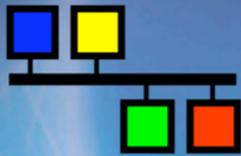


EPICS



Status Overview
The Australian Synchrotron

Wayne Lewis
Control Systems Group

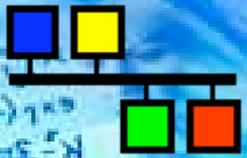


Image © 2006 TerraMetrics
© 2006 Europa Technologies
Image © 2006 NASA

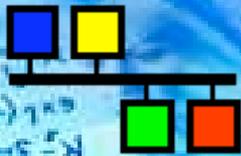
©2006 Google™

Pointer 26° 52'42.97"S 133° 37'14.18"E

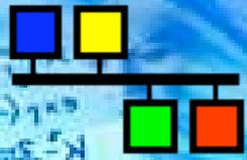
Streaming ||||| 100%

Eye alt 2300.75 mi



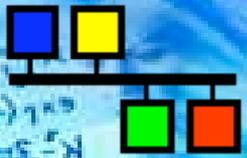


20km southeast of the centre of Melbourne. Adjacent to Monash University.



9 June, 2006

Accelerator is being funded and built by Victorian Government.
Beamlines are being funded by a number of the prospective user organisations, including national science organisations, universities and State Governments.
Initial suite of 9 experimental beamlines with space for at least 30 in the longer term.



Artist's impression of the Australian Synchrotron building



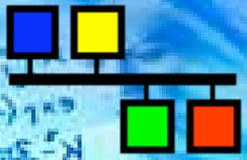
1 June 2006

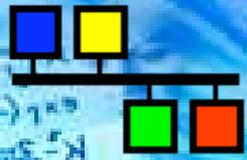


2 June 2006

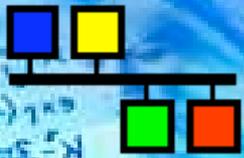
2 June 2006







Injection System	3mA beam at 3GeV. Ongoing optimisation.
Storage Ring	Mechanically and electrically complete. Services complete. Controls going.
Front Ends	9 front ends installed for initial beamlines.
Diagnostic Beamlines	Optical and X-Ray Diagnostic Beamlines installed.
Personnel Safety System	Final checks completed.
Experimental Beamlines	Five beamlines currently being procured and constructed. Four beamlines in design phase.
Facility Operator	Tendering in progress.



08.06.2006 23:51

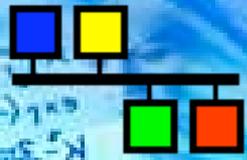
First Turn in Storage Ring!!!

after tweaking horizontal corrector in the middle of sector 5 the beam came around for first turn!





BPM 4 in sector 1



EPICS

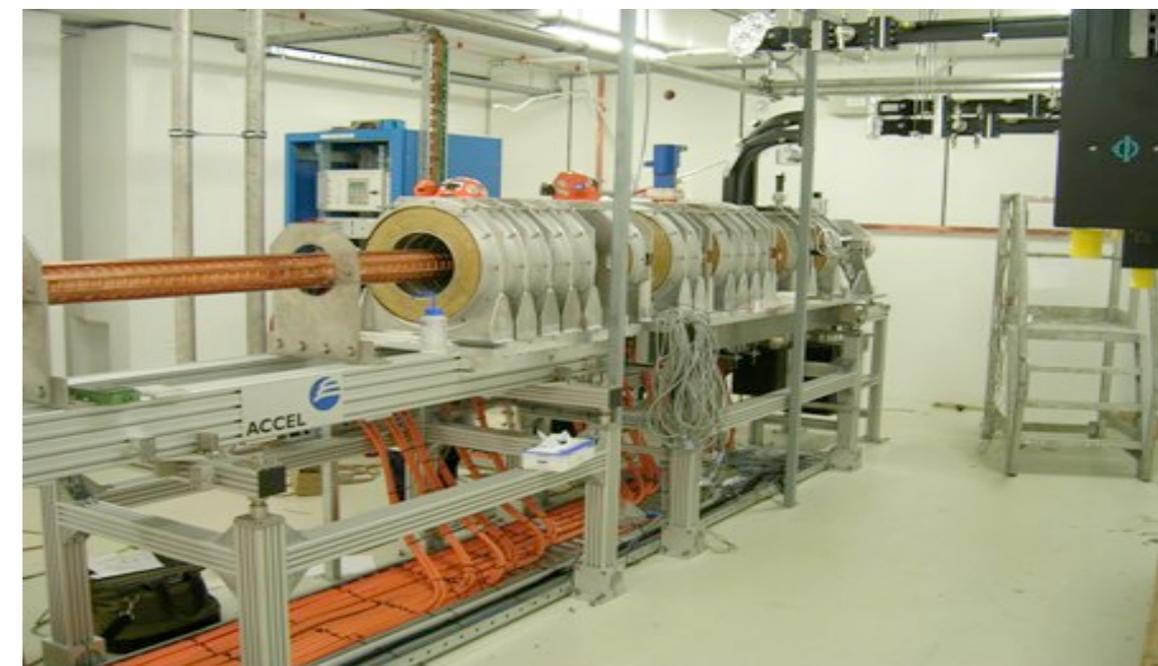
- EPICS 3.14.6
- Sequencer 2.0.7
- Asyn 4-0

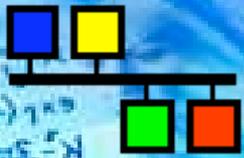
Hardware

- 20 PC104 microIOCs (from Cosylab) for LTB, Booster and BTS
- 1 x86-based computer (from PPT) for Linac
- 6 Siemens S7 PLCs for Equipment Protection

Software

- Debian Linux (from CosyLab)
- Linac software provided by PPT
- Booster software provided by Cosylab
- All software supplied by contractors





EPICS

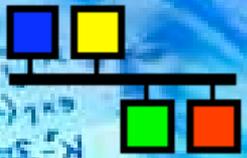
- EPICS 3.14.6 (upgrade to 3.14.8.2 planned)
- Sequencer 2.0.7
- Asyn 4-3
- Modbus IP

Hardware

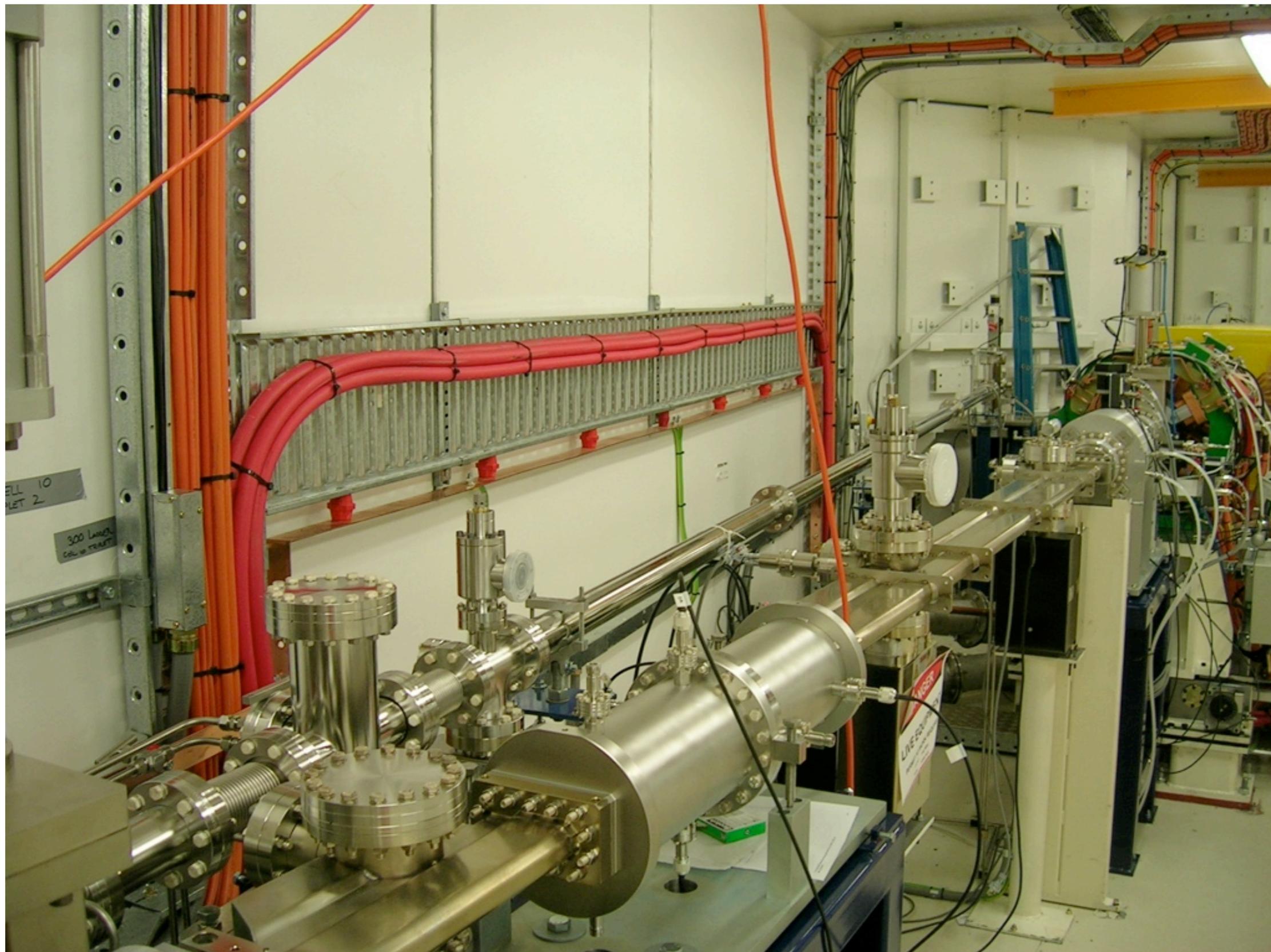
- 14 x86-based IOCs from Concurrent Computer Corporation
- 14 PC104 microIOCs from Cosylab for Magnet Power Supplies
- 2 Toshiba IOCs for RF System
- 98 Libera BPMs
- 28 Moxa Serial to Ethernet Converters
- 7 Modicon PLCs running Unity Pro
- Upgrading timing system to event based system

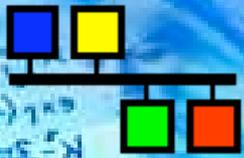
Software

- RedHat Linux on IOCs
- Debian Linux for RF System and BPMs









EPICS

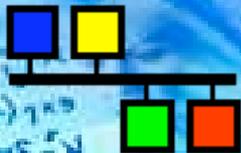
- EPICS 3.14.6
- Channel Archiver 2.1.8
- Alarm Handler 1.2.16 (ten archive engines)

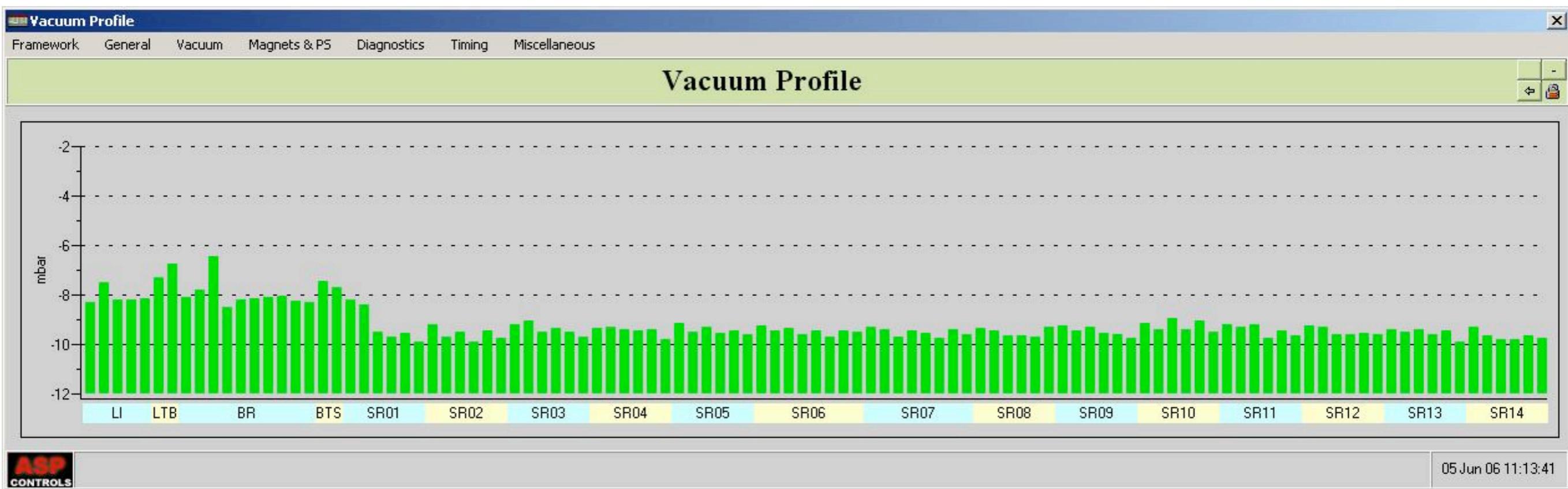
Hardware

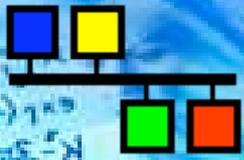
- Variety of dual-screen x86-based computers running Windows XP and RedHat Enterprise Linux
- PSS Console
- Maintenance Console (for monitoring network, deploying software, variety of other maintenance applications)

Software

- Delphi 2005 for Operator Interface
- MATLAB applications developed by physicists
- Bitscope Remote Oscilloscope monitoring software
- OPC link to building and plant monitoring





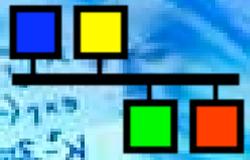


Initial beamlines - operational 31 March, 2007

- Protein crystallography
- Powder diffraction
- X-ray absorption spectroscopy
- Soft x-ray spectroscopy
- Infrared spectroscopy

Next phase - staged implementation through 2007/8

- Microspectroscopy
- Medical imaging
- SAXS/WAXS
- Protein crystallography II

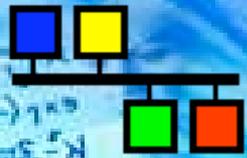


Progress

- Photon delivery system contracts let and fabrication commenced
 - Most include EPICS controls
- Major endstation items ordered
 - Detectors
 - Diffractometers
 - Data acquisition equipment
- Hutch contract placed and fabrication commenced

Targets

- Hutches installed in 3Q2006
- Photon delivery systems arrive 4Q2006
- Installation in 1Q2007
- Commissioning 1Q2007 and onwards



EPICS

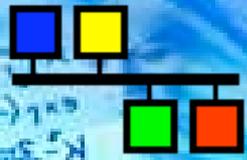
- Developing under 3.14.7 and 3.14.8.2
- Extensive use of synApps
- Mainly Linux (CentOS, Fedora) with Windows as required

Hardware

- Delta Tau and Galil motion control
- Wide range of VME hardware
- All VME hardware accessed across PCI/VME bridge using existing drivers
(more information in another presentation)
- Schneider PLCs for EPS and PSS

User interfaces

- Blulce for Protein Crystallography
- GumTree for Powder Diffraction and SAXS/WAXS
- GSECARS developments for XAS
- MEDM for commissioning/early operation



Physical infrastructure

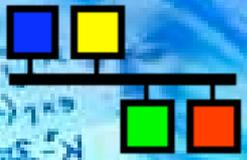
- Gigabit fibre and copper network inside facility
- Central core switch providing routing and firewall functions
- High bandwidth fibre connection to internet backbone

Logical configuration

- Separate VLANs for:
 - Accelerator
 - Individual beamlines
 - Servers
 - Office
 - Guests
- EPICS gateways to link to EPICS across VLANs

Applications

- Internal web server, FTP, external web site under development
- Electronic log book, Wiki, Perforce, Bugzilla



Who are we?

Richard Farnsworth

Steven Banks

Mark Bennett

Tim Butler

Mark Clift

Glenn Jackson

Bryce Karnaghan

Wayne Lewis

Wendy Lim

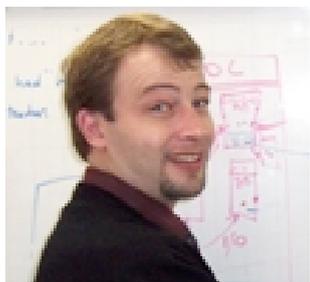
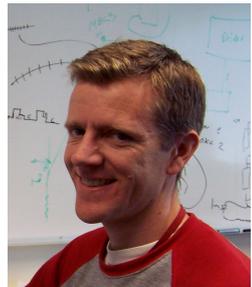
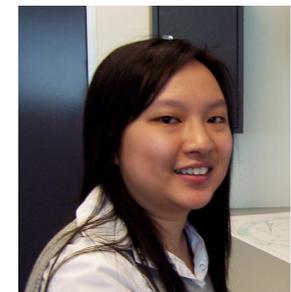
Michael Mallis

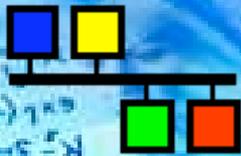
Andrew Rhyder

Andy Starritt

Matthew Tuffin

- Lead Control Systems Engineer
- Control Systems Engineer
- Control Systems Engineer
- Beamlines IT
- Beamline Control Systems Engineer
- Control Systems Engineer
- Control Systems Engineer
- Beamline Control Systems Engineer
- Technical IT Administrator





www.synchrotron.vic.gov.au