Data management

Local version control workflows

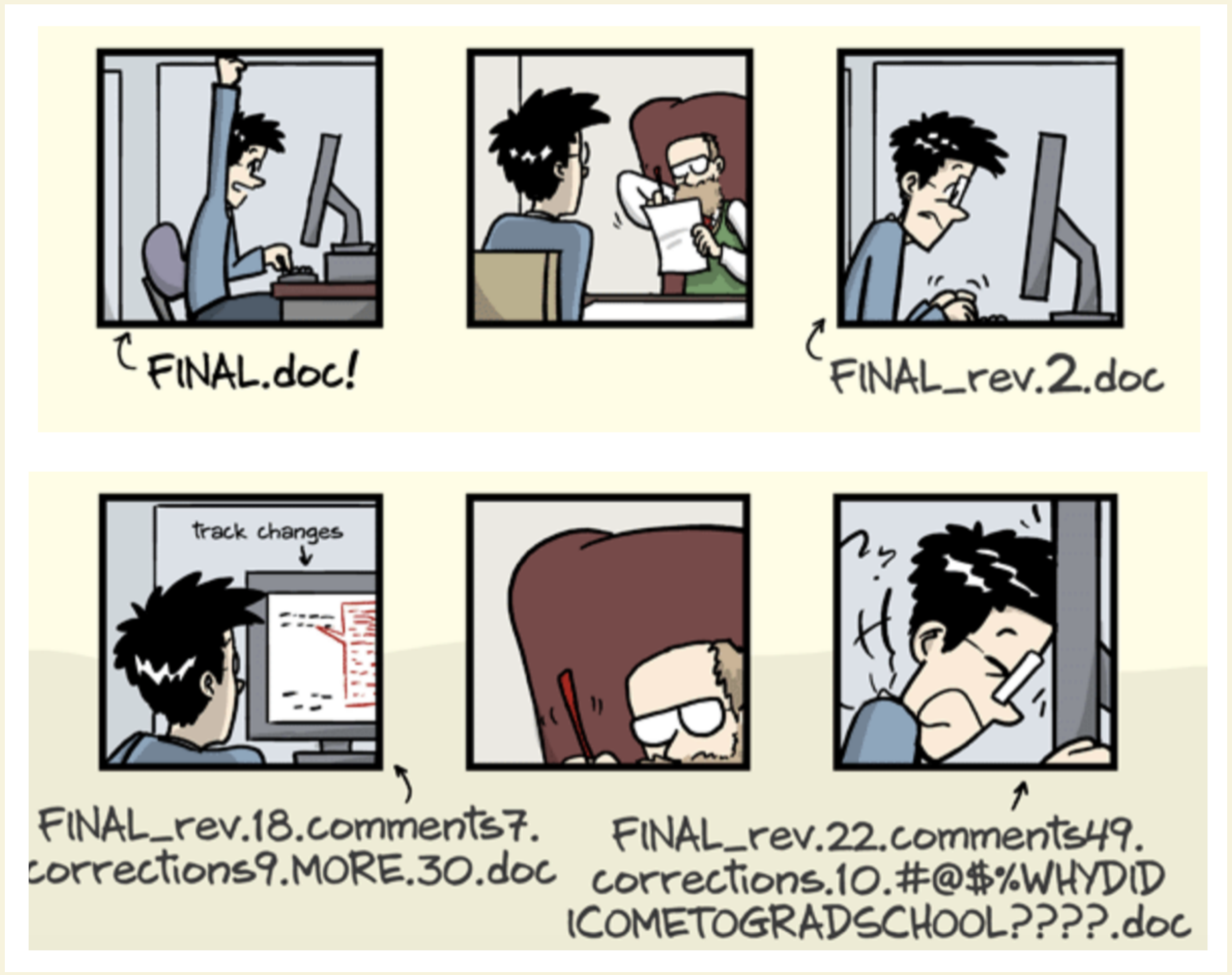
FINAL.doc!
FINAL_rev.2.doc
track changes
FINAL_rev.18.comments7.corrections9.MORE.30.doc
FINAL_rev.22.comments49.corrections.10.#@$%WHYDIDICOMETOGRADSCHOOL????.doc

Image credit: Full comic at http://phdcomics.com/comics.php?f=1531

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- **Prerequisites & technicalities**: Git identity, Gitlab/Github, Reathedocs, the Handbook
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- Sessions oriented at handbook content (totalling 6 sessions)
- Domain-agnostic narrative: "Educational course" on DataLad
- Live code-casts to follow along in your own terminal

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- Saving modifications to datasets: adding and changing files
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-> handbook chapter

DATALAD DATASETS

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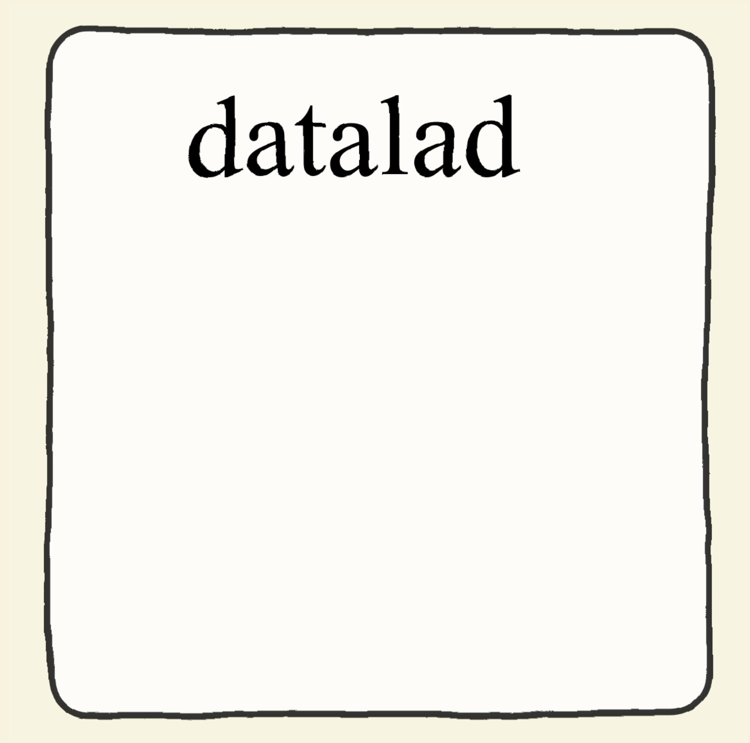
- DataLad is build on top of other tools:



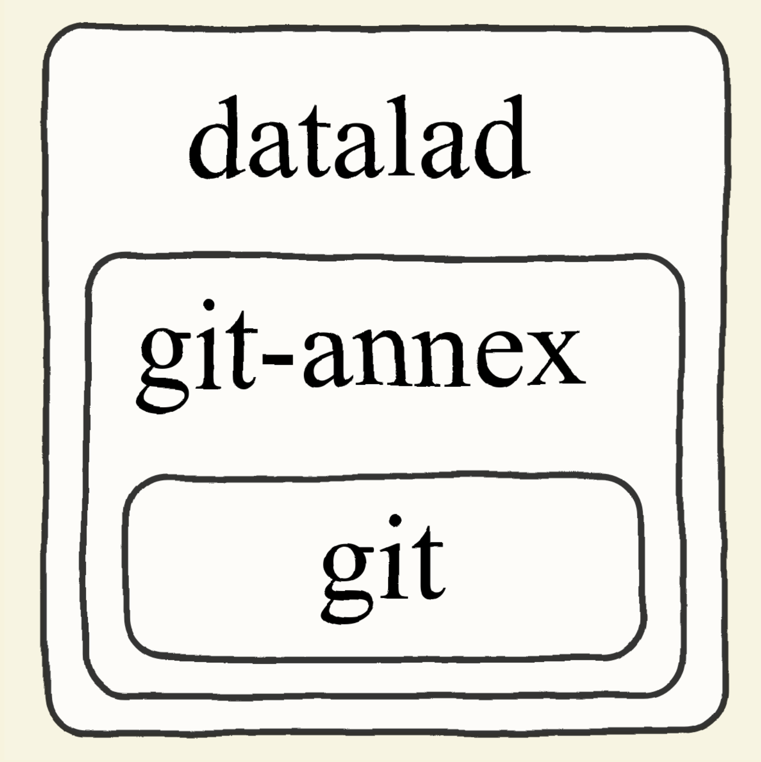
DATALAD DATASETS

The foundation is Git:

Datasets are Git repositories. If you want, use any Git command/feature!

Git-annex handles large file content:

(Large) file content is "annexed".



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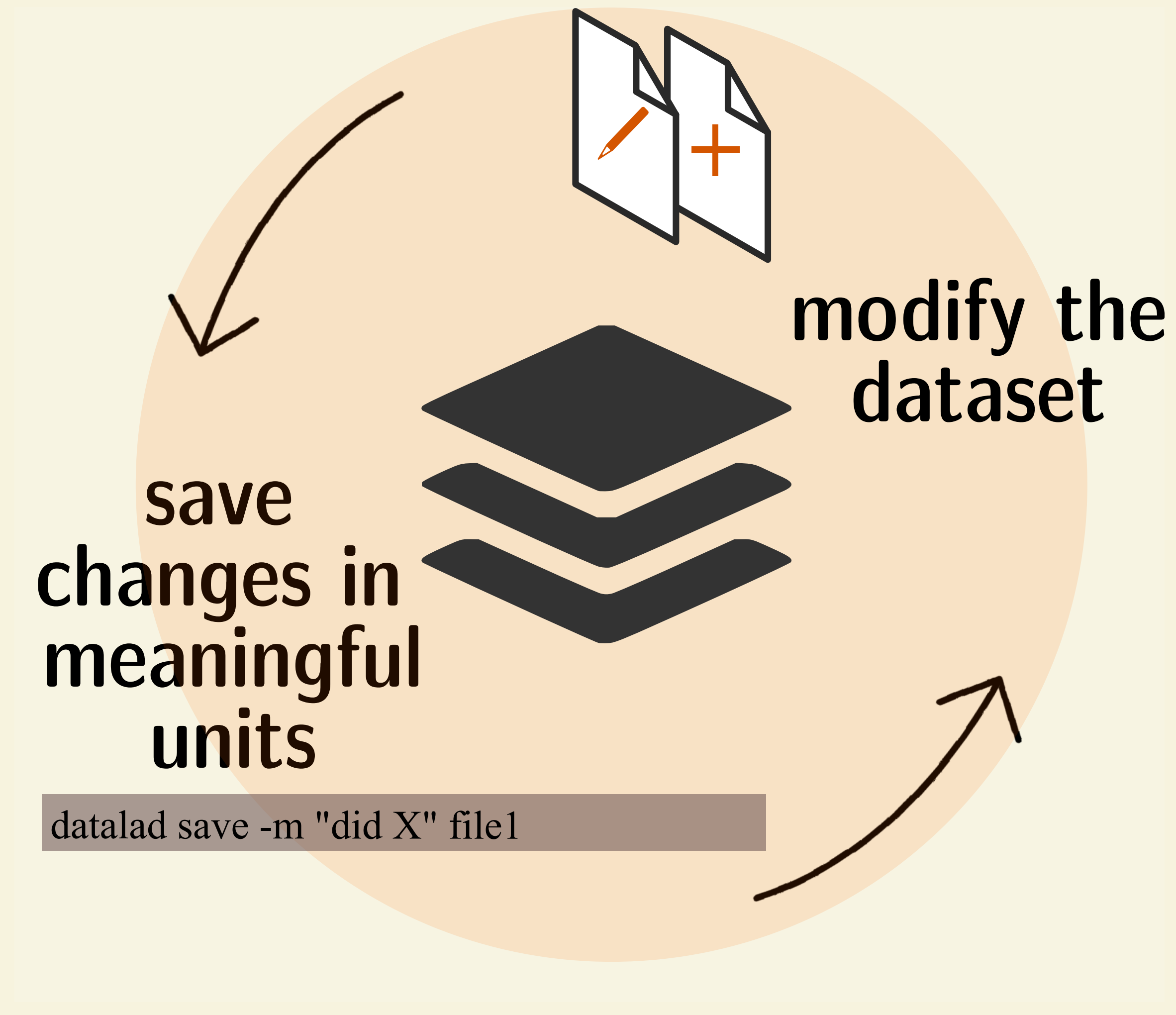

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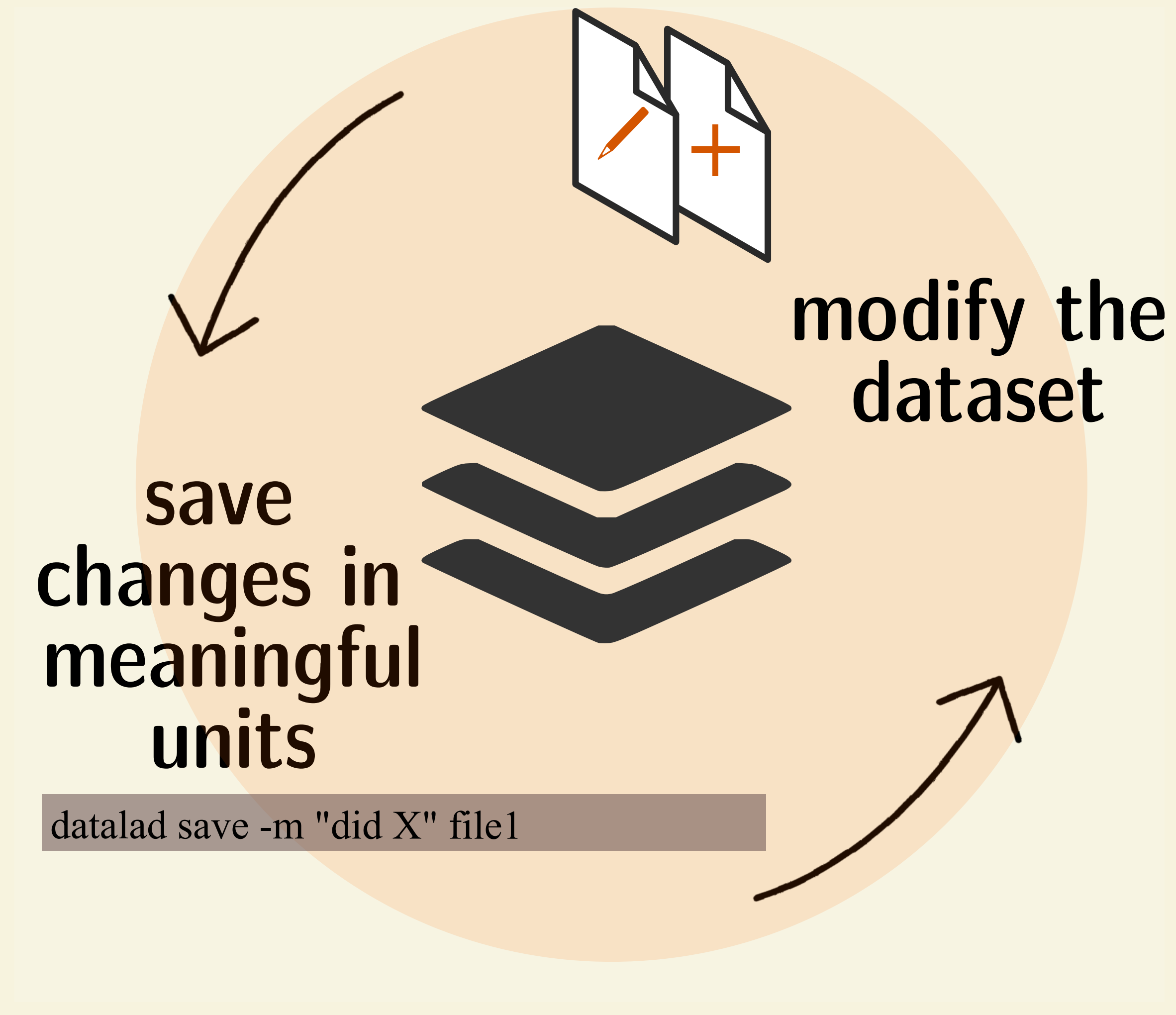

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Advice:

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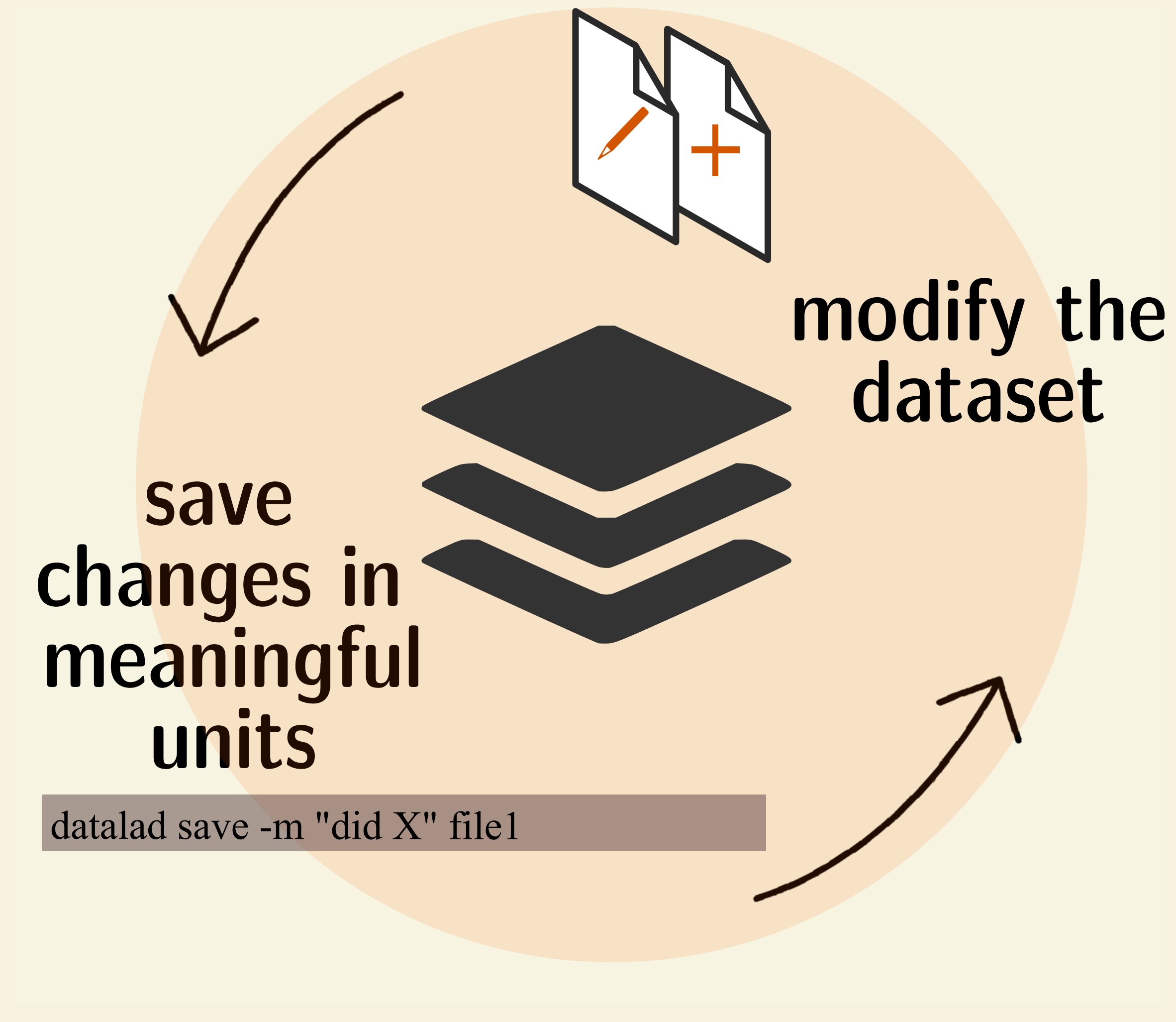

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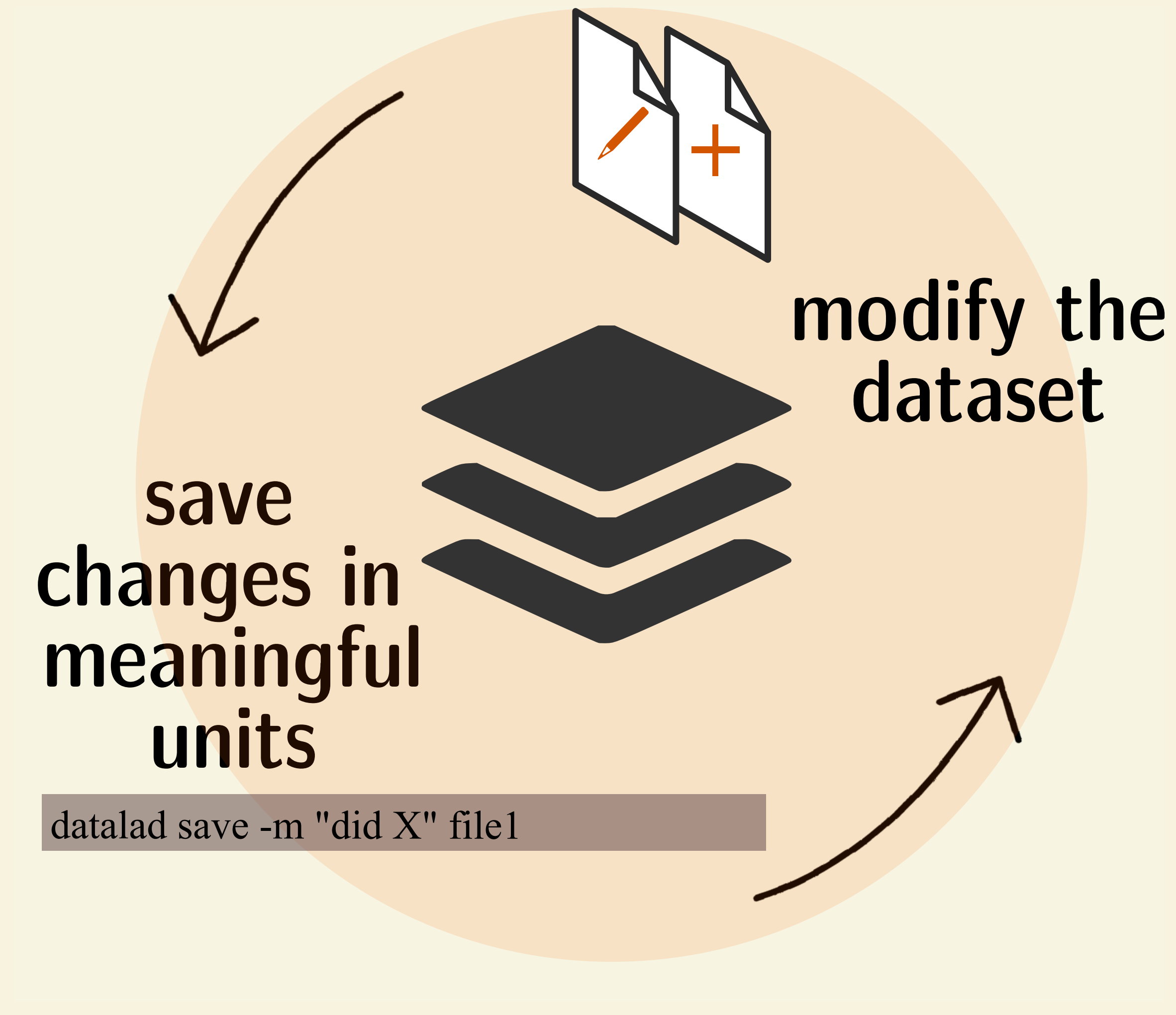

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Advice:

- Save *meaningful* units of change
- Attach helpful commit messages

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A clean dataset status is good practice.

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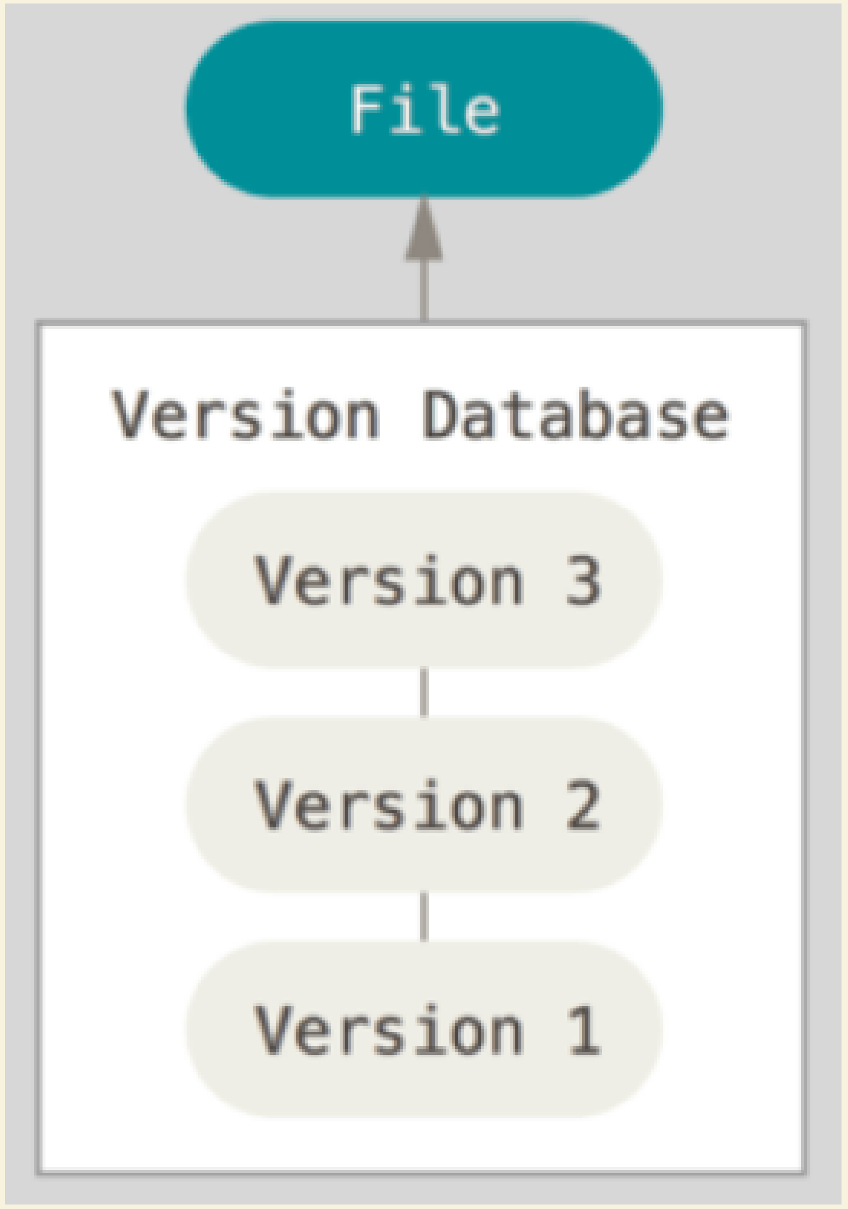

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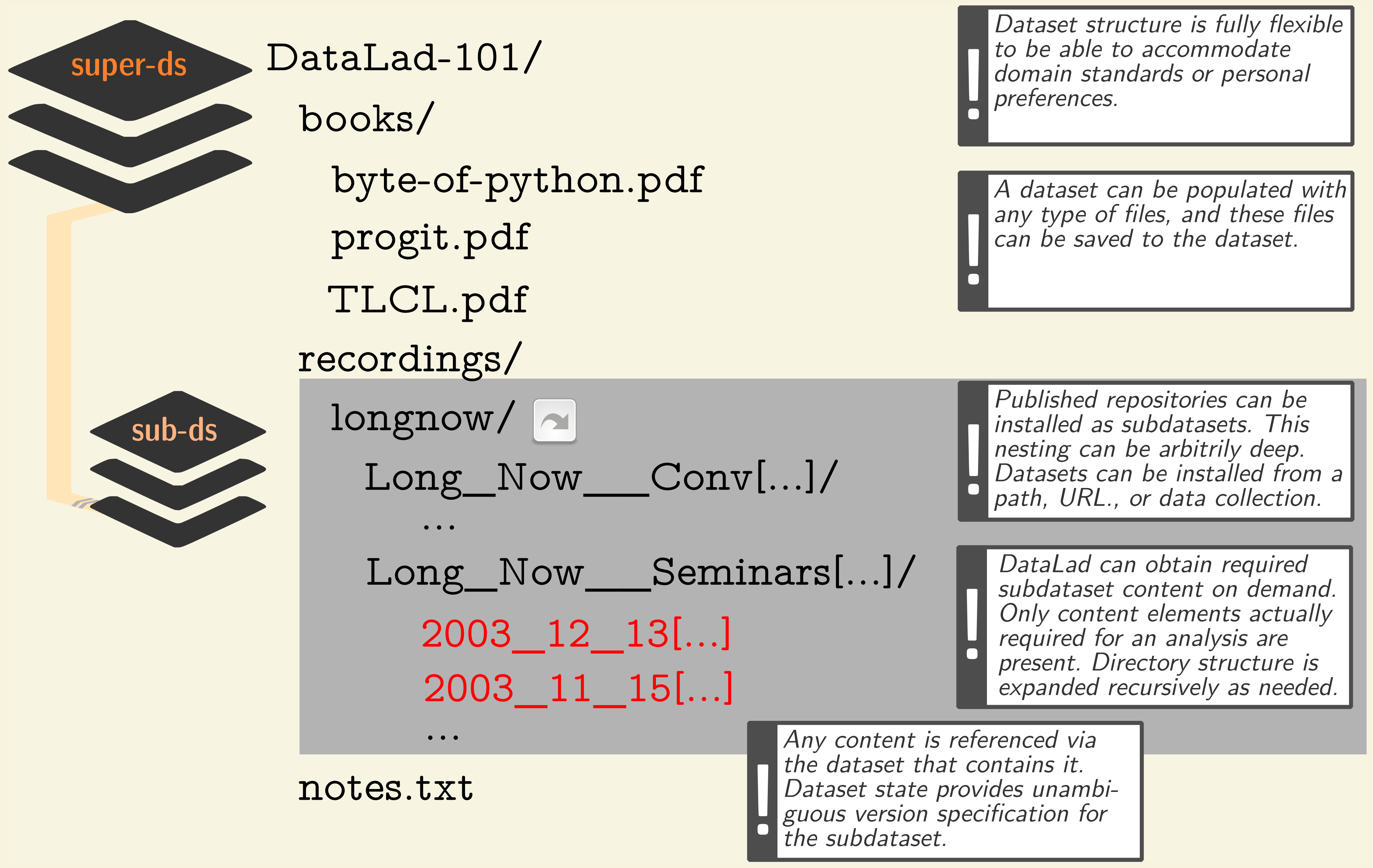

```
DataLad-101/
  books/
    byte-of-python.pdf
    progit.pdf
    TLCL.pdf
  recordings/
    longnow/
      Long_Now__Conv[...]/
        ...
      Long_Now__Seminars[...]/
        2003_12_13[...]
        2003_11_15[...]
        ...
  notes.txt
```

! *Dataset structure is fully flexible to be able to accommodate domain standards or personal preferences.*

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! *Published repositories can be installed as subdatasets. This nesting can be arbitrily deep. Datasets can be installed from a path, URL., or data collection.*

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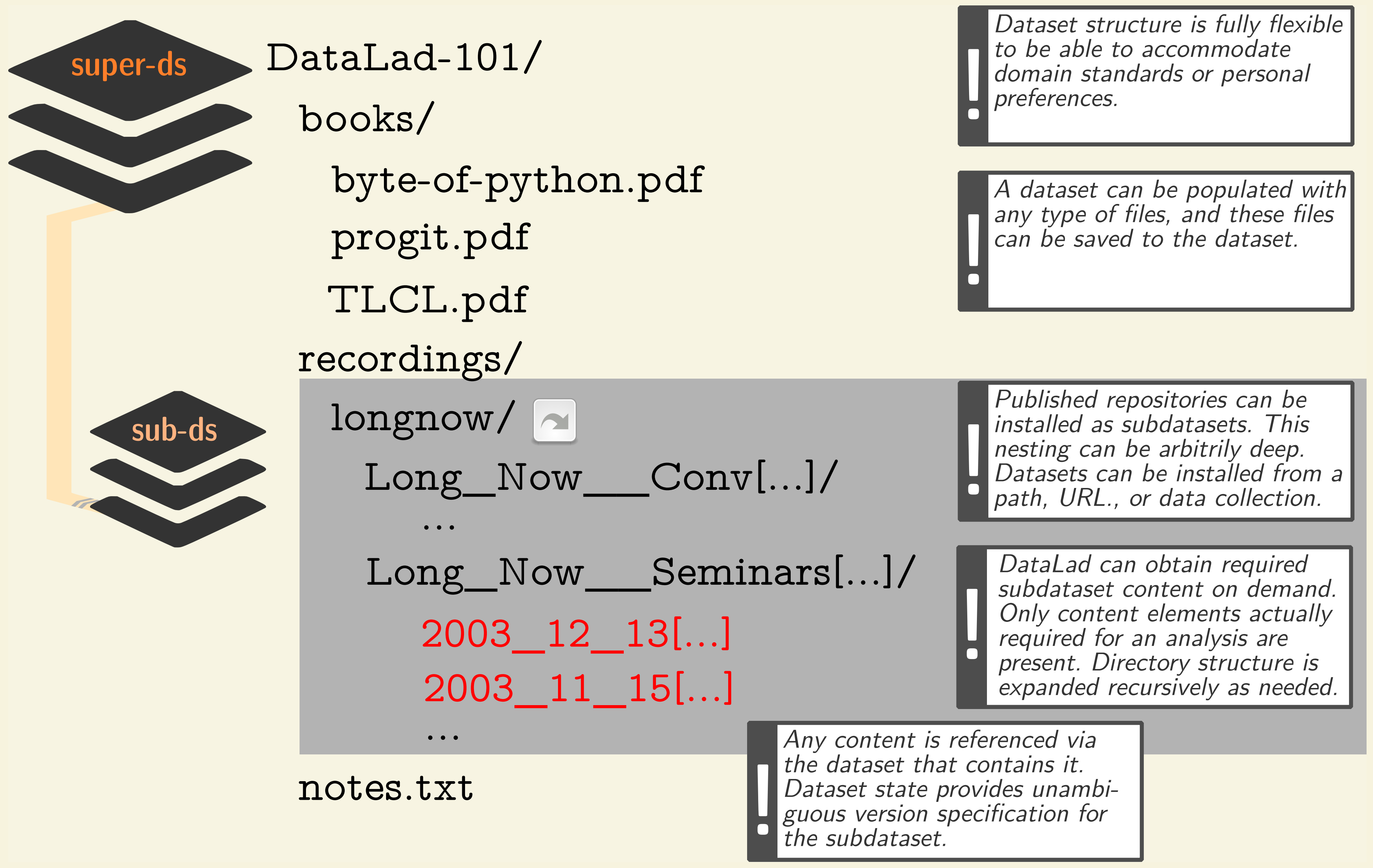

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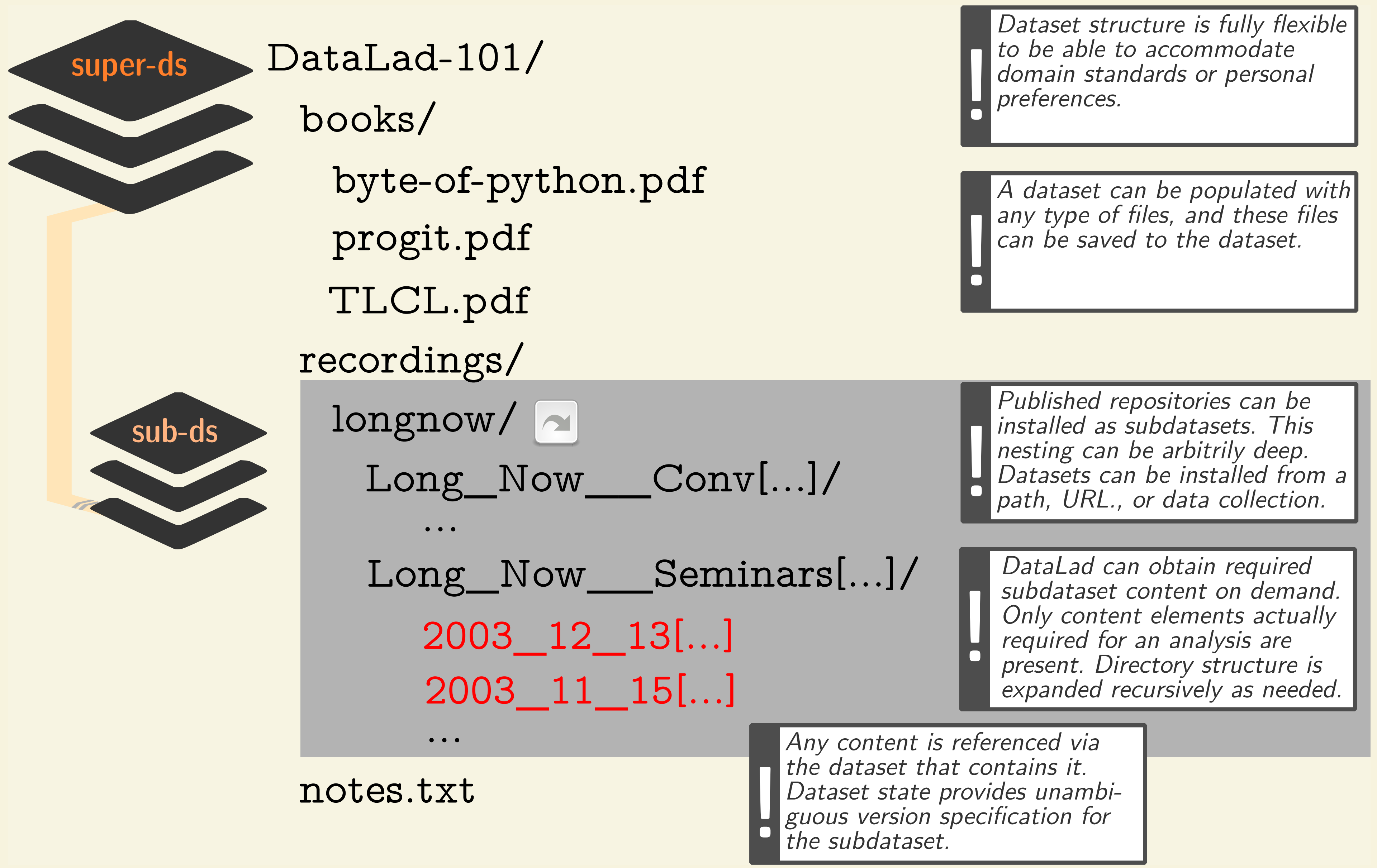

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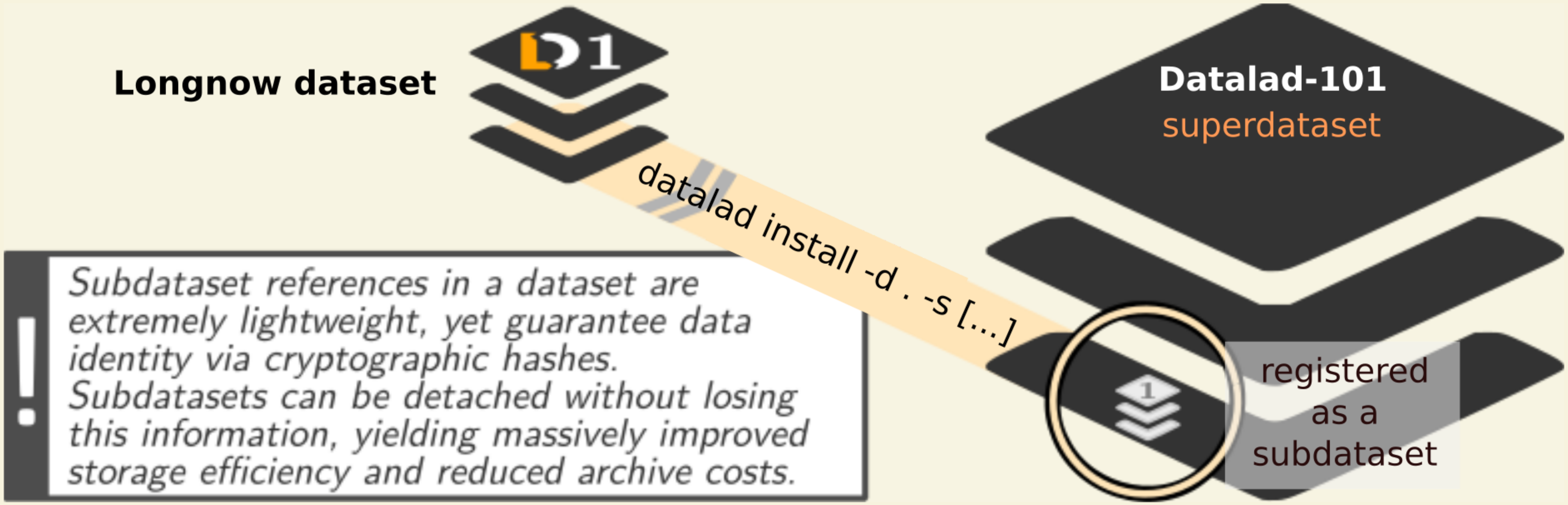

Subdataset references in a dataset are extremely lightweight, yet guarantee data identity via cryptographic hashes. Subdatasets can be detached without losing this information, yielding massively improved storage efficiency and reduced archive costs.

```
commit 8fdf62acd0bf1e99ebcb6c466edc994a5f4013ba
Author: DataLad Demo demo@datalad.org
Date:   Sat Oct 26 15:54:44 2019 +0200

    [DATALAD] Recorded changes

diff --git a/.gitmodules b/.gitmodules
new file mode 100644
index 0000000..1b59b8c
--- /dev/null
+++ b/.gitmodules
@@ -0,0 +1,4 @@
+[submodule "recordings/longnow"]
+       path = recordings/longnow
+       url = https://github.com/datalad-datasets/longnow-podcasts.git
+       datalad-id = b3ca2718-8901-11e8-99aa-a0369f7c647e
diff --git a/recordings/longnow b/recordings/longnow
new file mode 160000
index 0000000..dcc34fb
--- /dev/null
```

```
+++ b/recordings/longnow
@@ -0,0 +1 @@
+Subproject commit dcc34fbe669b06ced84ced381ba0db21cf5e665f
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Datasets preserve their history.

The superdataset records only the *version state* of the subdataset.

NOW WHAT I CAN DO WITH THAT?

Local version control

- Version control changing small files (code, manuscripts (text!), ...)
- Add large files to a dataset history
- Meaninful and well-described commits will make future interactions with the dataset history easier

Dataset installation and nesting

- Consume existing datasets
- Link datasets together

PRACTICE @HOME

- Start a coding project or take an existing project and version control your work with DataLad. Remember to create datasets with the `text2git` or `yoda` configuration!

FURTHER READING

The basics on datasets:

- Chapter DataLad Datasets in the handbook.

How to get help on commands and their options:

- Section How to get help in the handbook

OUTLINE: WHAT COMES NEXT?

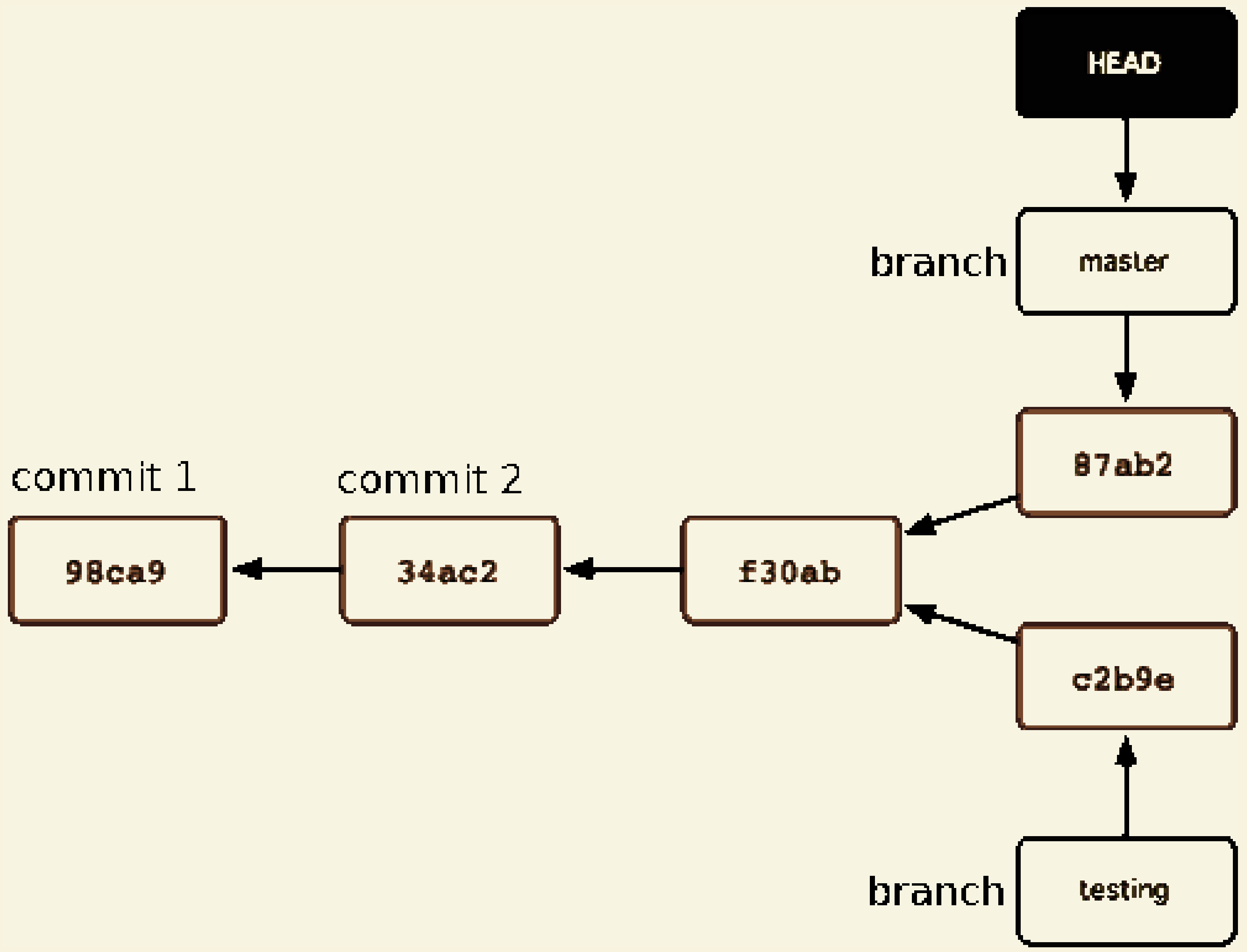
- Reproducible analyses with DataLad (chapter DataLad, Run! in the handbook).
- **Which date is suitable?** > Doodle poll <

OPEN QUESTION SESSION

BACKUP SLIDES FOR ANTICIPATED QUESTIONS

WHAT IS HEAD?

- A git repository is build up as a *tree* of **commits** (history entries).
- A **branch** is a named pointer (reference) to a commit, and allows to isolate developments. The default branch is called `master`.
- HEAD is a pointer to the branch you are on, and thus to the last commit in the given branch.



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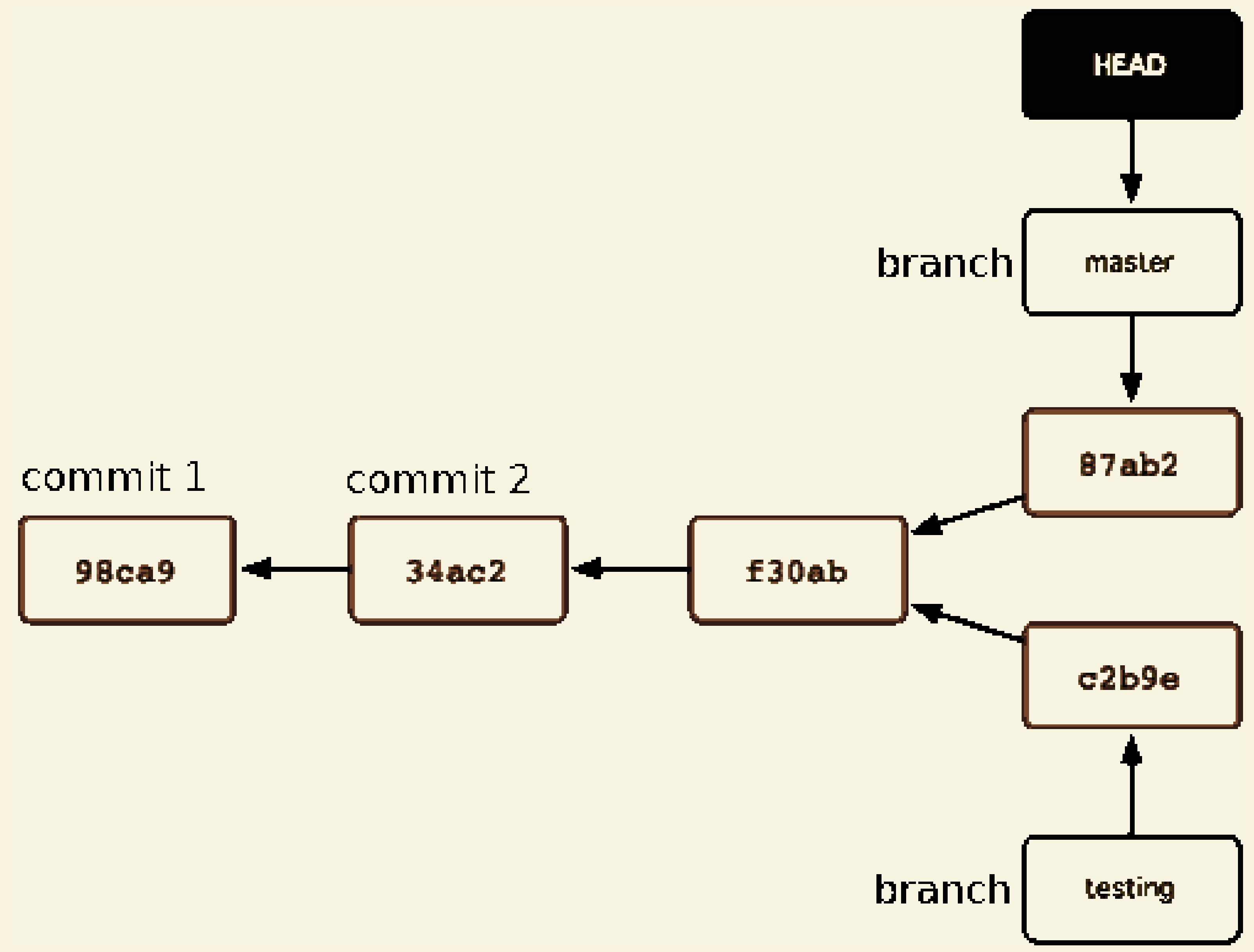

If you'd be on branch "testing", which commit would HEAD point to?

HOW DOES A HERE-DOCUMENT WORK?

```
$ cat << EOT > notes.txt
One can create a new dataset with 'datalad create [--description] PATH'.
The dataset is created empty

EOT
```

- Two *delimiting identifiers* (EOT) wrap any amount of text into a stream
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Why is it used?

- Allows pretty formating (e.g., line breaks)
- Allows writing documents from the terminal

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- More about this in Under the hood: Git-annex.