Interactive Design Center

Sandia/California's Interactive Design Center is the premiere user facility for modeling, design and simulation. Advanced computers and high-resolution display systems enable designers, engineers and analysts to better comprehend complex system designs and large-scale data sets.

The Interactive Design Center (IDC), located in the new Distributed Information Systems Laboratory (DISL) at Sandia/California, provides a visualization environment where designers, engineers and analysts work interactively to evaluate and modify nuclear weapons designs in real-time. Funded by DOE/NNSA's Advanced Simulation and Computing Program, the IDC is part of the larger strategy to develop an integrated approach to simulation-based stockpile stewardship. Enabled by dramatic improvements in modeling and simulation, the IDC provides design teams with advanced tools for visualization, data comprehension, and remote collaboration.

The IDC's primary application is the visualization of complex multi-megabit data sets on a large, high-fidelity display system. Desktop displays have limited size and resolution which limit the viewer's ability to discern small details.

By comparison, the IDC's thirty foot wide main display has over 35 million pixels to show extremely fine detail in highly complex models and simulations. As these details become apparent, design team members are better able to comprehend their designs, thus reducing design iterations and cycle time. Additionally, design teams may incorporate remote participants with the IDC's integrated videoconferencing systems and collaboration tools.

Solving Problems...

through improved comprehension, collaboration, and communication.

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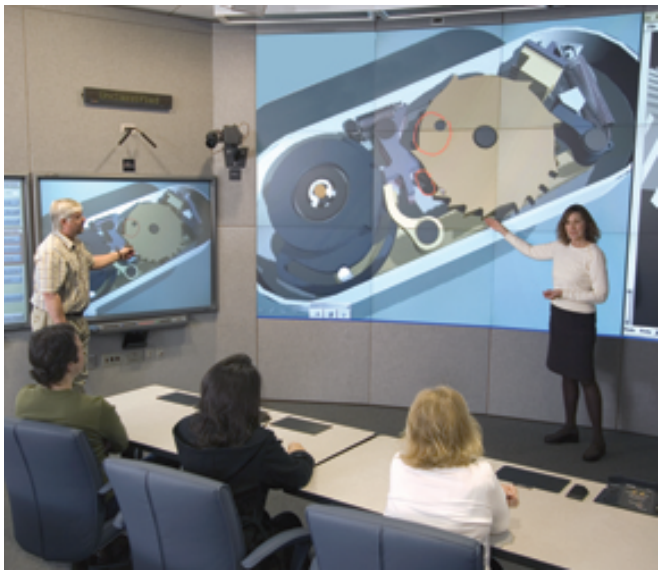

The IDC's interactive capabilities include real-time display annotation and computer and AV system control from the ancillary displays.

The IDC supports a wide variety of other customer applications with it's flexible AV system design. A Jupiter Systems video processor enables the simultaneous display of up to twenty separate inputs in scalable display windows across the main display array. Six ancillary SmartBoard displays complement the main display. They can be used as simple display screens or as interactive touchscreen systems for presentations and on-screen note taking. Two of these displays also have on-demand touch panel control overlays that allow users to control all of the IDC's AV system functions at these locations.

Two 80-processor GraphStream graphics computing clusters, two 16-processor Silicon Graphics servers, and 18 Windows personal computers power the IDC's visualization environment. Users may integrate their own laptop computers into the display systems and Sandia networks through numerous tabletop ports.

The IDC's user-friendly capabilities facilitate a broad range of applications. Touch panels provide a simple user interface for controlling the display systems. In-house computers are controlled from tabletop stations throughout the facility.

The IDC staff provides full operational support and user training, and develops software applications specific to customers' needs. The IDC's visualization and collaboration team supports designers, engineers and analysts by:

- Providing project teams with an advanced display environment for collaborative design reviews
- Integrating multiple software packages into a cohesive suite of tools for viewing, exploring and comprehending data
- Developing new techniques for integrating computational and test data into visualizations
- Providing platforms for highly realistic war gaming and threat scenario exercises

Small details in complex models and simulations become apparent when viewed on the IDC's 35 million pixel main display.

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