

University of Sydney – Electron Microscope Unit

Grid-enabled Access to a National Archive of Nanostructural Imagery (GRANI) Project

Requirements Analysis - Survey of Existing and Required Archival Facilities and Services

Date: 20 / 09 / 05

Notes :

(Simon Ringer & Peter Lines)

- 1 Online Registration.
- 2 Setup new users meeting.
- 3 Delegate contact staff member to look after person.
- 4 Ruth arranges meeting to discuss the user requirements.
- 5 Artologic -
3000Euro – Global Licence

Individual user accounts in synch with mike booking system –maintain files

Metadata

In lab notebooks
Filename

Windows NT – 8.3 Filename
OS 8.6, OS9
Windows 95 , NT, 2000, XP

Problem with instruments tied up in post processing

Instruments
Also by processing software & workstation

SIS - Soft imaging system
Main image analysis package

Synchronisation – more systematic , less interaction
Robotic – Apply same to 100

General

1. How many instruments does your centre support? Which ones are in most demand?

*About 50 – some preparation equipment
30 – imaging and analysis*

- *Atom probe*
- *Image analysis software*
- *SEM (scanning electron microscopes)*
- *TEM (transmission electron microscopes)*
- *Xray scanner*
- *Infrared scanner*
- *Light and Laser*
- *Tele microscopy*

(Instrument usage in NANO Annual Report 04/05 (Pg 38))

2. How many users do you have – individuals or organisations?

+538 individuals

Access to Instruments

3. What is the process for registering as a user and booking an instrument?

- *9 -5 hours initially*
- *Later after hours*

4. Do you have an online booking system? How is this accessed?

EMU (Electron microscope unit) website <http://www.emu.usyd.edu.au/emu/>

- *Yes - Password content.*
- *Choose location, instrument and time.*

5. Do you have secure logon procedures for registered users? Is it password controlled? How do users register and acquire a login id and password?

- *Secure login (for registered users)*
- *Apply through EMU website*
- *<http://fawcett.emu.usyd.edu.au/emu/index.jsp>*

6. Are there restrictions on how long/when users can book an instrument?

7. What is your charging scheme – subscription or time-based? Individual or organization-based?

- *Uni of Sydney – bulk annual subscription for research group*
- *Outside groups – hourly based individual subscriptions*
- *Uni woolongong ,CSIRO – prepaid*

8. How do you log usage?

Form Input :

1. *Register- personal details, project details, billing details – account codes*
2. *New user meeting – DHNS compliance (safety)*
 - i. *– requirements, instruments, training! (Courses)*
 - ii. *Swipe cards*
3. *User categorisation – levels 1 , 2 & 3*

9. What security mechanisms are used to stop vandalism and hackers? Are the instruments behind firewalls? Do you use swipe cards?

- *Firewalls- instruments on VPN*
- *Swipe cards*
- *Password controls on fileservers*

10. What databases do you currently maintain, what information do they store, what platforms are they on, do they talk to each other?

- *Booking / Usage* – *Postgraduate*
- *Extensia Portfolio , Annual reports* – *ULI*

11. How often do you backup administrative data and users' data?

Nightly

Telemicroscopy

12. Are all of your instruments online? If not, how many instruments do you have and what percentage/how many are online?

- *Still darkroom*
- *But every instrument capable of digital capture*

13. Can you control the instruments remotely or only view current image in real-time remotely?

- *3 – telemicroscopy - SEM, TEM, optical*
- *Other mouse-driven systems*
 - i. - scanning probe mikes*
 - ii. - atom probe*

(5 computer)

14. Are they connected to broadband networks? i.e., GrangeNet? What bandwidth? Private LANs (e.g., VPN) or internet?

- *Ultra high use TEM – effects image quality – better to have an outside room.*
- *Get technicians overseas to troubleshoot mikes*

15. How are the samples transferred and prepared?

- *Commercial Users – TEM for Canterbury NZ*
- final prep

16. Is simultaneous videoconferencing available and a necessity? Do you use both video and audio or only audio? How many web cameras?

- *Polycom, apple site , phone , speaker phone*
- *Good quality*

17. How often is telemicroscopy actually utilized? Under what circumstances is it used/useful?

VNC – Virtual Network Computing

Image Archival

18. How do users save and organize their images and analytical data ? As flat files in folders or in databases?

- *Image lab folders – for each instrument*
- *Works with own folders*
- *Store work there*
- *Need to automate accounts on fileserver*
- *Also users folders – If multiple instruments*

19. What image formats are supported?

- *Depends on Instrument*
- *-TIFF, JPEG, ZXI, Proprietary Formats*
- *(Confocal)*

20. What other types of data (e.g., spectrometry data) do users need to save? What formats are used/required?

- *XRD Spectra*
- *Atom probe datasets (3D slots)*
- *Time Series Data*
- *Frame Sequences (5 -10 fps) (Confocal)*

21. Do users save images in multiple formats?

- *TIFF, JPEG, ZXI, Proprietary Formats*

22. What image conversion services would be useful? e.g., tiff -> thumbnail

23. Does each instrument have its own camera and proprietary software?

- *Optical mikes – both*
- *Yes – Some built in , some added – level on integration varied*
- *3 SEMs – digital image capture, 2 add on*
- *TEMS – camera added on*

24. Are there built-in image analysis and manipulation tools?

25. Are any instruments connected directly to databases?

- *Atom probe*
- *Ziess Optical Microscope*

26. What facilities exist for saving metadata/data with images?

- *Store to CD-ROM*
- *Image Sticks*
- *Can Download FTP – Copy Remotely*
- *XL30 – Scale Bars, dates on Images – tend not to do it*

27. What data/metadata can be saved automatically/manually?

- *Users can do*
- *How to set quotas? Diverse requirements 10KB to 2GB*

28. How do users relate an image to precise sample coordinates? What happens when a session is interrupted?

29. Are there limitations on users' storage space?

30. What happens when users exceed their space limitation?

31. Are there time-limits on local users' data storage?

- *30 Days – backed up nightly*
- *Shifted to folders they cannot access (overwritten after 1-2 months)*
- *Stored on tape*
- *No space quotas*

32. Are there any search and retrieval services for finding stored images/data?
33. What kinds of search and browse facilities do you envisage?
34. Is there any particular image database software you would like to use or be investigated/evaluated further?
35. How do most users archive their images/data in the long term? On what medium?
36. How do users transfer very large images/files across the network?
- *FTP*
37. Do users want to be able to share images with others? What kinds of sharing and access policies do you envisage?
- *Openness to other users*
 - *-everyone can access everyone's images*
38. Would you like a centralized database with secure access across the NANO nodes or only within each NANO node?

39. What useful value-add services could be provided e.g., annotation services?
Watermarking? Image segmentation?

Finally

- nominate which items are mandatory, highly desirable, desirable, optional, unnecessary (M, HD, D, O, U)
- nominate which items are high priority, medium priority, low priority (HP, MP, LP)
- any other items on a wish list