



MRDF, VideoRay and WebEx Open the Doorway to Very Long Distance Robotic Telepresence

MRDF's collaborative partnership with VideoRay, LLC (www.videoray.com) and WebEx Communications, Inc. (www.webex.com), brings a submersible ROV with advanced capability within reach of many hundreds of diver/aquanauts involved annually in our on-going manned undersea habitat programs ... and has recently opened the doorway to very long distance Robotic telepresence.

Long distance robotic telepresence technology once considered the sole domain of NASA interplanetary probes and rovers, is just now making it into the hands of university researchers and student classrooms around the world. This transfer of technology has become possible thru rapid progress and reduced costs in the semiconductor industry, steady developments in advanced robotics, and the increasing speed, bandwidth and pervasiveness of global internet communications.

This research and development effort started several years ago between MRDF, Jim Lewis at NASA-Boeing, Dr. Bill Soeffing at the University of Sioux Fall South Dakota, Dr. Brian Howell at Western Carolina University, and the R&D team at VideoRay LLC. It has now been applied to provide students from distant classrooms and labs around the United States and Canada a virtual presence in our manned underwater laboratory, and the ability to control the VideoRay ROV in the seawater lagoon outside the undersea station from thousands of miles away over the internet.

In addition, in 2007 we began working with WebEx Communications, Inc. (now part of Cisco) to create a fast, ultra-reliable, secure, multi-application compatible, internet pipe between our underwater lab and other laboratories and classrooms anywhere in the world. The WebEx solution which provides very high security (used by the US armed services), reliability, and essentially "zero set-up" capability, has made the long distance internet control of the VideoRay ROV and a virtual student presence in the undersea station attractive to school system teachers and their network administrators. Last year over 248 students and teachers (grades 4-8) from remote classrooms in Pennsylvania and Florida participated in our new "Virtual Mini Adventure Program", with 49 participants piloting the VideoRay ROV over the internet.

Future plans are to: (1) extend this program to more students and teachers; (2) advance the technical capability of the program by offering more advanced / intuitive submersible ROV internet controllers (such as joystick, head-mounted display , & glove controllers); (3) provide state-of-the-art high speed internet connections to reduce control lag; (4)

use internet control of the VideoRay ROV to deploy, observe, actuate and maintain student designed project / instrument packages around the undersea lab, analogous to the deployment of instrument packages in the deep ocean or deep space; and (5) invite the high tech community (such as Cisco, Intel, Microsoft, ect...) to participate in program support and the implementation of recent technological developments to accelerate the very exciting future of human/robotic telepresence, and inspire the creative imaginations of the next generation of explorers, scientists, engineers, and technicians.

* If you would like to participate in this program contact Chris Olstad at chris@mrdf.org.

* For more detailed information see:

Remote Operation of ROV's over the Internet for Education and Research,
Chris Olstad (MRDF) and Tom Glebas (VideoRay); published in Proceedings,
Underwater Intervention 2008.