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Solidworks material library sharing strategy

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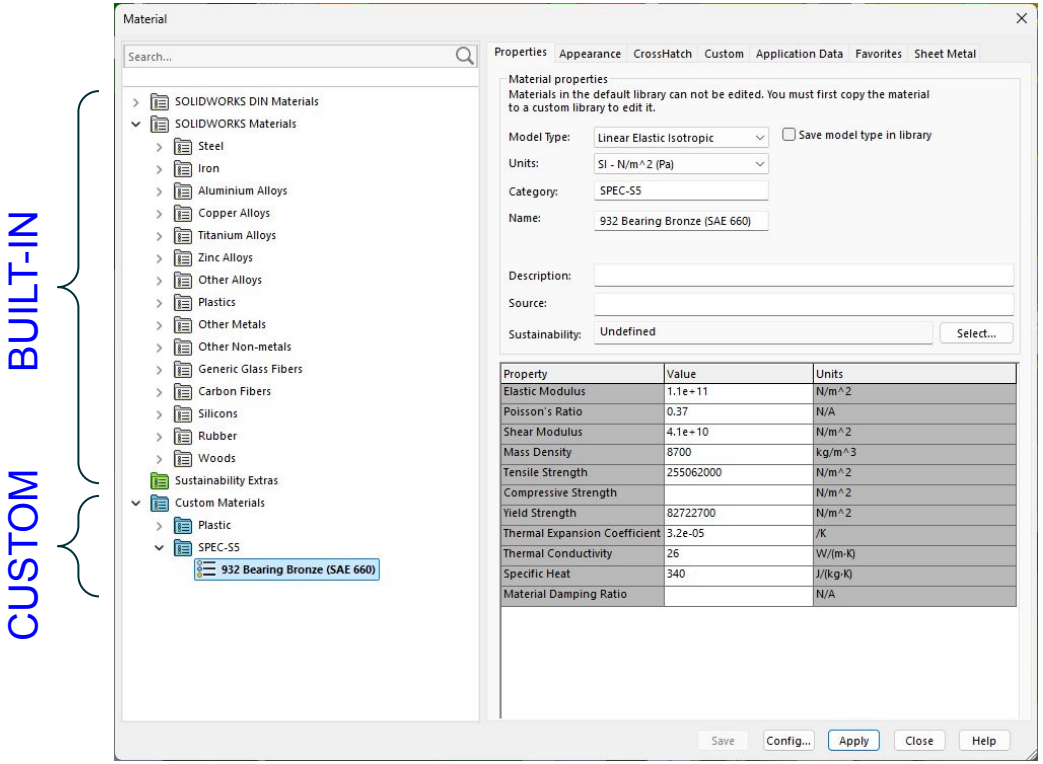
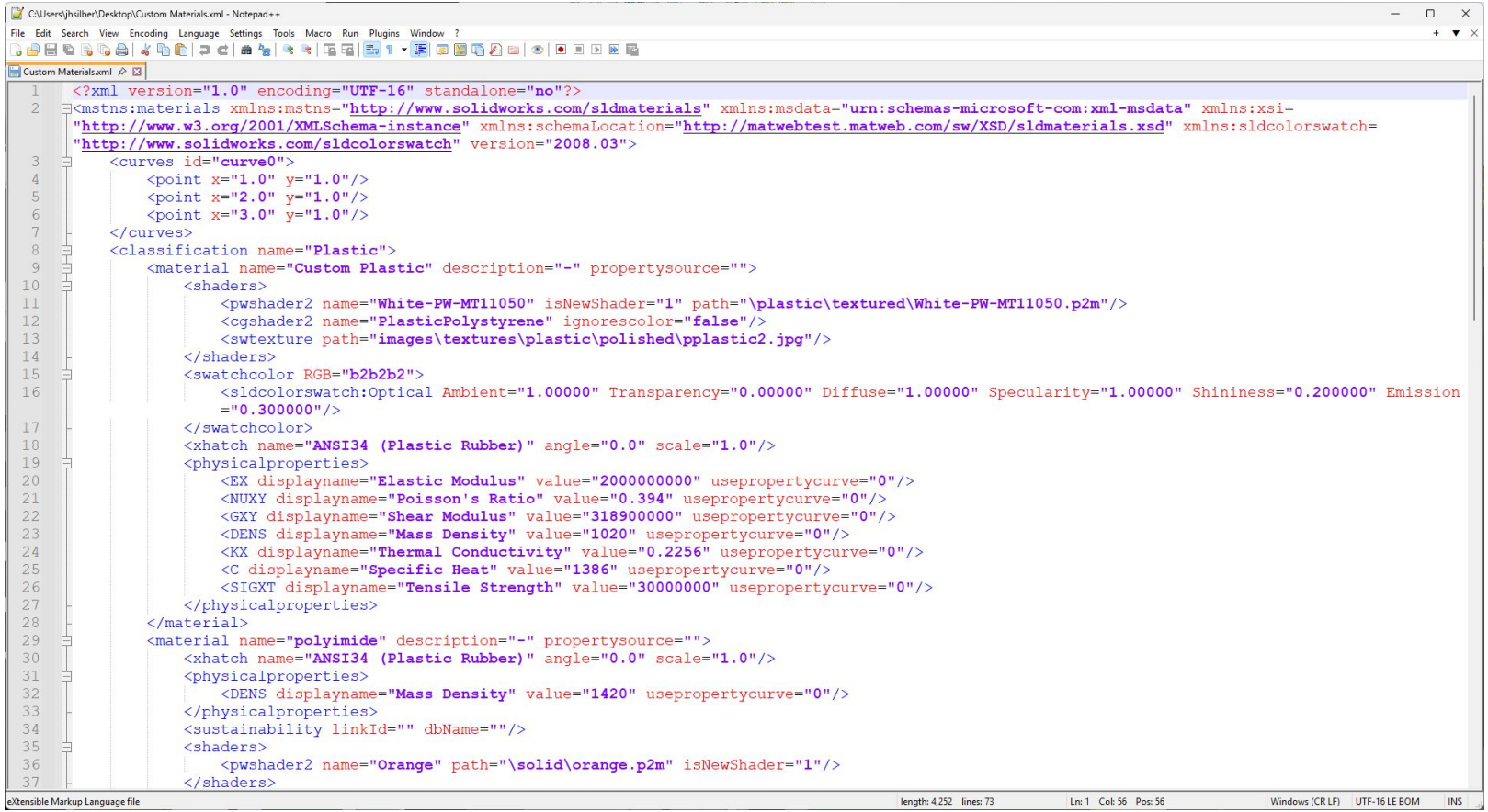
Background

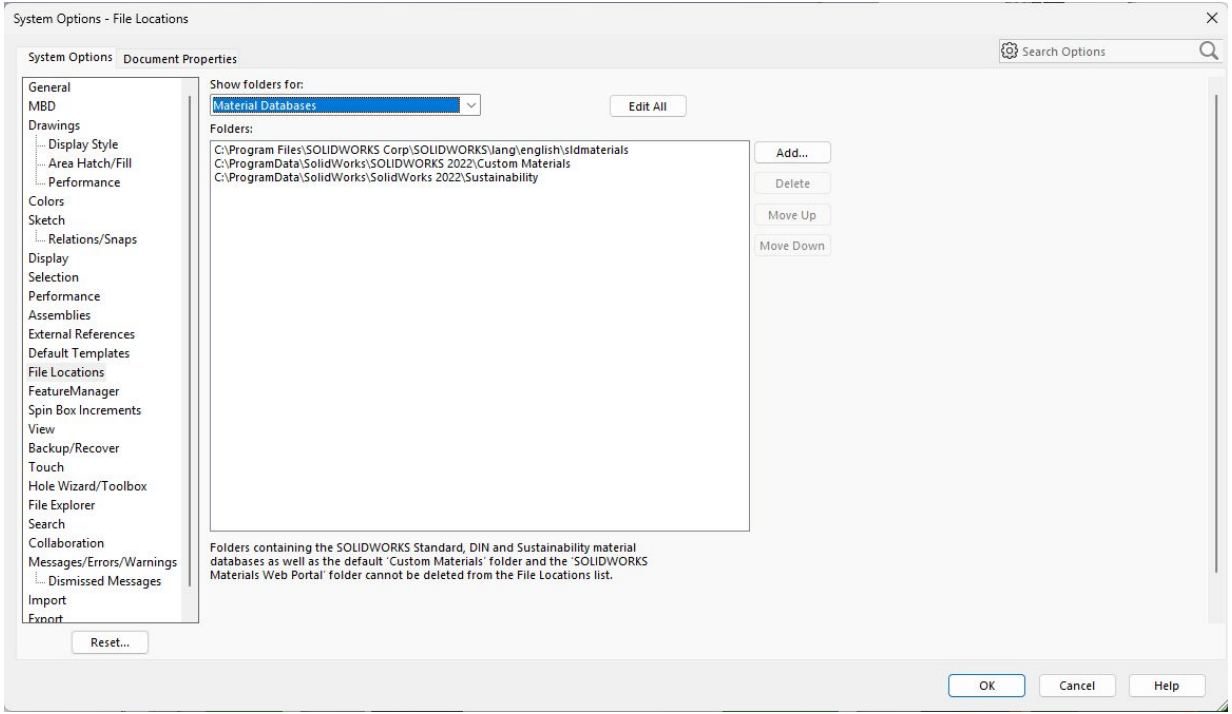
- Solidworks has both built-in and customizable material libraries
- At LBNL we share CAD data in Windchill
- Windchill support is provided for Solidworks template files, but not material library files
- We have at least three projects in Engineering right now using Solidworks + Windchill:
  - DUNE ND
  - ePIC SVT
  - Spec-S5
- We frequently need to define custom materials that aren't in the standard library
- To date, these material defs live in:
  - text file buried on user's disk
  - the particular part file where a given material is used
- Can we find a reliable, practical, low-friction solution to share custom materials?



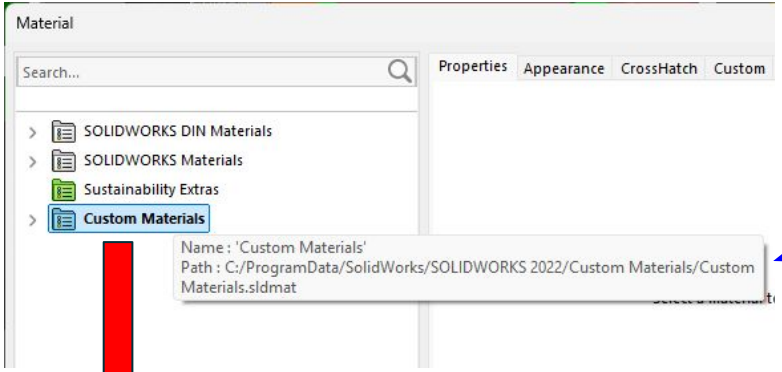
Solidworks material files are XML text files like this example



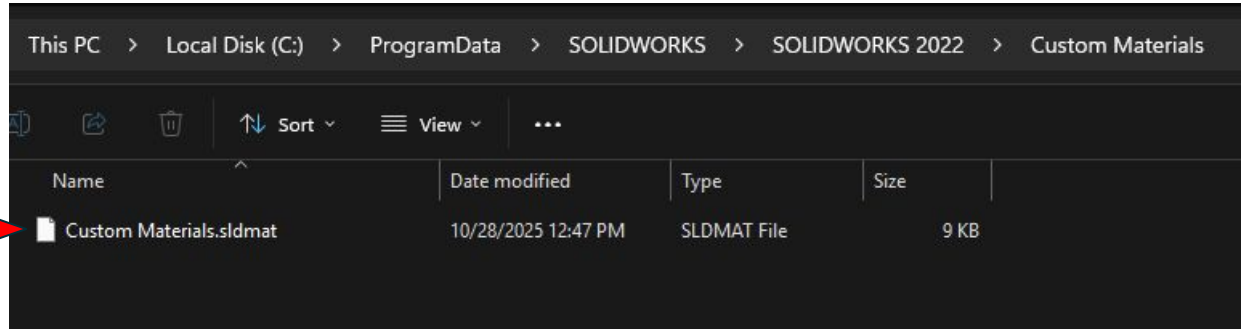
Multiple folder locations on the user's disk can be specified where Solidworks will look for material database files



In the material picker, “Libraries” correspond 1:1 to database text files on disk



Hover over library to see the path for that corresponding file



Rough proposal (for discussion)

1. Establish shared Google drive folder
    a. Or perhaps Github? – more archival, better traceability
2. Make a single file for ***vetted, shared*** properties
    a. Checked by someone other than the author
    b. Checks / changes are logged in…
        i. A spreadsheet in the drive?
        ii. Custom notes in each specific material?
    c. Reasonably trustworthy for anyone to use
3. Also make a folder for ***personal*** properties
    a. More flexible, for immediate sharing
    b. Not vetted
    c. Folder can contain any number of files
    d. Each user can arbitrarily post their own personal properties file
4. Ask that users adopt a common naming convention like `lbnlcommon_2026-02-18.sldmat` and `jhsilber_2026-02-18.sldmat`
5. Finally, provide an archive folder to toss old files
6. Users can then download files

Discussion notes

- Peter - make sure if someone directly opens from a Google drive location, that Solidworks doesn't autosave changes to the common file
- Gordon - can we put this on the Windchill common space?
- Joe - feeling less convinced about value of the work-in-progress "personal" files
- Nick - we should understand clearly the refresh behavior
  - does Solidworks autorefresh within a part if the sldmat internals change?
- Nick - does the xml file have a natural location for source notes?
  - and are these easily accessible from the UI?
- Nick - could we write some code to pull properties from a common Ansys material file (perhaps what ALS-U is working on? or just in Windchill common space) and write a Solidworks material file to disk
- Andrew - does collab.lbl.gov token work for X drive access remote? or have to vpn in?
- Andrew - line-by-line comparison features (diff) inherent to a workflow like GitHub could be quite helpful – in depth traceability is built in

Windchill → version control, user trace, no internal trace, CAD department bureaucratic challenge

Google drive → very flexible, easy user control, no traceability really, maybe too malleable

Github → excellent version control, traceability, shareability, independence, write safety, detail checks / approval process (pull requests etc)

Leaning toward github right now…