



## Space, the final frontier



literally nothing to talk about and boldly go where few spreadsheet newsletters have gone before, splitting infinitives and looking at that waste of space operator, the space “ ”. The touch typists amongst you might be re-evaluating your formula technique after reading this month’s articles...

And talking of space, we preview Microsoft’s latest “preview” that visualises ‘space’ with 3D maps, code named “GeoFlow”. You may never look at bubbles and skyscrapers in the same way again.

*Liam Bastick*, Managing Director, SumProduct

as James Teflon Kirk would say (common mistake: it’s not Tiberius, he didn’t like cling-ons as I recall). This month we have

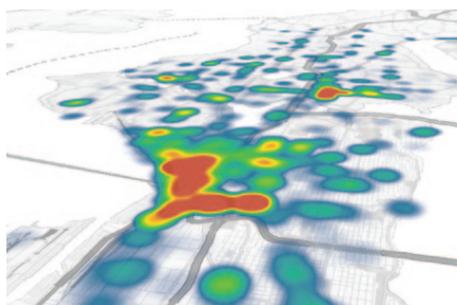
### Geo with the flow

April saw Microsoft announce the availability of the project currently code named "GeoFlow" Preview for Excel 2013 (a catchy title we thought), an add-in for Excel that allows users to view information over the twin parameters of space and time.

Essentially, chart data is constructed in the usual way in Excel (more than a million rows of data may be plotted from an Excel worksheet, the Excel Data Model or PowerPivot), including temporal and / or geographic data (*right*).

This data can then be presented in one of three ways (*below*):

Name	Program Identifier	Inspection	Description	Address	City	Zip Code
Food Safety Inspection data from <a href="https://www.datakc.org/">https://www.datakc.org/</a>			Seating 13-50 - 401 BROADWAY	SEATTLE	98122	
			Seating 13-50 - 401 BROADWAY	SEATTLE	98122	
			Seating 13-50 - 401 BROADWAY	SEATTLE	98122	
@ The PEAK	@ The PEAK	25/01/2013	Seating 13-50 - 401 BROADWAY	SEATTLE	98122	
@ The PEAK	@ The PEAK	28/09/2012	Seating 13-50 - 401 BROADWAY	SEATTLE	98122	
@ The PEAK	@ The PEAK	2/05/2012	Seating 13-50 - 401 BROADWAY	SEATTLE	98122	
@ The PEAK	@ The PEAK	2/02/2012	Seating 13-50 - 401 BROADWAY	SEATTLE	98122	
@ The PEAK	@ The PEAK	2/02/2012	Seating 13-50 - 401 BROADWAY	SEATTLE	98122	
@ The PEAK	@ The PEAK	2/02/2012	Seating 13-50 - 401 BROADWAY	SEATTLE	98122	
@ The PEAK	@ The PEAK	29/09/2011	Seating 13-50 - 401 BROADWAY	SEATTLE	98122	
@ The PEAK	@ The PEAK	12/05/2011	Seating 13-50 - 401 BROADWAY	SEATTLE	98122	
@ The PEAK	@ The PEAK	12/05/2011	Seating 13-50 - 401 BROADWAY	SEATTLE	98122	
@ The PEAK	@ The PEAK	12/05/2011	Seating 13-50 - 401 BROADWAY	SEATTLE	98122	
@ The PEAK	@ The PEAK	12/05/2011	Seating 13-50 - 401 BROADWAY	SEATTLE	98122	
@ The PEAK	@ The PEAK	26/01/2011	Seating 13-50 - 401 BROADWAY	SEATTLE	98122	
@ The PEAK	@ The PEAK	26/01/2011	Seating 13-50 - 401 BROADWAY	SEATTLE	98122	
@ The PEAK	@ The PEAK	14/10/2010	Seating 13-50 - 401 BROADWAY	SEATTLE	98122	
@ The PEAK	@ The PEAK	21/05/2010	Seating 13-50 - 401 BROADWAY	SEATTLE	98122	
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@ The PEAK	@ The PEAK	10/02/2010	Seating 13-50 - 401 BROADWAY	SEATTLE	98122	



Heat Maps



Columns



Bubble Visualisations

You can even go further and create interactive "tours" to share with others in a video format (this is what we used with PowerPoint), annotating data points and comparing time periods in just a few moments.

We’re firm believers that a picture tells more than a thousand words, and GeoFlow can certainly make a visual impact. SumProduct has already added it into a recent PowerPoint presentation drawing immediate attention to key issues for our engaged audience. Our presentation was for a client working in the transport / logistics sector. Very quickly, using their data we were able to display the most profitable destinations for transporting items from Australian cities, and how this had changed over time. They liked it.

This software is still in "preview" mode and of course, there are glitches: Lenovo users may need to deploy Microsoft’s troubleshooting instructions and presently, all data has to be in English. Further, GeoFlow can only work with Excel’s Data Model; it can neither connect to external servers nor support hierarchies in the Data Model.

But we think it’s a great start.

You can download the add-in for Excel 2013 with Office 365 ProPlus or Office Professional Plus 2013 from <http://www.microsoft.com/en-us/download/details.aspx?id=38395>.

## Mind the gap

When you absolutely have to have a longer formula, spacing out terms and arguments by inserting space makes a tough formula easier on the eye. Here at SumProduct we are strong advocates of keeping your formula short and simple – and we are also sensitive to removing additional spacing. You might think a space here or there is neither here nor there, but consider the following example:

	A	B	C	D	E	F
1	1	2	3	4	5	6
2	7	8	9	10	11	12
3	13	14	15	16	17	18
4	19	20	21	22	23	24
5	25	26	27	28	29	30
6	31	32	33	34	35	36

With the numbers 1 to 36 in the range A1:F6, the formula =C1:C6 A4:F4 appears nonsensical upon first glance. But you'd be wrong. If you were to press ENTER, lo and behold, the result is not #VALUE! but 21. Space is the intersect operator in Excel.

Used only for good, this can simplify calculations significantly. For example, consider the following:

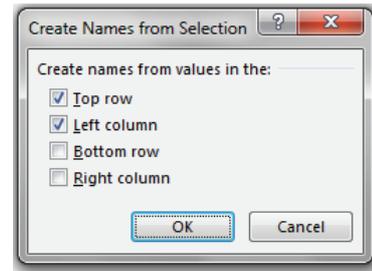
	A	B	C	D
1		Sales	COGS	Profit
2	CD	250	80	170
3	Vinyl	340	160	180
4	DVD	130	85	45
5	Blu-Ray	270	120	150

Assuming the number of rows and columns could vary and future reports may be ordered differently, if we wanted to make a dynamic formula to generate Vinyl Sales we could come up with the convoluted calculation

=INDEX(A1:D5,MATCH("Vinyl",A1:A5,0),MATCH("Sales",A1:D1,0))

For more on INDEX(MATCH) works, please see <http://www.sumproduct.com/thought/index-match>.

We can make this much simpler with an interim step. If I were to highlight cells A1:D5 in the above example and then use the keyboard shortcut CTRL + SHIFT + F3 ('Formulas' tab of Ribbon, 'Defined Names' group, 'Create from Selection'), we get the following dialog box:



Clicking on the 'OK' button so that range names are created from the top row and first column of the table, e.g. cells B2:D2 would be the range "CD". Now, calculating Vinyl Sales is easy:

=Vinyl Sales

Just how easy is that formula to understand..?

For more on range names please see <http://www.sumproduct.com/thought/names>.

Many professional modellers forget about space's hidden talents. Indeed, Microsoft's very own Help uses spaces as if they are going out of fashion:

Syntax

INDEX(array, row\_num, [column\_num])

Touch typists beware: it's second nature to include a space after a comma, but if you really want to make a formula easy to follow safely use ALT + ENTER to add line breaks instead:

=IF(A1=1,B1\*A2,  
IF(A1>1,A6-(B5/C5),  
MIN(B3,D2-D4,MAX(B8:C9))))

## Blank formatting tip

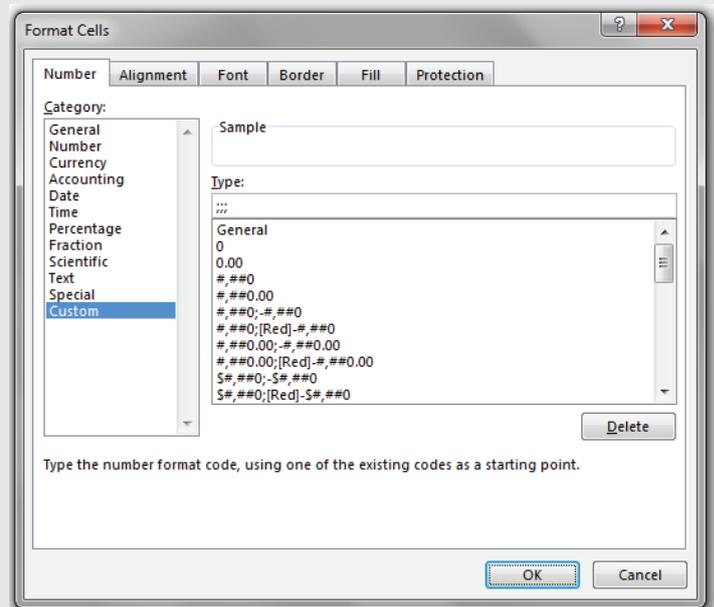
Sometimes you want to hide a cell's contents for one reason or another. Frequently, modellers will achieve this by having the font colour the same colour as the background. This proves ineffective if the worksheet is printed out in black and white as Excel will cunningly ensure the cell value may be seen, or if the cell is highlighted in a range in some versions of Excel.

A better method is to employ the following formatting. Highlight the cell that is to appear 'invisible' and then use CTRL + 1 to call up the 'Format Cells' dialog box (see right).

On the 'Number' tab, select the 'Custom' category and then type in ';;;' in the 'Type:' dialog box (see above). In the 'Sample' section, other than errors (e.g. #DIV/0!), all cell contents will disappear faster than Daffy at the start of duck hunting season.

	A	B	C	D	E	F	G
1							

For more on number formatting, please see <http://www.sumproduct.com/thought/number-formatting>.



Each newsletter, we'd like to introduce you to several useful keystrokes you may or may not be aware of. This month we remain faithful to our stellar space theme:

### Key Strokes

Keystroke	What it does	Keystroke	What it does
CTRL + Spacebar	Select column	ALT + Backspace	Undo (similar to CTRL + Z)
SHIFT + Spacebar	Select row	ALT + Enter	Safest way to "space out" a formula: inserts line breaks in Edit (F2) mode
ALT + Spacebar	Displays control menu		

There are over 540 keyboard shortcuts in Excel. For a comprehensive list, please download our Excel file at <http://www.sumproduct.com/thought/keyboard-shortcuts>.

## Upcoming SumProduct training

Training is ramping up this year. Our upcoming courses include:

### Sydney:

Valuations Modelling 1st May;  
M&A Modelling 2nd – 3rd May

### Kuala Lumpur:

Financial Analysis & Valuation 8th – 9th May

### Sydney:

Key Driver Analysis Modelling (CPA) 16th May;  
Forecasting & Financial Modelling Techniques (CPA) 17th May

### Melbourne:

Forecasting & Financial Modelling Techniques (CPA) 20th May;  
Key Driver Analysis Modelling (CPA) 21st May;  
Valuations Modelling 3rd Jun;  
M&A Modelling 4th – 5th Jun;  
Power of PowerPivot 6th – 7th Jun

### Perth:

Forecasting & Financial Modelling Techniques (CPA) 11th & 13th June (two sessions);  
Key Driver Analysis Modelling (CPA) 12th Jun

### Hong Kong:

Forecasting & Budgeting 18th – 21st Jun

### Brisbane:

Forecasting & Financial Modelling Techniques (CPA) 19th Jun;  
Key Driver Analysis Modelling (CPA) 20th Jun

### Sydney:

Power of PowerPivot 2nd – 3rd Jul

### Brisbane:

Power of PowerPivot 4th – 5th Jul;  
Financial Modelling Fundamentals 9th – 10th Jul

### Perth:

Financial Modelling Fundamentals 22nd – 23rd Jul

## Keeping TRIM

Space can be a real pain, especially when downloading data from third party databases. Where inputs can be 'free text' (i.e. no controls are in place to check inputs), not only can typos occur there may also be a proliferation of spaces too.

In the previous section, we had the formula

```
=INDEX(A1:D5,MATCH("Vinyl",A1:A5,0),MATCH("Sales",A1:D1,0))
```

If in cell A3 of that example the label was "Vinyl " (i.e. with a space after the 'l'), the formula would not work because the function would be looking to match "Vinyl" exactly.

One simple way to remove these issues easily is to use the TRIM() function. Any arguments, values or cell references included within TRIM() will have all superfluous spacing removed (e.g. "John Smith " will become "John Smith").

## Erratum: checking for empty cells

It is commonplace in financial modelling to check whether a cell (e.g. an input cell) is empty or not. A common calculation may be of the form:

```
=IF(A1=" ",1,0)
```

This is incorrect. This formula is checking to see if cell A1 has had a space typed in it, i.e. by definition if it has it will be non-empty! The correct syntax for checking whether a cell is empty or not is either

```
=IF(A1="",1,0) or  
=ISBLANK(A1)*1
```

## Classic Gotcha:

### ISBLANK vs. COUNTBLANK

While we are on the subject of ISBLANK (which gives a value of TRUE if the reference is blank and FALSE otherwise), do be aware that COUNTBLANK (counts the number of blank cells in a specified range) has a slightly different logic. Consider the following example:

	A	B	C
1	Value	ISBLANK	COUNTBLANK
2	1	0	0
3	0	0	0
4	-1	0	0
5		1	1
6		0	0
7		0	1

In cells A2:A7 of the above table, we have the values 1, 0, -1, <empty cell>, " ", ="" <formula for empty cell>.

Column B flags blank cells using =ISBLANK(Reference)\*1. Column C similarly flags a blank cell in column A using =COUNTBLANK(Reference)\*1. Note the differing treatment of cell A7 (= ""). ISBLANK recognises the cell is not blank since there is a formula in the cell, whereas COUNTBLANK decides that the cell is effectively blank.

Conclusion: Be careful when creating formulae depend upon blank cells that you use the correct logic for the situation.

## Services

We have undertaken a vast array of assignments over the years, including:

- Business planning
- Building three-way integrated financial statement projections
- Independent expert reviews
- Key driver analysis
- Model reviews / audits for internal and external purposes
- M&A work
- Model scoping
- Project finance
- Real options analysis
- Refinancing / restructuring
- Strategic modelling
- Valuations
- Working capital management

If you require modelling assistance of any kind, please do not hesitate to contact us at [contact@sumproduct.com](mailto:contact@sumproduct.com).

## Please forward!

These newsletters are not intended to be closely guarded secrets. Please feel free to forward this newsletter to anyone you think might be interested.

If you have received a forwarded newsletter and would like to receive future editions automatically, please subscribe by completing our newsletter registration process found at the foot of any <http://www.sumproduct.com> web page.

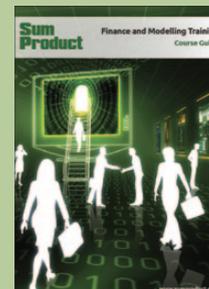
## Any questions?

If you have any tips, comments or queries for future newsletters, we'd be delighted to hear from you. Please drop us a line at [newsletter@sumproduct.com](mailto:newsletter@sumproduct.com).

## Training

SumProduct offers a wide range of training courses, aimed at finance professionals and budding Excel experts. Courses include Excel Tricks & Tips, Financial Modelling 101, Introduction to Forecasting and M&A Modelling.

Check out our more popular courses in our training brochure:



Email us at [training@sumproduct.com](mailto:training@sumproduct.com) for a copy of the brochure, or download it directly from: <http://www.sumproduct.com/training>.

**Registered Address:** SumProduct Pty Ltd, Level 1, 6 Riverside Quay, Southbank VIC 3006  
**Melbourne Address:** SumProduct Pty Ltd, Level 9, 440 Collins Street, Melbourne VIC 3000

[contact@sumproduct.com](mailto:contact@sumproduct.com) | [www.sumproduct.com](http://www.sumproduct.com) | +61 3 9020 2071