Excel Importer Tips and Tricks

GRANTA MI Monthly Online Training
11th June 2019
Agenda

- Introduction and recap: Excel import/export templates
- Tips and tricks
  1. **Validation**: Helping end-users enter valid data
  2. **Formulas**: Automatic record names, folder structure and subset membership
  3. **Housekeeping**: Altering or removing data in bulk
  4. **Legacy data**: Importing multiple Excel workbooks quickly
  5. **Versioning**: Schema changes, updating templates and managing template versions
- Q & A
Introduction

- Previous webinars on the archive:
  - Nov 2017: Importing from Excel
  - Oct 2016: Importing, exporting and manipulating complex data types
  - May 2016: Importing Data from Excel
  - April 2016: Exporting Data from GRANTA MI
  - March 2016: Working with Excel Importers and Exporters

https://grantadesign.com/industry/support/granta-mi/training-archive/
Introduction

- **Documentation**
  - Making an importer → Importer Guide
  - Making an exporter → Exporter Guide
  - Making an exporter-importer → **both**

- **Examples**
  - in MI:Training database
Recap: Excel Import/Export Templates

Excel

Import tools

Import

MI:Toolbox
Excel Importer

Remote Import

Export tools

Export

MI:Toolbox
Excel Exporter

MI:Viewer
(automatic template)
What can you do with Excel Import/Export Templates?

- Legacy data migration
- Regular data imports
  - e.g. test data
- Data entry forms
  - e.g. supplier batch info, test request
- Analysis, statistics and processing
  - e.g. design allowable generation
- Bulk editing, migration, housekeeping
- Export for QA
- Reporting
Is Excel the best solution?

- Excel may well be the best tool for your needs
- Other possibilities exist…

  - Legacy data migration: Bulk Data Importer, MI:Scripting Toolkit…
  - Regular data imports: Text Importer…
  - Data entry forms: Manual entry in MI:Explore, MI:Workflow…
  - Analysis, statistics and processing: MI:MatAnalyzer…
  - Bulk editing, migration, housekeeping: MI:Toolbox transform plugins, MI:Scripting Toolkit…
  - Export for QA: MI:Viewer default reports, MI:Scripting Toolkit…
  - Reporting: MI:Scripting Toolkit, FEA Exporters, Custom Reports…
Process: Creating an Excel import/export template

1. Development
   - Start from auto-generated template
   - Format data worksheets
   - Create named ranges
   - Populate special worksheets

2. Testing & QA
   - Do a trial import with realistic data
   - Check imported folders, records, attributes & links

3. Release
   - Hide special worksheets
   - Protect cells, worksheets, workbook
   - Document (embed advice in the template; train your users)
   - Distribute to users

4. Maintain
   - Revise templates when the schema changes
   - Train new users
   - Avoid use of out-of-date templates

Stakeholders:
- Template developer
- Database admin
- Importing user
- Data consumer
Excel Template: Data Journey (Import)

1. This cell contains the data...

2. ...a named range refers to the cell...

3. ...the named range is mentioned here...

4. ...the data will be imported into this database attribute

Exports: same journey in reverse, via Export Lookup worksheet

Data worksheet
(can have any name)
Excel Template: Special Worksheets

- For complex multi-step imports only
- Names the Attribute Lookup, Parameter Lookup, and Import Options worksheets for each import step

**Attribute Lookup**
- For import
- Maps data from Excel named ranges to GRANTA MI attributes

**Export Lookup**
- For export
- Maps data from GRANTA MI attributes to Excel named ranges
- Similar format to Attribute Lookup

**Import Options**
- For import (mostly)
- What folder/record do we place the data in?
- Conflict resolution settings
- Automatic linking; access control permissions

**Parameter Lookup**
- For import or export
- Only if you have complex data (functional, tabular, multi-value point)
- Named ranges and units of parameter values (e.g. x-values on a graph)
Tip 1: Validation

- Discrete attributes & units
  - Allow: list
  - Store allowable values in a separate, hidden worksheet

- Values within bounds
  - Allow: decimal
  - e.g. percentage: 0 to 100
Demo 1: Validation
Tip 2: Formulas

- Automatic record name
  - Example: `=CONCATENATE(MI_BATCHNUMBER,"-",MI_SPECIFICATION)`

- Copy user-selected units to *Attribute Lookup*
  - Example: `=Data!$D$89`

- Subset membership based on data values
  - Example: `=IF(J4="Aluminum alloys", TRUE, FALSE)`
Demo 2: Formulas
Tip 3: Housekeeping – Bulk edit

- Need to change one or a few attributes, in many records?
  - Use MI:Toolbox auto-generated template
  - Choose:
    - attributes to export
    - unit system
    - placement (in same record)
Tip 3: Bulk edit – Deleting data

- If you leave an attribute blank, the old value may be preserved
  - (depending on conflict resolution settings)

- Use the special value `[-DELETE-]` to delete data
Demo 3: Bulk edit
Tip 4: Legacy data – Separate data and template files

- **Data files**
  - formatted Excel with legacy data in certain cells

- **Template file**
  - “master” data worksheet with named ranges in the corresponding cells
  - special worksheets for import

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**Data files (no template info)**

<table>
<thead>
<tr>
<th>Plate</th>
<th>Sheet</th>
</tr>
</thead>
<tbody>
<tr>
<td>753</td>
<td>802</td>
</tr>
</tbody>
</table>

**Data**

- **Named range**
  - MI_BATCHNUMBER

**Attribute Lookup**

<table>
<thead>
<tr>
<th>Attribute Name</th>
<th>DataType</th>
<th>...</th>
<th>Data Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Batch Number</td>
<td>STXT</td>
<td>...</td>
<td>MI_BATCHNUMBER</td>
</tr>
<tr>
<td>Form</td>
<td>STXT</td>
<td>...</td>
<td>MI_FORM</td>
</tr>
</tbody>
</table>
Demo 4: Separate data and template files
Tip 5: Template versioning

- Store in a version-controlled table
  - For accessibility, provide a direct link from home page

Custom database home page

Link to record history (not individual record version) so that users get the latest version

Datasheets

Edit > Edit properties
Tip 5: Template versioning (Example)

- **Metals Pedigree table**
  - Template version used to import this data
  - Attributes

- **Tensile Test Data table**
  - Template version used to import this data
  - Attributes

- **Pedigree importer valid versions**
  - Values: v1 v2 ...

- **Test data importer valid versions**
  - Values: v1 v2 ...

- **Discrete Types**

![Diagram showing template versioning](image_url)
Demo 5: Template versioning
GRANTA MI Monthly Online Training Archive

Find previous sessions by logging in: https://grantadesign.com/industry/support/granta-mi/training-archive/
Training schedule

Next training is 9\textsuperscript{th} July – MI:Materials Gateway

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