

Access Grid for the OptIPortal

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ABSTRACT

When the early Access Grid community first started building Access Grid rooms, it was still quite novel and seemed somehow adventurous to spread a single desktop across three projectors and an operator console. We spent a lot of time experimenting with different hardware to find the best combinations to achieve the four video outputs required; single PCI cards with 4 video outputs, multiple PCI cards with 2 outputs, PCI cards with 2 outputs combined with AGP cards with 2 outputs etc. More recently, PCIe cards have become available with 4 video outputs and a throughput 16 times greater than that of AGP cards. Some motherboards have multiple PCIe slots available.

However, what happens if a lot more than 4 video outputs are needed? There is eventually a limit to the number of video outputs available from a single machine. To overcome this limitation, graphics clustering combines the video outputs from multiple machines to form a single multi-tile display. The idea of utilising graphics clustering for building Access Grid nodes was raised at the San Fransisco Retreat in 2005. At that time we used a technology known as Distributed Multihead X (DMX) for the graphics clustering. DMX works with up to 16 machines/screens and while that seemed plenty a few years ago, it is insufficient for many modern graphics clusters such as “OptIPortals” some of which are comprised of over 50 machines/screens.

With the 20 screens we're using in the OptIPortal display at UQVislab, we use other clustering techniques such as SAGE (from EVL) and CGLX (from Calit2). Currently neither of these operating modes easily allows interactive or multi-window applications such as the Access Grid to be run. Although SAGE already incorporates features to enable concurrent access to a single OptIPortal display by multiple remote sites, the only in band communication between the different sites is via a simple text tool. The ability to also run the AccessGrid toolkit on the display itself, perhaps utilizing high definition video streams, would greatly enhance the collaborative potential of OptIPortals.

This talk will introduce the concepts of graphics clustering, as applied to OptIPortals, and summarise our efforts to integrate the Assess Grid toolkit into these large format displays.