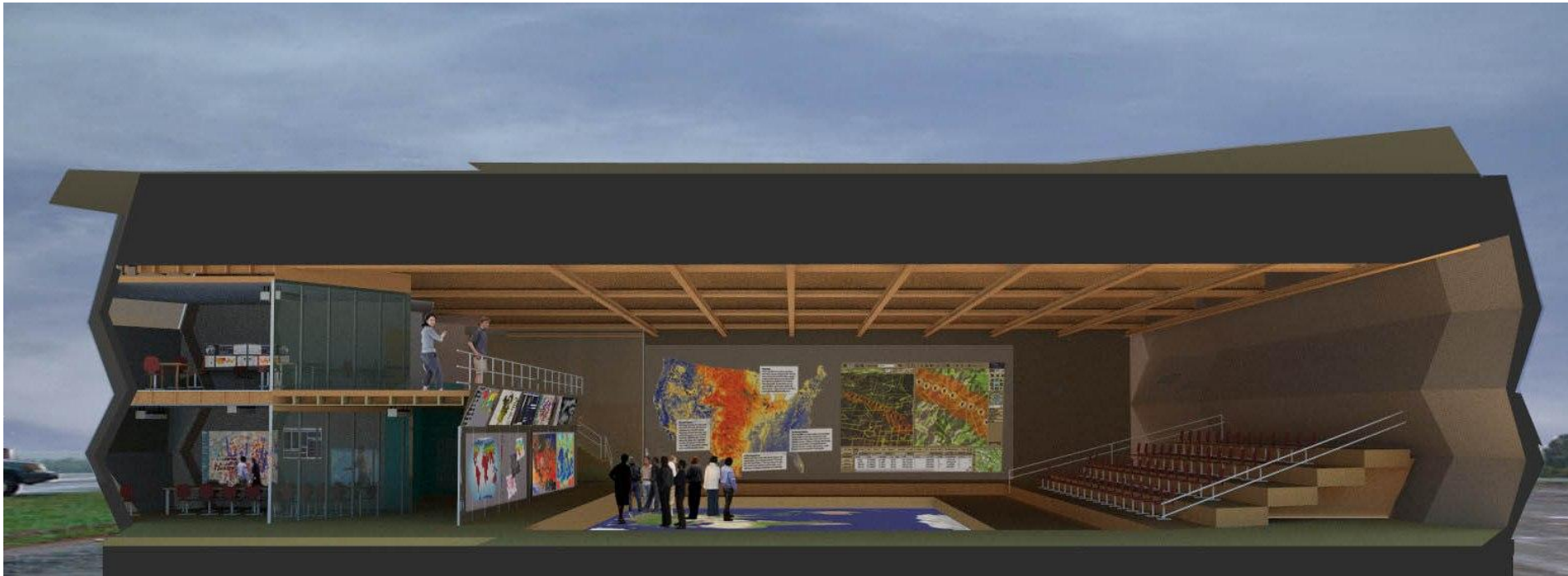


World Resources Simulation Center



www.wrsc.org

A Project of the
Global Energy Network Institute (GENI)
www.geni.org

World Resources Simulation Center



The WRSC is a visualization center where we can literally “see” the critical trends of global and regional issues and project options and consequences of different strategies to allow policymakers and business leaders to make more sustainable choices for our planet.



Artist's rendering of the WRSC



Foundation



The foundation for the World Resources Simulation Center and GENI is born from the question posed in the World Game™ simulation:

How do we make the world work for 100% of humanity in the shortest possible time through spontaneous cooperation without ecological damage or disadvantage to anyone?

-R. Buckminster Fuller



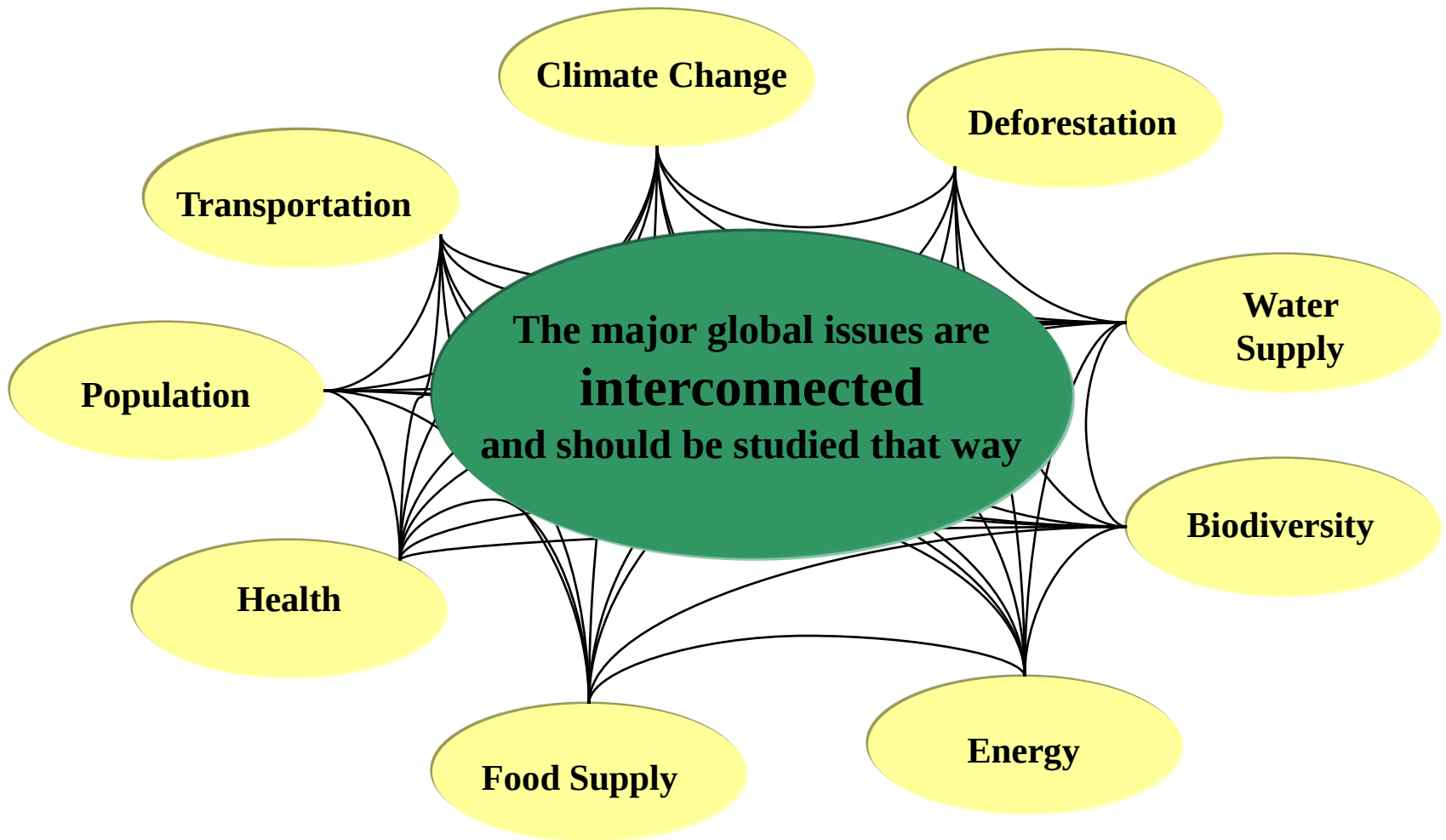
Global Energy Network Institute

GENI is a non-profit organization conducting research and educational activities related to the international and inter-regional transmission of electricity, with a specific emphasis on the interconnection of renewable energy resources. This is the premier strategy from the World Game™ simulation.



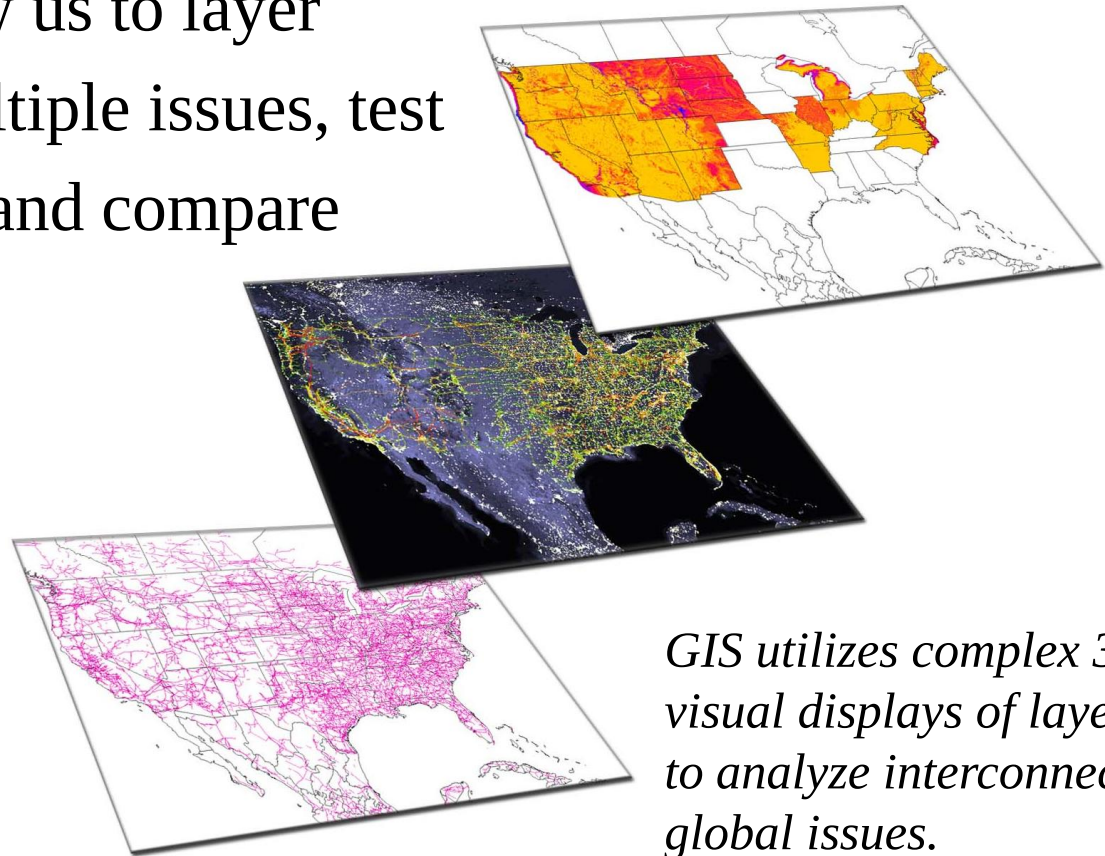
There are multiple global issues that are all interconnected...

Global Issue Connectivity



Visualizing Interconnected Issues

Simulation tools and visualization software now allow us to layer information on multiple issues, test solution scenarios and compare forecasts.



GIS utilizes complex 3-D visual displays of layered data to analyze interconnected global issues.

[Link to WRSC Sim](#)



Limitations of Current Approach

- Typical conference format - smart people convene for a few days, show their latest work, and then go home.
- No permanent facility with dedicated research staff devoted to resource connectivity, available for local and global issues.
- Available web based visualization information does not give leaders and decision makers a forum to consider issues face-to-face and study options in a defined collaborative context.



WRSC Functions

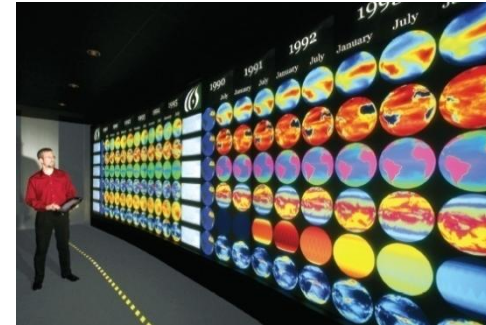
- Resource and demand assessment
- Long range forecasting and trend analysis
- Visualization and simulation to facilitate informed decision making
- Education and facilitation for decision makers
- Propose strategies and test implications
- Analyze environmental and human issues



The Air Force Control Center for Iraq and Afghanistan. Instead of planning war, the WRSC will be used for planning peace and sustainability.

Usage Groups

- Policymakers and stakeholders at local, national, and international levels
- Corporations for strategic planning, issue analysis
- Students and experts for research and education



The WRSC is a versatile facility used as a gathering place to plan a future by intentional design.

Services & Activities

- Large scale conferences
- In-person interactive discussions that promote group discovery
- Face-to-face collaborative research
- Large scale immersive visualization and scenario simulations

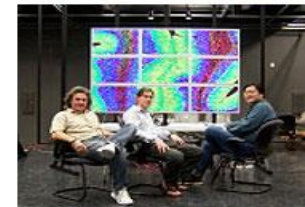
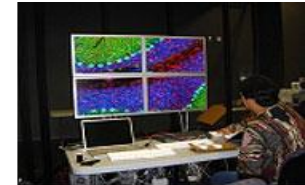


Framing issues in the context of a global solutions perspective will tie research and information to systemic action.

The WRSC Facility



- Immersive Projection Systems
- Interactive Displays
- Numerous Workstations



Immersive Projector Systems

Leaders immersed in multiple streams of layered resource information presented in the context of benefit-to-all will shift forever how leaders approach the decisions they make.



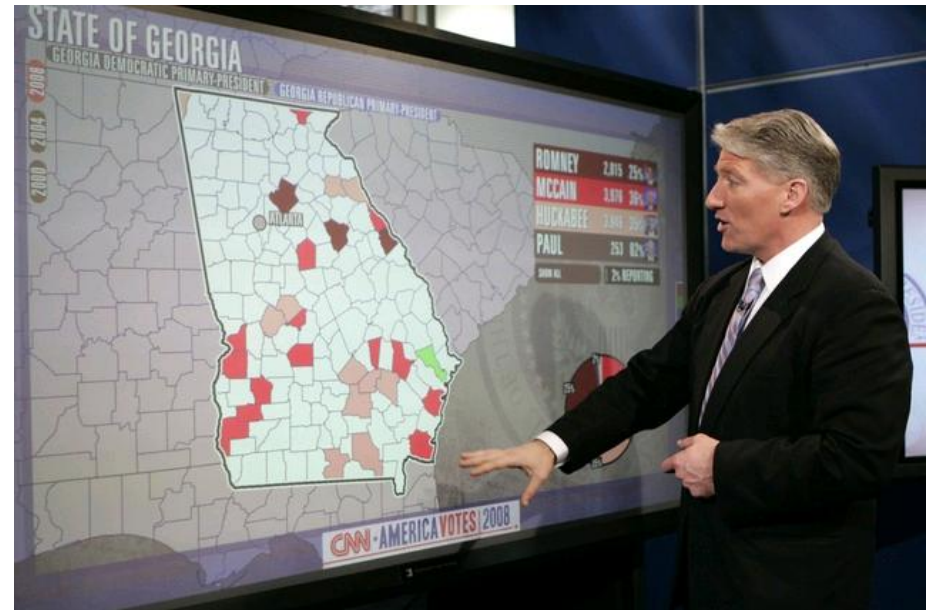
NOAA's Science on a Sphere uses projectors to display planetary data on a 6' diameter dome

Immersive projection systems fill large spaces with dynamic imagery.

Interactive Displays

Interactive displays make 3-D layers of data comprehensible and usable to decision makers.

Microsoft Surface is a table top Windows PC that allows users to manipulate digital content with hand gestures. It will be available on a commercial scale in 2010.



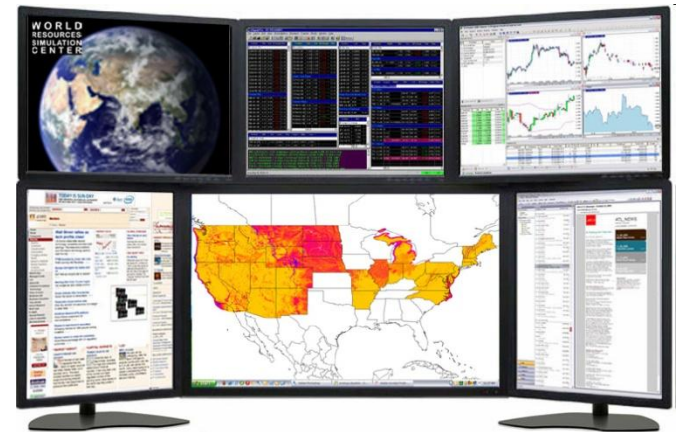
CNN's John King uses Jeff Han's Perceptive Pixel touch screen to analyze primary results from Georgia.

Workstations



State of the art computer workstations will be available for use by staff, interns, and visitors.

Users will have at large, multiscreen capable monitors for their computers.



Previous Project Phases

Phase I – Test the Prototype & Develop Individual Partnerships

- **Engage** key strategic partners – comprehensive thinkers, IT experts
- **Host** a WRSC demonstration conference with core supporters – June 13-14, 2009



Phase II - Develop Institutional Partnerships & Raise Funds

- **Develop** support from institutional partners, seek foundation grants and corporate partners.
- **Conduct** feasibility study and explore new entity set-up
- **Obtain** funding of \$50,000 to host a month-long demonstration

Recent Project Phase

Phase III - Month-long Collaborative Event: Energy & Water Sustainability



- **Host** an in-depth event on real issues to test the process and outcomes
- **Develop** WRSC website for ongoing expert participation on global issues
- **Build** partnerships and experience for next Phase.

Current & Future Project Phases

Phase IV – Open Ongoing Demonstration Facility

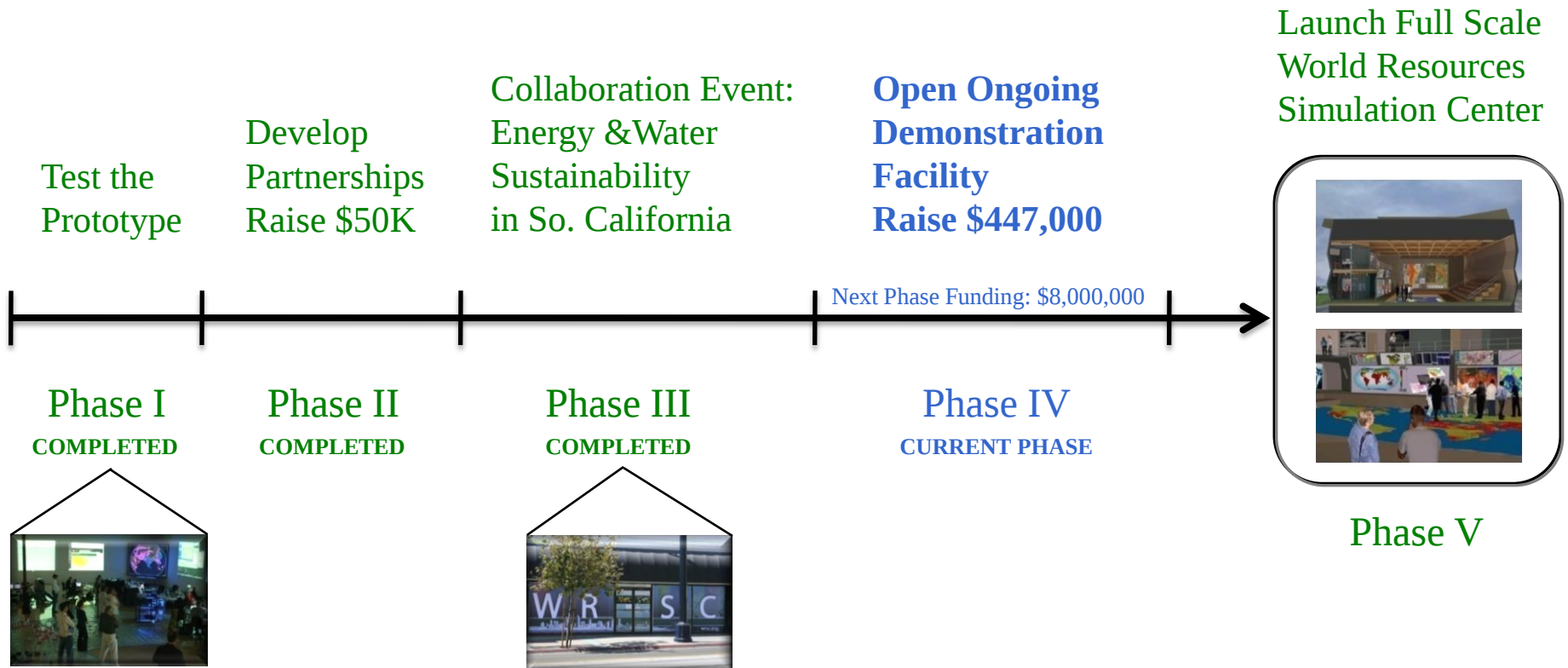
- **Obtain** funding of \$447,000 to create and staff a smaller scale version of the Center
- **Create and staff** a smaller scale version of the Center using off-the-shelf technology of projectors and computers as a two year demonstration of the capabilities of the fully funded WRSC



Phase V – Launch Full Scale WRSC

- **Secure** full funding of \$8 million and in-kind contributions needed for full scale center
- **Facility** preparation and hardware testing
- **Staffing** and personnel recruitment
- **IT** requirements

Timeline



Partnership & Support



- We are actively seeking partners and support for the creation of the WRSC.
- For more information or to view our complete proposal, please contact us or visit on the web at: www.wrsc.org

World Trade Center of San Diego
1250 Sixth Ave. Suite 901
San Diego, CA 92101 USA
619-595-0139
peter@geni.org

Appendix

Appendix

- Phases & Start-up Expenses
- Green Building Design
- Examples of Visualization Technologies



The WRSC will provide a high tech immersive environment for visitors.

Phase Budgets



Phase IV Funding Needed: \$447,000

Phase III Expenses	
Equipment Installation	\$ 6,000
Moving Fees	3,000
Miscellaneous	6,500
Computers	8,400
Computer Monitors	4,000
Furniture	10,000
IT Server & Setup	9,000
Facility	91,000
Ongoing IT	55,000
Personnel	212,400
Additional Operating Funds	40,817
Total Phase IV Expenses	446,117

Phase V Funding Needed: \$8 million

Start Up Expenses	
Retrofit Facility to LEED-EB Rating	\$ 1,000,000
Initial Software Licensing	200,000
Supplies	25,000
Equipment Install, Rental & Maint.	125,000
Personnel	150,000
Website Creation, Maint. & Hosting	25,000
<i>Total Start-Up Expenses</i>	<i>1,500,000</i>
Start Up Equipment	
50 Interactive Wall Screens	625,000
50 Workstations	350,000
Immersive Projector System	100,000
Interactive Floor System	1,000,000
<i>Total Start-up Equipment</i>	<i>2,075,000</i>
Year 1 Expenses	
Personnel	1,410,000
Rent	300,000
Other	1,723,533
<i>Total Year 1 Expenses</i>	<i>3,433,533</i>
Total Start Up and Year 1 Expenses	\$ 7,008,533

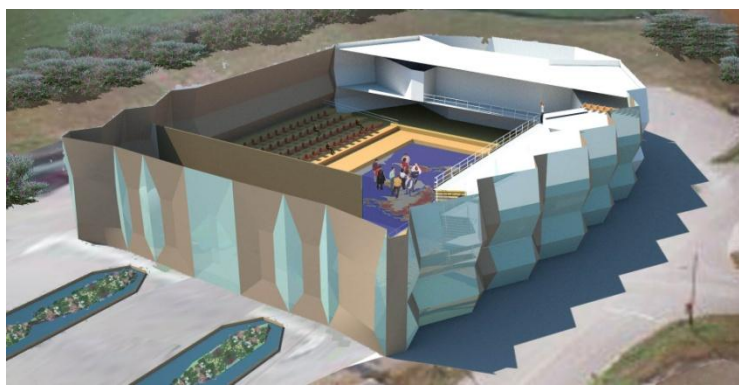
WRSC Revenue



After an anticipated 6 month ramp up, the WRSC will begin to generate a substantial portion of its income from hosting conferences and events within the facility.

Pro Forma Income & Expense					
	Year 1	Year 2	Year 3	Year 4	Year 5
Revenue & Support					
Corporate Partnerships/Major Gifts	\$ 400,000	\$ 1,365,000	\$ 2,205,000	\$ 3,125,588	\$ 3,889,620
Long or Short Term Facility & Personnel Lease Time	60,000	84,000	132,300	162,068	194,481
Large & Small Sessions & Conferences	390,000	976,500	1,488,375	1,736,438	1,823,259
Total Revenue	850,000	2,425,500	3,825,675	5,024,093	5,907,360
Expenses					
Other Costs & Expenses	2,023,533	2,289,713	2,595,884	2,803,574	3,081,724
Personnel	1,410,000	1,606,500	1,951,425	2,187,911	2,734,889
Total Operating Expenses	3,343,533	3,684,113	4,223,174	4,611,784	5,413,065
Net Income	(2,583,533)	(1,470,713)	(721,634)	32,607	90,747

WRSC Building - Existing Structure



15,000 – 20,000 sq. ft building

The WRSC location will be dependent on investor and partnership requirements. Our plan incorporates an existing structure, and will not require additional or new construction.

However, Center locations to be considered will utilize or have the ability to be retrofitted to LEED-EB (Leadership in Energy and Environmental Design Green Building Rating System – Existing Building) standards.

A Center devoted to the sustainable usage of resources must, at a minimum, utilize such green practices as water conservation, efficient heating and cooling, and attain some of its power requirements from alternative energy sources.



Green Power

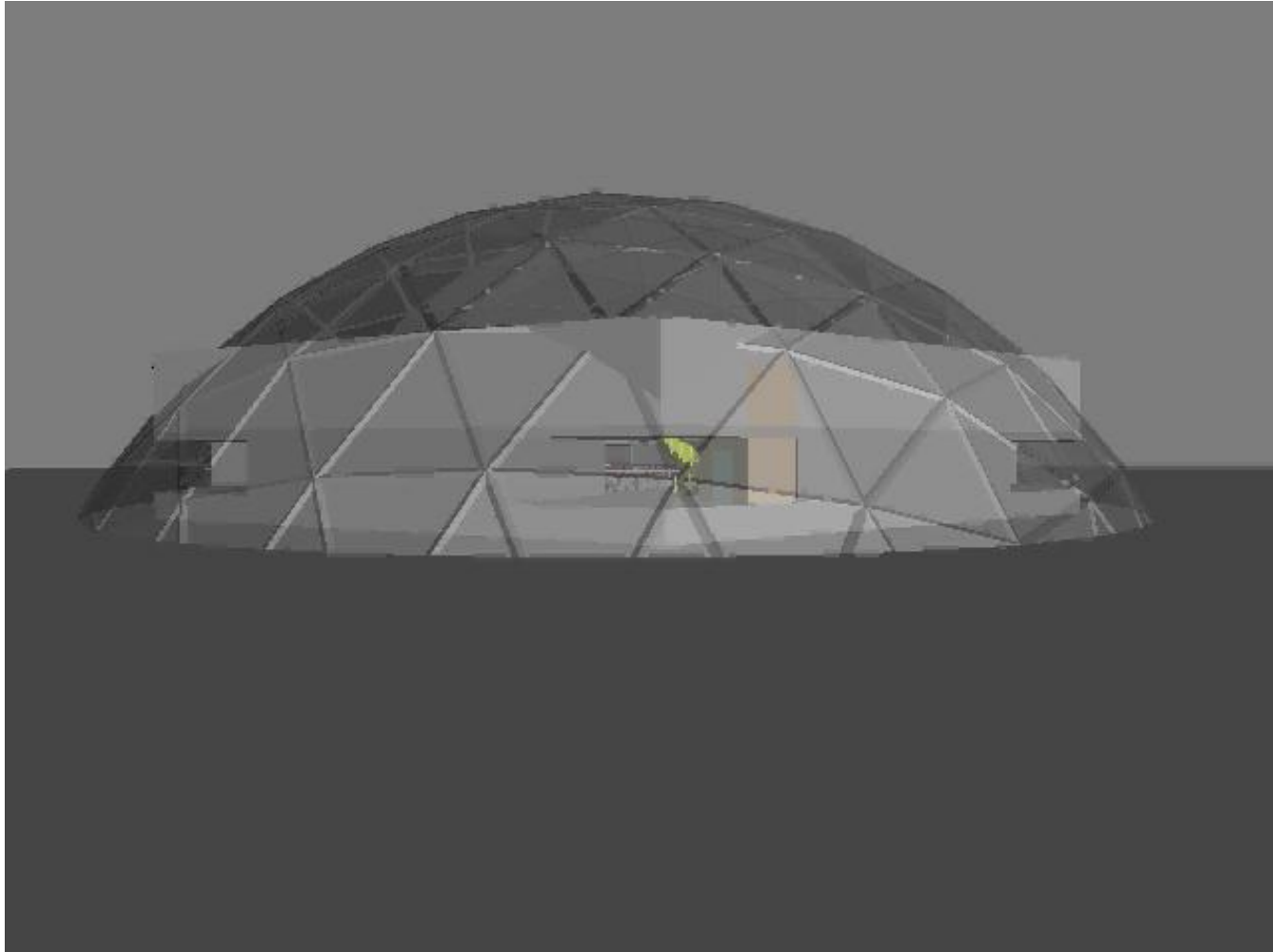
In conjunction with LEED certification, the WRSC will optimize energy efficiency performance with renewable energy with the goal of becoming a net zero carbon facility. Depending on location and design parameters, this will be achieved through:



- Photovoltaic Modules
- Wind Turbines
- Geothermal heat pumps
- Other energy efficient technologies



Alternative Structure Fly-Through



Concept courtesy of Ben Shepard, The Neenan Company

Examples of Visualization Technologies



Cutting edge touch screens, immersive environments and mapping software are combining to give never before possible interactions between people and information. The WRSC will utilize these and other advancing technologies, allowing users to discover solutions in ways never before imagined.

Autodesk Design on Jeff Han's Perceptive Pixel Multi-Touch Screen.

<http://www.youtube.com/watch?v=O7ENumwMohs>

Duke University Graduate Student Gil Bohrer has created a virtual forest to study how forest canopies interact with the atmosphere.

<http://www.youtube.com/watch?v=N0-w-uhrmi8>

Using Google Earth on a Multi-Touch Screen.

<http://www.youtube.com/watch?v=rnkoLrZQIHU>

Other Visualization Technologies

There is no scarcity of thoughtful, knowledgeable, committed people working to make the world a better place. Below are a few demonstrations using visualization to explain environmental issues and trends. The WRSC will provide a large scale format to examine these and other issues, beyond the confines of a small computer screen.

Climate Time Machine

<http://climate.jpl.nasa.gov/ClimateTimeMachine/climateTimeMachine.cfm>

This color-coded map shows a progression of changing global surface temperatures from 1885 to 2007. Dark blue indicates areas cooler than average. Dark red indicates areas warmer than average. (Credit: NASA/Goddard Scientific Visualization Studio)

GENI Renewable Energy Resource Maps

<http://www.geni.org/globalenergy/library/renewable-energy-resources/index.shtml>

Here you will find renewable energy resource maps (global/ continent wide/ country) with definitions, information and links to current articles as well as related web resources.

Gapminder

<http://www.gapminder.org>

Explore this changing world using the best statistics on health, income, environment and much more.