

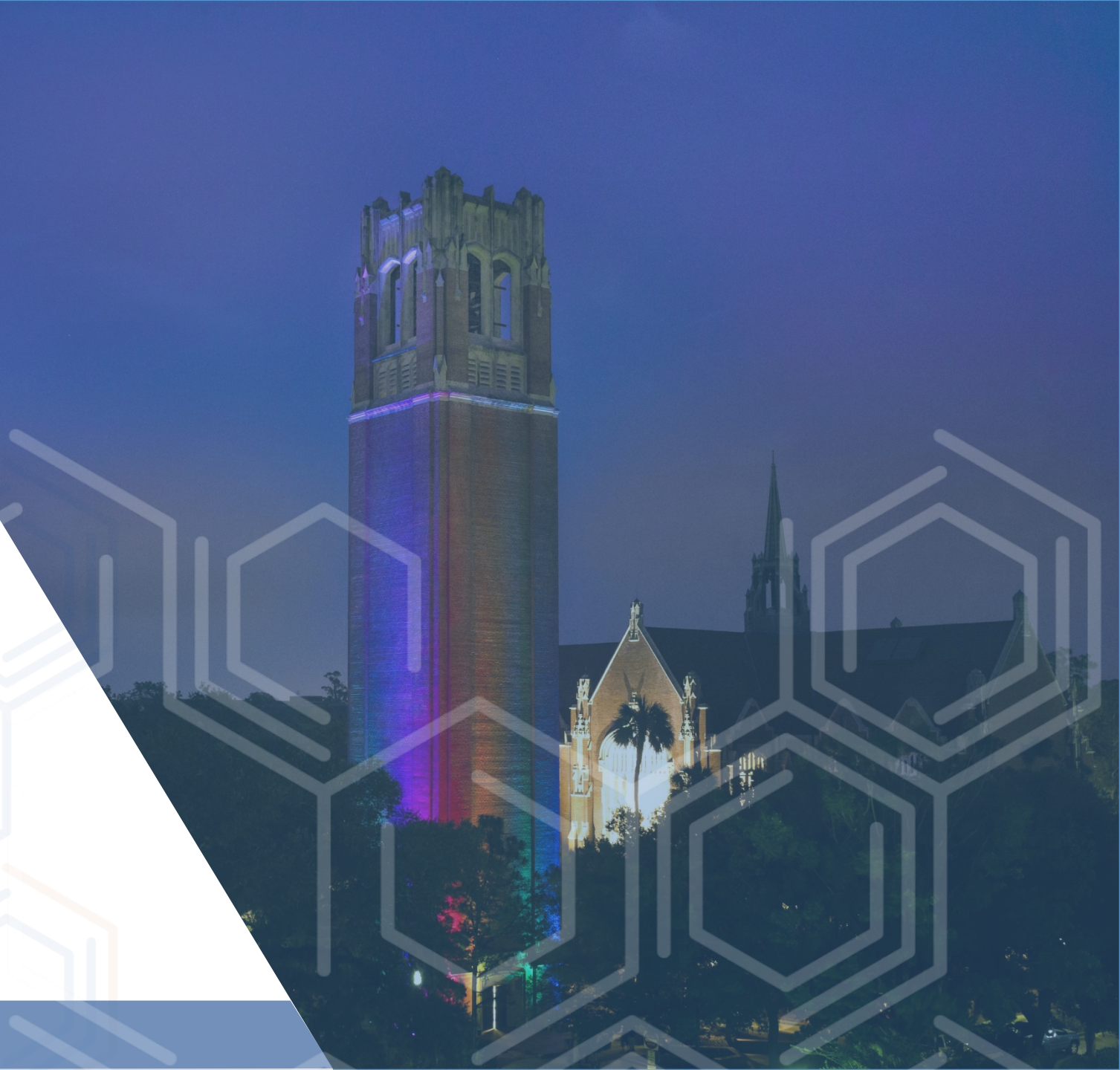
# Selecting an Electronic Research Notebook at the University of Florida

**Presenter:** Plato Smith, Ph.D., Data Management Librarian

**Date:** September 28, 2021

**Time:** 2:30 pm – 3:30 pm

**Location:** Zoom





# Acknowledgements

- Flora W. Marynak (UF Informatics Institute (UFII) and UF Biodiversity Institute (UFBI))
- Alethea Geiger (UF Informatics Institute)
- Dr. George Michailidis (UF Informatics Institute)
- Dr. Laurie Taylor (UF George A. Smathers Libraries)
- Dr. Steve Boulant (UF Molecular Genetics & Microbiology)
- Dr. Christopher Vulpe (UF Center for Environmental & Human Toxicology)
- Dr. William “Brad” Barbazuk (UF Interdisciplinary Center for Biotechnology Research (UF ICBR))
- Dr. Sylvain Doré (UF Department of Anesthesiology)
- Dr. Erik Deumens (UF Research Computing)
- Dr. Forrest Masters (UF College of Engineering)
- Dr. Sobha Jaishankar (UF Research)
- Dr. Stephanie Gray (UF Research)



# Compliance

## Good laboratory practice compliance

“The principles of Good Laboratory Practice (GLP) define a set of rules and criteria for a quality system concerned with organizational process and the conditions under which non-clinical health and environmental safety studies are planned, performed, monitored, recorded, reported and archived.” – European Medicines Agency Science Medicines Health (2021)



# Compliance

U.S. Food & Drug Administration (FDA) CFR – Code of Federal Regulations Title 21, Part 11 – Electronic Records; Electronic Signatures

Approach to Specific Part 11 Requirements:

1. Validation
2. Audit Trail
3. Legacy Systems
4. Copies of Records
5. Record Retention





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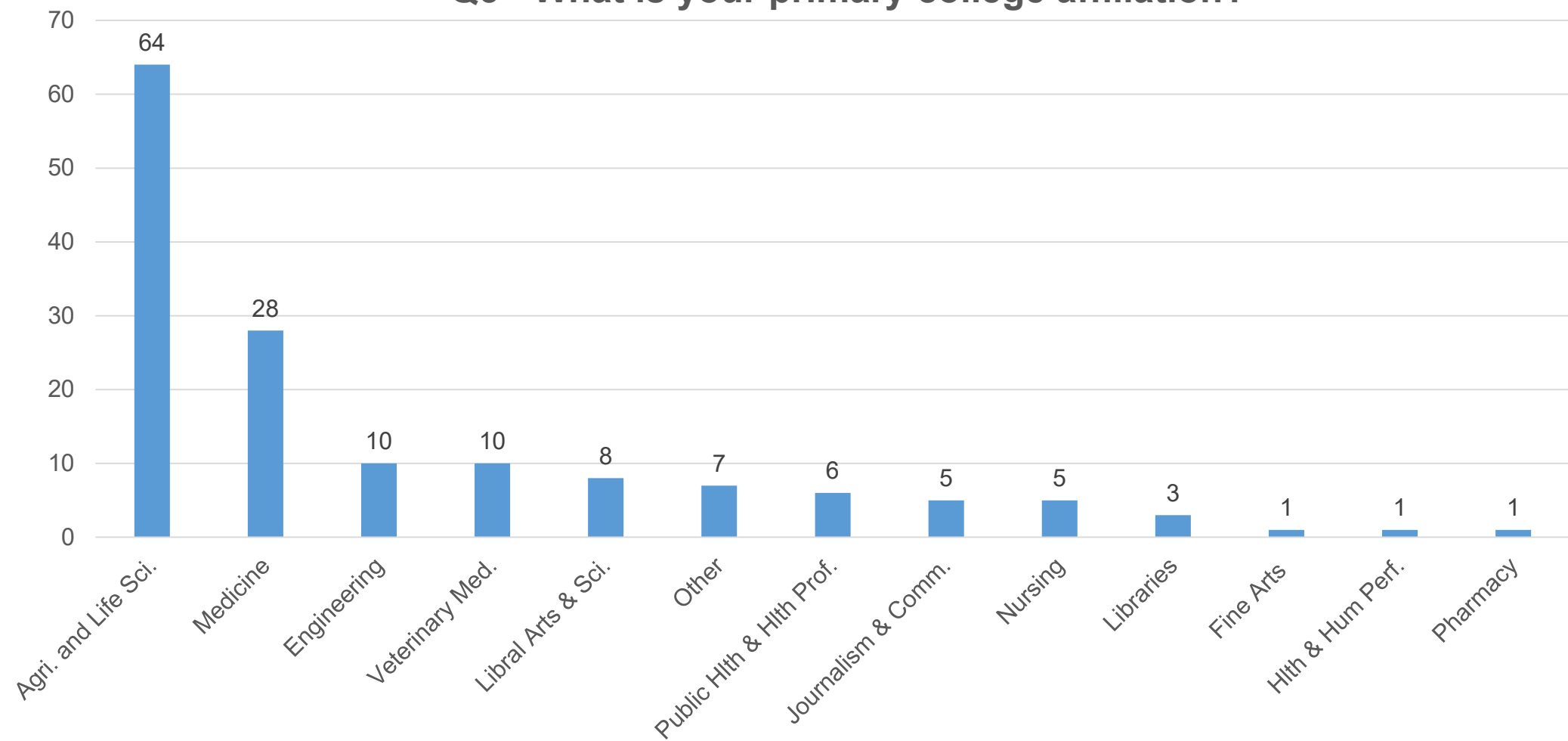


# Exploring electronic lab notebooks at UF (2020)

- May - June 2020
- Qualtrics survey – 14 questions
- 157 responses (Note: not all questions answered)
- Question 2 – What is your primary role?
  - 115 Faculty (76%)
  - 10 Staff (6.62%)
  - 10 Graduate/Professional Student (6.62%)
  - 6 Postdoctoral Fellow (3.97%)
  - 6 Undergraduate student (3.97%)
  - 4 Other (2.65) (i.e. Extension Faculty; Research scholar; Lab manager)

# Exploring electronic lab notebooks at UF (2020)

Q3 - What is your primary college affiliation?



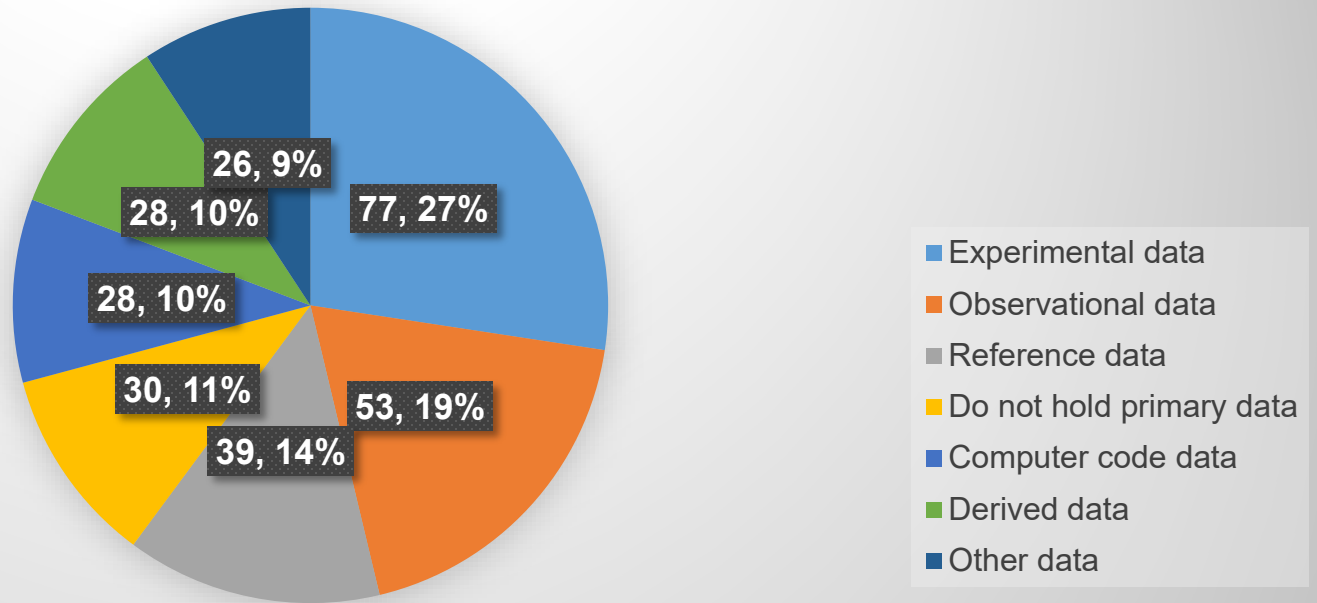






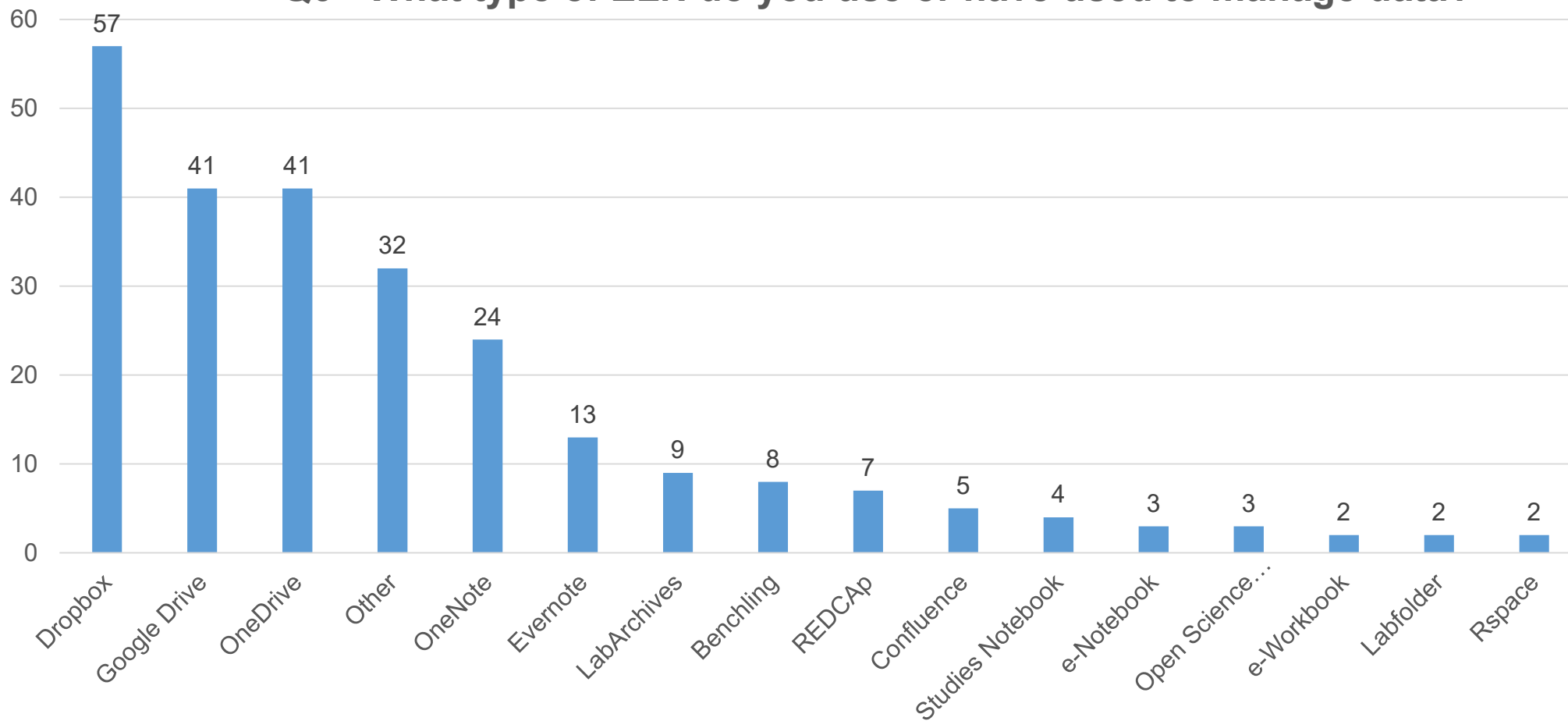
# Exploring electronic lab notebooks at UF (2020)

Q5 – What type of data do you manage using an ELN?



# Exploring electronic lab notebooks at UF (2020)

Q6 - What type of ELN do you use or have used to manage data?





# Exploring electronic lab notebooks at UF (2020)

## Q7 – How would you rate the level of need of the following ELN features?

### Required

- Windows Compatible – 78.41% (69)
- Internal Data Sharing – 72.29% (60)
- Ability to manipulate files and images – 67.05% (59)

### Preferred

- Protocol Integration – 46.43% (39)
- Metadata Creation Prompts – 44.74% (34)
- Rights Management (licensing) – 39.74% (31)

### Recommended

- Linux Compatible – 50.72% (35)
- Rights Management (licensing) – 39.74 (31)
- Metadata Creation Prompts – 38.16% (29)



# Key areas for consideration – Storage and security

(University of Cambridge)

## 1. Cloud vs local

- Cloud** - requires not local infrastructure or support; updates are provided; privacy standards are typically very high; and a good choice for individuals and research groups
- Local** – institutional electronic research notebook (ERN) deployment with integration with local systems (e.g. required Gatorlink authentication); local is more appropriate

## 2. Back-ups

- Back-up work in ERN to minimize data loss
- Do not rely on vendor back-up
- Develop an ERN back-up strategy similar to personal laptop backup strategy
  
- How much work is lost if ERN crashes?
- What is the frequency of ERN snapshots?
  - Every few minutes
  - Once a day
  
- How often to take snapshot of ERN?
  - How long are back-ups stored?
  - A year or more



# Key areas for consideration – Storage and security

(University of Cambridge)

## 3. Data security

- ❑ **What is the location of the information held in the ERN as well as ERN back-ups?**
  - ❑ Physical location
  - ❑ Server location
  - ❑ Industry partner security requirements
  - ❑ Understand security aspects of the ERN
  - ❑ Understand terms and conditions of using ERN in how the platform handles and access data

## 4. Data retention

- ❑ **What is the data retention schedule of vendor?**
  - ❑ Copies may be kept even after deletion from platform
    - ❑ How will you protect the identity of participants, if required? (e.g. via anonymization, [HHS HIPAA Methods for de-identification](#), IRB)
    - ❑ How will sensitive data be handled to ensure it is stored and transferred securely? (i.e. [HiPerGatorRV](#), [REDCap](#))
- ❑ **What is the data retention schedule of the project?**
  - ❑ Are there constraints on the length of time to keep data (i.e. data provider agreement; IRB compliance)
  - ❑ How long will you keep data after project ends (See: [UF Records Management](#) guidelines)?





# Key areas for consideration – Forward planning

(University of Cambridge)

## 1. Longevity of platform

- a. Discipline-specific platforms may not be long-term
- b. Well-established companies offer more reassurance for longevity

## 2. Futureproofing

- a. Consider future during selection
- b. Future needs (i.e. [NIH Policy on Data Management and Sharing](#))
- c. New features, general updates, and bug fixes
- d. Platform performance impacts experience

## 3. Disengagement – what if you want to change systems?

- a. Export features (including at least PDF output)
  - a. Searchable, shareable, and can be secured and duplicated – basic documentation
- b. Make monthly PDF exports and store in multiple locations (good ERN practice)
- c. Check product specification specific data formats for archival purposes (i.e. machine readable – See: [Format Descriptions](#))



# Key areas for consideration – Selecting an ELN for your lab (Harvard University Longwood Medical Area/University of Cambridge)

- The type of science that you do and the specific features that you need
  - Suitability**
  
- Your lab's established practices and preferences (i.e. Standard Operating Procedures (SOPs))
  - Platform**
  - Storage**
  
- Your institution's ELN policies
  
- The security level of your data
  
- Your budget
  - Free/cost**



# How to develop a DIY documentation ELN/ERN using OneDrive or Dropbox?

- ❑ **Do-it-yourself (DIY)** combinations of well-established productivity tools (e.g. **Evernote, OneNote, Dropbox, OneDrive**) to operate core features of a ‘real electronic notebook’ is an attractive, economical, accessible, and low-impact option but updates can interrupt workflow.
- ❑ **Develop standard folder organization**
- ❑ **Develop file naming conventions, protocols, SOPs, and workflows**
- ❑ Create shareable notebooks with rights
- ❑ Create collaborative notebooks
- ❑ Track changes/experiments in notebooks
- ❑ Record group meetings in notebooks
- ❑ Export notebooks in PDF for collaborators
- ❑ Third-party infrastructure/data security concerns (Cloud vs local consideration)

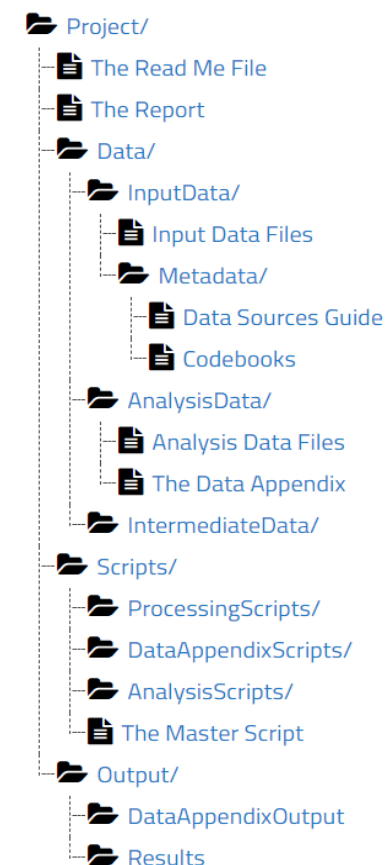


Fig. 2 - TIER Protocol 4.0



# How to pick an electronic research notebook?

(University of Cambridge)

- Do you have a budget?
- Will you be using software independently, or as a group?
- Do you need supervisor features (i.e. dashboard; overview of group's activity)?
- Are you looking to deploy at departmental/institutional level?
- Which operating systems will be used?
- What devices will be used to operate the ERN software?
- Do your funding agreements require specific data security/compliance?

## Evaluating the product

- Interface design
- Workflow suitability
- Data management/storage
- Integration with other software and/or online services
- Collaboration features
- PI/supervisor features
- Export features

Electronic notebook case studies - <https://tinyurl.com/yhk5o6ll>

# eLabNext use case – eLabJournal

The screenshot shows the eLabNext website header with the logo and navigation menu. Below the header is a section titled 'Personal demo – eLabNext products' featuring a 'Request a personal demo' button and a list of three benefits. At the bottom is a hexagonal infographic with five statistics.

**eLabNext**  
EPPENDORF GROUP

About eLabNext ▾ Products ▾ Pricing Hosting Resources ▾ Contact Us

## Personal demo – eLabNext products

Request a personal demo

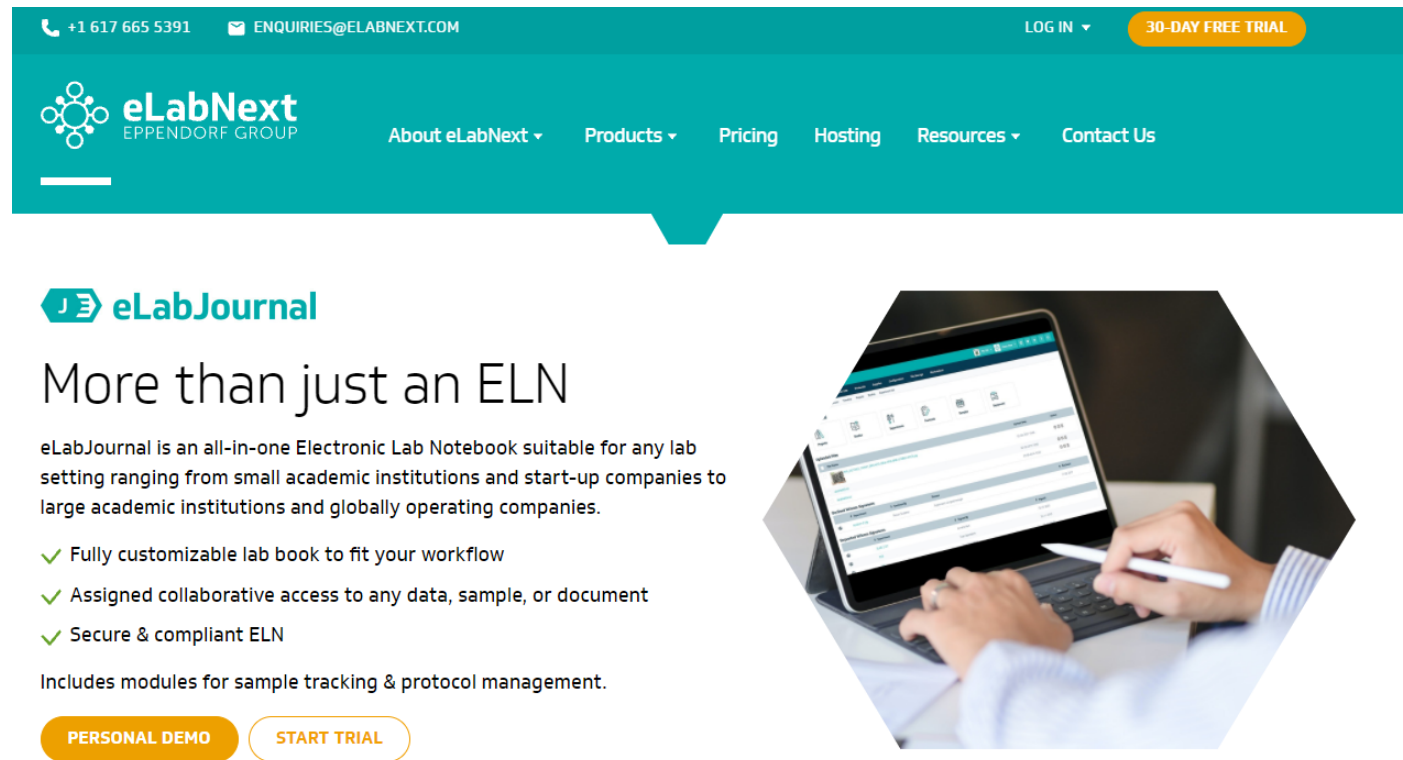

- ✓ An online personal demo when it suits you
- ✓ Review of the workflow in your lab
- ✓ Your questions answered directly by our lab digitization specialist

<b>11.000.000</b> SAMPLES ORGANIZED	<b>600.000</b> EXPERIMENTS TRACKED
<b>60.000</b> PROTOCOL TEMPLATES	<b>42.000</b> SCIENTISTS WORLDWIDE
<b>10.000</b> LABS SERVED	

Fig. 3 – eLabNext Products (<https://www.elabnext.com/products/>)



# eLabNext use case – eLabJournal



The screenshot shows the eLabNext website header with contact information (+1 617 665 5391, ENQUIRIES@ELABNEXT.COM), a login button, and a 30-day free trial offer. The navigation menu includes links for About eLabNext, Products, Pricing, Hosting, Resources, and Contact Us. The main content area features the eLabJournal logo and the headline "More than just an ELN". A descriptive paragraph states that eLabJournal is an all-in-one Electronic Lab Notebook suitable for various lab settings. A list of three benefits is provided: fully customizable lab book, collaborative access, and secure & compliant ELN. A note mentions modules for sample tracking and protocol management. Two call-to-action buttons, "PERSONAL DEMO" and "START TRIAL", are located at the bottom of the product description. An image on the right shows a person's hands using a laptop displaying the eLabJournal interface.

+1 617 665 5391 ENQUIRIES@ELABNEXT.COM LOG IN 30-DAY FREE TRIAL

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**eLabJournal**

## More than just an ELN

eLabJournal is an all-in-one Electronic Lab Notebook suitable for any lab setting ranging from small academic institutions and start-up companies to large academic institutions and globally operating companies.

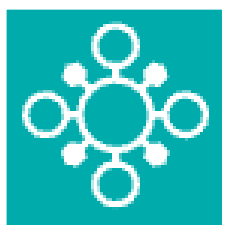
- ✓ Fully customizable lab book to fit your workflow
- ✓ Assigned collaborative access to any data, sample, or document
- ✓ Secure & compliant ELN

Includes modules for sample tracking & protocol management.

PERSONAL DEMO START TRIAL

Fig. 4 – eLabJournal (<https://www.elabnext.com/products/elabjournal/>)

# Select ELNs among some of top ELNs (LabsExplorer, 2019)



eLabJournal

- Requested by a UF Molecular Genetics & Microbiology lab
- Approved by UF IRM – August 2020
- Useful add-ons and integrations
- Good inventory management
- Harvard Medical School



LabArchives

- Previously explored by UF
- Used by several UF researchers/labs (2020 ELN survey)
- Classroom editions for students and teachers
- Mass General Brigham

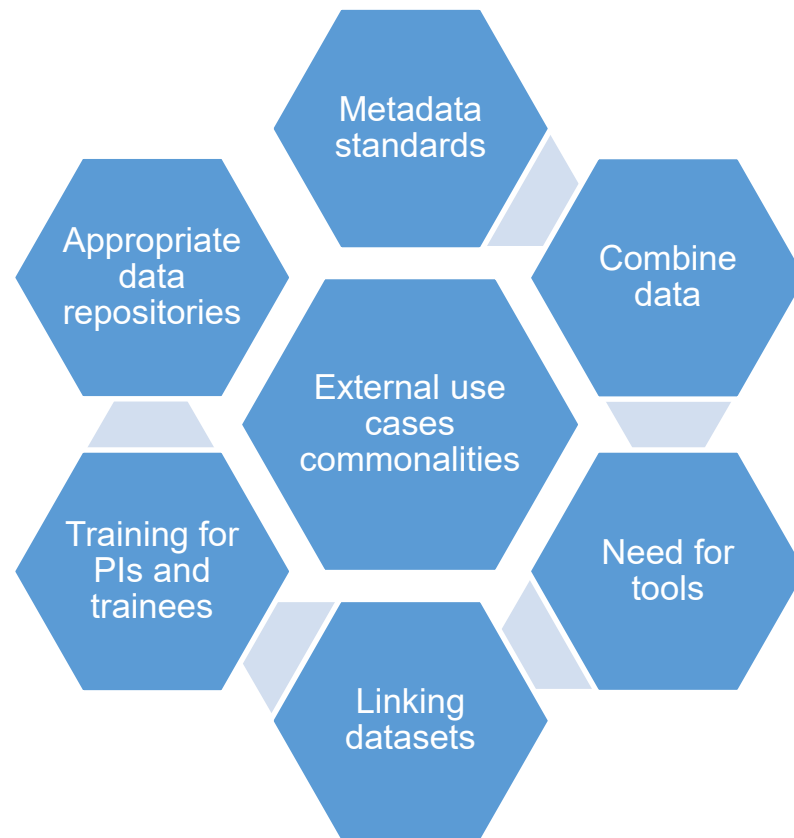


RSpace

- Integrates with several archives and repositories, including GitHub, figshare, Dataverse, ORCID, Mendeley, protocols.io and more
- Built-in metrics
- University of Edinburgh

Fig. 5 – Some top ELNs reviewed by LabsExplorer in 2019

# Some common themes across external use cases for superfund research programs (SRPs) (Suk, 2021)



**Fig. 6 – Enhancing integration, interoperability, and reuse of data**



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# Thank you

Who can help you with selecting an electronic research notebook at the University of Florida?

1. UF Office of Research
2. Your department or college IT staff
3. UF Academic Research Consulting & Services - <https://arcs.uflib.ufl.edu/>
4. Subject and departmental librarians – Subject/Area Specialists - <https://uflib.ufl.edu/specialists/>

Contact information

UF Libraries Data Management Librarian

[plato.smith@ufl.edu](mailto:plato.smith@ufl.edu)