

Automating SAS AMO using VBA Programming

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AMO: An Opportunity for Transformation

- Business Case for Using AMO
- Old Approach
- New Approach
- DEMO
- Wrap Up

Business Case for Using AMO

- Data from several datasets joined and transformed
- Multiple (9) output datasets created from these joined datasets
- Output data loaded into Excel
- Extensive editing done in Excel ("hospital hmodelling")
 - This editing is more an "art" than "science" and can't be done programmatically ("Rubik's Cube")
- Final results are sent to external organisations for review
 - They don't have SAS
- Conclusion: Excel is the proper tool for this job
- This process will be repeated for ~ 200 organisations over the next 18 months (as of 2013 Q1)

- Enterprise Guide (EG) project was used to join the datasets
- Data was filtered in EG by the external organisation ID, start date, and end date
- Filtering criteria was hard coded into the SQL queries
 User knew SQL but unaware of EG prompting
- Multiple (9) CSV files created from the output datasets
- VBA macro used to import the CSV files into multiple worksheets
- CSV import problematic due to lack of data typing in CSV files

Issues:

- 1. EG project had to be re-edited and re-run every week or so to apply the filtering
- 2. Lots of manual editing to fix data incorrectly changed by Excel
- 1 1.5 days spent in getting the data prepared in Excel before other work can begin

- (New) EG project still used to join the datasets
- No filtering is done in EG, so the output datasets contain all organisations and dates
- SAS output datasets created instead of CSV files (SPDE engine)
- SAS AMO used to import the data into Excel directly from the server
- VBA programming used to set the filtering criteria from within Excel
- EG project only needs to be run every couple months as new claims data arrives

Results:

- 1. Data is correctly imported by AMO as it "knows" the data type
- 2. It's a much easier process to initialise data for a new model (just click a button)
- 3. Process reduced from 1.5 days to 5 minutes to initiate a new model

DEMO...

Book1 – Key Points:

- Open SAS dataset into Excel
- Demonstrate key AMO features
 - o SAS Data
 - o Tasks
 - Reports (Stored Processes)
 - Quick Start
 - SAS Favorites
 - \circ Modify
 - o Properties
 - Manage Content
 - \circ Tools
 - $\circ~$ Per View/View All
 - o Begin Edit/Commit
 - o Filter and Sort
 - Name Manager (Formulas Tab)

Book1 – SAS Menu Tab



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Book1 – Tasks

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Book1 – Reports

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Book1 – Reports (cont)

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Book1 – Quick Start – Task Gallery



Book1 – Quick Start – Automatic Chart

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Book1 – Quick Start – Automatic Chart (cont)



Book1 – Favorites



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Book1 – Manage Content

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Book1 – Filter & Sort (cont)

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Book1 – Filter & Sort (cont)

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Book1 – Name Manager

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Book2 – Key Points:

- Simple VBA programming to change object properties (filter) and execute methods (refresh)
- Add reference to SAS AMO plugin in VBA project (Tools \rightarrow References)
- Insert module to contain VBA code (Insert \rightarrow Module)
- Show Object Browser
- Create SAS Data filter string using VBA
- Refresh SAS Data object using VBA
- Create and Use Named Ranges in VBA programs for easier maintenance

Book2 – Add Reference to SAS AMO Plugin

Visual Basic Editor (Alt-F11) \rightarrow Tools \rightarrow References:

Select the SAS Add-In #.# for Microsoft Office

References - VBAProject								
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SAS Add-In 5.1 for Microsoft Office	Cancel							
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Visual Basic Editor (Alt-F11) \rightarrow View \rightarrow Object Browser (F2):

Can be interesting to see the Properties and Methods of available Classes

Microsoft Visual Basic - Book2.xlsm - [Object Browser]									
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Book2 – Named Ranges

Create and Use Named Ranges for easier and more maintainable coding

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Book3 – Key Points:

- Using more generic VBA code to update all SAS data objects
- Update multiple SAS data objects specifying a single filter in Excel
- Demonstrate that SAS objects are deleted when a worksheet is deleted

Book4 – Key Points:

- Using a Named Range for Input Prompts
- Demonstrating event processing each time a prompt value is changed

Book5 – Key Points:

- Adding a button to a worksheet
- Binding a macro to that button
- Refreshing SAS content using that button

Book6 – Key Points:

- Using Stored Processes (called "Reports") in Excel
- Binding an Input Stream to a Named Range
- Display the XML stream sent to SAS

Book7 – Key Points:

- Demonstrate a generic approach to passing name/value pairs (macro variables) from Excel to a Stored Process
- Use those name/value pairs to filter the output dataset
- Use the Style Manager to format the output
- No VBA code used, just built-in AMO functionality and the Refresh button

• Binding Stored Process input and output prompts to Excel cells

Book9 – Key Points:

- Using VBA to refresh Stored Process
- Show the online help

Book9 – Online Help



- If the "landing zone" for your data is Excel, think AMO
- Data can be communicated between Excel and the remote SAS Session
- VBA is available to "drive" SAS AMO
- You don't need to be an expert VBA programmer

Tips and Techniques for Automating the SAS® Add-In for Microsoft Office with Visual Basic for Applications Tim Beese, SAS Institute Inc., Cary, NC http://support.sas.com/resources/papers/proceedings11/012-2011.pdf

Excelling with Excel

Tim Beese and Greg Granger, SAS Institute Inc., Cary, NC http://support.sas.com/resources/papers/proceedings12/036-2012.pdf

Help for the SAS Add-In for Microsoft Office

(Accessible from the SAS AMO Help button) See especially "Automating the SAS Add-In with Visual Basic Code" chapter

Contact:

http://www.linkedin.com/in/scottbass



Questions?