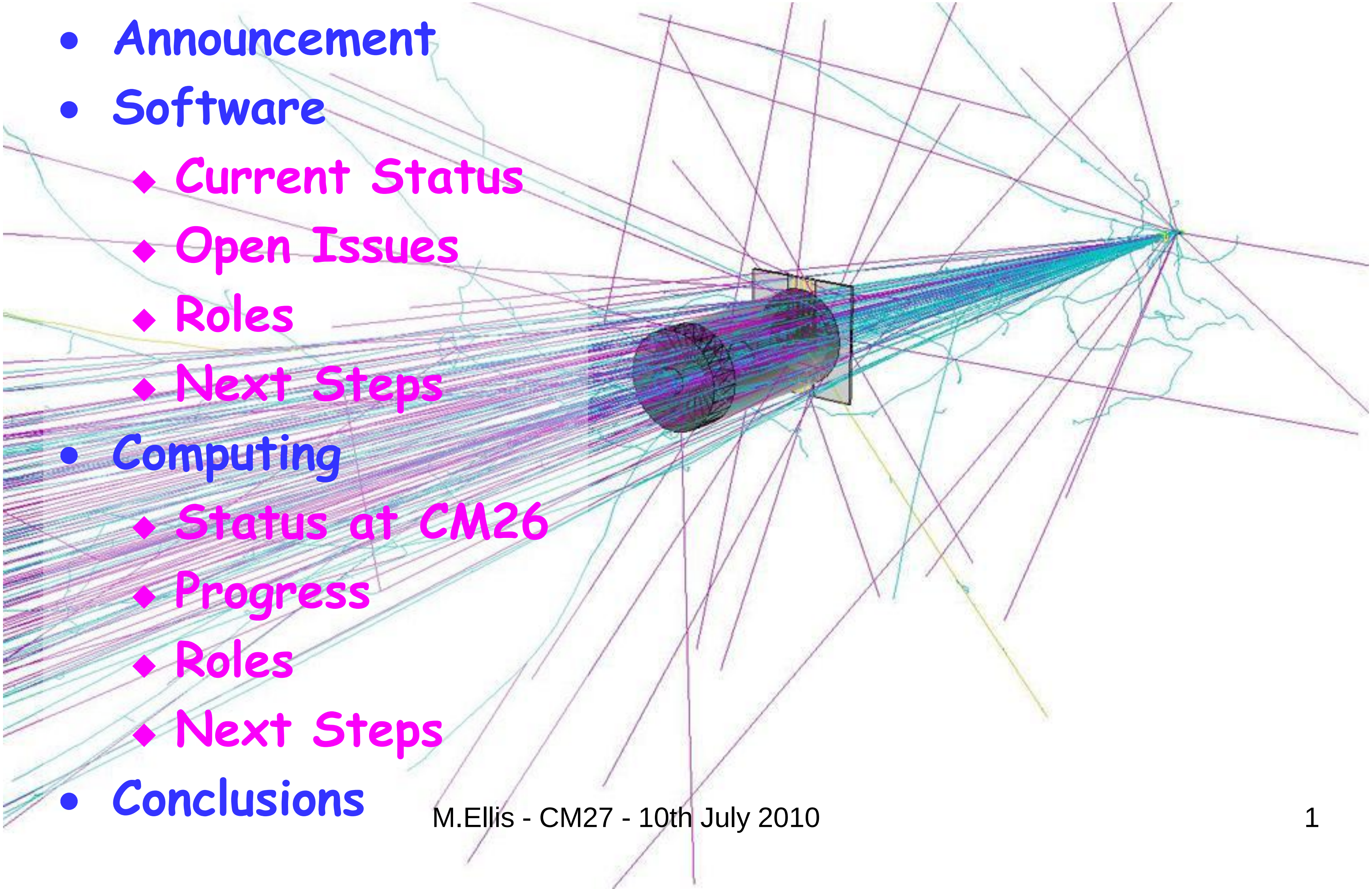
Software & Computing



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Announcement

- I will be moving back to Australia at the end of September this year, and as a result it will be necessary to find a new "Software Tsar".

- I hope to maintain some connection with MICE in my "spare time" but it will of course be via email, etc.

Software – Current Status

- Detector work is progressing well, see talks by David A, Mariyan, Vassil & Yordan.
- G4MICE applications are becoming increasingly common in the control room as well as offline (Online Rec, Data Quality, etc)
- Recent influx of eager students is very welcome!
- Work on the implementation of the real MICE hall geometry is progressing (Matt Littlefield).
- Analysis of real data is happening and this is resulting in development of our tools (e.g. Adam, David F, Mark).
- Ongoing improvements in other parts of the code.

Software – Open Issues

- Currently suffers from lack of competent management (mea culpa).
    - Haven't had software phone meetings in a while.
    - Lack of clear development plan for releases.
- Documentation
    - A lot of the code and most of the applications are still not properly documented. Makes it very hard for a new user to get started on their own.
- Testing
    - Majority of G4MICE tests have not been updated in a long time and as a result, the current testing framework is more of a hindrance than help in making releases.
- A number of crucial roles are currently all being held by a small number of people with finite time.

Software Open Issues

- An incomplete list of known work required:
  - New design of high level data containers (MICEEvent, Spill and Run) and corresponding modifications to data reader and code that uses these objects.
  - Update of external libraries, including addition of XML parsing code for DB use.
  - Code inspection and testing in order to allow compilation on 64 bit systems.
  - Several known memory leaks need to be tracked down and nailed.
  - Installation of recent releases on the GRID.
  - …

Software - Roles

- This is a first attempt at a list of roles, some of which are filled, others perhaps not.
- I hope to iterate over these in the software group and present to MICE for approval and hopefully mice to fill them!
    - Software project manager
    - Release coordinator
    - Testing coordinator
    - Documentation coordinator
    - Domains managers
    - Detector managers
    - GRID software manager
    - ???

Software – Next Steps

- There has been a lot of recent development, which is great, but it has resulted in a very unstable CVS head and a lot of confusion amongst people who wish to use the code.
- Try to make one (possibly two) releases in the coming month and a half.
- If possible, upgrade to new external libraries in second release.
- Identify complete list of roles, document responsibilities and find critters to fill them.

Computing – Status at CM26

- heplnw17 had died and this was making it hard/impossible for a lot of people to do a lot of important work!
- A list of requirements was generated, discussed and agreed at CM26.
- New servers had been purchased and were to be installed in RAL.
- Access to interactive computing was an unresolved issue.

Computing – Progress since CM26

- Quite a lot!
  - MICE Bastion server has been installed.
  - Two virtual machines running on one server:
    - heplnv150 (mousehole) – provides SSH access to the RAL network from anywhere outside of RAL.
    - heplnv151 – will be used to provide an EPICS CA gateway.
  - Web services machine:
    - micewww.pp.rl.ac.uk
      - Holds the elog, database API and database web access clients.
      - Visible from everywhere
  - Database server:
    - No direct connection to this machine by anyone, only the API talks to this server.
  - PPD UNIX system
    - MICE can get accounts and G4MICE is installed on it.

SSH Bastion

- mousehole.pp.rl.ac.uk
  - Instructions for getting an account can be found from the MICO page:
    - http://mice.iit.edu/mico/computing/
  - Anyone who wants an account needs to:
    - Make an SSH public key (instructions for linux users are on the web and Windows instructions will come in the next week, hopefully).
    - Email me the key, your desired username and the contact email address you want associated with the account.

PPD UNIX System

- PPD has a large cluster that consists of a mix of 32 bit machines running SL4 and 64 bit machines running SL5.
- Once you have an account on mousehole, you can find a form on the same page:
  - http://mice.iit.edu/mico/computing/
- Fill it in and send it to Rose, who will confirm that you really are a registered mouse and forward the request to Chris Brew who will make your account.
- G4MICE is installed on the machines and documentation will be added to the web soon.
- In the meantime, here is a copy of the email sent to the MICE list:

G4MICE on the PPD Machines

- All of the MICE softare can be found in the area
  /opt/ppd/mice/g4mice/
- The compilers, external libraries and pre-compiled releases of G4MICE are all separated by architecture, so for now you should only use versions that have "32" in the name.
- For most users who are not code developers, it will not be necessary to download anything or install anything to use G4MICE.
- You simply need to chose a version and source the appropriate script to setup your environment variables appropriately.

G4MICE on the PPD Machines

- At the moment, we have the current versions available:
  - MICE-2-0-0_32 (this is release mice-2-0-0 compiled with a 32 bit compiler)
  - MICE-2-1-0_32
  - MICE-2-2-0_32
  - MICE-2-2-9_32
  - MICE-dev_32 (this is the head of the CVS repository)

- It is planned that the MICE-dev_32 version will be automatically updated to the CVS head and re-compiled daily, but that has not been implemented yet.

G4MICE on the PPD Machines

- To use any of these without installation, you just need to source the corresponding scripts, which can be found in /opt/ppd/mice/g4mice/
    - setupmice.2-0-0.32.csh
    - setupmice.2-1-0.32.csh
    - setupmice.2-2-0.32.csh
    - setupmice.2-2-9.32.csh
    - setupmice.dev.32.csh
- And then you can run from your home directory (or anywhere else) in a manner like:
    - ${MICESRC}/Applications/Simulation mycards.in

G4MICE on the PPD Machines

- In order to use a locally installed version of G4MICE, there is an additional script:
  - setupmice.local.32.csh
- This takes 0, 1 or 2 arguments.
  - source /opt/ppd/mice/g4mice/setupmice.local.32.csh
    - Assumes CVS username “anonymous” and G4MICE in ~/MICE/
  - source /opt/ppd/mice/g4mice/setupmice.local.32.csh ellis
    - Uses given CVS username and G4MICE in ~/MICE/
  - source /opt/ppd/mice/g4mice/setupmice.local.32.csh ellis ~/some/directory/MICE
    - Uses given CVS username and supplied location for G4MICE
- Of course, you still need to check out the version of G4MICE you want!

Database

- See talks from David F yesterday.
- Executive summary:
  - Database and API have been installed, tested and are working.
  - Still waiting for final tweaks to control room software to automate writing of run information to the DB.
  - With no load on the DB, writing the run information takes ~ 0.1 seconds.
    - Compare with O(10 seconds) for start of run.
  - With an average instantaneous load of 3000 DB reads per second from the GRID, there is no appreciable change in the time taken to write the run information.
  - It is still O(0.1 seconds).

Wireless

- We have made progress, but unfortunately the new wireless is not yet available.
- At the moment there are two WiFi options:
  - STFC-Staff
    - Is not supposed to be used by most MICE as it is only for machines that are controlled by approved STFC people.
  - STFC-Visitor
    - This is what we currently use, with the need to obtain a username and password to access on a frequent basis.
- The new WiFi will be accessible using a "Federal ID" which all MICE with an ID badge will be able to obtain.
  - It will be called something like STFC-Facility-User
  - Has been tested, waiting for installation.

Other Computing Progress

- See talks by Henry, JSG, James, et al.
  - Backup system in preparation.
  - Data mover work progressing well.
  - Data quality checking app work in progress.
  - New webcams purchased, installation progressing.
    - Webcams are again visible from the MICO page.

Computing - Roles

- In addition to the existing roles in the offline software and online groups, I think that there are a few more that should perhaps be formalised:
    - PPD computing contact.
    - Account creation on mousehole.
    - Web services admin (light).
    - Database server admin (light).
    - Backup coordinator.
    - Webcam setup and maintenance.
    - G4MICE on the PPD machines.
    - …
    - Probably others I've not thought of right now!

Computing – Next Steps

- Data Mover
  - Complete work, testing and transition to routine use.
- Database
  - Complete control room work and transition to automated updating of the DB from EPICS and DATE.
- G4MICE on PPD
  - Documentation
  - Automatic updates from CVS head.
- WiFi

Conclusions

- A lot of progress on the software and computing infrastructure since CM26!
- Thanks to all the bright sparks who have been making it happen.