AG Presentation Protocols (for lectures and seminars)

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Introduction

The mathematical sciences communities in Australia, New Zealand, Canada and the UK have chosen to use Access Grid technology for multi-nodal remote video collaboration for teaching advanced courses, seminars, research and other meetings. The following Protocols are provided to facilitate the optimization of the quality and reliability of the AG collaborative experience. It is generally desirable to observe Presentation Protocols, but it is a requirement for participation in several special AG events (such as Terry Tao's Clay-Mahler Lectures and The AMSI Optimization AGR Colloquium Series).

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The development of these Protocols is a work in progress as we draw from

- our AMSI experience (with AGR Honours teaching and seminars),
- the AGR IT community (particularly Jason Bell),
- the Canadian experience (since 2005) with their Coast to Coast seminars, C2C, initiated by Jonathan Borwein [4] and
- the experience and experimentation of the newly formed Optimization Group (a Special Interest Group of ANZIAM, SIGopt, homepage: www.carma.newcastle.edu.au/sigopt) with foundation leaders Jonathan Borwein (Newcastle), Andrew Eberhard (RMIT) and Regina Burachik (UniSA).

The protocols (with comments):

1. **Quality Assurance** (QA) of AGRs [2]. This is a process being taken up internationally and is being driven by Jason Bell. The AGR IT people make an appointment (email j.bell@cqu.edu.au) for about an hour to have their AGR setup checked. This is not a pass/fail hurdle: Jason follows a checklist and provides advice on how to fix problems and adjust settings (particularly audio settings). Once QA-ed, the AGR may join in activities such as the AG Clay-Mahler Lectures and the Optimization seminars.
2. **The latest stable version of the AG Toolkit** should be used for all Access Grid Rooms, AGRS: the current stable version, in mid 2009, is the AG Toolkit version 3.1. (The AG Toolkit version 3.2 beta, which includes Auto-Detection and configuration of devices such as webcams and Auto-Detection of the network; and will connect via unicast or multicast, has been tested extensively and will soon become the stable release.)
3. **Personal Connection to the AG – PIGs and EVO** [3]. If the use of a fully featured AGR is not available, then a personal connection to the AG can be made by running the AG software on a personal computer: provided a high bandwidth connection to the internet is available. The Australian Research Collaboration Services, ARCS, has chosen two systems to support: AG for large rooms and high bandwidth and EVO which is ideal for desktops and lower bandwidth internet connections. Usually different video conferencing systems do not communicate with each other. However a bridge for EVO to AG is in the final phase of

testing by ARCS and is expected to be available very soon. When available to the Australian community, there will be an announcement on the ARCS website. This would mean that an academic at home or office (without the high bandwidth needed for AG) could participate in an AG session. There is now a clear advantage for the mathematical community to adopt EVO for limited video-conferencing collaboration (such as small meetings for planning, or PhD supervision, etc.).

4. **VPCScreen (and AGVCR)** [3]. Most presentations (for Honours lectures and seminars) do not require control of the software to be given to remote nodes. Although VNC is being used, VPCScreen should be used instead: because VPCScreen produces a video stream of the presentation material, it scales up to a large number of AGRs. It also can be recorded by AGVCR.
5. **VenueVNC** [3]. This should be used if remote control of the software is required (for Honours interactive tutorials and interactive research). VNC and VenueVNC work well only for a small number (about five to eight) of nodes. and the display is not recorded by AGVCR. It is possible to use "multicast" versions of VNC, such as used in the C2C seminar series [4] in Canada (where VNC Reflector is used). However presentation materials transmitted by VNC are not recorded by AGVCR.

   A mix of VPCScreen and VenueVNC was used by Jason Bell in December 2007 to run the 1-day workshop on mathematics for 21st century engineers hosted by RMIT with 16 remote AGRs participating. Most presentations were from the "host" AGR at RMIT, but four other AGRs also contributed presentations. The AGRs that presented used VNC and all others (that were receiving only) used VPCScreen. For such an event, expert AG IT support is necessary.

6. **VLC Media Player**. A presentation that requires a video (with audio) to be played presents a challenge for the AG. VPCScreen [3] handles video (without audio) and animations, such as Maple animations, but doesn't handle videos such as mpeg and mov files. VLC Media Player is open source, cross platform and handles many video formats.

   RMIT (with UniSA and W'gong AGRs) successfully tested the use of VLC to stream some video files. Mark Nelson (from W'gong) gave a seminar at RMIT to La Trobe that discussed the use of videos in mathematics teaching. Mark had many videos to show: the first was successfully shown but then the VLC was accidently exited! Although we could reinstate VLC, we were unable to restart the web streaming: the player is simple to use, but the web streaming requires expert IT support to set up. This leads to our next two items.

7. **Specialist AG IT support.** It's important that specialist AG IT support staff (including network engineers who are required specifically with respect to multi-casting issues):
   7.1. are **available for testing** of current hardware and software, new software and maintenance.
   7.2. are able to contact the other AG IT staff during any tests or events via a **communication back-channel**: in addition to the text communication channel provided by the AG Venue Client, the names and phone numbers of the AG IT staff for all participating AGRs should be known and shared.
   7.3. are **present throughout any special events and seminars**. This should not be necessary

once an Honours course is established since the Lecturer (and software used) is usually the same throughout and the remote sites that are connecting remain unchanged.

7.4. conduct **Event pre-testing of AGRs:** that is, **about two weeks before the event**, conduct a brief test connection of all AGRs intending to participate.

7.5. conduct **Event pre-testing of Presentation materials:** that is, **about two days before the event**, conduct a brief test of the speakers presentation materials (see next item) to ensure that there are no problems. For example, for a slide show (using Power Point, pdf, Maple, Mathematica, etc) check that each slide is fully visible (that is, it correctly fits the screen that will be transmitted to the remote AGRs).

8. **Data Storage** (see p 12 of [1]). The Access Grid Toolkit, AGTk, allows users to upload and download files to the Venue Server. This uses an Integrated FTPS data storage which means you can use any FTPS program to upload and download files; or, from the AG venue client, just copy and paste into the Data storage. This allows those connected via AGRs to the have access to various collaborative files or presentation materials. We recommend that **presentations be provided at least two days before the presentation**, so that it can be tested at the host AGR, placed into the Data storage and then downloaded as a local copy at each of the remote AGRs.

8.1. **A backup capability.** Providing files for testing and copying into the Data Storage gives a backup capability: for example, mpeg videos (that are tricky to stream properly) would be available at each AGR where playing locally using VLC would be a simple task. Many mpeg files are large and difficult or impossible to transmit by email: in this case, using the Data Storage provides a simple solution without the need for mailing CDs or DVDs.

8.2. **Backup – number the slides/pages.** For backup in the event that there are transmission problems with the presentation materials, but the AG video and audio streams are OK, it is desirable to have the presentation materials with page numbers. The presenter can give a verbal prompt for the remote AGRs to run the local copy (from the Data Storage) "in synch" with the presenter.

Pages in a pdf slide show, produced by using the LaTeX beamer class, can be numbered in the frametitle by

```
\frametitle{Advanced maths courses \hfill {\scriptsize  p.\insertpagenumber}}
```

or in the top right hand side of the frame by

```
\hfill {\scriptsize  p.\insertpagenumber }\\
```

Note that this gives a unique number for each view (as desired): this page number is advanced each time that a new view is produced as a slide is progressively uncovered.

9. **List of s/w and versions.** For example, we might recommend that all AGRs have Adobe Reader versions 8 and 9 (the two most current versions) and pdf files must be compatible with these. This would have avoided difficulties with a recent pdf presentation where one of the AGRs did have Adobe Reader, but it was version 4 and could not read the more recent file!

References

1. Bell, J. (2008). The Access Grid-More than just Video Conferencing, *Video Collaboration Workshop,* Accessed via the link Day 1, 2:00-3:30 pm, AccessGrid, PDF format of presentation, at http://www.arcs.org.au/support/training/video-collaboration-workshop/schedule

2. Bell, J. et al. (2008). The Access Grid: Global Quality Assurance Program, *Video Collaboration Workshop,* Accessed via the link Day 2, 2:30-3:15 pm, Global Quality Assurance Program for the Access Grid, PDF format of presentation, at http://www.arcs.org.au/support/training/video-collaboration-workshop/schedule

3. Blyth, B. and Bell, J. (2009). The Access Grid: AG on a personal computer; and using VPCScreen, *AustMS Gazette*, 36, 2 (May), 105-109. Accessed via http://www.austms.org.au/Gazette+Volume+36+Number+2+May+2009

4. Borwein, J., et al., Coast-to-Coast (C2C) Seminar: Background, History, and Practice; and Apendices A & B. In Borwein, J., Rocha, E.M. and Rodrigues, J.F. (Editors) *Communicating Mathematicsin the Digital Era*. AK Peters, 2008. Available from http://users.cs.dal.ca/~jborwein/c2c08.pdf