



Hooking up SAS and Excel

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Agenda

The background of the slide is a warm, reddish-orange color. It features a central gear with four spokes, surrounded by three network cables with RJ45 connectors. The background is overlaid with faint, glowing circuit board patterns and abstract lines, suggesting a technical or digital theme.

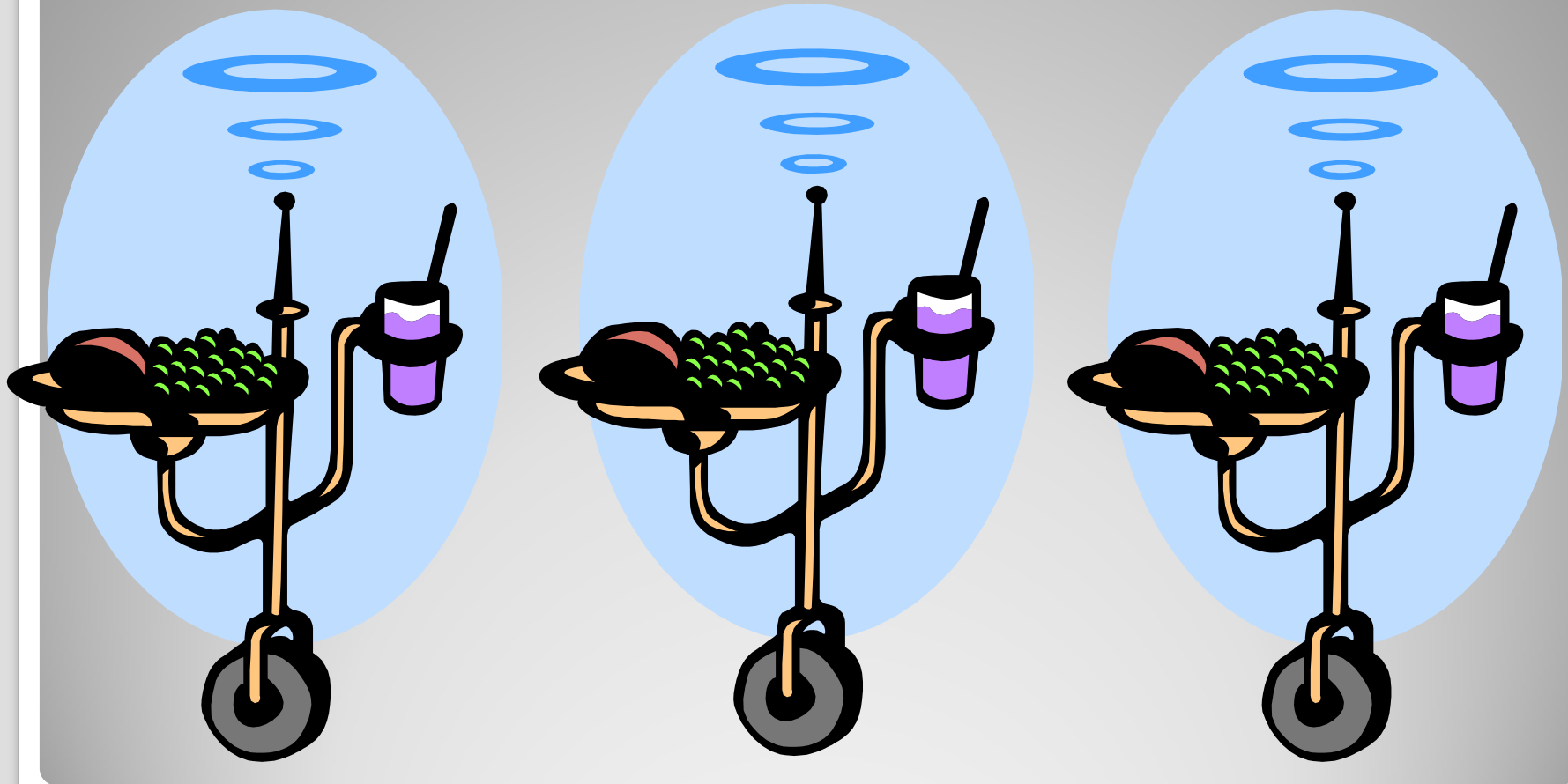
1. Introduction

2. Techniques

3. Examples

Introduction

- Lot of people asking for best approach
- Lots of techniques – cover 16 today!
- Only time for overview of each
- Some techniques deserve own session
- Focus on SAS to Excel today



Is Excel the best way? Consider BI self-service delivery

12 Techniques - condensed

1. EG export and import wizards

2. EG export as project step

3. DMS export and import wizards

4. ODS CSV, XML, HTML, MS Office

5. ODS ExcelXP tagset

6. Proc export and import

7. SAS Excel libname engine

8. Third-party control code - .Net, VBA or Java

9. AMO – SAS Add-in to MS Office

10. OLEDB

11. ODBC

12. DDE

Quick quiz – Heard of? Used?

1. EG export and import wizards

2. EG export as project step

3. DMS export and import wizards

4. ODS CSV, XML, HTML, MS Office

5. ODS ExcelXP tagset

6. Proc export and import

7. SAS Excel libname engine

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9. AMO – SAS Add-in to MS Office

10. OLEDB

11. ODBC

12. DDE

Categories of techniques

- Controlled by
 - Push from SAS
 - Pull from Excel
 - Third-party control
- Content type
 - Data – data set rows to Excel
 - Information or output – procedure output

For each technique





1. EG export and import wizards

EG Export Wizard



What?

- Simple wizard in EG
- Exports to Excel, flat files, others
- SAS Push
- Data transfer

Good for

- Quick one-off creation of xls
- Creates new or overwrites xls

Example – Cars table to export

Tools Help | Process Flow

CARS ▾

Filter and Sort Query Builder | Data ▾ Describe ▾ Graph ▾ Analyze ▾ | Export ▾ Send To ▾

	Make	Model	Type	Origin	DriveTrain	MSRP
1	Acura	MDX	SUV	Asia	All	\$36,945
2	Acura	RSX Type S 2dr	Sedan	Asia	Front	\$23,820
3	Acura	TSX 4dr	Sedan	Asia	Front	\$26,990
4	Acura	TL 4dr	Sedan	Asia	Front	\$33,195
5	Acura	3.5 RL 4dr	Sedan	Asia	Front	\$43,755
6	Acura	3.5 RL w/Naviga...	Sedan	Asia	Front	\$46,100
7	Acura	NSX coupe 2dr...	Sports	Asia	Rear	\$89,765
8	Audi	A4 1.8T 4dr	Sedan	Europe	Front	\$25,940
9	Audi	A4 1.8T converti...	Sedan	Europe	Front	\$35,940
10	Audi	A4 3.0 4dr	Sedan	Europe	Front	\$31,840
11	Audi	A4 3.0 Quattro 4...	Sedan	Europe	All	\$33,430
12	Audi	A4 3.0 Quattro 4...	Sedan	Europe	All	\$34,480
13	Audi	A6 3.0 4dr	Sedan	Europe	Front	\$36,640
14	Audi	A6 3.0 Quattro 4...	Sedan	Europe	All	\$39,640
15	Audi	A4 3.0 convertib...	Sedan	Europe	Front	\$42,490
16	Audi	A4 3.0 Quattro c...	Sedan	Europe	All	\$44,240

EG Send to – one-touch export

Tools Help | Process Flow ▾

CARS ▾

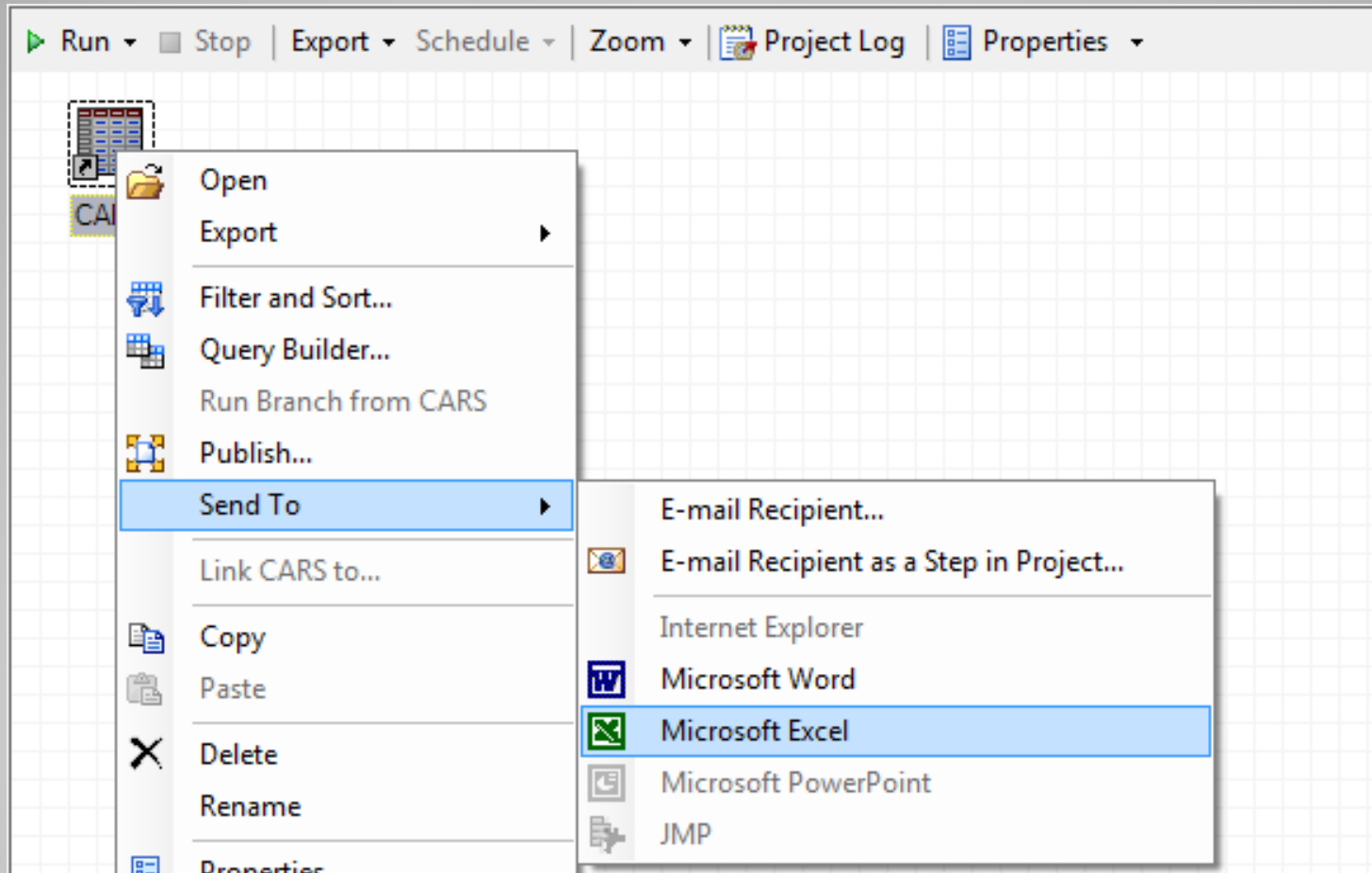
Filter and Sort Query Builder | Data ▾ Describe ▾ Graph ▾ Analyze ▾ Export ▾

Send To ▾

- E-mail Recipient...
- E-mail Recipient as a Step in Project...
- Internet Explorer
- Microsoft Word
- Microsoft Excel
- Microsoft PowerPoint
- JMP

	Make	Model	Type	Origin	Drive		
1	Acura	MDX	SUV	Asia	All		
2	Acura	RSX Type S 2dr	Sedan	Asia	Front		
3	Acura	TSX 4dr	Sedan	Asia	Front		
4	Acura	TL 4dr	Sedan	Asia	Front		
5	Acura	3.5 RL 4dr	Sedan	Asia	Front		
6	Acura	3.5 RL w/Naviga...	Sedan	Asia	Front		
7	Acura	NSX coupe 2dr...	Sports	Asia	Rear		
8	Audi	A4 1.8T 4dr	Sedan	Europe	Front		
9	Audi	A41.8T converti...	Sedan	Europe	Front		\$35,940
10	Audi	A4 3.0 4dr	Sedan	Europe	Front		\$31,840
11	Audi	A4 3.0 Quattro 4...	Sedan	Europe	All		\$33,430
12	Audi	A4 3.0 Quattro 4...	Sedan	Europe	All		\$34,480
13	Audi	A6 3.0 4dr	Sedan	Europe	Front		\$36,640
14	Audi	A6 3.0 Quattro 4...	Sedan	Europe	All		\$39,640
15	Audi	A4 3.0 convertib...	Sedan	Europe	Front		\$42,490
16	Audi	A4 3.0 Quattro c...	Sedan	Europe	All		\$44,240
17	Audi	A6 2.7 Turbo Qu...	Sedan	Europe	All		\$42,840
18	Audi	A6 4.2 Quattro 4...	Sedan	Europe	All		\$49,650

EG Send to - alternative



Microsoft Excel ribbon showing tabs: Home, Insert, Page Layout, Formulas, Data, Review, View, SAS.

Home tab ribbon groups:

- Clipboard: Paste, Cut, Copy, Format Painter
- Font: Font face (Calibri), Size (11), Bold (B), Italic (I), Underline (U), Text color, Background color, Font color
- Alignment: Text alignment (Left, Center, Right), Orientation (Horizontal, Vertical), Merge & Center, Wrap Text
- Number: Number format (General, \$, %, etc.), Decimal places (0.00)

Formula bar: A1, fx, Make

	A	B	C	D	E	F	G	
1	Make	Model	Type	Origin	DriveTrain	MSRP	Invoice	En
2	Acura	MDX	SUV	Asia	All	\$36,945	\$33,337	
3	Acura	RSX Type S 2dr	Sedan	Asia	Front	\$23,820	\$21,761	
4	Acura	TSX 4dr	Sedan	Asia	Front	\$26,990	\$24,647	
5	Acura	TL 4dr	Sedan	Asia	Front	\$33,195	\$30,299	
6	Acura	3.5 RL 4dr	Sedan	Asia	Front	\$43,755	\$39,014	
7	Acura	3.5 RL w/Navigation 4dr	Sedan	Asia	Front	\$46,100	\$41,100	
8	Acura	NSX coupe 2dr manual S	Sports	Asia	Rear	\$89,765	\$79,978	
9	Audi	A4 1.8T 4dr	Sedan	Europe	Front	\$25,940	\$23,508	
10	Audi	A4 1.8T convertible 2dr	Sedan	Europe	Front	\$35,940	\$32,506	
11	Audi	A4 3.0 4dr	Sedan	Europe	Front	\$31,840	\$28,846	
12	Audi	A4 3.0 Quattro 4dr manual	Sedan	Europe	All	\$33,430	\$30,366	
13	Audi	A4 3.0 Quattro 4dr auto	Sedan	Europe	All	\$34,480	\$31,388	
14	Audi	A6 3.0 4dr	Sedan	Europe	Front	\$36,640	\$33,129	
15	Audi	A6 3.0 Quattro 4dr	Sedan	Europe	All	\$39,640	\$35,992	
16	Audi	A4 3.0 convertible 2dr	Sedan	Europe	Front	\$42,490	\$38,325	
17	Audi	A4 3.0 Quattro convertible 2dr	Sedan	Europe	All	\$44,240	\$40,075	
18	Audi	A6 2.7 Turbo Quattro 4dr	Sedan	Europe	All	\$42,840	\$38,840	

EG Export wizard

The screenshot displays the SAS Enterprise Guide interface. The title bar reads "SAS Enterprise Guide - SAS-to-Excel.egp". The menu bar includes "File", "Edit", "View", "Tasks", "Program", "Tools", and "Help". The "File" menu is open, showing options such as "New", "Open", "Close Project", "Save SAS-to-Excel", "Save SAS-to-Excel As...", "Save", "Save As...", "Import Data", "Run SAS-to-Excel", "Schedule SAS-to-Excel", "Export", "Send To", "Publish", "Page Setup for Process Flow...", and "Print Preview for Process Flow". The "Export" menu item is selected, and its sub-menu is visible, containing "Export CARS...", "Export As A Step In Project...", "Export All Code In Process Flow 1...", and "Export All Code In Project...". The "Export CARS..." option is highlighted. In the background, a process flow diagram is visible with a step named "CARS" highlighted in yellow. The process flow toolbar includes "Run", "Stop", "Export", "Schedule", "Zoom", "Project Log", and "Properties".



Export



Save in: SAS-Excel examples



- Desktop
- My Documents
- My Computer
- My Network Places
- Servers

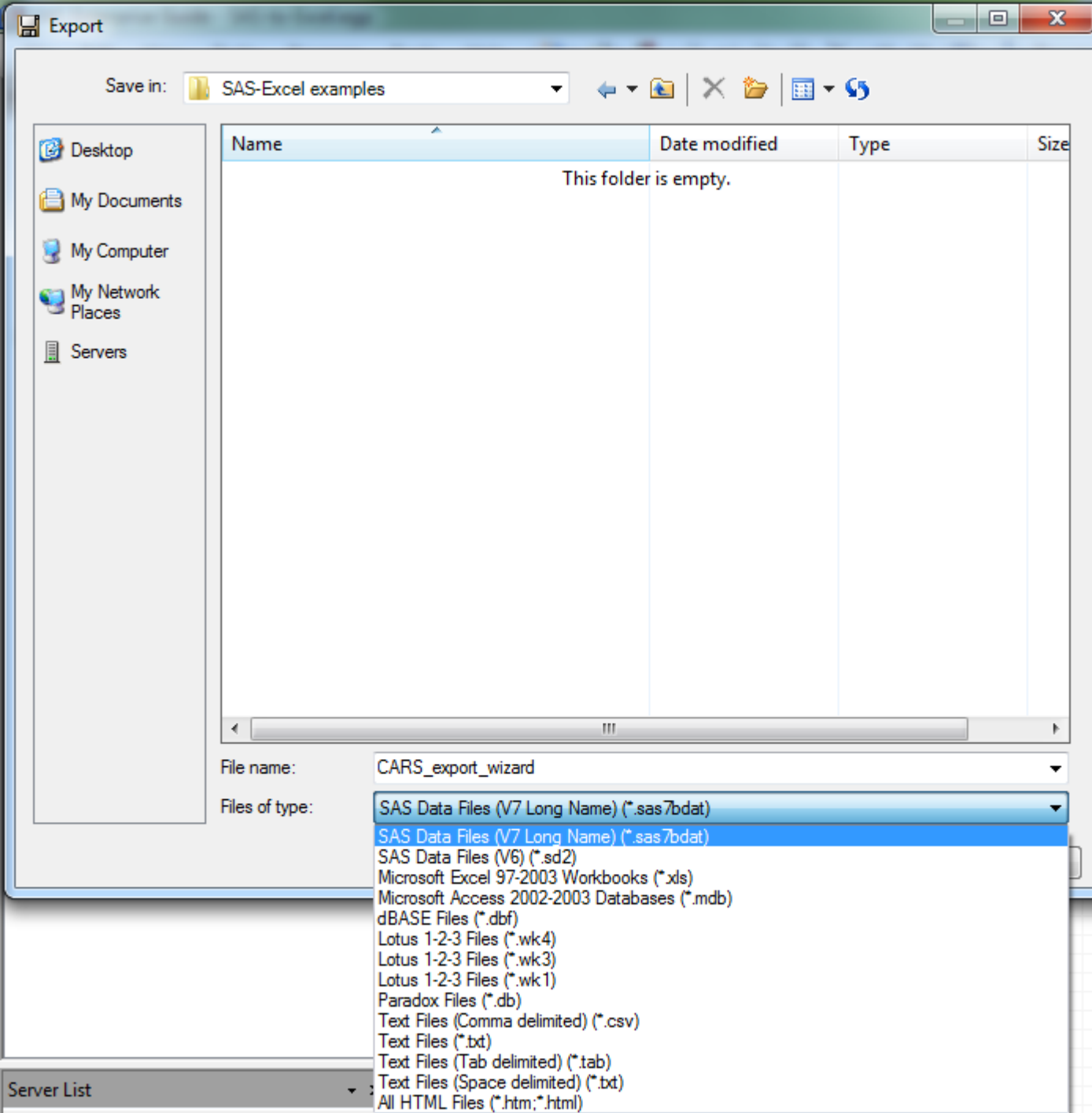
Name	Date modified	Type	Size
This folder is empty.			

File name: CARS_export_wizard

Files of type: SAS Data Files (V7 Long Name) (*.sas7bdat)

Save

Cancel



Microsoft Excel ribbon showing tabs: Home, Insert, Page Layout, Formulas, Data, Review, View, SAS.

Home tab ribbon sections:

- Clipboard:** Paste, Cut, Copy, Format Painter
- Font:** Calibri, 11, Bold (B), Italic (I), Underline (U), Text Color, Background Color
- Alignment:** Left, Center, Right, Justify, Merge & Center, Wrap Text
- Number:** General, Currency (\$), Percentage (%), Thousand Separator (comma), Decimals (0.00)

	A	B	C	D	E	F	G	
1	Make	Model	Type	Origin	DriveTrain	MSRP	Invoice	Eng
2	Acura	MDX	SUV	Asia	All	\$36,945	\$33,337	
3	Acura	RSX Type S 2dr	Sedan	Asia	Front	\$23,820	\$21,761	
4	Acura	TSX 4dr	Sedan	Asia	Front	\$26,990	\$24,647	
5	Acura	TL 4dr	Sedan	Asia	Front	\$33,195	\$30,299	
6	Acura	3.5 RL 4dr	Sedan	Asia	Front	\$43,755	\$39,014	
7	Acura	3.5 RL w/Navigation 4dr	Sedan	Asia	Front	\$46,100	\$41,100	
8	Acura	NSX coupe 2dr manual S	Sports	Asia	Rear	\$89,765	\$79,978	
9	Audi	A4 1.8T 4dr	Sedan	Europe	Front	\$25,940	\$23,508	
10	Audi	A4 1.8T convertible 2dr	Sedan	Europe	Front	\$35,940	\$32,506	
11	Audi	A4 3.0 4dr	Sedan	Europe	Front	\$31,840	\$28,846	
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14	Audi	A6 3.0 4dr	Sedan	Europe	Front	\$36,640	\$33,129	
15	Audi	A6 3.0 Quattro 4dr	Sedan	Europe	All	\$39,640	\$35,992	
16	Audi	A4 3.0 convertible 2dr	Sedan	Europe	Front	\$42,490	\$38,325	
17	Audi	A4 3.0 Quattro convertible 2dr	Sedan	Europe	All	\$44,240	\$40,075	
18	Audi	A6 2.7 Turbo Quattro 4dr	Sedan	Europe	All	\$42,840	\$38,840	



Pros

- Quick and simple
- No coding
- Base SAS only



Cons

- Just for one-offs
- No formatting – just data transfer



2. EG export as project step

EG Export as Step



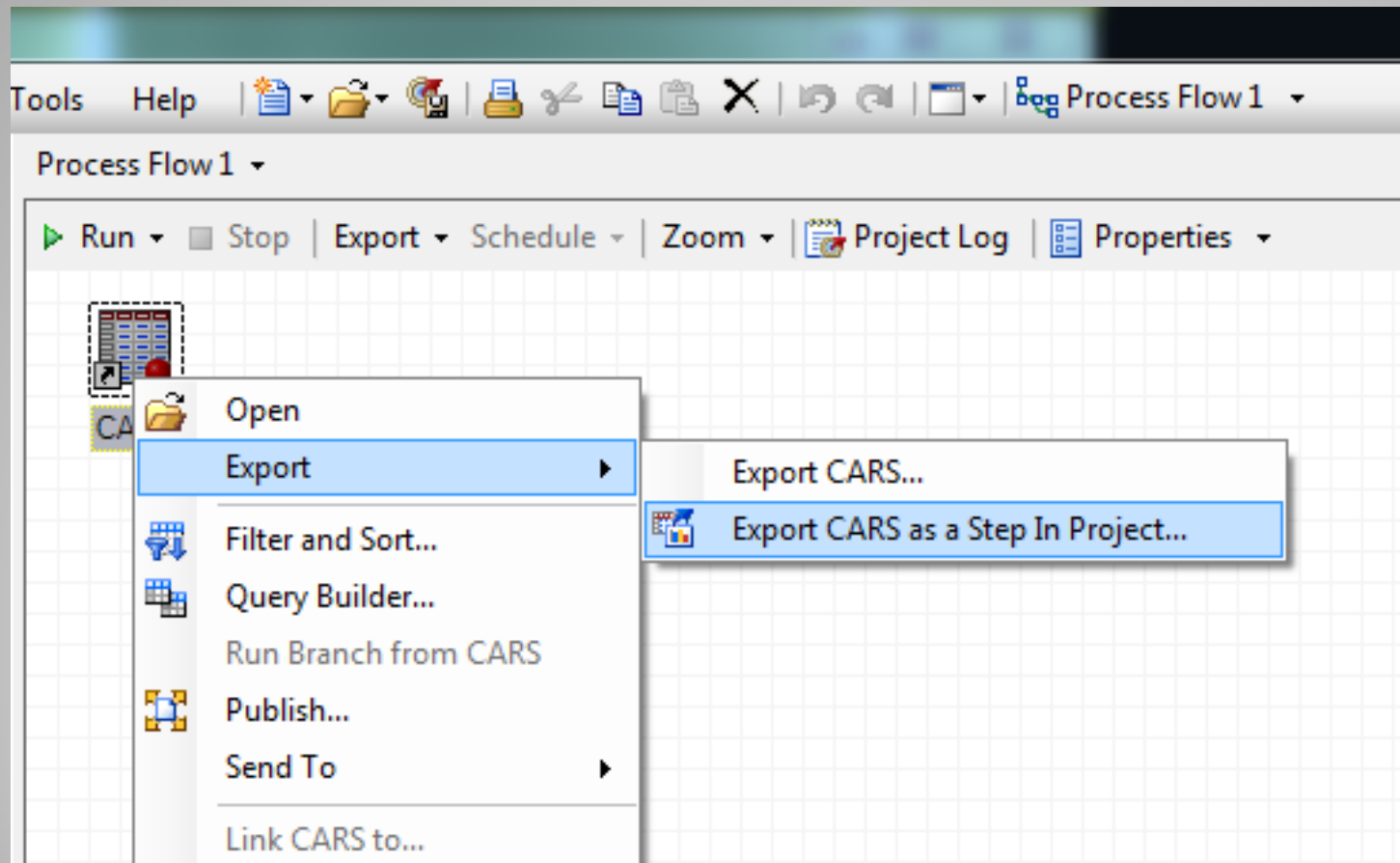
What?

- Simple wizard in EG
- Results in step in EG process
- SAS Push
- Data transfer

Good for

- Can run ad-hoc or regular
- Creates new or overwrites xls
- Creates xls

EG – Export as Project Step



1 of 4 Select the file to export.



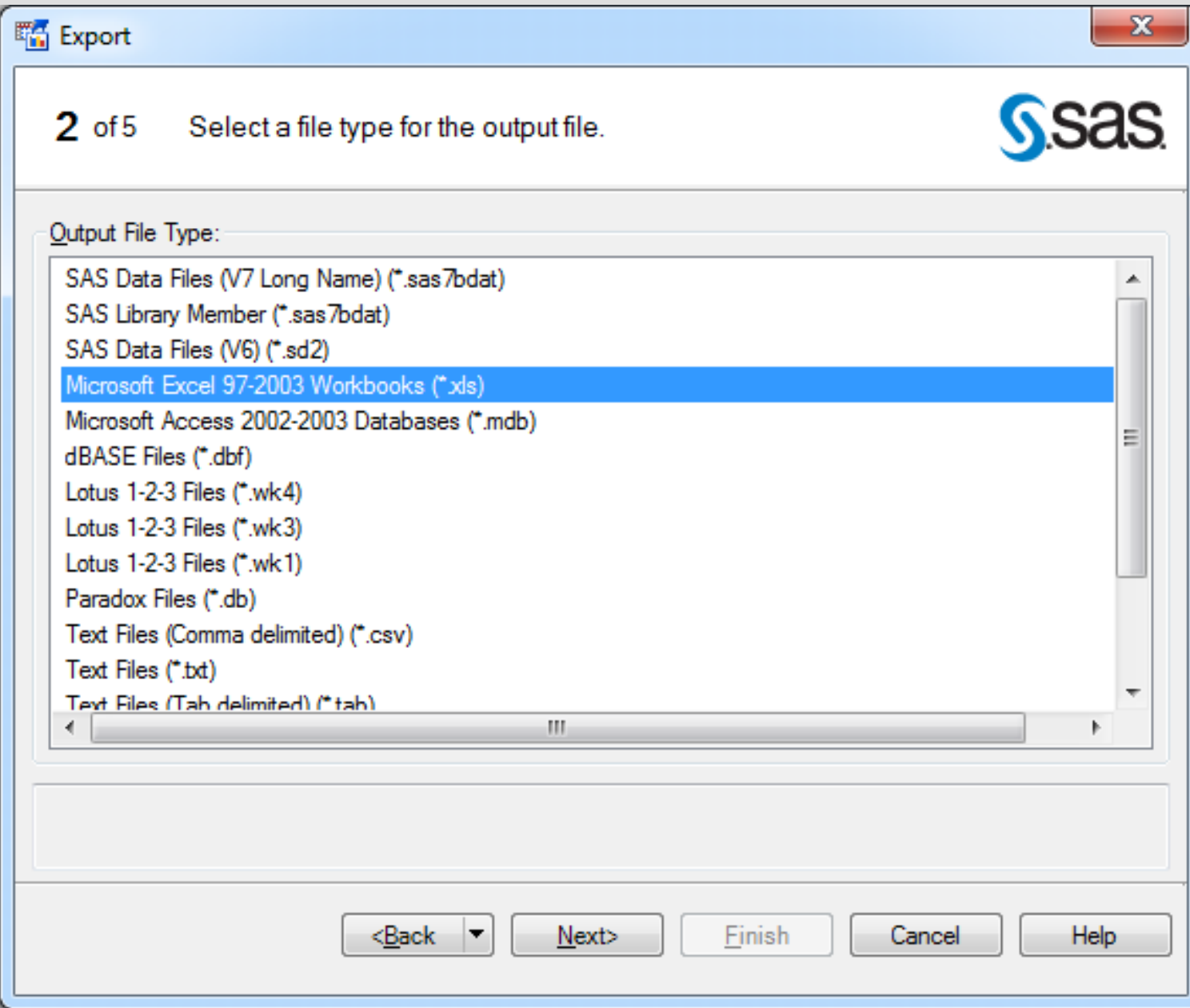
The export task allows a user to export a file and distribute the new file to another physical location. Some files such as data and report files can be converted to a new type prior to saving.

Export even when errors occur in the file

File To Export:

Name /	Type	Source	Container	Date Modified
CARS	Input Data		Process Flow 1	3/8/2013 5:45:47 PM
CARS	Input Data		Process Flow	3/8/2013 5:04:43 PM
CLASS	Input Data		Process Flow	3/8/2013 4:20:16 PM
FRED	Input Data	Program	Process Flow	3/8/2013 4:25:56 PM
Last Submitted Code		Summary Stati...	Process Flow	3/8/2013 4:20:53 PM
Last Submitted Code		Program	Process Flow	3/8/2013 4:25:55 PM
Last Submitted Code		One-Way Fre...	Process Flow	3/8/2013 5:18:51 PM
Log	SAS Log	Summary Stati...	Process Flow	3/8/2013 4:20:52 PM

<Back | Next> | Finish | Cancel | Help





4 of 5 Specify the location and name for the output file.



Output File:

Local Computer

C:\Knoware\SAS-Excel examples\CARS_export_task.xls

Browse...

SAS Servers

Browse...

Output Options

Overwrite existing output

Specifies the location and name of the exported file on a SAS server.

<Back

Next>

Finish

Cancel

Help

EG – Export as Project Step

SAS Enterprise Guide - SAS-to-Excel.egg

File Edit View Tasks Program Tools Help | [Icons] | SAS Pro

Project Tree

- Process Flow
 - CLASS
 - Summary Statistics
 - CARS
 - One-Way Frequencies
 - SHOES
 - Programs
 - Program
- Process Flow 1
 - CARS
 - Export File [CARS]

Process Flow 1

Run Stop Export Schedule Zoom Project Log P

```
graph LR; CARS[CARS] --> Export1[Export File [CAR...]]; Export1 --> Export2[Export File [CAR...]];
```



Pros

- Quick and simple
- No coding
- Part of project

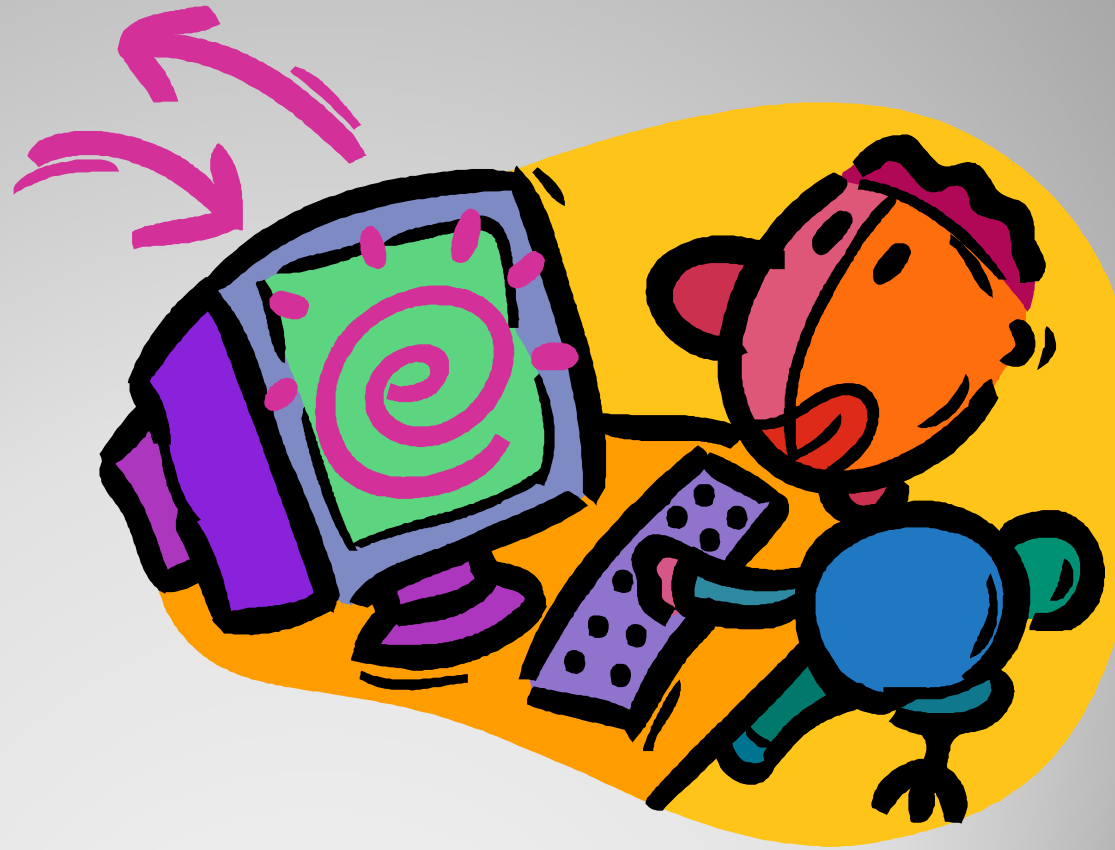


Cons

- No formatting –
just data transfer

Export as Project Step - needs

- Base SAS, EG
- SAS/Access to PC File Formats (PCFF)



3. DMS export and input wizards

DMS Export Wizard



What?

- Simple wizard in DMS
- Exports to Excel, flat files, others
- SAS Push
- Data transfer

Good for

- Quick one-off creation of xls
- Can generate code for regular use
- Creates new or overwrites xls

DMS Export Wizard

SAS

File Edit View Tools Solutions Window Help

New Ctrl+N
Open... Ctrl+O
Close

Open Object...

New Program
Open Program...

Save Ctrl+S
Save As...
Save As Object...

Import Data...
Export Data...

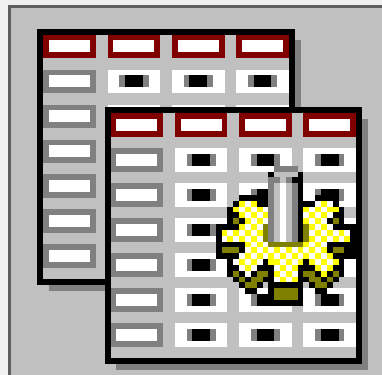
Page Setup...

Log - (Untitled)

NOTE: Copyright (c) 2002-2010 by SAS Institute Inc. All rights reserved.
NOTE: SAS (r) Proprietary Software Licensed to KNOWLEDGE WAREHOUSE
NOTE: This session is executing on

NOTE: Updated analytical products:
SAS/STAT 9.3_M1, SAS/ETS 9.3_M1, SAS

NOTE: SAS initialization used:
real time 13.63 sec
cpu time 6.37 sec



SAS
Export Wizard

SAS Source

Choose the source SAS data set:

Library:

SASHELP

Member:

CARS

Write variable labels as column names

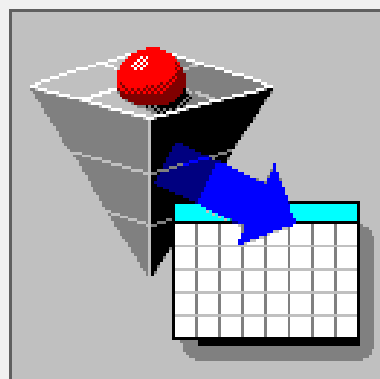
Help

Cancel

< Back

Next >

Finish



SAS
Export Wizard

Export to
EXCEL file

What type of data do you wish to export?

Standard data source

Select a data source from the list below.

Microsoft Excel Workbook(*.xls *.xlsb *.xlsm *.xlsx)

Microsoft Excel Workbook(*.xls *.xlsb *.xlsm *.xlsx)

- Microsoft Access Database(*.mdb *.accdb)
- Microsoft Excel Workbook on PC Files Server
- Microsoft Access Database on PC Files Server
- Comma Separated Values (*.csv)
- Tab Delimited File (*.txt)
- Delimited File (*.*)
- dBASE File (*.dbf)
- JMP File (*.jmp)
- SPSS File (*.sav)
- Stata File (*.dta)
- Paradox File (*.db)
- Microsoft Excel 5 or 95 Workbook (*.xls)
- Microsoft Excel 4 Spreadsheet (*.xls)
- Lotus 1-2-3 Spreadsheet (*.wk4)
- Lotus 1-2-3 Spreadsheet (*.wk3)
- Lotus 1-2-3 Spreadsheet (*.wk1)

Help

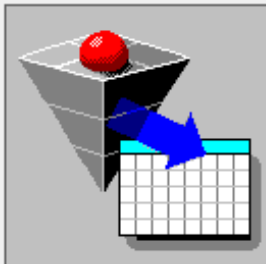
Cancel

< Back

Next >

Finish

Export Wizard - Select export type



SAS
Export Wizard

Export to
EXCEL file

What type of data do you wish to export?

Standard data source

Select a data source from the list below.

Microsoft Excel Workbook(*.xls *.xlsb *.xlsm *.xlsx)

User-defined formats

Define a special file format using the External File Interface (EFI) facility.

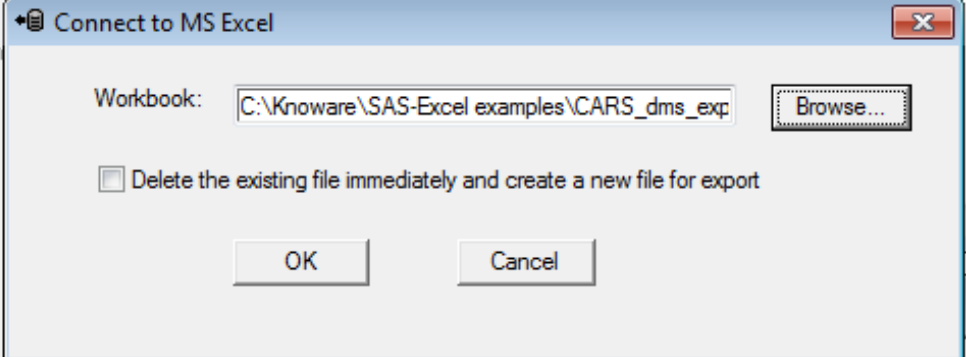
Help

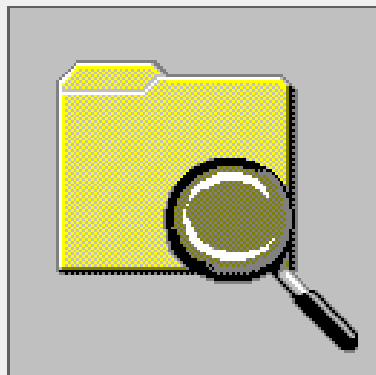
Cancel

< Back

Next >

Finish





SAS
Export Wizard

Select file

The export Wizard can create a file containing PROC EXPORT statements that can be used in SAS programs to export this data again.

If you want these statements to be generated, enter the filename where they should be saved:

Browse...

Replace file if it exists.

Help

Cancel

< Back

Next >

Finish

Microsoft Excel ribbon showing tabs: Home, Insert, Page Layout, Formulas, Data, Review, View, SAS.

Home tab ribbon groups:

- Clipboard:** Paste, Cut, Copy, Format Painter
- Font:** MS Sans Serif, 10, Bold (B), Italic (I), Underline (U), Paragraph (list), Bullets (list), Text Color (A), Background Color (A)
- Alignment:** Left, Center, Right, Justify, Indent Left, Indent Right, Decrease Indent, Increase Indent, Wrap Text, Merge & Center
- Number:** General, Currency (\$), Percentage (%), Comma (.), Thousand Separator (')

	A	B	C	D	E	F	G	H	I	J	K
1	Make	Model	Type	Origin	DriveTrain	MSRP	Invoice	EngineSiz	Cylinders	Horsepow	MPG_C
2	Acura	MDX	SUV	Asia	All	36,945.00	33,337.00	3.5	6	265	
3	Acura	RSX Type	Sedan	Asia	Front	23,820.00	21,761.00	2	4	200	
4	Acura	TSX 4dr	Sedan	Asia	Front	26,990.00	24,647.00	2.4	4	200	
5	Acura	TL 4dr	Sedan	Asia	Front	33,195.00	30,299.00	3.2	6	270	
6	Acura	3.5 RL 4dr	Sedan	Asia	Front	43,755.00	39,014.00	3.5	6	225	
7	Acura	3.5 RL w/	Sedan	Asia	Front	46,100.00	41,100.00	3.5	6	225	
8	Acura	NSX coup	Sports	Asia	Rear	89,765.00	79,978.00	3.2	6	290	
9	Audi	A4 1.8T 4c	Sedan	Europe	Front	25,940.00	23,508.00	1.8	4	170	
10	Audi	A4 1.8T cc	Sedan	Europe	Front	35,940.00	32,506.00	1.8	4	170	
11	Audi	A4 3.0 4dr	Sedan	Europe	Front	31,840.00	28,846.00	3	6	220	
12	Audi	A4 3.0 Qu	Sedan	Europe	All	33,430.00	30,366.00	3	6	220	
13	Audi	A4 3.0 Qu	Sedan	Europe	All	34,480.00	31,388.00	3	6	220	
14	Audi	A6 3.0 4dr	Sedan	Europe	Front	36,640.00	33,129.00	3	6	220	
15	Audi	A6 3.0 Qu	Sedan	Europe	All	39,640.00	35,992.00	3	6	220	
16	Audi	A4 3.0 cor	Sedan	Europe	Front	42,490.00	38,325.00	3	6	220	
17	Audi	A4 3.0 Qu	Sedan	Europe	All	44,240.00	40,075.00	3	6	220	
18	Audi	A6 2.7 Tur	Sedan	Europe	All	42,840.00	38,840.00	2.7	6	250	
19	Audi	A6 4.2 Qu	Sedan	Europe	All	49,690.00	44,936.00	4.2	8	300	
20	Audi	A8 L Quat	Sedan	Europe	All	69,190.00	64,740.00	4.2	8	330	
21	Audi	S4 Quattr	Sedan	Europe	All	48,040.00	43,556.00	4.2	8	340	

Generated SAS code

```
PROC EXPORT DATA= SASHELP.CARS  
    OUTFILE= "C:\...\CARS_dms.xlsb"  
    DBMS=EXCELCS REPLACE;  
    SERVER="sas93";  
    PORT=9621;  
    SSPI=YES;  
    SHEET="all_cars";  
RUN;
```

A teal-colored arrow pointing to the left, containing text about pros.

Pros

- Quick and simple
- No coding
- Generates code

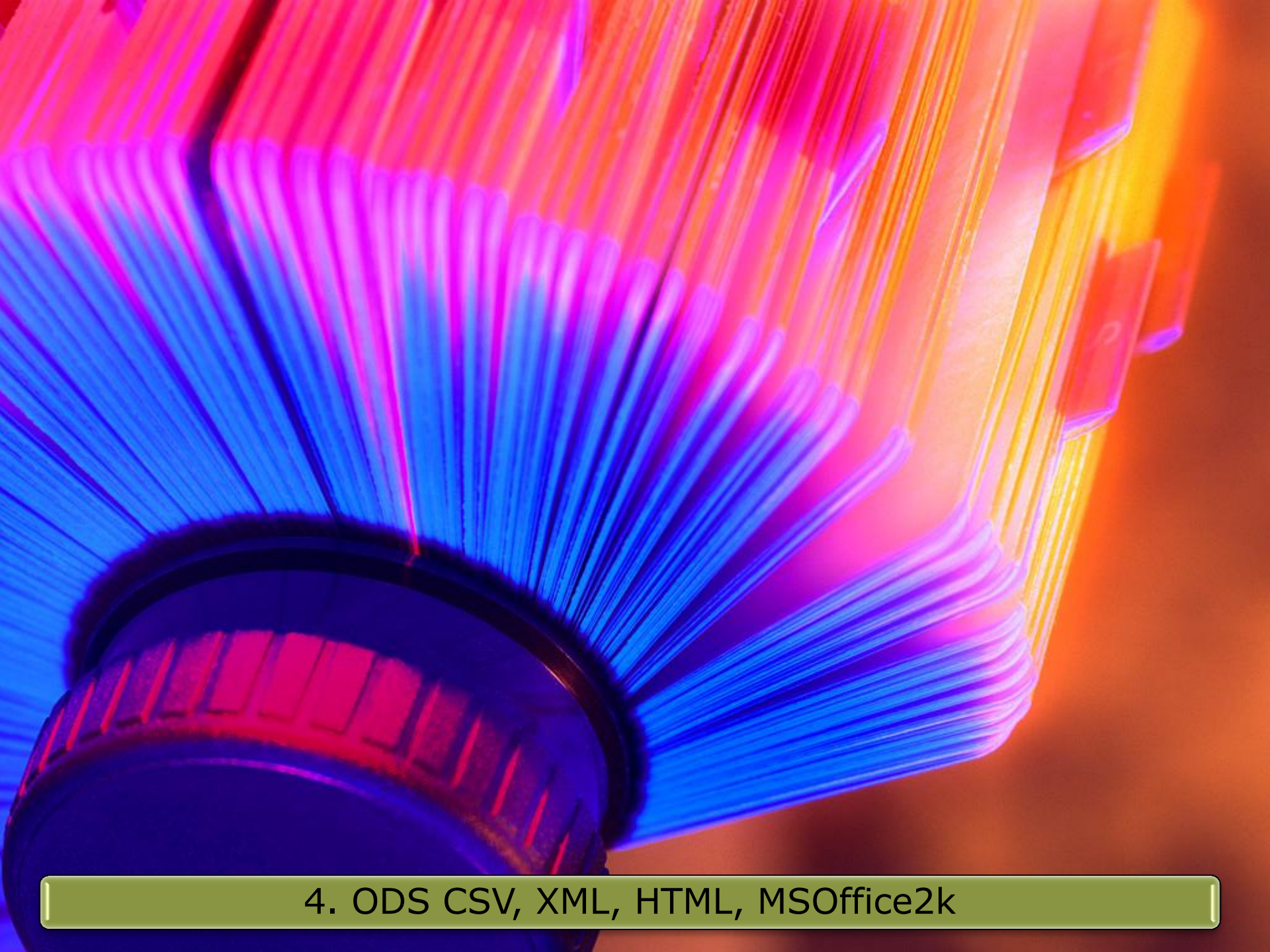
A purple-colored arrow pointing to the right, containing text about cons.

Cons

- No formatting –
just data transfer

EG Export Wizard – Needs?

- Base SAS, PCFF
- Maybe need SAS PC Files Server



4. ODS CSV, XML, HTML, MSOffice2k

ODS CSV



What?

- Creates csv file, not xls format
- SAS Push
- Data transfer

Good for

- Simple data transfer
- Good for other apps needing csv
- Creates new or overwrites file

ODS HTML



What?

- Better looking output
- Move to MSOffice2K

Good
for

ODS MSOffice2k



What?

- Creates html
- Specific for MS Office
- SAS Push
- Output transfer

Good
for

- Nice looking output
- Supports images and graphs
- Creates new or overwrites xls

ODS CSV example

```
ods listing close;  
ods csv file='C:\output\cars_csv.csv';
```

```
title 'All cars - ODS csv example';  
proc print data=sashelp.cars noobs;  
run;
```

```
ods csv close;  
ods listing;
```

Microsoft Excel ribbon showing tabs: Home, Insert, Page Layout, Formulas, Data, Review, View, SAS.

Clipboard group: Paste, Cut, Copy, Format Painter.

Font group: Calibri, 11, Bold (B), Italic (I), Underline (U), Text color, Background color.

Alignment group: Text alignment (left, center, right, justified), Orientation (vertical, horizontal), Wrap Text, Merge & Center.

Number group: General, Currency (\$), Percentage (%), Thousands separator (,), Decimal places (0.00).

Active cell: A1, Formula bar: Make

	A	B	C	D	E	F	G	H	I	J	K	MP
1	Make	Model	Type	Origin	DriveTrain	MSRP	Invoice	EngineSize	Cylinders	Horsepow	MPG_City	MP
2	Acura	MDX	SUV	Asia	All	\$36,945	\$33,337	3.5	6	265	17	
3	Acura	RSX Type S	Sedan	Asia	Front	\$23,820	\$21,761	2	4	200	24	
4	Acura	TSX 4dr	Sedan	Asia	Front	\$26,990	\$24,647	2.4	4	200	22	
5	Acura	TL 4dr	Sedan	Asia	Front	\$33,195	\$30,299	3.2	6	270	20	
6	Acura	3.5 RL 4dr	Sedan	Asia	Front	\$43,755	\$39,014	3.5	6	225	18	
7	Acura	3.5 RL w/M	Sedan	Asia	Front	\$46,100	\$41,100	3.5	6	225	18	
8	Acura	NSX coupe	Sports	Asia	Rear	\$89,765	\$79,978	3.2	6	290	17	
9	Audi	A4 1.8T 4d	Sedan	Europe	Front	\$25,940	\$23,508	1.8	4	170	22	
10	Audi	A4 1.8T con	Sedan	Europe	Front	\$35,940	\$32,506	1.8	4	170	23	
11	Audi	A4 3.0 4dr	Sedan	Europe	Front	\$31,840	\$28,846	3	6	220	20	
12	Audi	A4 3.0 Qu	Sedan	Europe	All	\$33,430	\$30,366	3	6	220	17	
13	Audi	A4 3.0 Qu	Sedan	Europe	All	\$34,480	\$31,388	3	6	220	18	
14	Audi	A6 3.0 4dr	Sedan	Europe	Front	\$36,640	\$33,129	3	6	220	20	
15	Audi	A6 3.0 Qu	Sedan	Europe	All	\$39,640	\$35,992	3	6	220	18	
16	Audi	A4 3.0 con	Sedan	Europe	Front	\$42,490	\$38,325	3	6	220	20	
17	Audi	A4 3.0 Qu	Sedan	Europe	All	\$44,240	\$40,075	3	6	220	18	
18	Audi	A6 2.7 Tur	Sedan	Europe	All	\$42,840	\$38,840	2.7	6	250	18	
19	Audi	A6 4.2 Qu	Sedan	Europe	All	\$49,690	\$44,936	4.2	8	300	17	

ODS CSV note – embedded commas

Embedded commas in numerical columns can cause issues, as taken as delimiter. Two solutions:

- Update your tagset – see Usage Note 10241
- Don't format numbers with commas, i.e. comma format or dollar format

cars_c

Home Insert Page Layout Formulas Data Review View SAS

Clipboard: Paste, Cut, Copy, Format Painter

Font: Calibri, 11, Bold, Italic, Underline, Text Color, Background Color

Alignment: Wrap Text, Merge & Center

Number: General, Currency, Percentage, Increase/Decrease Decimal

A1 *f_x* Make

	A	B	C	D	E	F	G	H	I	J	K	
1	Make	Model	Type	Origin	DriveTrain	MSRP	Invoice	EngineSize	Cylinders	Horsepower	MPG_City	MPG
2	Acura	MDX	SUV	Asia	All	\$36	945	\$33	337	3.5	6	
3	Acura	RSX Type S	Sedan	Asia	Front	\$23	820	\$21	761	2	4	
4	Acura	TSX 4dr	Sedan	Asia	Front	\$26	990	\$24	647	2.4	4	
5	Acura	TL 4dr	Sedan	Asia	Front	\$33	195	\$30	299	3.2	6	
6	Acura	3.5 RL 4dr	Sedan	Asia	Front	\$43	755	\$39	14	3.5	6	
7	Acura	3.5 RL w/M	Sedan	Asia	Front	\$46	100	\$41	100	3.5	6	
8	Acura	NSX coupe	Sports	Asia	Rear	\$89	765	\$79	978	3.2	6	
9	Audi	A4 1.8T 4d	Sedan	Europe	Front	\$25	940	\$23	508	1.8	4	
10	Audi	A4 1.8T con	Sedan	Europe	Front	\$35	940	\$32	506	1.8	4	
11	Audi	A4 3.0 4dr	Sedan	Europe	Front	\$31	840	\$28	846	3	6	
12	Audi	A4 3.0 Quattro	Sedan	Europe	All	\$33	430	\$30	366	3	6	
13	Audi	A4 3.0 Quattro	Sedan	Europe	All	\$34	480	\$31	388	3	6	
14	Audi	A6 3.0 4dr	Sedan	Europe	Front	\$36	640	\$33	129	3	6	
15	Audi	A6 3.0 Quattro	Sedan	Europe	All	\$39	640	\$35	992	3	6	
16	Audi	A4 3.0 con	Sedan	Europe	Front	\$42	490	\$38	325	3	6	
17	Audi	A4 3.0 Quattro	Sedan	Europe	All	\$44	240	\$40	75	3	6	
18	Audi	A6 2.7 Turbo	Sedan	Europe	All	\$42	840	\$38	840	2.7	6	
19	Audi	A6 4.2 Quattro	Sedan	Europe	All	\$49	690	\$44	936	4.2	8	

ODS HTML example

```
ods listing close;  
ods html  
    body='C:\output\cars_html.xls'  
    style=barrettsblue;  
  
title 'All cars - ODS html example';  
  
proc print data=sashelp.cars noobs;  
run;  
  
ods html close;  
ods listing;
```


cars_htr

Home Insert Page Layout Formulas Data Review View SAS

Cut Copy Paste Format Painter Clipboard

Arial 12 Font

Alignment

General Number

N1 fx

A B C D E F

	Make	Model	Type	Origin	Drive Train	MSRP
1	All cars - ODS html example					
2						
3						
4	Acura	MDX	SUV	Asia	All	\$36,94
5	Acura	RSX Type S 2dr	Sedan	Asia	Front	\$23,82
6	Acura	TSX 4dr	Sedan	Asia	Front	\$26,99
7	Acura	TL 4dr	Sedan	Asia	Front	\$33,19
8	Acura	3.5 RL 4dr	Sedan	Asia	Front	\$43,75
9	Acura	3.5 RL w/Navigation 4dr	Sedan	Asia	Front	\$46,10
10	Acura	NSX coupe 2dr manual S	Sports	Asia	Rear	\$89,76
11	Audi	A4 1.8T 4dr	Sedan	Europe	Front	\$25,94
12	Audi	A4 1.8T convertible 2dr	Sedan	Europe	Front	\$35,94
13	Audi	A4 3.0 4dr	Sedan	Europe	Front	\$31,84
14	Audi	A4 3.0 Quattro 4dr manual	Sedan	Europe	All	\$33,43
15	Audi	A4 3.0 Quattro 4dr auto	Sedan	Europe	All	\$34,48
16	Audi	A6 3.0 4dr	Sedan	Europe	Front	\$36,64
17	Audi	A6 3.0 Quattro 4dr	Sedan	Europe	All	\$39,64
18	Audi	A4 3.0 convertible 2dr	Sedan	Europe	Front	\$42,49
19	Audi	A4 3.0 Quattro convertible 2dr	Sedan	Europe	All	\$44,24

ODS MSOffice2k example

```
ods listing close;  
ods tagsets.msoffice2k  
    file='C:\output\cars_msoffice2k.xls'  
    style=barrettsblue;  
  
title j=left 'All cars - ODS msoffice2k example';  
  
proc print data=sashelp.cars noobs;  
run;  
  
ods tagsets.msoffice2k close;  
ods listing;
```

cars_

Home Insert Page Layout Formulas Data Review View SAS

Cut Copy Paste Format Painter Clipboard

Arial 12 B I U Font

Wrap Text Merge & Center Alignment

General \$ % Number

N4 106

A B C D E F G

1 **All cars - ODS msoffice2k example**

2

3	Make	Model	Type	Origin	DriveTrain	MSRP	Inv
4	Acura	MDX	SUV	Asia	All	\$36,945	\$33
5	Acura	RSX Type S 2dr	Sedan	Asia	Front	\$23,820	\$21
6	Acura	TSX 4dr	Sedan	Asia	Front	\$26,990	\$24
7	Acura	TL 4dr	Sedan	Asia	Front	\$33,195	\$30
8	Acura	3.5 RL 4dr	Sedan	Asia	Front	\$43,755	\$39
9	Acura	3.5 RL w/Navigation 4dr	Sedan	Asia	Front	\$46,100	\$41
10	Acura	NSX coupe 2dr manual S	Sports	Asia	Rear	\$89,765	\$79
11	Audi	A4 1.8T 4dr	Sedan	Europe	Front	\$25,940	\$23
12	Audi	A4 1.8T convertible 2dr	Sedan	Europe	Front	\$35,940	\$32
13	Audi	A4 3.0 4dr	Sedan	Europe	Front	\$31,840	\$28
14	Audi	A4 3.0 Quattro 4dr manual	Sedan	Europe	All	\$33,430	\$30
15	Audi	A4 3.0 Quattro 4dr auto	Sedan	Europe	All	\$34,480	\$31
16	Audi	A6 3.0 4dr	Sedan	Europe	Front	\$36,640	\$33
17	Audi	A6 3.0 Quattro 4dr	Sedan	Europe	All	\$39,640	\$35
18	Audi	A4 3.0 convertible 2dr	Sedan	Europe	Front	\$42,490	\$38

ODS CSV

Pros

- Good for simple data
- All Excel versions
- Small size

Cons

- Plain output
- No formatting – just data transfer

ODS MSOffice2k

Pros

- Nicer output
- Embedded images and graphs
- Use SAS styles

Cons

- Still HTML file, not XLS
- Larger file
- No multi-sheet, use MSOffice2k_x
- ExcelXP has many more options



5. ODS ExcelXP tagset

ODS ExcelXP tagset



What?

- ODS tagset – creates XML
- Latest on SAS Web Site
- SAS Push
- Output transfer

Good for

- Powerful for controlling formatting
- SAS styles
- Multi-sheets
- Creates new or overwrites xls

ODS ExcelXP tagset - simple

```
ods listing close;  
ods tagsets.ExcelXP  
    file='C:\output\ExcelXP-simple.xls';  
  
title 'All cars - simple example';  
  
proc print data=sashelp.cars noobs;  
run;  
  
ods tagsets.ExcelXP close;  
ods listing;
```


Home Insert Page Layout Formulas Data Review View SAS

Cut Copy Paste Format Painter Clipboard

Arial, Helvetica, 14 A A

B I U Font

Alignment

Wrap Text Merge & Center

General Number

Conditional Formatting

A1 f_x Make

	A	B	C
1	Make	Model	Type
2	Acura	MDX	SUV
3	Acura	RSX Type S 2dr	Sedan
4	Acura	TSX 4dr	Sedan
5	Acura	TL 4dr	Sedan
6	Acura	3.5 RL 4dr	Sedan
7	Acura	3.5 RL w/Navigation 4dr	Sedan
8	Acura	NSX coupe 2dr manual S	Sports
9	Audi	A4 1.8T 4dr	Sedan
10	Audi	A4 1.8T convertible 2dr	Sedan
11	Audi	A4 3.0 4dr	Sedan
12	Audi	A4 3.0 Quattro 4dr manual	Sedan
13	Audi	A4 3.0 Quattro 4dr auto	Sedan
14	Audi	A6 3.0 4dr	Sedan
15	Audi	A6 3.0 Quattro 4dr	Sedan
16	Audi	A4 3.0 convertible 2dr	Sedan
17	Audi	A4 3.0 Quattro convertible 2dr	Sedan

ODS ExcelXP tagset - fancier

```
ods tagsets.ExcelXP  
  file='C:\output\ExcelXP-fancier.xls'  
  style=BarrettsBlue  
  options(embedded_titles="YES"  
    print_header='&LPage &P of &N'  
    embedded_footnotes="YES"  
    autofilter='3-5');
```

```
ods tagsets.ExcelXP  
  options(sheet_name='Europe');  
title 'European Cars';  
footnote 'Updated March 2013';
```

ODS ExcelXP tagset - fancier

```
proc print data=sashelp.cars noobs;  
  where origin='Europe';  
  var make model type origin drivetrain;  
  var msrp /  
    style(header)=[background=yellow  
      font_face="times new roman" just=center]  
    style(data)=[background=green  
      font_face="times new roman" just=center];  
  var invoice enginesize cylinders;  
run;
```

Font

al, Helvetica, 12

I U

Font

Alignment

Wrap Text

Merge & Center

Alignment

Number

General

\$ % , <=0 .00 >=0

Number

Styles

Normal Bad Neutral Calculation

Conditional Formatting Format as Table

Styles

fx

B

C

D

E

F

European Cars

Model	Type	Origin	DriveTrain	MSRP	
A4 1.8T 4dr	Sedan	Europe	Front	\$25,940.00	\$
A4 1.8T convertible 2dr	Sedan	Europe	Front	\$35,940.00	\$
A4 3.0 4dr	Sedan	Europe	Front	\$31,840.00	\$
A4 3.0 Quattro 4dr manual	Sedan	Europe	All	\$33,430.00	\$
A4 3.0 Quattro 4dr auto	Sedan	Europe	All	\$34,480.00	\$
A6 3.0 4dr	Sedan	Europe	Front	\$36,640.00	\$
A6 3.0 Quattro 4dr	Sedan	Europe	All	\$39,640.00	\$
A4 3.0 convertible 2dr	Sedan	Europe	Front	\$42,490.00	\$
A4 3.0 Quattro convertible 2dr	Sedan	Europe	All	\$44,240.00	\$
A6 2.7 Turbo Quattro 4dr	Sedan	Europe	All	\$42,840.00	\$
A6 4.2 Quattro 4dr	Sedan	Europe	All	\$49,690.00	\$
A8 L Quattro 4dr	Sedan	Europe	All	\$69,190.00	\$
S4 Quattro 4dr	Sedan	Europe	All	\$48,040.00	\$
RS 6 4dr	Sports	Europe	Front	\$84,600.00	\$
TT 1.8 convertible 2dr (coupe)	Sports	Europe	Front	\$35,940.00	\$
TT 1.8 Quattro 2dr (convertible)	Sports	Europe	All	\$37,390.00	\$
TT 3.2 coupe 2dr (convertible)	Sports	Europe	All	\$40,590.00	\$
A6 3.0 Avant Quattro	Wagon	Europe	All	\$39,640.00	\$

Pros

- Loads of options
- Flexible
- Good for generating lots of spreadsheets
- No need for manual format
- Run on any SAS platform
- Just Base SAS needed

Cons

- XML, not native XLS
- MS XML-no image support
- Dates in text format – need specific format to xls dates

ODS ExcelXP tagset - needs

- Base SAS (no PCFF needed)
- ExcelXP tagset – best to get updated
- Excel 2002 or above

6. Proc export and import



SAS/Access to PC File Formats

- Proc Export and Import
- Use Excel Libname engine
- Proc DBLOAD

- May need SAS PC Files Server
 - If 64-bit Windows, SAS and 32-bit Office
 - If Unix or Linux

- **ERROR: Connect: Class not registered**
- **ERROR: Error in the LIBNAME statement**

Proc Export



What?

- SAS table to Excel file
- Exports to Excel, flat files, others
- SAS Push
- Data transfer

Good for

- Creating xls, no formatting
- Updating simple pre-formatted xls

Proc Export - simple

```
proc export
```

```
  data=SASHELP.CARS
```

```
  outfile="C:\output\CARS_export.xls"
```

```
  dbms='excel2007' replace;
```

```
  sheet='All Cars';
```

```
run;
```

Proc Export – PC Files Server

proc export

data=SASHELP.CARS

outfile="C:\output\CARS_export.xlsb"

dbms='excelcs' replace;

SERVER="sas93";

PORT=**9621**;

SSPI=YES;

sheet='All Cars';

run;

Microsoft Excel ribbon interface showing the following tabs: Home, Insert, Page Layout, Formulas, Data, Review, View, SAS.

The **Home** tab is active, displaying the following groups:

- Clipboard:** Paste, Cut, Copy, Format Painter.
- Font:** MS Sans Serif, 10, Bold (B), Italic (I), Underline (U), Text Color, Background Color, Font Color.
- Alignment:** Left, Center, Right, Justify, Merge & Center, Wrap Text.
- Number:** General, Currency (\$), Percentage (%), Comma (,).

	A	B	C	D	E	F	G	H	I	J	K
1	Make	Model	Type	Origin	DriveTrain	MSRP	Invoice	EngineSiz	Cylinders	Horsepow	MPC
2	Acura	MDX	SUV	Asia	All	36,945.00	33,337.00	3.5	6	265	
3	Acura	RSX Type	Sedan	Asia	Front	23,820.00	21,761.00	2	4	200	
4	Acura	TSX 4dr	Sedan	Asia	Front	26,990.00	24,647.00	2.4	4	200	
5	Acura	TL 4dr	Sedan	Asia	Front	33,195.00	30,299.00	3.2	6	270	
6	Acura	3.5 RL 4dr	Sedan	Asia	Front	43,755.00	39,014.00	3.5	6	225	
7	Acura	3.5 RL w/	Sedan	Asia	Front	46,100.00	41,100.00	3.5	6	225	
8	Acura	NSX coup	Sports	Asia	Rear	89,765.00	79,978.00	3.2	6	290	
9	Audi	A4 1.8T 4c	Sedan	Europe	Front	25,940.00	23,508.00	1.8	4	170	
10	Audi	A4 1.8T cc	Sedan	Europe	Front	35,940.00	32,506.00	1.8	4	170	
11	Audi	A4 3.0 4dr	Sedan	Europe	Front	31,840.00	28,846.00	3	6	220	
12	Audi	A4 3.0 Qu	Sedan	Europe	All	33,430.00	30,366.00	3	6	220	
13	Audi	A4 3.0 Qu	Sedan	Europe	All	34,480.00	31,388.00	3	6	220	
14	Audi	A6 3.0 4dr	Sedan	Europe	Front	36,640.00	33,129.00	3	6	220	
15	Audi	A6 3.0 Qu	Sedan	Europe	All	39,640.00	35,992.00	3	6	220	
16	Audi	A4 3.0 cor	Sedan	Europe	Front	42,490.00	38,325.00	3	6	220	
17	Audi	A4 3.0 Qu	Sedan	Europe	All	44,240.00	40,075.00	3	6	220	
18	Audi	A6 2.7 Tur	Sedan	Europe	All	42,840.00	38,840.00	2.7	6	250	
19	Audi	A6 4.2 Qu	Sedan	Europe	All	49,690.00	44,936.00	4.2	8	300	
20	Audi	A8 L Quat	Sedan	Europe	All	69,190.00	64,740.00	4.2	8	330	

Proc Export – Extra sheet

proc export

```
data=SASHELP.CARS(where=(origin='USA'))
```

```
outfile="C:\output\CARS_export.xlsb"
```

```
dbms='excelcs' ;
```

```
SERVER="sas93";
```

```
PORT=9621;
```

```
SSPI=YES;
```

```
sheet='USA cars';
```

```
run;
```

Added new sheet

22	Chevrolet	Tracker	SUV	USA	Front	20,255.00	19,108.00	2.5	6
23	Chevrolet	Aveo 4dr	Sedan	USA	Front	11,690.00	10,965.00	1.6	4
24	Chevrolet	Aveo LS 4	Sedan	USA	Front	12,585.00	11,802.00	1.6	4
25	Chevrolet	Cavalier 2	Sedan	USA	Front	14,610.00	13,697.00	2.2	4
26	Chevrolet	Cavalier 4	Sedan	USA	Front	14,810.00	13,884.00	2.2	4
27	Chevrolet	Cavalier L	Sedan	USA	Front	16,385.00	15,357.00	2.2	4
28	Chevrolet	Impala 4d	Sedan	USA	Front	21,900.00	20,095.00	3.4	6
29	Chevrolet	Malibu 4d	Sedan	USA	Front	18,995.00	17,434.00	2.2	4
30	Chevrolet	Malibu LS	Sedan	USA	Front	20,370.00	18,639.00	3.5	6
31	Chevrolet	Monte Ca	Sedan	USA	Front	21,825.00	20,026.00	3.4	6
32	Chevrolet	Impala LS	Sedan	USA	Front	25,000.00	22,931.00	3.8	6
33	Chevrolet	Impala SS	Sedan	USA	Front	27,995.00	25,672.00	3.8	6
34	Chevrolet	Malibu LT	Sedan	USA	Front	23,495.00	21,551.00	3.5	6
35	Chevrolet	Monte Ca	Sedan	USA	Front	24,225.00	22,222.00	3.8	6
36	Chevrolet	Astro	Sedan	USA	All	26,395.00	23,954.00	4.3	6
37	Chevrolet	Venture L	Sedan	USA	Front	27,020.00	24,518.00	3.4	6
38	Chevrolet	Corvette 5	Sports	USA	Rear	44,525.00	39,069.00	5.7	8

◀ ◁ ▶ ▷ All Cars USA cars

Ready

Pros

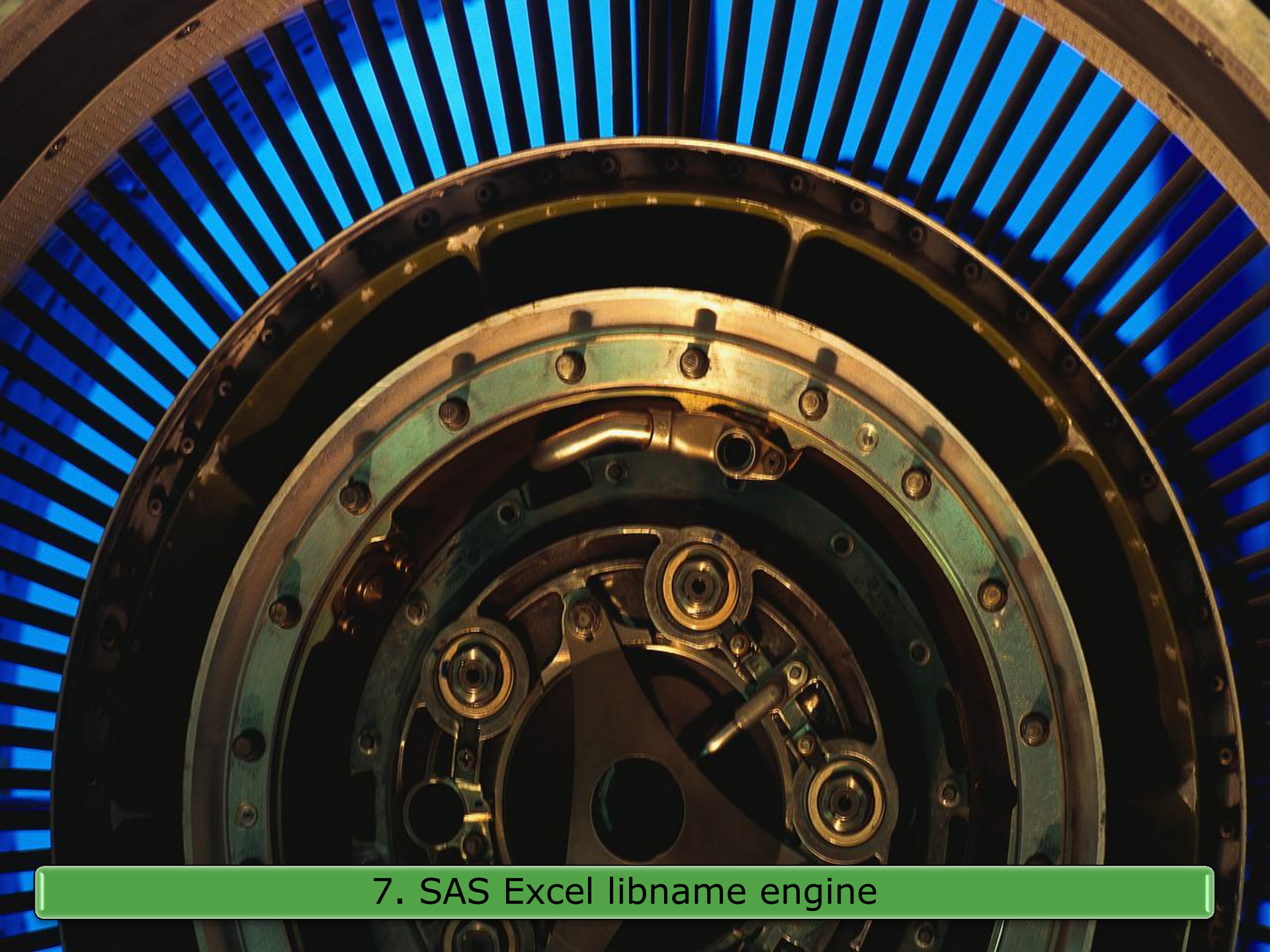
- Simple code
- Batch running
- Multi sheets
- Create new or update

Cons

- Can't write to range, starts in A1
- SAS formats not honoured

Proc Export - needs

- Base SAS, PCFF
- Just SAS skills



7. SAS Excel libname engine

SAS Excel engine



What?

- Use Excel as a library
- Sheets and ranges as tables
- SAS Push
- Data transfer

Good for

- Creates new xls files or sheets
- Updates pre-formatted xls

SAS Excel engine - basics

- Assign libname

```
libname cars_xls excel 'c:\output\c.xls';
```

- Can use like other SAS libraries

```
data cars_xls.all_cars;  
  set sashelp.cars;  
run;
```

- libname cars_xls clear;

SAS Excel engine - basics

- Can refer to sheets or ranges
- Sheets end in \$ - need SAS name literal
data cars_xls.'cars_sheet1\$'
set sashelp.cars;
run;
- Ranges have no \$
data cars_xls.cars_range1;

Use pre-formatted Excel file

1. Create formatted template in Excel
2. Define range in Excel for SAS data
3. Process SAS data
4. Use Excel libname to update Excel range
5. Rest of sheets update automatically

Excel engine – range update

- Must delete first

```
proc datasets lib= cars_xls  
  delete cars_range1;
```

```
data cars_xls.cars_range1;  
  sas code...;
```

File Home Insert Page Layout Formulas Data Review View

Cut Copy Paste Format Painter Clipboard

MS Sans Serif 10 A A

B I U Font

Alignment

Wrap Text Merge & Center

G15 fx

A B C D E F G

1 Analysis of Average Car Prices - By Category

2						
3	Origin	(All)				
4	Cylinders	(All)				
5	DriveTrain	(All)				
6						
7		Data				
8	Type	Average of MSRP	Average of Invoice			
9	Hybrid	\$19,920	\$18,429			
10	Sedan	\$29,774	\$27,390			
11	Sports	\$53,387	\$48,473			
12	SUV	\$34,790	\$31,625			
13	Truck	\$24,941	\$22,617			
14	Wagon	\$28,841	\$26,646			
15	(blank)					
16	Grand Total	\$32,775	\$30,015			



Pros

- Advanced customisation
- Excel not needed
- DDE replacement - mostly



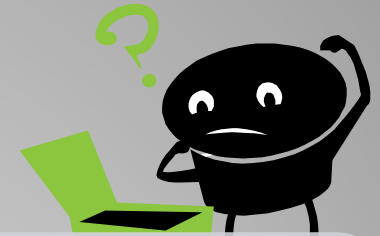
Cons

- Cannot create formatting – use existing
- Can't overwrite range – delete first

Excel libname engine – Needs?

- Base SAS, PCFF
- At least SAS 9

Third party control code



What?

- Program reads from SAS and writes to Excel
- Has complete control of Excel
- Data transfer

Good for

- Complete customisation and formatting
- Automation
- DDE replacement



Pros

- Flexibility
- Complete control

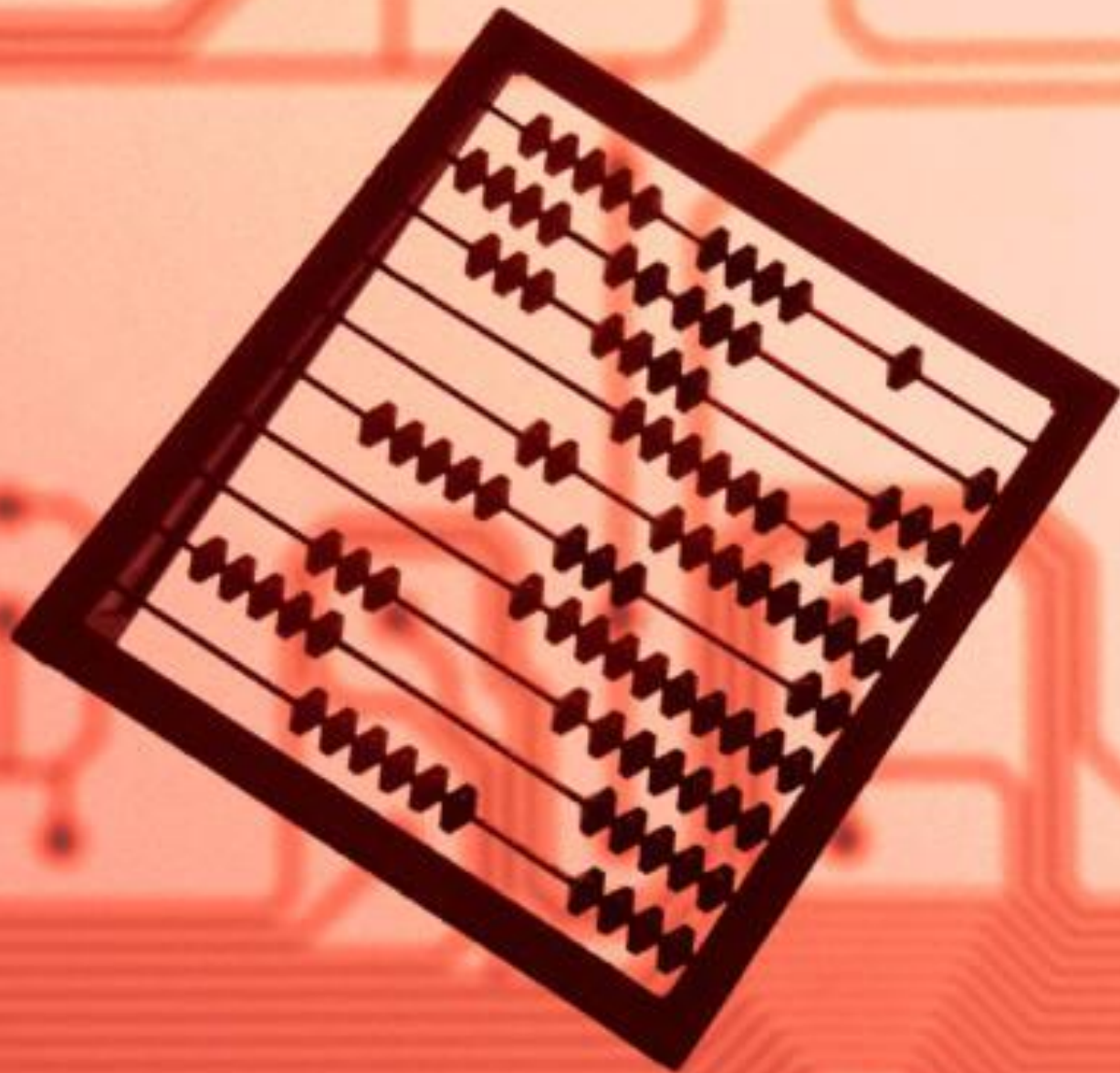


Cons

- Complex
- Skills required
- Programming

Third party control code - needs

- SAS Integration Technologies
- Knowledge of SAS IOM (Integrated Object Model)
- .Net or Java programming skills



9. AMO

AMO – SAS Add-in



What?

- Excel mechanism to pull SAS data and run logic
- SAS menu in Excel
- Excel pull
- Data and output transfer

Good for

- Lots of things!
- Quick creation of xls
- Updating xls with new data
- Running SAS logic from Excel



View SAS Data



Data

Local:SASHELP.CARS

Browse...

Details

Filter & Sort...

View

Worksheet

Number of records to view:

500 at a time

All

Insert record numbers in the first column

Display data source and filter information in the worksheet

Pivot Table

SAS OLAP Analyzer

Location

New worksheet:

Existing worksheet: A1

New workbook

[Why am I unable to specify the location in Excel by clicking in a worksheet?](#)

OK

Cancel

Help

File Home Insert Page Layout Formulas Data Review View JMP SAS Table Tools Design

Table Name: Table1

Summarize with PivotTable
Remove Duplicates
Convert to Range

Export Refresh Unlink

External Table Data

Header Row Total Row Banded Rows
First Column Last Column Banded Columns

Table Style Options

	A	B	C	D	E	F	G	
1	Make	Model	Type	Origin	DriveTrain	MSRP	In	
2	1	Acura	MDX	SUV	Asia	All	\$36,945	
3	2	Acura	RSX Type S 2dr	Sedan	Asia	Front	\$23,820	
4	3	Acura	TSX 4dr	Sedan	Asia	Front	\$26,990	
5	4	Acura	TL 4dr	Sedan	Asia	Front	\$33,195	
6	5	Acura	3.5 RL 4dr	Sedan	Asia	Front	\$43,755	
7	6	Acura	3.5 RL w/Navigation 4dr	Sedan	Asia	Front	\$46,100	
8	7	Acura	NSX coupe 2dr manual S	Sports	Asia	Rear	\$89,765	
9	8	Audi	A4 1.8T 4dr	Sedan	Europe	Front	\$25,940	
10	9	Audi	A4 1.8T convertible 2dr	Sedan	Europe	Front	\$35,940	
11	10	Audi	A4 3.0 4dr	Sedan	Europe	Front	\$31,840	
12	11	Audi	A4 3.0 Quattro 4dr manual	Sedan	Europe	All	\$33,430	
13	12	Audi	A4 3.0 Quattro 4dr auto	Sedan	Europe	All	\$34,480	
14	13	Audi	A6 3.0 4dr	Sedan	Europe	Front	\$36,640	
15	14	Audi	A6 3.0 Quattro 4dr	Sedan	Europe	All	\$39,640	
16	15	Audi	A4 3.0 convertible 2dr	Sedan	Europe	Front	\$42,490	
17	16	Audi	A4 3.0 Quattro convertible 2dr	Sedan	Europe	All	\$44,240	

Book1

File Home Insert Page Layout Formulas

SAS Data Tasks Reports Quick Start SAS Favorites Refresh Filter Prop

Insert Selection

A3

	A	B	C	D	E
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					

Local:SASHELP.CARS

To build a report, choose fields from the PivotTable Field List

PivotTable Field List

Choose fields to add to report:

- Cylinders
- DriveTrain
- EngineSize
- Horsepower
- Invoice
- Length
- Make
- Model
- MPG_City
- MPG_Highway
- MSRP
- Origin
- Type
- Weight
- Wheelbase

Drag fields between areas below:

Report Filter	Column Labels
Row Labels	Values

Defer Layout Update Update

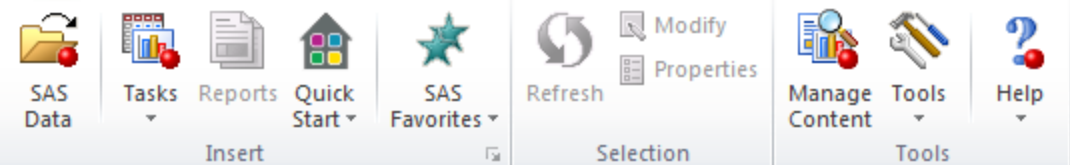


1	Orig									
2	Cylin									
3	Drive									
4										
5										
6	Row									
7	Hybr									
8	Seda									
9	Spor									
10	SUV									
11	Truc									
12	Wagon									
13	Grand Total									\$3
14										
15										
16										
17										
18										
19										

- Task Gallery
- ANOVA
- Capability
- Control Charts
- Data
- Describe
- Graph**
- Multivariate
- Pareto
- Regression
- Survival Analysis
- Time Series
- Task Templates

- Automatic Chart...
- Area Plot...
- Bar Chart...**
- Bar Chart Wizard...
- Bar-Line Chart...
- Box Plot...
- Bubble Plot...
- Contour Plot...
- Donut Chart...
- Line Plot...
- Line Plot Wizard...
- Map Chart...
- Pie Chart...

File Home Insert Page Layout Formulas Data Review View JMP SAS

M16 *fx*

A B C D E F G H I J K L M N O

1 Average Price by Car Type

2

3 MSRP (Mean)

4 \$60,000

5

6

7

8 \$50,000

9

10

11 \$40,000

12

13

14 \$30,000

15

16

17 \$20,000

18

19

20 \$10,000

21

22

23 \$0

24 Hybrid SUV Sedan Sports Truck Wagon

25

26

27

Type



Pros

- Very powerful
- Pre-formatted
- Update refresh
- Run SAS tasks and stored processes
- Direct to pivot tables

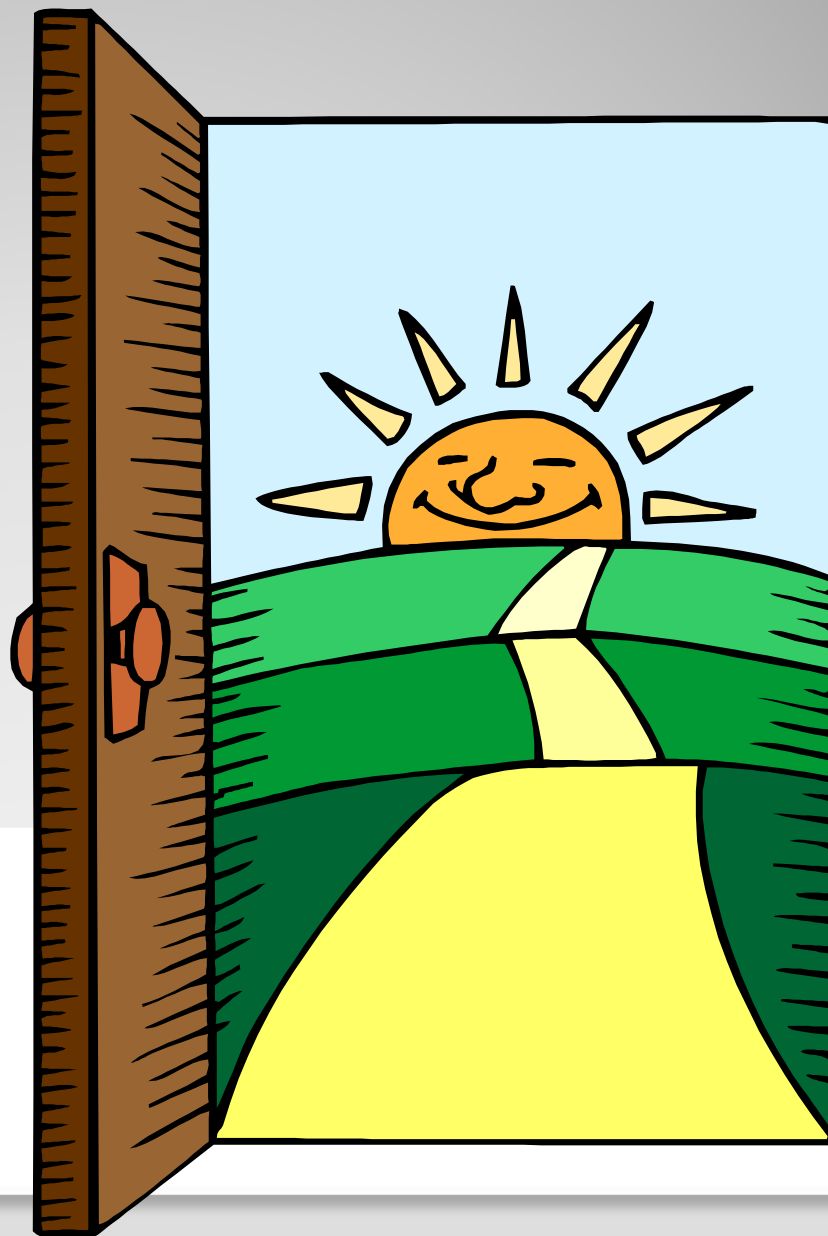
Cons

- Needs BI server
- Not controlled by SAS process, so can't batch

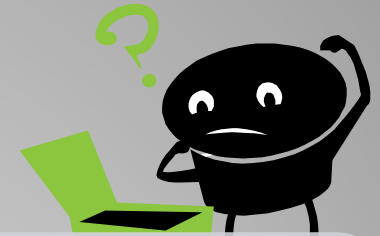
AMO – SAS Add-in - Needs

- SAS BI Server or Integration Tech
- AMO client on desktop
- If have EG and SAS server, likely to have it licensed

10 and 11. OLEDB and ODBC



OLEDB and ODBC



What?

- Excel to read SAS data direct via OLEDB or ODBC
- Excel pull
- Data transfer

Good for

- Pre-formatted Excel files when PCFF not available
- Updates existing xls



Pros

- Good formatting
- No coding
- Good for non-SAS specialists
- PCFF not needed



Cons

- Harder to automate as not SAS controlled

OLEDB and ODBC - needs

- Appropriate SAS drivers set up
- Note: SAS/Access to OLEDB or ODBC not required – only needed for SAS reading to these sources – not as provider



12. DDE

DDE – Dynamic Data Exchange

What?

- Remote control Excel from SAS
- Very powerful, but outdated
- SAS and Excel on same computer
- SAS Push

Good for

- Creating complex and nicely formatted spreadsheets
- Automated processes

DDE Notes

- Over 20 years old and considered dated
- Not suitable for server environment, as SAS sessions in batch and server unattended (Excel should be interactive)
- DDE has poor error reporting and debugging



Pros

- Formatting
- Control
- Automation



Cons

- Dated
- Not for server model
- DDE and VBA knowledge

DDE – Needs

- Base SAS
- Not server environment
- Need “x command”
- Need DDE and VBA knowledge
- “For the adventurous programmer”

Summary

- Presentation will be on web site
- References available in presentation

Which is best for me?

- What possible at my work?
- Familiar with each technique
- Use what appropriate for situation



Detailed sessions?

- SAS Excel libname
- SAS Add-in to MS Office
- ODS ExcelXP tagset
- Third-party controlling program
- Excel to SAS

Briefing times?

- Before work
- Lunchtime
- After work – 4:30, 5:00

Useful references - overview

- Moving Data and Results Between SAS® and Microsoft Excel (SAS Global Forum-2012)

Harry Droogendyk, Stratia Consulting Inc.

<http://support.sas.com/resources/papers/proceedings12/247-2012.pdf>

- Creating an Excel report: A comparison of the different techniques (SAS Global Forum-2011)

Romain Miralles, Clinovo, Sunnyvale, CA

<http://support.sas.com/resources/papers/proceedings11/074-2011.pdf>

Useful references - ExcelXP

- An Introduction to Creating Multi-Sheet Microsoft Excel Workbooks the Easy Way with SAS
(SAS Global Forum-2012)
Vincent DelGobbo, SAS Institute Inc., Cary, NC
<http://support.sas.com/resources/papers/proceedings12/150-2012.pdf>
- Getting Started with ODS: Generating Formatted Reports Using the ExcelXP Tagset
(SAS Global Forum-2012)
Allan Del Rosario, Jennifer Mefford, Marriott International,
<http://support.sas.com/resources/papers/proceedings12/207-2012.pdf>

Useful references – ODS Formats

- Don't Gamble with Your Output: How to Use Microsoft Formats with ODS

(SAS Global Forum-2012)

Cynthia L. Zender, SAS Institute, Inc., Cary, NC, USA

E.g. leading zeros, dates, formats etc

<http://support.sas.com/resources/papers/proceedings11/266-2011.pdf>

Useful references – Excel Libname

- Customized Excel Output Using the Excel Libname
Harry Droogendyk, Stratia Consulting Inc., Lynden, ON
<http://analytics.ncsu.edu/sesug/2008/SIB-105.pdf>
- De-Mystifying the SAS LIBNAME Engine in Microsoft Excel:
A Practical Guide
Paul A. Choate, California State Developmental Services
Carol A. Martell, UNC Highway Safety Research Center
<http://www2.sas.com/proceedings/sugi31/024-31.pdf>



Hooking up SAS and Excel

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