Access Grid Now and in the Future

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The last six months have seen a huge increase in the number of Access Grid nodes in the UK. The Access Grid Support Centre has now registered over forty nodes across the country and there does not appear to be any visible decrease in the rate at which nodes are being registered. With this surge in the uptake of Access Grid, many users are now looking to what the Access Grid promises to provide in the future.

The Access Grid Now

There are two software products currently in use that allow the connection to an Access Grid meeting. These are the inSORS client and the Access Grid Toolkit (AGTk). These tools are fully interoperable for multi-site videoconferencing, which is the main use of Access Grid. Commonly, users use only audio and video in any given Access Grid meeting, however it is becoming more common to also share presentations between sites. Both tools provide means to make this possible, but only when using inSORS software at the site giving the presentation can both the inSORS and AGTk nodes both see the presentation. In the UK, this problem is solved by allowing any node registered with the Access Grid Support Centre to download the presentation part of the inSORS software (known as IG-Pix) for free. However, international sites have to rely on third party solutions when both inSORS and AGTk nodes are in use.

Increasing the Quality of Access Grid Video

The video format currently used by Access Grid is very effective for sending images of people. The format cleverly removes the parts of the image that the human eye does not notice. Unfortunately, this technique relies on the video being smooth; this is not true of most images on a computer screen for example (see Figure 1). Similarly, when more than three people appear on a video stream, it is difficult to tell which person is speaking. This shows the need to increase the quality of the Access Grid streams.

This need for increased video resolution has been recognized by some members of the Access Grid community. There is now a version of vic (the video tool used by AGTk) that uses the MPEG-4 codec. This video format uses the same bandwidth as the current format, but the resolution is not fixed. Another solution that has been developed is the use of High Definition Video (HDV) and Digital Video (DV). These formats require much more bandwidth than MPEG-4, and therefore separate addressing is used so that only the required video streams are displayed in an Access Grid session. All these formats would also allow the playback of most video files over the Access Grid, allowing for shared movie viewing.
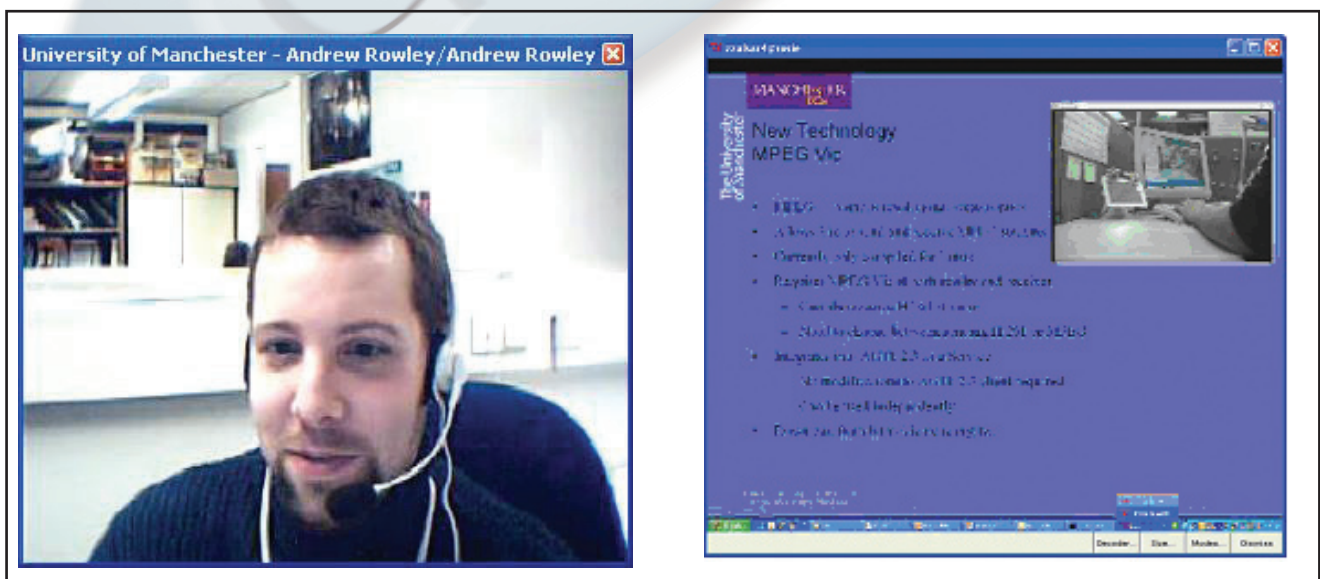

Figure 1: An example of Access Grid video streams. The left image appears to be of higher quality that the right image, but this is an illusion of the Access Grid video format. The words in the right image are difficult to read.

Video Placement Technology

Any user of the Access Grid will have noticed that most meetings require the presence of a node operator. One of the jobs of the operator is to lay out the video streams on the projector wall. If a participant joins in the middle of the meeting, the new video streams must also be placed so as to be visible to the local participants. Video Placement (VP) is a piece of software that automatically arranges the video streams of the remote sites. The streams are also arranged by the site that is transmitting them. This is configurable, so that different sites can appear differently (see Figure 2). InSORS clients also feature a very basic video layout tool.

Meeting Recordings

It is often requested that a meeting be recorded. This is useful for reviewing what was said in a meeting at a later date, or for the development of training materials. Current meeting recording and replay tools for Access Grid only support the recording and playback of the Access Grid streams; pausing, fast-forwarding, rewinding and navigation are not supported. Work is in progress to enhance one of these tools known as Voyager Multimedia Server developed at Argonne National Laboratory. As part of the Memetic project (http://www.memetic-vre.net/), this will also be integrated with Meeting Replay (http://www.aktors.org/coakting/mars/).
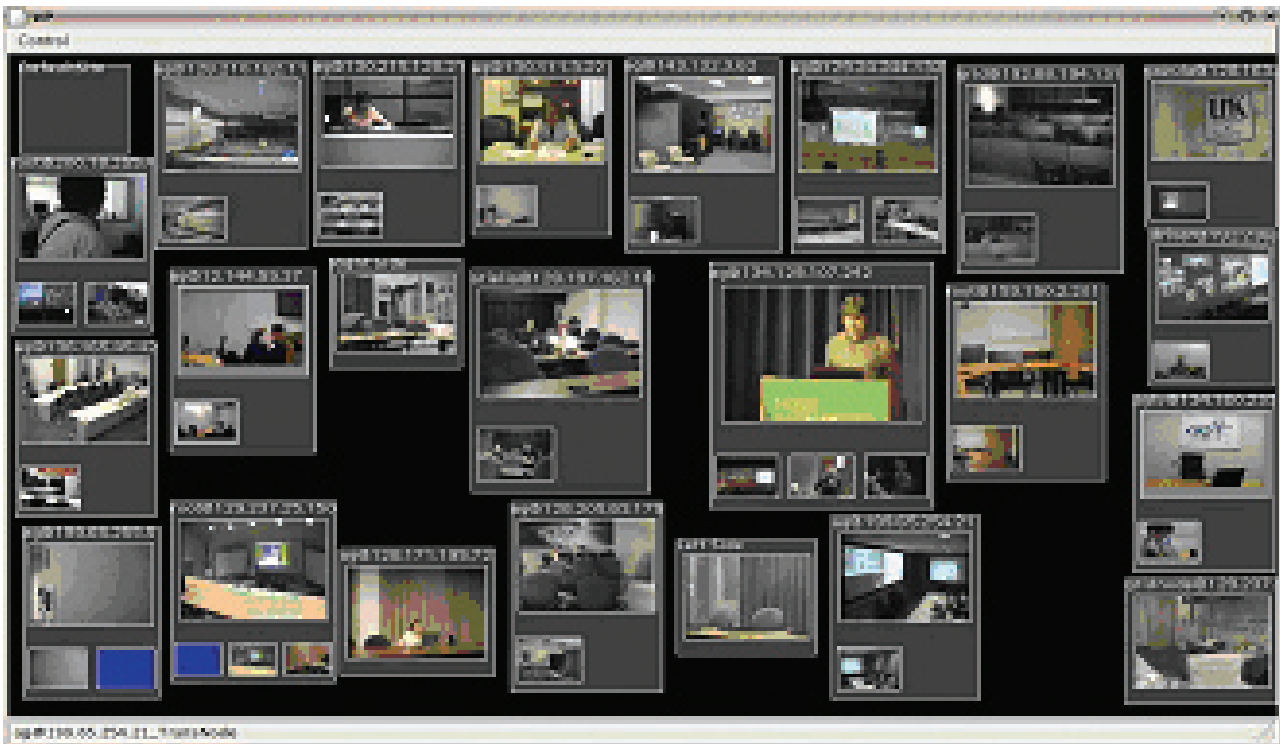

Figure 2: An example of video layout using VP.

Presentation Sharing

Other solutions are now being developed for presentation sharing. One solution being investigated at the Access Grid Support Centre is to have a copy of the screen transmitted as an Access Grid video stream. This has the advantage that it should be possible to see full movement on the screen; currently IG-pix only updates about once every second. As was shown, the current Access Grid video format is not sufficient to support screen sending. However, the AGSC video tool will support screen sending and higher quality video.

This will include the annotation of the recordings and will allow navigation through the recording, allowing users to view the parts of the stream that are most useful to them. It is hoped that the annotation will be automated using events that happened in the meeting.

Looking to the Future

It is clear that there are many advances that are currently being developed for Access Grid. It is hoped that these can become part of the standards for Access Grid in the future. The work described here represents only a handful of the current Access Grid projects.