

# Different Approaches to Maintaining Excel Reports

**Presented by: Amanda Bin Feng  
ING Direct Canada**

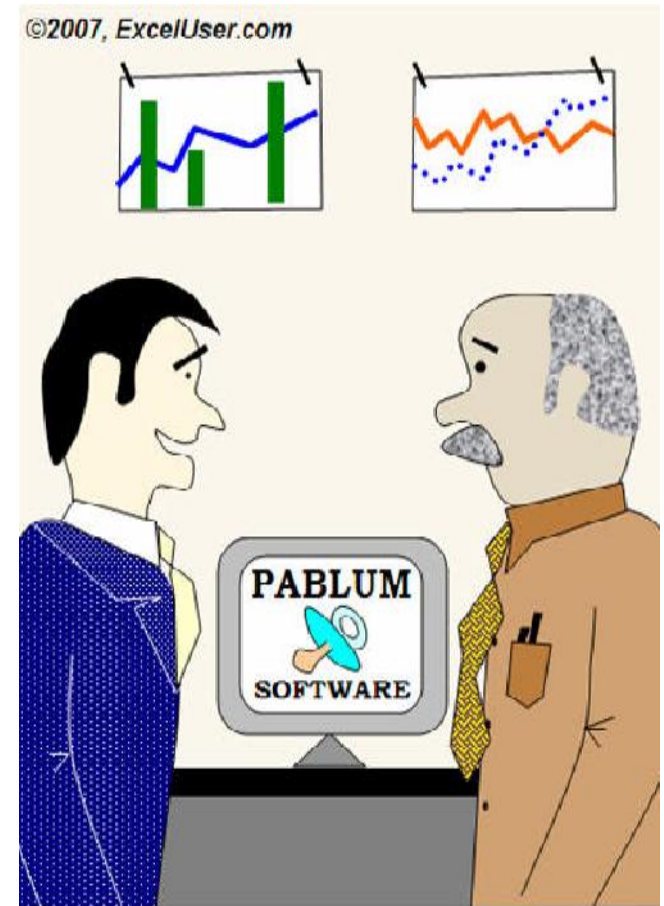
**Toronto Area SAS Society, December 11, 2009**

**ING  DIRECT**

# Objective

When we need to maintain routine reports, we would like to:

- Populate SAS data into formatted Excel spreadsheets as Excel reports are
  - easy to design
  - easy to format
  - easy to use and share
- Automate the routine update process as much as possible



*It's for managers with no time for training.*

# Outline

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- Solution 1 : Update Excel reports through links to other data sources.
- Solution 2: Update Excel reports via Dynamic Data Exchange (DDE).
- Solution 3: Update Excel reports by calling Excel Macros

# Solution 1 – Update Reports Through Excel Links

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## Procedure

- Create a formatted Excel spreadsheet
- Populate SAS dataset
- Export SAS data to a new Excel worksheet
- Build links between the formatted Excel spreadsheet and the data sheet

# Solution 1 – Update Reports Through Excel Links

- Create a formatted Excel spreadsheet

Microsoft Excel - Weekly Sales Report.xls

File Edit View Insert Format Tools Data Window Help

Type a question for help

100%

Reply with Changes... Egd Review...

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C16 Footnote :

### Weekly Sales Report by Region

	Current Week		Month to Date		Year to Date	
	Sales #	Sales %	Sales #	Sales %	Sales #	Sales %
Alberta						
BC						
Ontario						
Quebec						
Other						
<b>Total</b>	<b>0</b>	<b>0%</b>	<b>0</b>	<b>0%</b>	<b>0</b>	<b>0%</b>

Footnote : Report data are fictitious

Report / Sheet2 / Sheet3

# Solution 1 – Update Reports Through Excel Links

- Populate SAS dataset

VIEWTABLE: Work.Region							
	REGION	WEEKLY #	WEEKLY %	MTD #	MTD %	YTD #	YTD %
1	Albera	163	0.0842812323	263	0.0851408223	9565	0.085488037
2	EC	207	0.1070320579	369	0.1194561347	12385	0.1106520375
3	Ontario	945	0.4886246122	1512	0.4394787957	53456	0.4777E77478
4	Other	83	0.0425162358	129	0.0417610877	4352	0.0388963835
5	Quebec	536	0.2771458118	816	0.2341631596	32129	0.2871E57911

# Solution 1 – Update Reports Through Excel Links

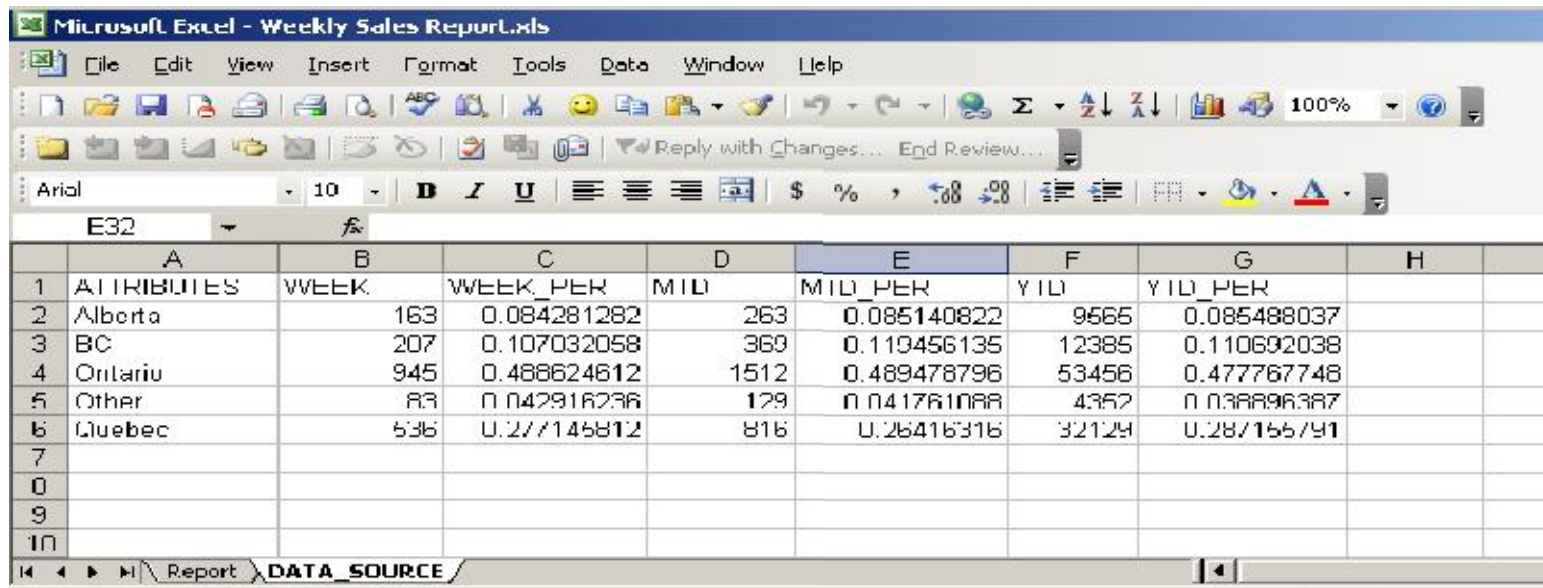
- Export SAS data to an Excel sheet

```
PROC EXPORT DATA=REGION DBMS=EXCEL
```

```
OUTFILE="My Documents\Weekly Sales Report" REPLACE;
```

```
SHEET="DATA_SOURCE";
```

```
RUN;
```



The screenshot shows a Microsoft Excel spreadsheet titled "Weekly Sales Report.xls". The spreadsheet contains a table with the following data:

	A	B	C	D	E	F	G	H
1	ATTRIBUTES	WEEK	WEEK_PER	MID	MID_PER	YTD	YTD_PER	
2	Alberta	163	0.084281282	263	0.085140822	9665	0.085488037	
3	BC	207	0.107032058	369	0.110456135	12385	0.110692038	
4	Ontario	945	0.488624612	1512	0.489478796	53456	0.477767748	
5	Other	83	0.042916236	129	0.041761088	4352	0.038896387	
6	Quebec	536	0.277145812	816	0.26416316	32129	0.287155791	
7								
8								
9								
10								

# Solution 1 – Update Reports Through Excel Links

- Build links between the formatted Excel spreadsheet and the data sheet

The screenshot shows the Microsoft Excel interface. The active window is 'Weekly Sales Report.xls'. The formula bar shows the formula `=DATA_SOURCE!B2`, which is circled in red. The spreadsheet displays a 'Weekly Sales Report by Region' table with columns for 'Current Week', 'Month to Date', and 'Year to Date'. The data is as follows:

	Current Week		Month to Date		Year to Date
	Sales #	Sales %	Sales #	Sales %	
Alberta	163	8.4%	263	8.5%	9,565
BC	207	10.7%	369	11.9%	12,385
Ontario	945	48.9%	1,512	48.9%	53,456
Quebec	536	27.7%	816	26.4%	4,352
Other	83	4.3%	129	4.2%	4,352
<b>Total</b>	<b>1,934</b>	<b>100%</b>	<b>3,089</b>	<b>100%</b>	<b>84,110</b>

The second spreadsheet, 'Weekly Sales Report.xls', is also visible, showing a table with columns: ATTRIBUTES, WEEK, WEEK\_PER, MTD, MTD\_PER, YTD, and YTD\_PER. The data is as follows:

ATTRIBUTES	WEEK	WEEK_PER	MTD	MTD_PER	YTD	YTD_PER
Alberta	163	0.084281282	263	0.085140822	9565	0.085488037
BC	207	0.107032058	369	0.119456135	12385	0.110692038
Ontario	945	0.488624612	1512	0.489478796	53456	0.477767748
Other	83	0.042916236	129	0.041761088	4352	0.038896387
Quebec	536	0.277145812	816	0.26416316	32129	0.287155791

At the bottom of the second spreadsheet, the path `Report\DATA_SOURCE` is visible in the status bar.

# Solution 1 – Update Reports Through Excel Links

- Once we set up the links, the routine work is updated with the “Data\_Source” worksheet by Proc Export.

The screenshot displays two Excel worksheets side-by-side. The left worksheet, titled "Weekly Sales Report by Region", contains a summary table with the following data:

	Current Week		Month to Date		Sales
	Sales #	Sales %	Sales #	Sales %	
Alberta	226	10.9%	626	8.9%	9
BC	237	11.5%	831	11.7%	12
Ontario	922	44.6%	3,346	47.3%	58
Quebec	594	28.7%	1,940	27.4%	4
Other	90	4.3%	330	4.7%	4
<b>Total</b>	<b>2,069</b>	<b>100%</b>	<b>7,073</b>	<b>100%</b>	<b>87</b>

The right worksheet, titled "Weekly Sales Report.xls", contains the following data:

1	ATTRIBUTES	WEEK	WEEK_PER	MTD	MTD_PER	YTD	YTD_PER
2	Alberta	226	0.109231513	626	0.088505585	9928	0.085681491
3	BC	237	0.114548091	831	0.117489043	12847	0.110873299
4	Ontario	922	0.445625906	3346	0.473066591	55290	0.477168575
5	Other	90	0.043499275	330	0.046656299	4553	0.039293697
6	Quebec	594	0.287095215	1940	0.274282483	33253	0.286982938

An orange oval highlights the 'WEEK' column in the right worksheet, which is linked to the 'Current Week' data in the left worksheet. The status bar at the bottom of the Excel window shows the active cell as D9 with the formula =DATA\_SOURCE!B2.

# Solution 1 – Update Reports Through Excel Links

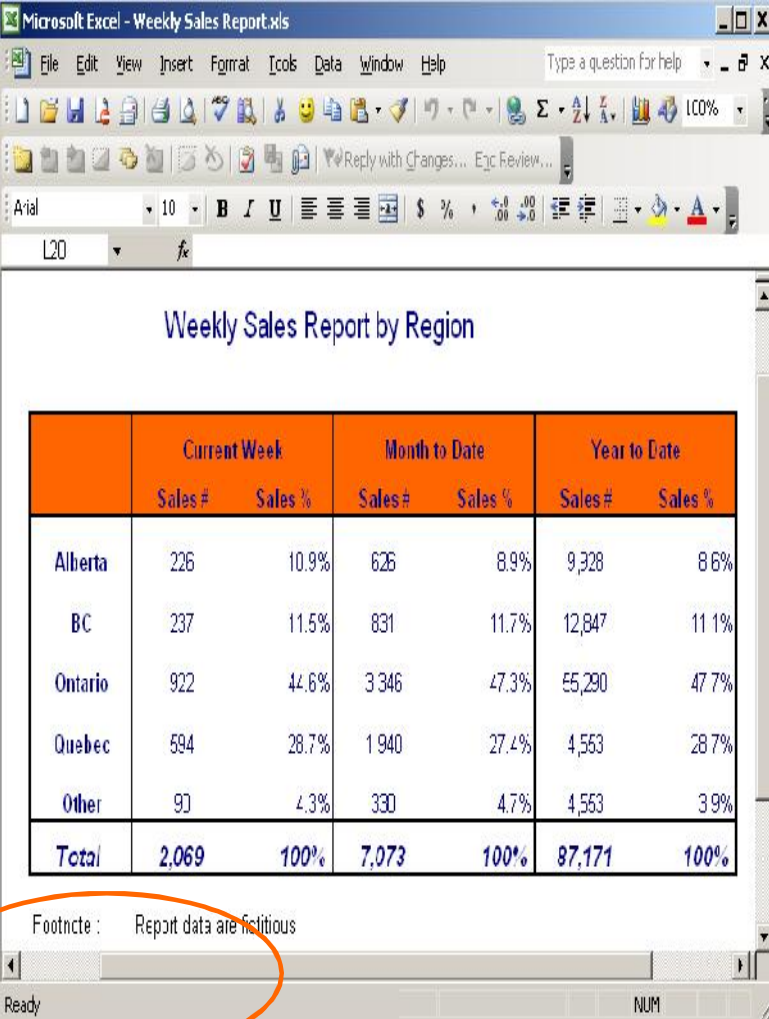
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- Strengths:
  - It minimizes SAS coding.
  - It's easy to use.
- Weaknesses:
  - Building links for a massive report might be a tedious task
  - End users are not able to copy the report data for other purposes since the data in the report sheet are just images of the original Data Source.
  - End users might get distracted by Data Source sheets

# Solution 1 – Update Reports Through Excel Links

- **Tips:**

- Keep Report sheets and Data Source sheets in one Excel file so that the report can be distributed
- Focus users' attention on the report sheets by hiding sheet tabs.



Microsoft Excel - Weekly Sales Report.xls

File Edit View Insert Format Tools Data Window Help

Weekly Sales Report by Region

	Current Week		Month to Date		Year to Date	
	Sales #	Sales %	Sales #	Sales %	Sales #	Sales %
Alberta	226	10.9%	626	8.9%	9,328	8.6%
BC	237	11.5%	831	11.7%	12,847	11.1%
Ontario	922	44.6%	3,346	47.3%	55,290	47.7%
Quebec	594	28.7%	1,940	27.4%	4,563	28.7%
Other	93	4.3%	330	4.7%	4,563	3.9%
<b>Total</b>	<b>2,069</b>	<b>100%</b>	<b>7,073</b>	<b>100%</b>	<b>87,171</b>	<b>100%</b>

Footnote: Report data are fictitious

Ready NUM

# Solution 2 – Update Reports Via DDE

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## Procedure

- Create a formatted Excel spreadsheet
- Populate SAS dataset
- Connect SAS with Excel and export data to formatted Excel report file directly

# Solution 2 – Update Reports Via DDE

- Create a formatted Excel spreadsheet
- Populate SAS dataset

Weekly Sales Report by Region

	Current Week		Month to Date		Year to Date	
	Sales #	Sales %	Sales #	Sales %	Sales #	Sales %
Alberta						
BC						
Ontario						
Quebec						
Other						
<b>Total</b>	0	0%	0	0%	0	0%

I footnote: Report data are fictitious

TABLE: Work.Region

Region	Weekly #	Weekly %	MTD #	MTD %	YTD #	YTD %
Alberta	226	0.1092315128	626	0.0885055846	9928	0.0856814906
BC	237	0.1145480909	831	0.1174890428	12847	0.1108732988
Ontario	922	0.4456259062	3346	0.4730665913	55290	0.4771685754
Quebec	594	0.2870952151	1940	0.2742824827	33253	0.2869829379
Other	90	0.043499275	330	0.0466562986	4553	0.0392936973

# Solution 2 – Update Reports Via DDE

- Connect SAS with Excel.

```
/******  
*** Open Excel application.  
*****/  
OPTIONS NOXSYNC NOXWAIT;  
X " 'C:\Program Files\Microsoft Office\OFFICE11\excel.exe'";  
/******  
*** Suspend SAS for 5 seconds to allow Excel to be fully started.  
*****/  
DATA _NULL_;  
RC=SLEEP (5);  
RUN;  
/******  
*** Open the Report Template.  
*****/  
FILENAME OPEN DDE "EXCEL|SYSTEM" notab;  
data _null_;  
FILE OPEN ;  
PUT '[close("Book1")]';  
PUT '[open("C:\Documents and Settings\AFENG\My Documents\Weekly Sales Report.xls")]';  
run;
```

# Solution 2 – Update Reports Via DDE

- Export SAS data to the Excel report.

```
/******  
*** Fill data directly into the Excel report .  
*****/  
FILENAME REPORT DDE 'EXCEL|REPORT!R9C4:R13C9';  
DATA _NULL_;  
  SET REGION;  
  FILE REPORT;  
  PUT WEEK WEEK_PER MTD MTD_PER YTD YTD_PER;  
RUN;
```

# Solution 2 – Update Reports Via DDE

- Export SAS data to the Excel report.

```
/******  
*** Save the Excel Report and close Excel.  
*****/
```

```
data _null_  
FILE OPEN ;  
PUT "[Save()]" ;  
PUT '[FILE.CLOSE(FALSE)]' ;  
PUT '[QUIT()]' ;  
RUN ;  
  
FILENAME OPEN CLEAR ;  
FILENAME REPORT CLEAR ;
```

```
DATA _NULL_  
RC=SLEEP (5);  
RUN ;
```

# Solution 2 – Update Reports Via DDE

- Strengths:
  - SAS can operate Excel directly
  - SAS through DDE can do (almost) anything
    - Export data
    - Format data
    - Build formulas
- Weaknesses:
  - Needs a lot of hard coding
  - Difficult to use
    - Excel areas have to be addressed in code by columns and rows



"It's called Excel but I don't feel like I'm excelling..."

# Solution 2 – Update Reports Via DDE

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- Tips:

Please refer TASS presentation by Nathaniel Derby on June 13,08  
[Populating Excel: The DDE Way - Nathaniel Derby](#)

# Solution 3 – Update Reports by Calling Excel Macros

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- Procedure
  - Create a formatted Excel spreadsheet
  - Populate SAS dataset and export to an Excel data source file
  - Create Excel Macros to update the formatted Excel spreadsheet by copying data from the data source file
  - Connect SAS with Excel and call Excel Macros to update Excel reports

# Solution 3 – Update Reports by Calling Excel Macros

- Create a formatted Excel spreadsheet.
- Populate SAS dataset and export to a new Excel data source file.

```
PROC EXPORT DATA=REGION  
DBMS=EXCEL
```

```
OUTFILE="My Documents\Weekly  
Sales Update" REPLACE;
```

```
SHEET="DATA_SOURCE";
```

```
RUN;
```

Region	Weekly #	Weekly %	MTD #	MTD %	YTD #	YTD %
Albera	226	0.1092315128	626	0.0865055846	9928	0.086814906
RC	237	0.1145430909	631	0.1174890428	12847	0.1106732988
Ontario	922	0.4456239062	3346	0.4730665913	55290	0.4771685754
Quebec	554	0.2870952151	1940	0.2742824827	33253	0.2865829379
Other	90	0.043439275	330	0.0466562986	4553	0.0392916973

	A	B	C	D	E	F	G
1	REG ON	WEEK	WEEK PER	MTD	YTD PER	YTD	YTD PER
2	Alberta	226	0.08232	626	0.088506	9928	0.085681
3	RC	237	0.114543	631	0.117489	12847	0.110873
4	Ontario	922	0.445623	3346	0.473067	55230	0.477169
5	Quebec	554	0.287095	1940	0.274282	33253	0.286983
6	Other	90	0.043439	330	0.046656	4553	0.039294
7							
8							
9							
10							

# Solution 3 – Update Reports by Calling Excel Macros

- Create Excel Macros to update the formatted Excel spreadsheet by copying data from the data source file

The screenshot shows the Microsoft Excel interface with a spreadsheet titled 'Weekly Sales Report by Region'. The spreadsheet has a table with columns for 'Current Week', 'Month to Date', and 'Year to Date', each with sub-columns for 'Sales #' and 'Sales %'. The rows list regions: Alberta, BC, Ontario, Quebec, Other, and a Total row. The 'Total' row shows 0 sales and 0% for all periods. A 'Record Macro' dialog box is open, showing the macro name 'ReportUpdate', a shortcut key of 'Ctrl+', and the description 'Macro recorded 12/3/2009 by ING Direct'. The dialog box also shows the macro is stored in 'This Workbook'.

	Current Week		Month to Date		Year to Date	
	Sales #	Sales %	Sales #	Sales %	Sales #	Sales %
Alberta						
BC						
Ontario						
Quebec						
Other						
<b>Total</b>	<b>0</b>	<b>0%</b>	<b>0</b>	<b>0%</b>		

Footnote : Report data are fictitious

# Solution 3 – Update Reports by Calling Excel Macros

- Connect SAS with Excel

```
/******  
*** Open Excel application.  
*****/  
OPTIONS NOXSYNC NOXWAIT;  
X " 'C:\Program Files\Microsoft Office\OFFICE11\excel.exe";  
  
/******  
*** Suspend SAS for 5 seconds to allow Excel to be fully started.  
*****/  
DATA _NULL_;  
RC=SLEEP (5);  
RUN;  
  
FILENAME OPEN DDE "EXCEL|SYSTEM" notab;  
  
data _null_;  
FILE OPEN ;  
PUT '[close("Book1")]';  
PUT '[open("C:\Documents and Settings\AFENG\My Documents\Weekly Sales Report.xls")]';  
run;
```

# Solution 3 – Update Reports by Calling Excel Macros

- Call Excel Macros to update Excel Report

```

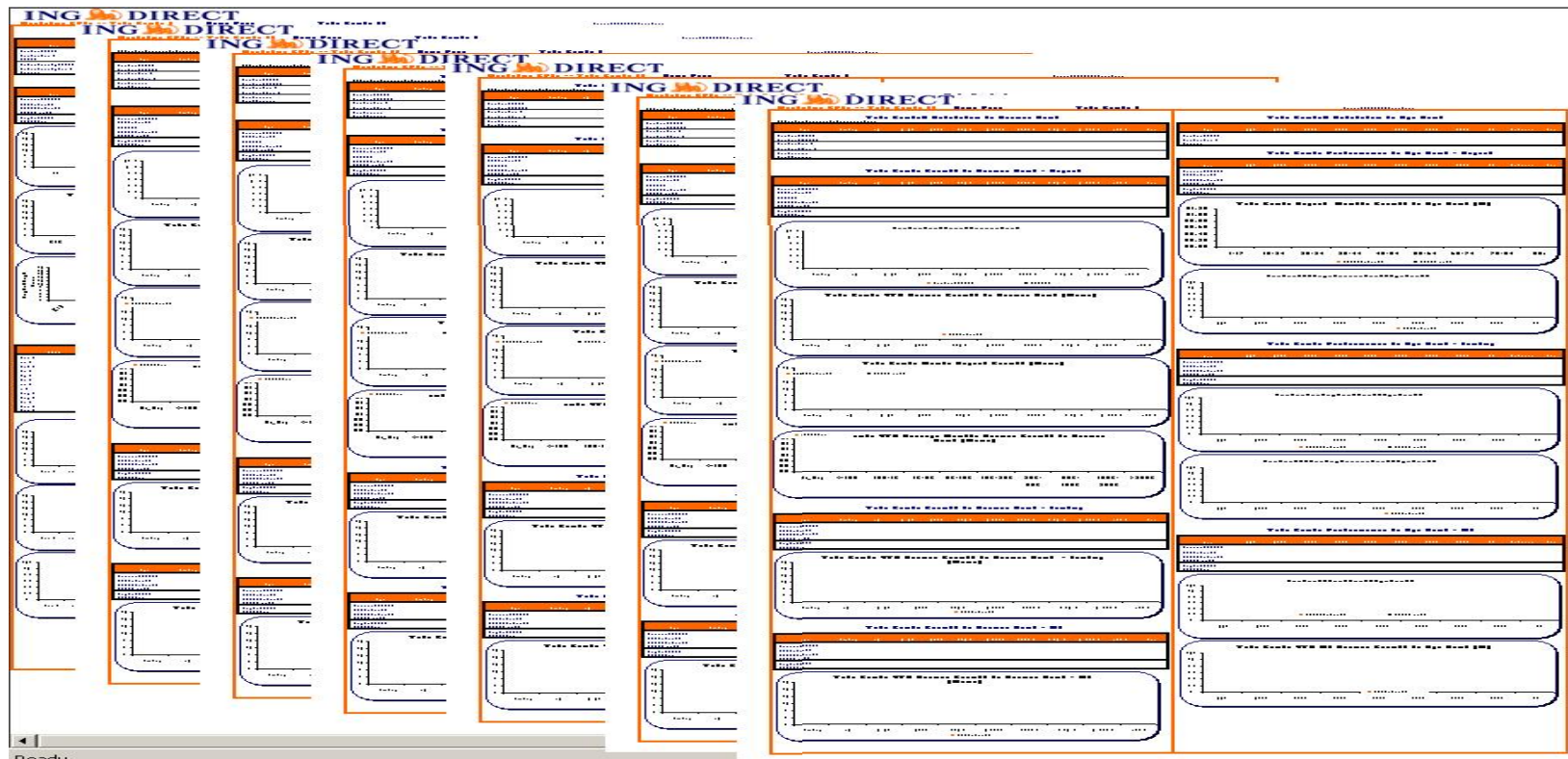
/*****
/* Execute the macro */
/*****
data _null_;
FILE OPEN;
PUT '[RUN("REPORTUPDATE")]';
PUT "[Save()]";
PUT '[FILE.CLOSE(FALSE)]';
PUT '[QUIT()]';
RUN;

/*****
/* Clean up the filerefs */
/*****
FILENAME OPEN CLEAR;

DATA _NULL_;
RC=SLEEP (5);
RUN;
```

# Solution 3 – Update Reports by Calling Excel Macros

- Strength:
  - Can handle massive and complex reports !



# Solution 3 – Update Reports by Calling Excel Macros

- Strengths:
  - SAS will operate Excel directly
  - It's FUN to watch the update process



# Solution 3 – Update Reports by Calling Excel Macros

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- Weakness:
  - Need to learn how to record Excel Macros  
(This is not difficult at all! You don't need to know how to do VBA coding before you can record Excel Macros)

# Solution 3 – Update Reports by Calling Excel Macros

- **Tips:**

- Keep Report spreadsheets and Data Source sheets in different Excel files.
- Set Security Level from Medium (by default) to Low to suppress the Excel Macro warning

The screenshot displays the Microsoft Excel interface with a spreadsheet titled "Weekly Sales Report.xls". The spreadsheet shows sales data for various provinces: Alberta, BC, Ontario, Quebec, and Other. A "Security" dialog box is open, showing the "Security Level" set to "Low (not recommended)". The dialog box also shows "Trusted Publishers" and "Trusted Locations" sections. The "Security Level" section has four radio buttons: "Very High", "High", "Medium", and "Low". The "Low" option is selected. The "Trusted Publishers" section is empty. The "Trusted Locations" section is also empty. The "OK" and "Cancel" buttons are visible at the bottom of the dialog box.

	Current	Year to Date		Year to Date	
	Sales %	Sales #	Sales %		
Alberta	226		8.9%	9,928	8.6%
BC	237				
Ontario	922				
Quebec	594				
Other	90				
<b>Total</b>	<b>2,069</b>	<b>7,073</b>	<b>100%</b>	<b>115,871</b>	<b>100%</b>

Footnote : Report data are fictitious

# Outline

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- Solution 1 : Update Excel reports through links to other data sources.
- Solution 2: Update Excel reports via Dynamic Data Exchange (DDE).
- Solution 3: Update Excel reports by calling Excel Macros

# Acknowledgements & Contact Information

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- **Acknowledgements**

- Special thanks to Peter Eberhardt , Darryl Prebble and Rupinder Dhillon for taking precious time to review this presentation.
- SAS is a Registered Trademark of the SAS Institute, Inc. of Cary, North Carolina
- Microsoft Excel is a Registered Trademark of the Microsoft Corporation

- **Contact Information**

Work Phone: 416-758-5202

Email: [abinfeng@ingdirect.ca](mailto:abinfeng@ingdirect.ca)