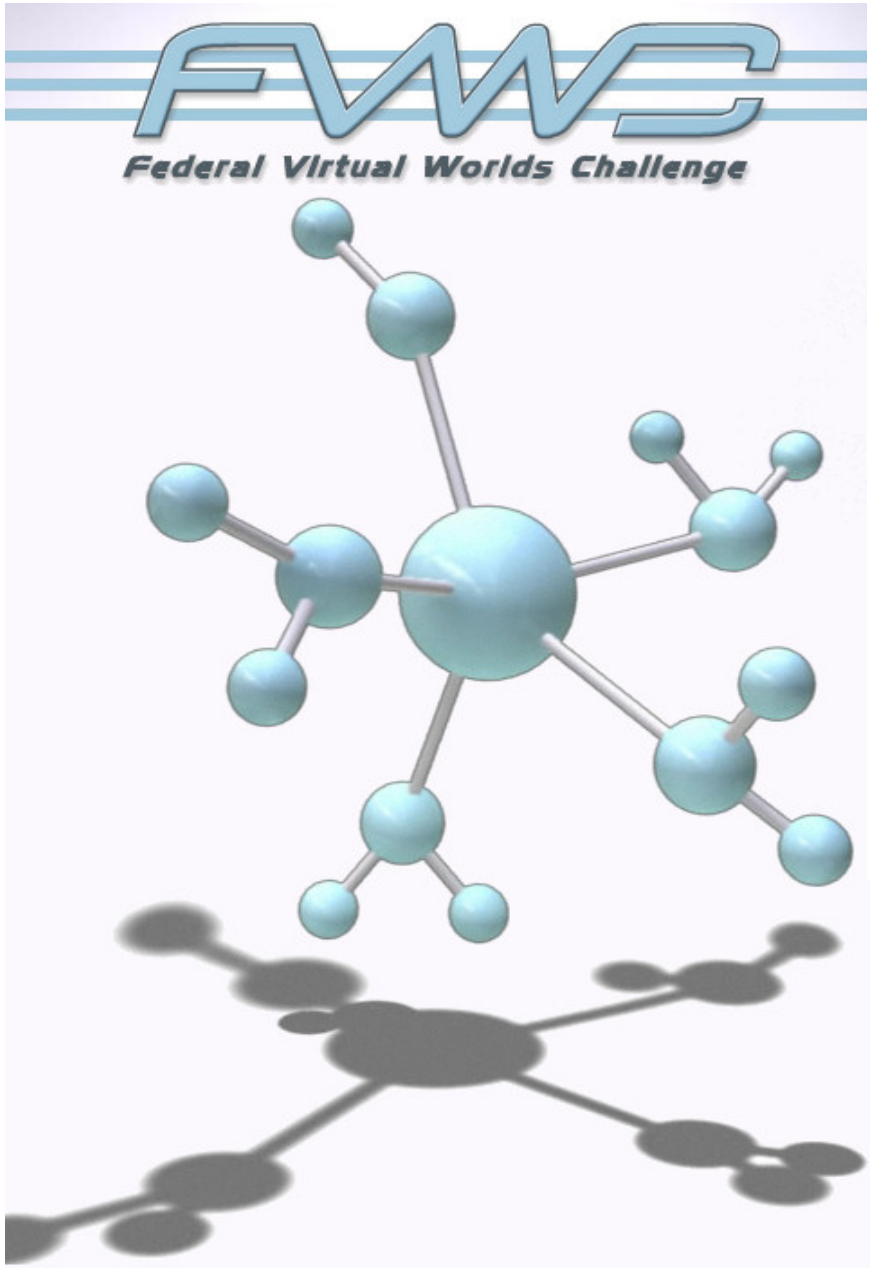
The I-X Process Panel (I-P2) (Tate et al. 2002) provides the principal interface for a human user of an I-X system; its underlying representation and reasoning act on the current world state to present the user with context-sensitive options for action. The aim is to provide a planning, workflow and communications ‘catch all’ for the user. On behalf of its user, an I-P2 can accept process-level activities to:

- Handle an issue
- Perform an activity
- Respect a constraint
- Note an annotation

Where appropriate, it can suggest performing these activities through:

- Manual performance
- The invocation of internal or external capabilities
- Delegation to other agents or services
- Planning and executing a composite of these approaches


Observe
Orient
Decide
Act
Vue
The Virtual University of Edinburgh


FVWC
Federal Virtual Worlds Challenge


FVWC
Federal Virtual Worlds Challenge
2nd Place
Government/
Gov-Contractor
Collaboration
FOR I. ROOM
AUSTIN TATE

2010