7 steps to manage your research data digitally

Practical strategies on how you can get started

SciNote

Speakers

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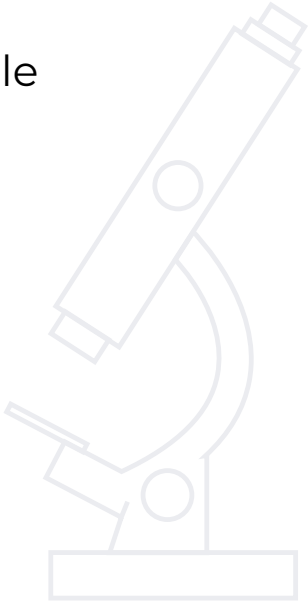
Housekeeping

- Chat will be open for activities and discussions
- Please leave your questions in the Q&A box
- Webinar recording & resources referred to will be available after the event
- Remember to fill out post-webinar survey



Next webinar

Webinar SciNote

Setting up a digital infrastructure to support regulatory compliance

Date / Time:
March 29 at 7am PST; 10am EST; 4pm CET

dynamic code

Magnus Refthammar
Head of R&D

SciNote

Theresa Liao
Content Specialist

Let’s start with an activity

Waterfall activity

There will be a question on the next slide.

Type of your answer for the question in the chat box, BUT do not press enter or hit submit. Make sure it’s set to send the message to everyone.

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What’s your goal for managing data digitally?

Why care about data management?

- Research funding agency requirements
- Regulatory compliance
- Don’t want to lose data when a student or staff member leaves the lab
- Want to find data much faster when I need to publish/apply for grants/share with collaborators
- And more…

What's FAIR?

Findability, **A**ccessibility, **I**nteroperability, & **R**euse of digital assets

https://www.go-fair.org/fair-principles/

Key concepts:

- Metadata & data should be easy to **find** for both humans & computers
- Know how data can be **accessed** (plus authentication & authorisation)
- Data should be integrated with other data, and **interoperate** with applications or workflows (for analysis, storage, and processing)
- Metadata and data should be well-described so that they can be **reused** - replicated and/or combined in different settings

Let’s get started with

7 steps to manage data digitally

Keep in mind that we are not funding or regulatory agencies!

Step 1: Have a clear goal in mind

What is your goal for managing research data (digitally)?

- Something to work toward
- Prevents distraction, helps with prioritization

But wait…

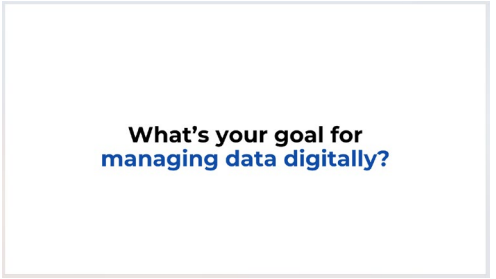
Step 1: Have a clear goal in mind

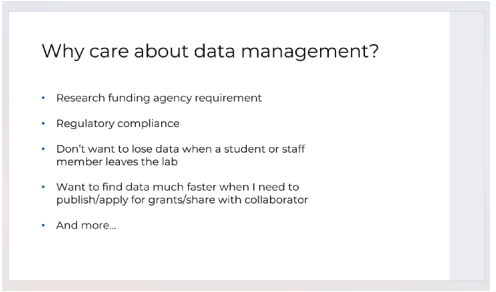
What is your goal for managing research data (digitally)?

- Something to work toward
- Prevents distraction, helps with prioritization

We just did this in our activity! Next steps:

- Be specific and measurable, and include a time frame
- Refer to your Data Management Plan





Step 2: Understand best practices

Keep FAIR in mind

For your files:

- Naming conventions
  - Ensure it is something descriptive, relevant, and allows for sorting
  - Incorporate dates, version numbers, and project number
  - Keep it short
- Version control
  - Have a system in place to track versions and activities (e.g., who made what changes)
- Meta data
  - Make sure to capture meta data (“data of data”)
  - Include title, description or summary, person who developed the file, and key words
- Cross reference and documentation
  - Make sure you can trace from file to file
  - Ensure you can locate supplementary information, reports, raw data, and other notes

Step 2: Understand best practices

For organizing files:

- Create a hierarchy for your file folders
  - Start with broader topics, and then narrow down to specifics
- Back up
  - Make sure you back up your files regularly
- Be consistent
  - Develop a system, revise during the transition, and stick to it as much as you can
- Share best practices with the whole lab
  - Make sure all team members are aware of these practices and follow them

References / resources:

- Cambridge Data Management Guide
- Harvard Longwood Research Data Management (Naming conventions)

Step 3: Review how you're managing data

This helps you understand your existing data practices

Some key questions to ask:

- What data are generated in what format?
- How are they preserved and consolidated?
- Who have access to them? Who need access to them?
- What happens when you have collaborators?
- How do you access data when you need them?

Step 4: Technical requirements/needs

What are necessities, and what are “good to have”

- Cloud-access? Locally hosted? All in one platform? Or have a “hub”?
- Back up requirements
- Security needs (e.g., 2FA, access control, encryption)
- Cross reference, activity log, version control (traceability)
- Collaboration needs (document sharing, tag, chat, comments)
- Regulatory/funding requirements
  - 21 CFR Part 11/Annex 11
  - GLP/GMP
  - Data management & sharing plan
- Privacy needs (defined by project/institution/organization)
- Other tools to help research management? (inventory, integrations, API, reporting, etc)
- Who will maintain the technical infrastructure (DIY? Digital platform?)
  - How accessible is the support?
  - Training materials?

Resource: ELN self-evaluation spreadsheet

Step 5: Communicate the change

Make sure everyone in the lab understands why

- Involve lab members in decision making
- Listen to feedback from those who handles data everyday
- Provide context and background on why this is important

Resource: Digitalizing your lab? 3 pitfalls to avoid in digital implementation [checklist]

Step 6: Develop a plan toward your goal

Look at step 1-4, and create action items and set timeline

- Decide how to transition past, existing and new data
  - Based on our experience, start the transition with active and new data, and convert past data when needed

- Create templates and workflows when you can

- Decide who will be responsible
  - **Students? Post-doc?** Keep in mind turnover. Also, does the student/post-doc have enough authority to move things forward?
  - **Research Associate? Staff?** Make sure to balance their existing workload and create motivation.
  - **PI?** Is this a priority? Will the PI get too busy for it?

Step 6: Develop a plan toward your goal

Examples of action items:

- Develop a naming system for your files (and document this)
- Create a template for documenting protocols
- Decide what file structure would make the most sense (and document this)
- Research & purchase digital tools (e.g., ELN) to help you
  - **Trial/Demo (highly recommended, shorten your research time)**
  - Ask about pricing, training materials, support, added benefits

Step 7: Review, improve, and maintain

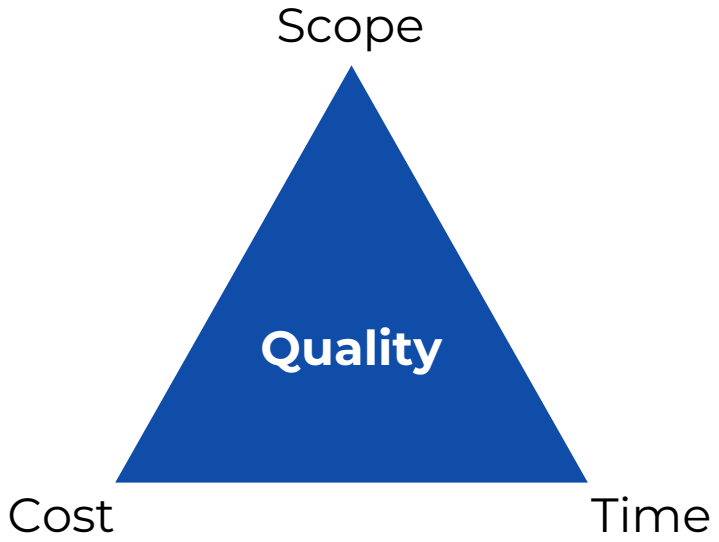
Don’t expect overnight change!

- Review what’s working, what’s not working
  - If something isn’t working, understand why
  - Will help you maintain best practices in the long run
- Have a plan for ongoing training
  - Create training materials so new lab members can quickly understand what’s going on
- Keep your goal in mind, and prioritize
  - Know what is necessary, and what is good to have

Comparing ways of managing data

The quality of your data management depends on three factors/constraints – scope, cost, time

Resource: Data management and sharing: Paper vs OneNote vs SciNote Electronic Lab Notebook [Comparison]



Working with paper

Easy to use, extremely difficult to manage

Challenges

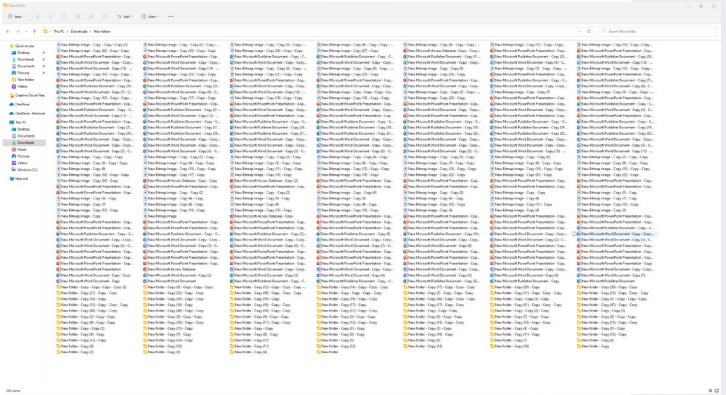
- Very difficult to find, access, and reuse data or meta data
- A lot of time (and physical space) wasted to manage

Actions

- Switch to a digital system

Working with shared server folder

Quick to lose control with multiple users



Challenges

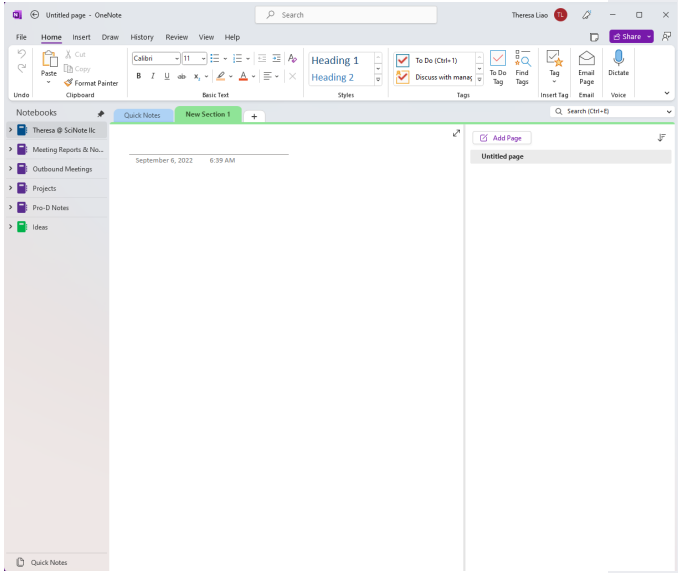
- Depends on individuals to follow best practices
- Lacks interactive features for automation, tracking, referencing

Actions

- Standardize data management procedures as much as you can
- Create templates for repeatable tasks

Working with OneNote

Lack structure, digital version of paper



Challenges

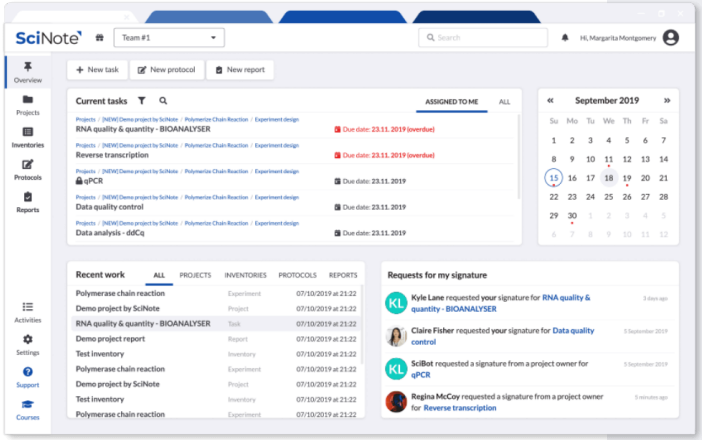
- Depends on individuals to follow best practices
- Lacks hierarchy; more like paper (flat structure)
- Some basic interactive features, not designed for lab

Actions

- Standardize data management procedures as much as you can
- Create templates for repeatable tasks

Working with an ELN

Longer to adopt, but pays off in the long run due to features designed for research labs



Challenges

- Takes time to integrate into day-to-day
- Might have a cost associated with it

Actions

- Make sure to sign up for full trail/demo to learn your options
- Treat it as an investment; get the most out of it (added benefits, time saved)
- Work with a provider that will help you with implementation and training

What’s it like using **an ELN for data management?**

Q&A

Theresa Liao

Content Specialist

Jack Lentjes

Key Accounts Manager

Book a meeting with Jack

jack@scinote.net

SciNote

Users Love Us

High Performer WINTER 2023

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Let’s finish with an activity

Waterfall activity

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What’s your next step for
digital data management?

Thank you

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