



ROBOTICS RESEARCH: Development of Telerobotic Control Capability

The Problem: The U. S. Department of Energy (DOE) Office of Science and Technology (OST) Deactivation and Decommissioning Focus Area (DDFA) has identified an increasing need for remote systems and robotics to address the cleanup of facilities throughout the DOE complex. The DDFA has funded considerable basic and applied research in robotics through the OST Industry Program, University Program, and through the Environmental Management Science Program (EMSP). Many of these research activities are providing encouraging results that must now be integrated into systems for field applications.

The Technology: The DOE OST Robotics Crosscutting Program (Rbx) has established a development activity in the area of telerobotic control. Telerobotic control provides technical solutions for the next generation of remote-manipulation problems that currently rely completely on human operators to execute tasks. Computer-controlled execution of portions of the manipulation task increases remote system productivity and efficiency.

The Research: The Rbx technology development activity provides the development and integration focus for telerobotic control technologies. The Rbx has established a framework that allows integration of research results from DDFA-funded university and industry research

projects. The previously developed Compact Remote Operator Console provides the platform upon which to implement the computer and open-software architecture for human-machine interface and advanced controls development. A major role of the Rbx is to establish procedures to define and execute performance testing that will quantify the benefits of candidate telerobotic technologies.

The Benefit: This technology development activity establishes a long-term relationship that integrates research, development, and testing. This integration can help focus and direct DDFA-funded basic and applied research activities. Most importantly, integration with ongoing Rbx system development activities provides a path to deployment for applicable research results.

Future Advances Through Rbx Initiatives: Remote systems deployed to date have been fundamentally teleoperated systems with little or no automated capabilities. Further integration, test, and evaluation within the Rbx will provide technologies to increase the level of automation within these systems, thus increasing their efficiency and productivity. Rbx development in telerobotic control technologies will produce more effective remote systems that will increase the cost benefit of these systems as well.

For more information on this project please contact:

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