

# Electronic Lab Notebooks (ELNs): a Solution for Active-phase Data Management

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# Outline

- Context
- ELNs: some concepts
- LabArchives project @ MIT
- Lessons learned and further questions
- Next steps
- Questions and discussion

# Context @ my university

- RDM service within the Libraries
  - Grew from the bottom-up
  - Consulting, workshops, resource guides
  - Team supports all disciplines
  - *Referrals to related services on campus*
- Recent initiative to build relationships and collaborate with related service-providers on campus (e.g., **IT**, **VP for Research**, legal, human subjects, etc.)

# Role of Lab Notebooks

- Laboratory-based research groups in the natural and physical sciences
- Lab notebook entries typically document:
  - Procedures or protocols (e.g., steps in using equipment, recipes for making mixtures)
  - Observations/research data
  - Conclusions
- Standards for sign-off for patent filing

# Electronic Lab Notebooks (ELN)

- Software to collect and track lab information
- Upload and store files, including automatic import of data from lab machines
- Search
- Remote access and backup
- Share contents with collaborators
- Standardize templates for use across a group
- Version control and time-stamping of activity

# Types of ELNs

## General Purpose



labguru

## Discipline-specific



# LabArchives Project: Impetus

- University IT department receiving inquiries
- LabArchives selected as a general-purpose software that could meet *most* researchers' needs and support goals to:
  - Improve active-phase data management/storage
  - Centralize technology, budgeting and support
  - Support university documentation of research

# Project Partners

- Lead: Information Services & Technology (IS&T)
  - New product division
  - Help desk
- Existing peer model to collaborate with the...
- Libraries (RDM group)
- Vice President for Research



# Project Goals

- Make LabArchives available campus-wide and raise awareness among researchers
- Obtain feedback on the product and better understand user needs and practices
- Develop support model
- Ultimately, more secure and organized storage of research data and related materials

# Project Tasks

- Agree upon support model
- Develop staff skills: familiarize ourselves with the software and how it might be used
  - Used LabArchives as our project workspace
- Clarify functionality with the vendor
- Publicize and write documentation for users
- Develop back-end documentation for staff

# Researcher Usage

- Most usage so far: students & research staff; chemical engineering, material science and engineering, health science & technology
- Active-phase, limited sharing
- Coordinated vs. optional use in a lab
- Storing procedures/protocols vs. data
- Tracking work for IP/patent needs
- More to be learned on researcher workflow

# Features Investigated

- Need to understand functionality within context of life-cycle curation
- File format management
- Storage and backups
- Integration with other tools (e.g., Dropbox)
- Moving data from active-phase storage in LabArchives to long-term public access in a data repository

# What About the Social Sciences?

- Potential for use in organizing research
- Focusing first on getting uptake among lab-based research groups, understand use cases
- Adapt terminology
- Social science equivalents of protocols?
  - paradata
  - survey instruments and question banks
  - methods documentation
  - experimental setup for RCTs

# Lessons Learned & Further Questions

- Developing good practice documentation from a variety of perspectives/expertise
  - Library focus: advising on practices to best enable downstream data sharing and repository deposit
- Strengths and requirements of project partners
- Messaging: offer without endorsement
- Knitting together various tools for research (e.g., Dropbox, lab management, analysis, OSF)
- Active-phase vs. data publishing platform?

# Next Steps

- Need to better understand use and develop ongoing evaluation mechanisms
- Support other ELNs? (yet there's a long tail...)
- Related proposal for a campus RDM service network; may provide more opportunities to integrate services across the life cycle

# Conclusion

- Explore options for partnering across your institution on active-phase RDM tools
- Be open to new tools and unexpected research uses
- Thank you!
- Questions and discussion?