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Title:	Granta upload bottlenecks at LANL
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Granta upload bottlenecks at LANL

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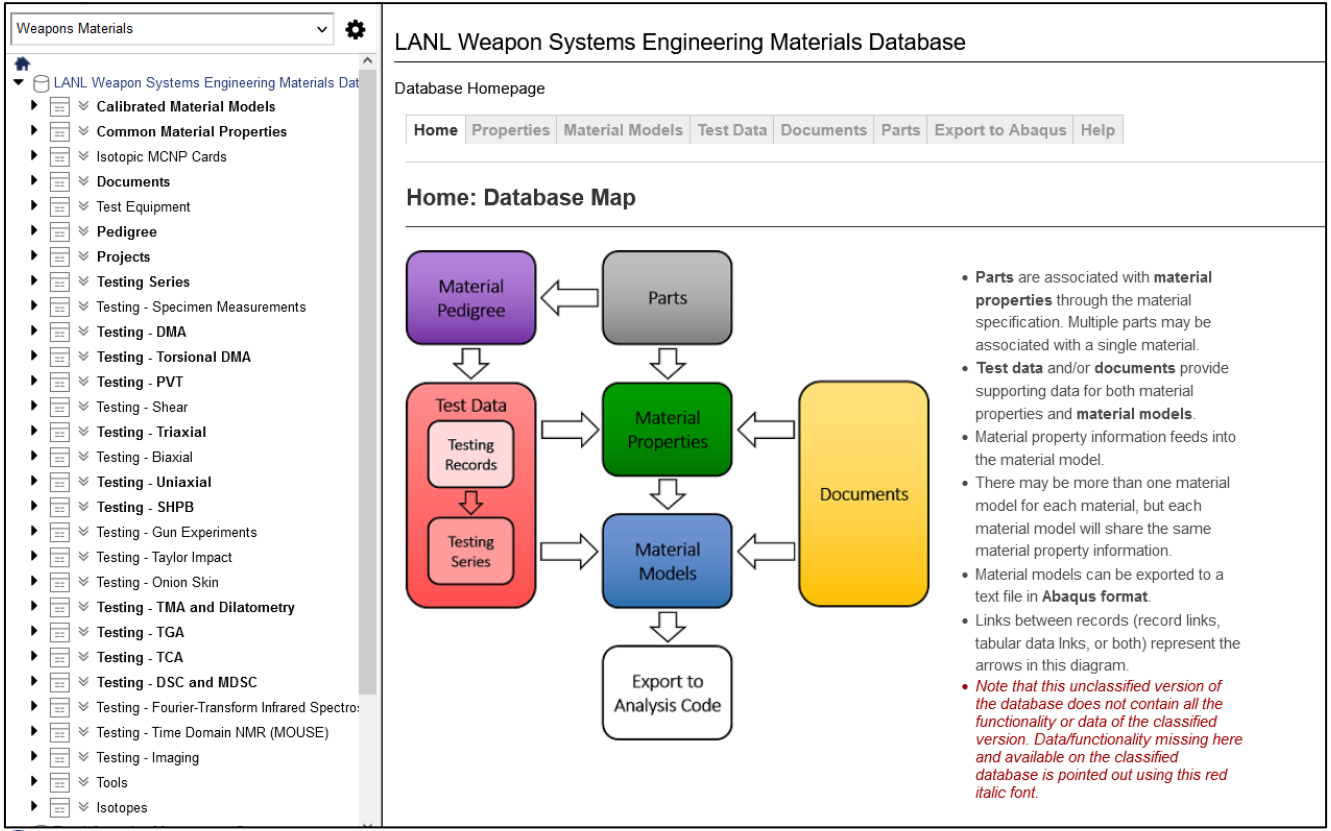
Agenda

- Brief overview of LANL database
- Use-case 1: Material Properties records
- Use-case 2: Aging & compatibility test records
- Tools that might be useful

Brief overview of LANL database

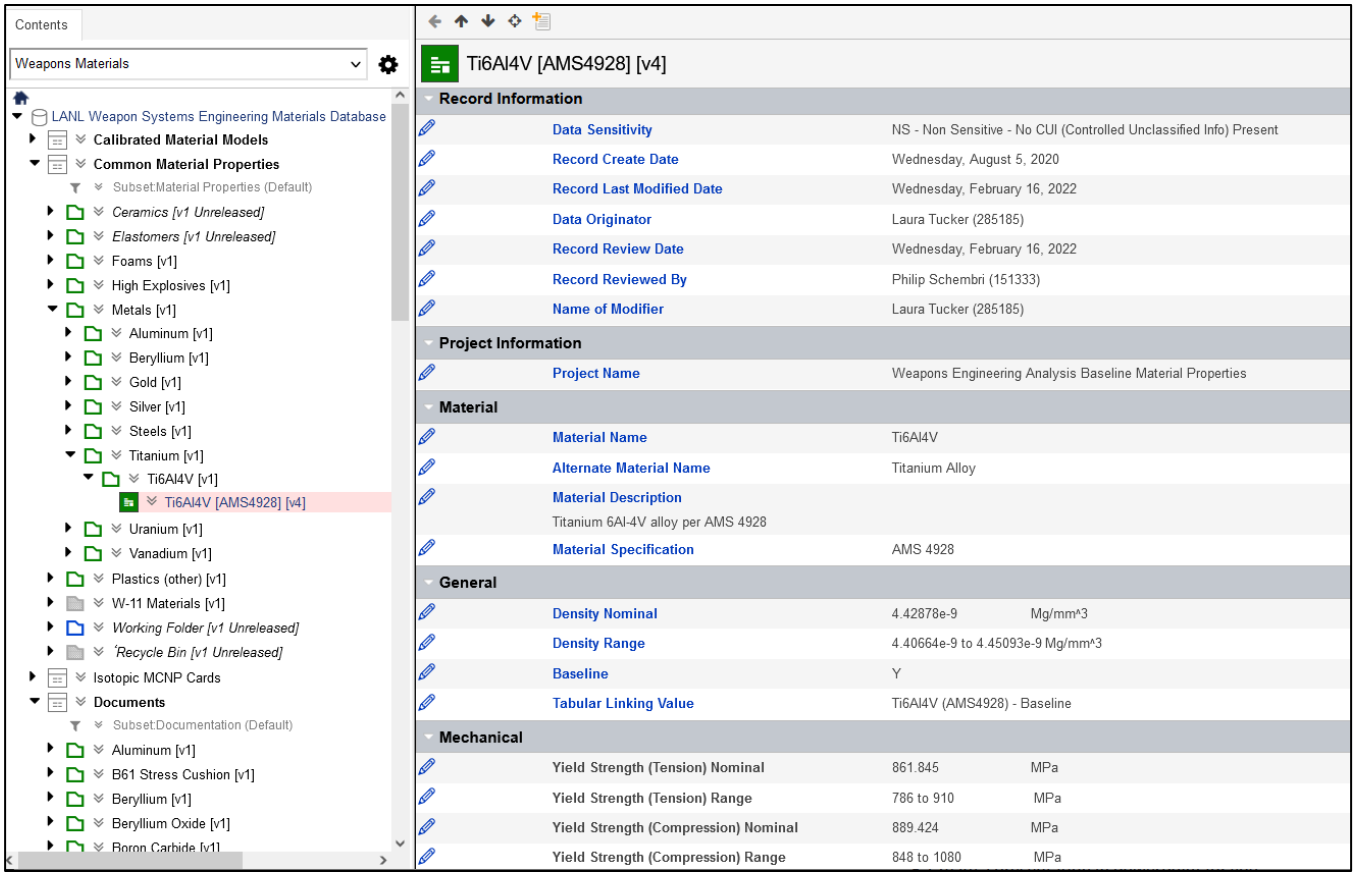


- Several organizations upload **test data**
  - Tools and workflows specific to instruments
- Several organizations upload material **property** & calibrated material model (**CMM**) data, linked to test data
- **Many users** upload data; no centralized ‘Granta group’
- Data must be **reviewed** for consistency before release

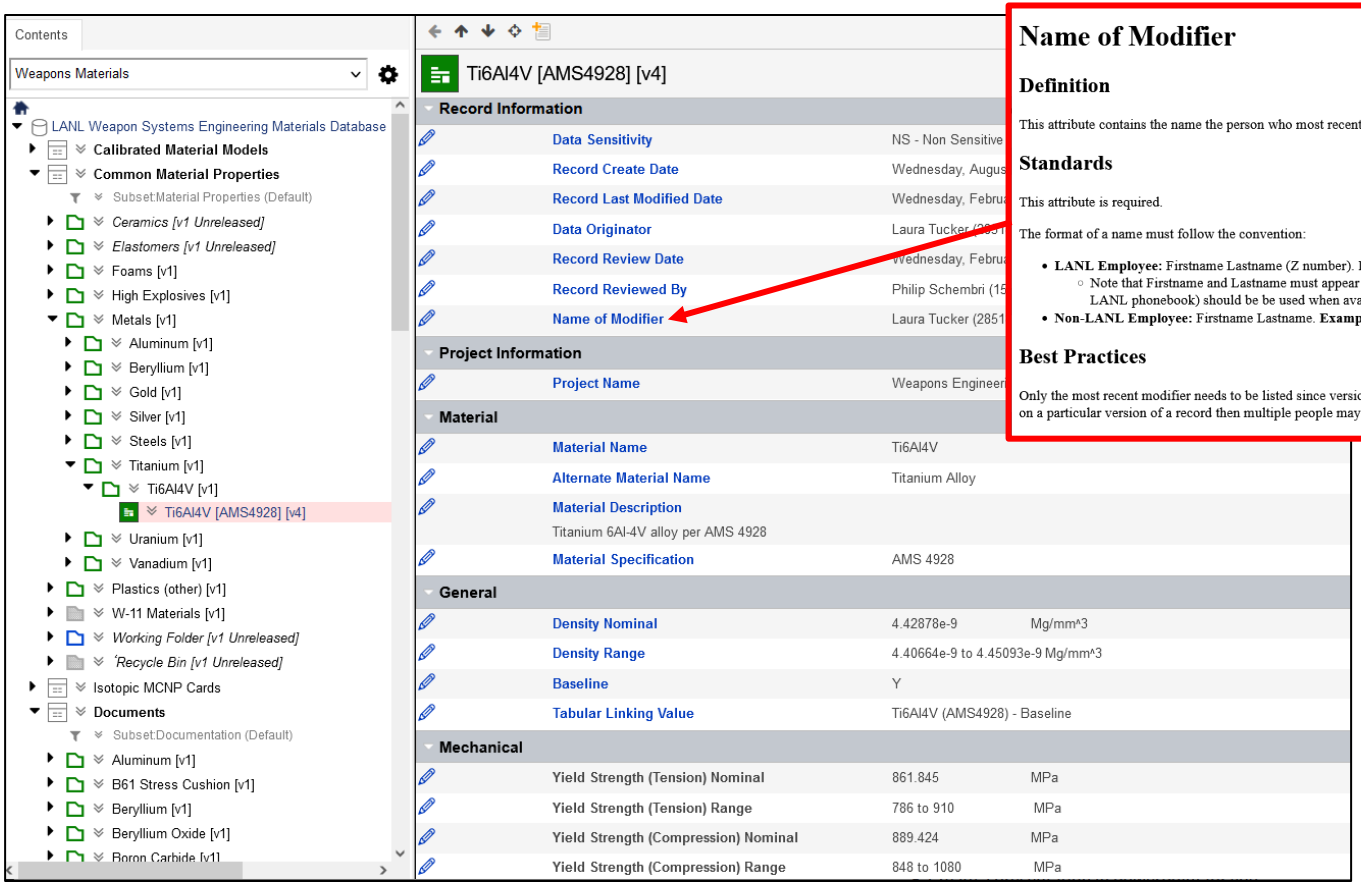
Use case 1: Material properties

- Primary producer and consumer is Engineering Analysis group.
- Relatively small number of Properties records.
  - Usually created manually in Viewer
- Even ‘frequent’ Granta users struggle to make records consistent with standards.
  - Standards documented in help files and Confluence
- Creating/editing records is high-effort.
- Not fun for users to be told to revise their records many times after review.

Use case 1: Material properties; example record



Use case 1: Material properties; example record



Name of Modifier

Definition

This attribute contains the name the person who most recently entered or uploaded data to this record.

Standards

This attribute is required.

The format of a name must follow the convention:

- **LANL Employee:** Firstname Lastname (Z number). **Example:** Thom Mason (172327)
  - Note that Firstname and Lastname must appear as they do in the LANL phonebook, except that nicknames (in parentheses in the LANL phonebook) should be be used when available.
- **Non-LANL Employee:** Firstname Lastname. **Example:** Sam Smith

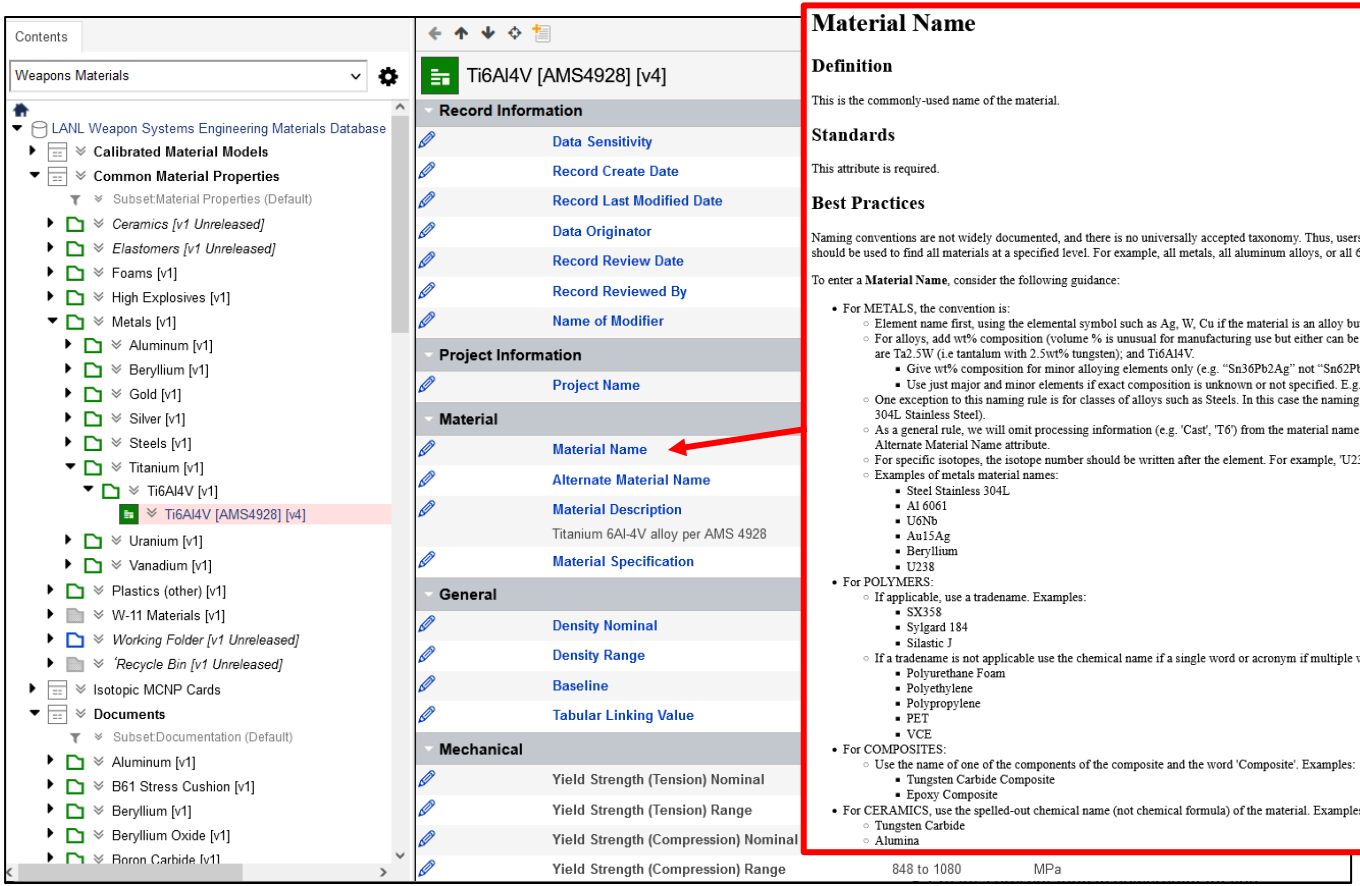
Best Practices

Only the most recent modifier needs to be listed since version history can be used to track previous modifiers. If multiple people have worked on a particular version of a record then multiple people may be listed here.

We try to maintain consistent format of 'name' STXT attributes to facilitate 'search' use-cases

- Mistakes are often caught during review
- Discrete lists would be too long
- A table for Personnel would work, but is technically challenging

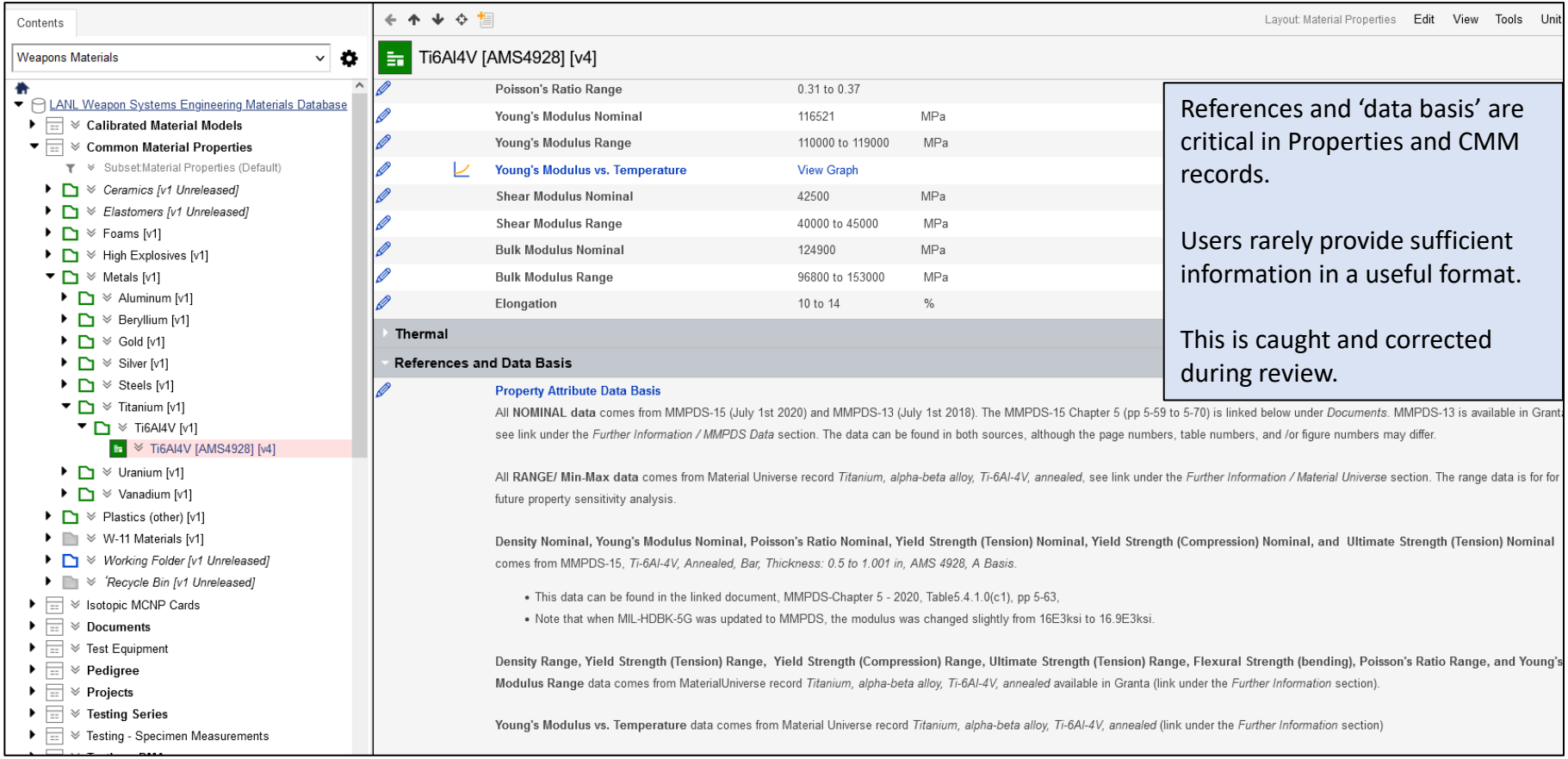
Use case 1: Material properties; example record



Material Name is particularly challenging. It would be really nice to have:

1. Context sensitive discrete types
2. A standard taxonomy

Use case 1: Material properties; example record

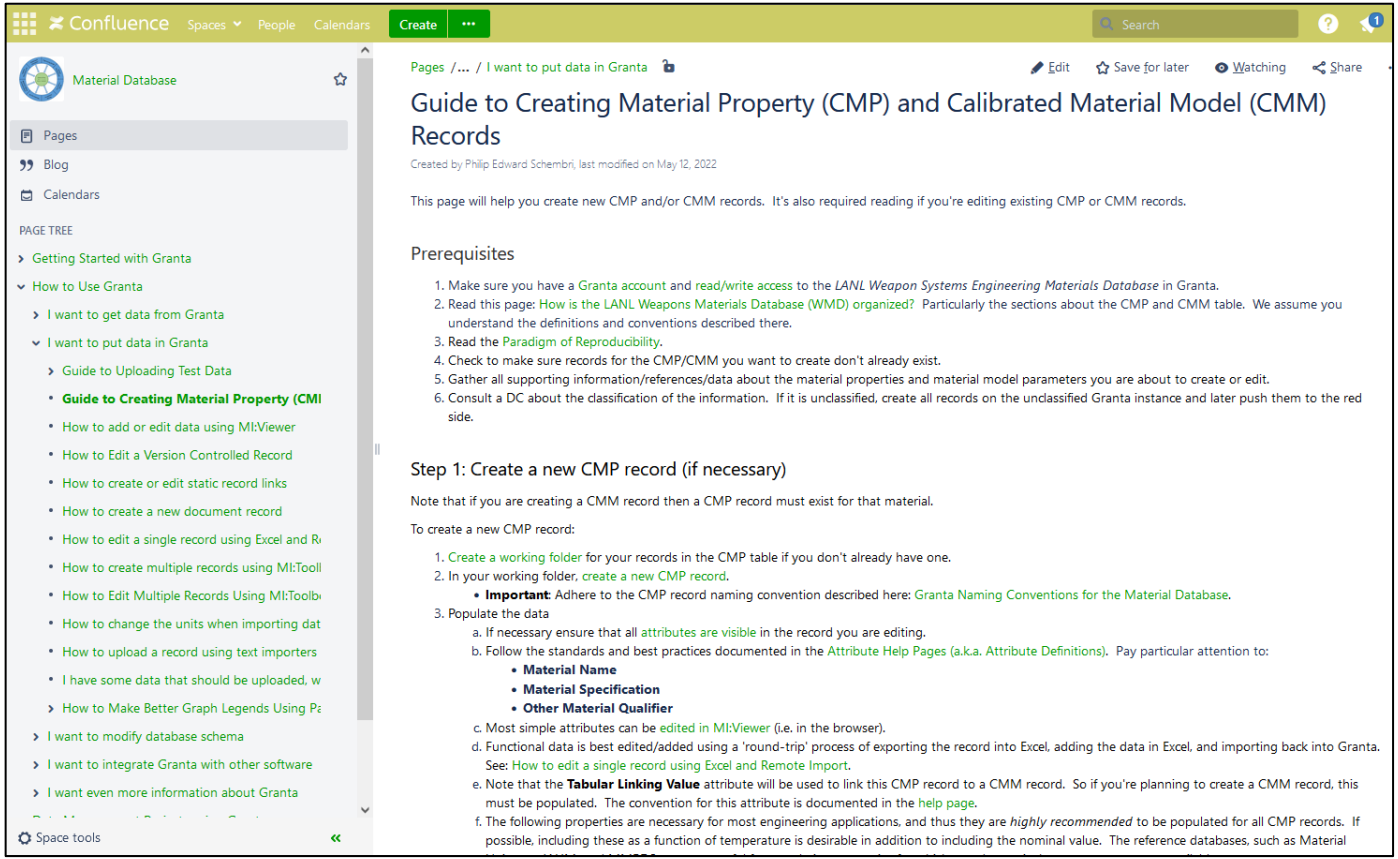


References and 'data basis' are critical in Properties and CMM records.

Users rarely provide sufficient information in a useful format.

This is caught and corrected during review.

Use case 1: Material properties; Confluence



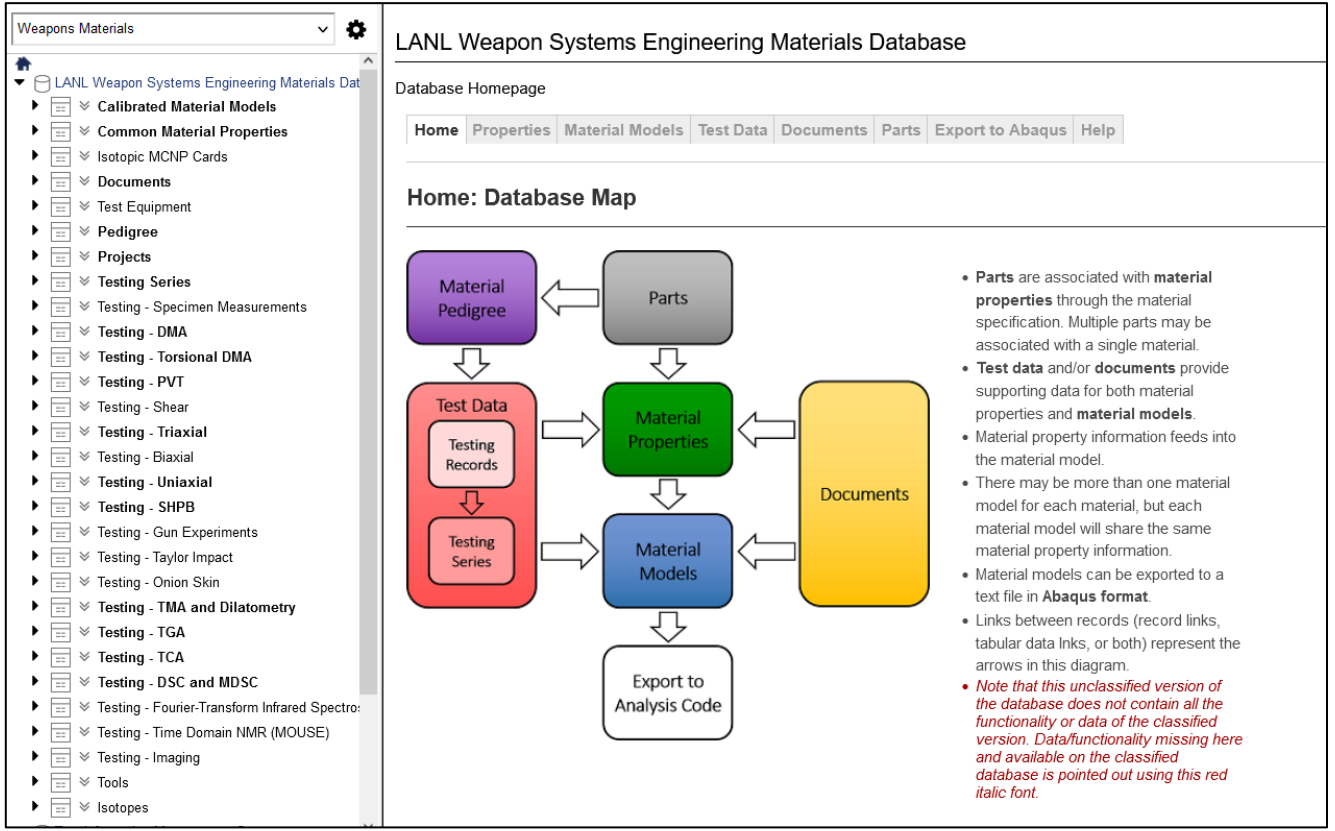
- We use Confluence for:
  - Documentation that cannot be captured in help files
    - Links
    - Record naming conventions
  - General workflow & prerequisites
- It's way too much for users to read in detail. They skip over it and miss important points

Use case 2: Aging & compatibility test records

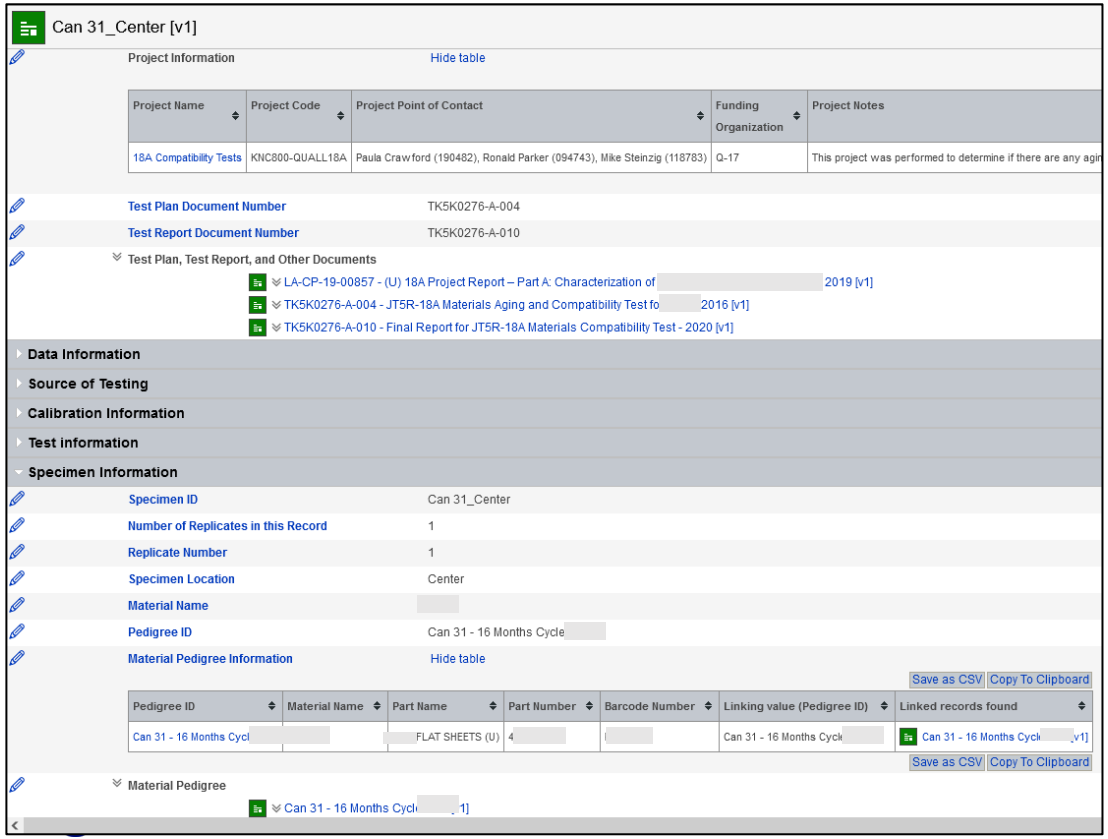
- Data generated by materials science groups, often for part development and/or qualification
- Large number of records (~4000). Many independent variables including:
  - Material formulation
  - Batch/lot
  - ‘Aging’ temperature
  - ‘Aging’ time
- Multiple test types
  - Differential scanning calorimetry
  - Thermogravimetric analysis
  - Spectroscopy
  - Mechanical compression
  - etc

Use case 2: Aging & compatibility test records

- Data spread across multiple tables:
  - Projects
  - Pedigree
  - Testing Series
  - Test Equipment
  - Documents
  - Testing:
    - DSC
    - Uniaxial
    - TGA
    - Etc…
- Data comes from text files with some metadata
- Organization of data and other metadata added manually



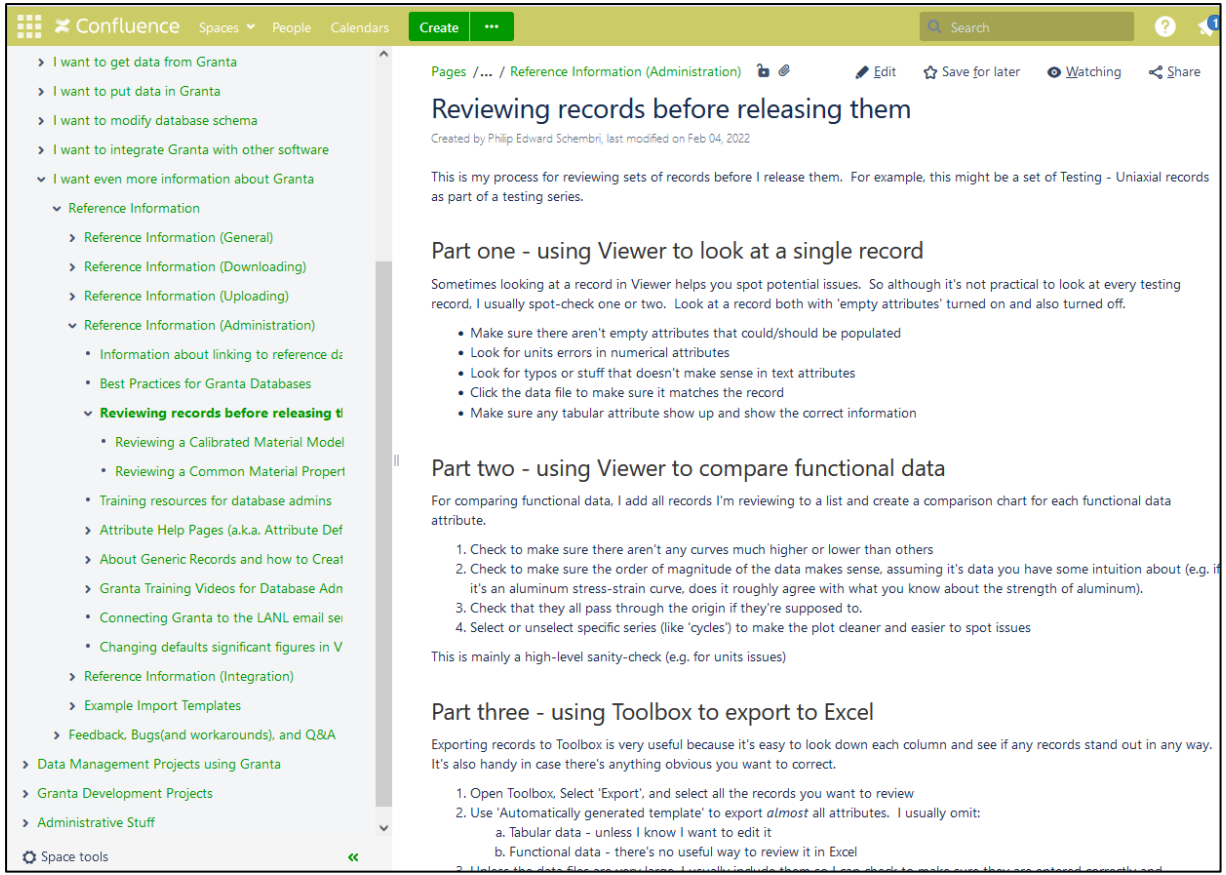
Use case 2: Aging & compatibility test records



Workflow for uploading

- Gather files, reports, and any other information
- Upload test records using text import templates
- Create Pedigree records using Excel
  - These contain the ‘aging’ metadata
- Round-trip test records (per table) Toolbox & Excel
  - Export to Excel
  - Add metadata, links
    - Some is tabular, so VBA tools are needed to move data between sheets
  - Import
- Create additional records (Testing Series, Project, etc) manually
- Review (exporting to Excel…)

Use case 2: Aging & compatibility test records



- Review process can take as long as upload process.
- Confluence or reports document upload & review process.
- Because review often performed by technical SME, the ‘Granta review’ and ‘technical review’ overlap.
  - It becomes a very big job

Tools that might be useful

- In Viewer/Explore:
  - Walk user through workflow of uploading
    - Provide help file text in edit window
  - Check consistency of record name and attribute data
  - Check the format of STXT and LTXT attributes
    - Provide example text in the correct format
    - Disallow any incorrect format
  - Check whether linking values are valid
- For existing records:
  - Find data in a set of records that is *almost* identical (or is in an almost identical format)
  - Find records in a set of records that a missing attribute data that most other records have
  - Check validity of linking values
  - Identify records that are missing from a test matrix
- Automatic bulk record/data creation
  - Based on a test matrix (set of attribute values that are independent variables), e.g. for Pedigree records
  - Automatic creation of linking ('ID') values, which can then be tweaked