IMSC has developed and currently supports the following three IIP Projects:

(1) Interdisciplinary Initiative Project (IIP)
Chojo: A mobile gaming research project
Collaboration Between IMSC and
USC Cinema School's Interactive Division
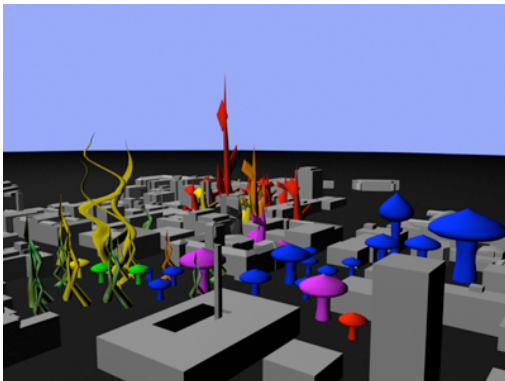
1.   Research Team

Project Leaders: Victor LaCour, *IMSC*
                         Scott Fisher, *School of Cinema Television*

Other Faculty: Prof. Suya You, *IMSC*

Post Doc(s):   Diego Borro, Post-Doctorate Fellow, IMSC

Graduate Students: William Carter, Todd Furmanski, Prasanna Joshi, Kurt MacDonald,
   Tripp Millican

Overview 3d map showing movement
of players and 3D garden virtual objects.

IMSC team and Cinema School team discussing
mobile game architecture in the game's "projection room".

2.   Statement of Project Goals

The goal of this research collaboration between IMSC and USC Cinema School's Interactive Division is to create a persistent virtual world that mirrors the USC campus, and to develop engaging content that exists in that alternative space. Using mobile devices, students walk through the USC campus leaving behind virtual fragments, represented by small 3d Models, as they walk. These objects exist on a virtual world embedded upon a 3d Model of the USC campus. Mobile users, using PDAs are able to create new objects, and peek inside the space they are helping to develop. As each object is dropped, it retains a set of unique behaviors, and will interact with other elements in the virtual world. The result will be an emerging, complex series of ecosystems that give life to the virtual space and propel users and viewers alike to engage with the world.
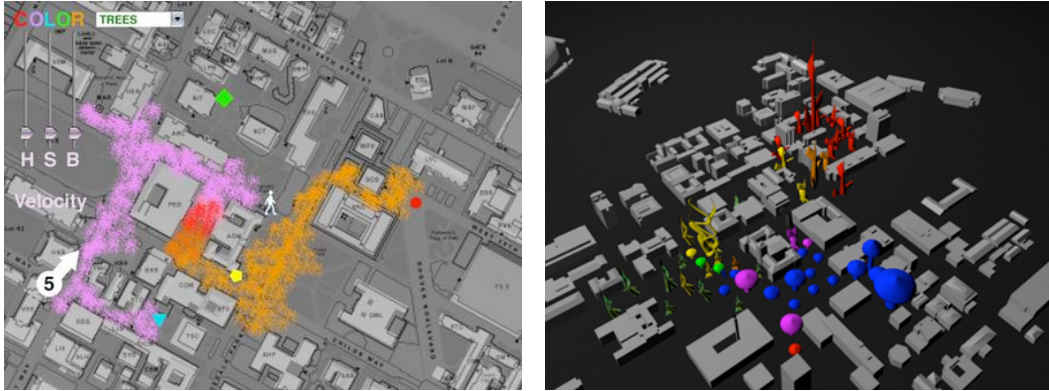
Interactive 2D campus viewer (shown left) displays the players positions and
created virtual objects on the mobile device while the
3D viewer (shown right) displays similar data within a 3D context on the projected kiosk 3D display.

3.   Project Role in Support of IMSC Strategic Plan

Please see above introduction section.

4.   Discussion of Methodology Used

This system will utilize GPS data taken from the player's mobile devices, providing the player's position, velocity, and direction of movement. These variables will generate player position and create virtual garden objects via a 2d overview screen. The mobile device will also send these variables via a wireless network to the game server, which will then generate a 3D representation of both the players and the virtual garden objects within a 3D campus model. The PDA can also retrieve of "snapshot" of this 3D view from the server. This "snapshot" will correspond to the player's current position. The type of virtual garden object created by the player is determined by walking though different "activation point" areas across campus. The velocity of the player's movement determines the size, shape, and color of the virtual garden objects created. By moving across the campus the players will create a virtual garden that will interact dynamically with other garden objects. For example certain plants can cause other plants to change form, color, or possibly die. The overall game rules design can lead to competition-based games, cooperative play, or random play experiences.

5.   Short Description of Achievements in Previous Years

This is a new project, see below for achievements.

5a.   Detail of Accomplishments During the Past Year

Due to the projects scale and scope much of the last six months have been devoted to mobile game design. Cinema students spent time developing out different proposals for various mobile oriented games. Team mentors from both IMSC and the Cinema school then evaluated these proposals. After a treatment was chosen, work began on refinement of game rules and game functionality. Concurrently, IMSC team members were assembled based on interest and proficiency and funding for student involvement was secured. This project is also, in part, an extension of IMSC work previous developed with the Augmented Virtual Environment (AVE).

A model had been created using rough LIDAR data taken from aerial LIDAR scanning of the USC campus. IMSC developed an application by which to refine the rough point data model. This refined model and the model viewer is currently integrated into the CHOJO project. The last three months have been devoted to collaborative development of the project where by both cross discipline teams have evolved the game architecture. Within the last month, work has begun as the IMSC team is developing the GPS coordination as well as the mobile device's 2d map, buttons, and 3d platform.

6.   Other Relevant Work Being Conducted and How this Project is Different

N/A

7.   Plan for the Next Year

See Below.

8.   Expected Milestones and Deliverables

We expect to have a workable prototype by July/August 2004

9.   Member Company Benefits

N/A

10.   References

N/A