Geophysical Research Abstracts
Vol. 18, EGU2016-10728, 2016
EGU General Assembly 2016

National Laboratory for Advanced Scientific Visualization at UNAM - Mexico

Marina Manea (1), Vlad Constantin Manea (1), and Alfredo Varela (2)

(1) Universidad Nacional Autonoma de Mexico, Centro de Geociencias, Laboratorio de Geodinamica Computacional, Juriquilla, Queretaro, Mexico , (2) Universidad Nacional Autonoma de Mexico, Institute of Neurobiology, Juriquilla, Queretaro, Mexico

In 2015, the National Autonomous University of Mexico (UNAM) joined the family of Universities and Research Centers where advanced visualization and computing plays a key role to promote and advance missions in research, education, community outreach, as well as business-oriented consulting. This initiative provides access to a great variety of advanced hardware and software resources and offers a range of consulting services that spans a variety of areas related to scientific visualization, among which are: neuroanatomy, embryonic development, genome related studies, geosciences, geography, physics and mathematics related disciplines. The National Laboratory for Advanced Scientific Visualization delivers services through three main infrastructure environments: the 3D fully immersive display system Cave, the high resolution parallel visualization system Powerwall, the high resolution spherical displays Earth Simulator. The entire visualization infrastructure is interconnected to a high-performance-computing-cluster (HPCC) called ADA in honor to Ada Lovelace, considered to be the first computer programmer. The Cave is an extra large 3.6m wide room with projected images on the front, left and right, as well as floor walls. Specialized crystal eyes LCD-shutter glasses provide a strong stereo depth perception, and a variety of tracking devices allow software to track the position of a user's hand, head and wand. The Powerwall is designed to bring large amounts of complex data together through parallel computing for team interaction and collaboration. This system is composed by 24 (6x4) high-resolution ultra-thin (2 mm) bezel monitors connected to a high-performance GPU cluster. The Earth Simulator is a large (60") high-resolution spherical display used for global-scale data visualization like geophysical, meteorological, climate and ecology data. The HPCC-ADA, is a 1000+ computing core system, which offers parallel computing resources to applications that requires large quantity of memory as well as large and fast parallel storage systems. The entire system temperature is controlled by an energy and space efficient cooling solution, based on large rear door liquid cooled heat exchangers.
This state-of-the-art infrastructure will boost research activities in the region, offer a powerful scientific tool for teaching at undergraduate and graduate levels, and enhance association and cooperation with business-oriented organizations.