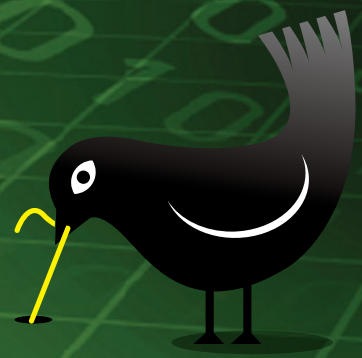


# Sum Product

NEWSLETTER #53 - April 2017

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## Does the Earlybird really get the worm?

This month, we remind you of the expiry of the Earlybird offer for our very own Unlock Excel event and how to be an “Earlybird” for Office 365 and being able to get your hands on the latest features in Excel just that little bit quicker.

In this issue, we also take a look at the benefits of model audits, reviews and the like as many around the world dust off their models for transactions, updated budgets and forecasts and so on. Can you really trust the models you rely upon every day? It might make for uncomfortable reading.

There’s also a reminder about the Amsterdam Excel Summit as well as the usual Power Query Pointers, the A to Z of Excel Functions and we retain our continued infatuation with the function keys in Keyboard Shortcuts. Enjoy!

Until next month.

*Liam Bastick*, Managing Director, SumProduct



## Unlock Excel: Earlybird Pricing Ends Soon



You may recall, together with CPA Australia, SumProduct is hosting the Excel MVP conference in 2017 for Australia and New Zealand. Previously known as the Excel Summit South, it’s been rebranded as **Unlock Excel** and features experts from all around the globe.

There will be presentations from up to seven of the world’s leading Excel gurus (our own Liam Bastick, as well as Chandoo, Roger Govier, Inge Hawighorst, Jon Peltier, Ken Puls and Mynda Treacy), Microsoft’s Dany Hoter and Eric Patterson and modelling errors expert Bas Jansen amongst others. The event is aimed at all abilities and we hope you’ll find there’s something for everybody.

The events are as follows:

- **MELBOURNE:** 1-2 May: Rydges Melbourne
- **BRISBANE:** 4-5 May: Hilton Brisbane
- **SYDNEY:** 8-9 May: Rydges World Square
- **AUCKLAND:** 11-12 May: Stamford Plaza Auckland

We know we have mentioned this in an earlier newsletter, but the Earlybird pricing offer has nearly finished and we’d hate for our readers to miss out. The end dates for the discounted pricing are:

- **MELBOURNE:** Monday 3 April
- **BRISBANE:** Thursday 6 April
- **SYDNEY:** Monday 10 April
- **AUCKLAND:** Thursday 13 April

For more details, you may view the full program and book at [www.cpaaustralia.com.au/unlockexcel](http://www.cpaaustralia.com.au/unlockexcel). Hope to see you there!

## Do Your Models Need a Health Check?

If you've been reading our newsletters, you'll know we've been going around the conference circuit in March. At one event in Brisbane, a gentleman asked us a very common question. In his company, he has a budgeting spreadsheet that forecasts revenues and costs over the next few years. It's spread out over 30 tabs of calculations and he wanted to know: how can he be sure that it's all working correctly?

It's a challenging question that deserves consideration. You can give a very simple answer though: chances are, it's not working correctly, and that it's riddled with errors.

Numerous studies have shown that most financial models contain errors. While the precise estimates based on samples vary (some studies report numbers as high as 100% of models with over 150 formulae), it's very clear that human error, poor spreadsheet practice and a lack of training all contribute in various ways to errors in financial models.

Let's go over some of the statistics:

- An Ernst & Young study (2006) of over 400 spreadsheets demonstrated that every spreadsheet contained an error of some kind
- A KPMG study in 1998 of 22 spreadsheets showed that 91% contained significant errors
- Lawrence and Lee (2004) looked at 30 spreadsheet audits that showed that 100% contained errors, with a cell error rate of 6.9% (i.e. one error every 17 unique formulae)
- Experienced staff conducting peer reviews of spreadsheets generally only identify 40-60% of errors when working individually. When self-reviewing, this falls to less than 20%.

These are pretty damning numbers! Unfortunately, they match up with our experience of reviewing client models. This applies to the small and medium enterprise (SME) business building a budget model as equally as it does to investment banking firms trying to finance the next public private partnership (PPP) transaction. When we've reviewed models, we find that there is generally an error or potential error for every 10 to 30 unique formulae that we review. Some of these errors might be very minor and not have any effect on the final numbers - units or labels might be missing, a calculation might not work properly given the inputs, but coincidentally gets the right number (often zero). However, there are plenty of cases where an error has had a significant impact on the bottom-line profitability forecast, or the valuation of a project.

We've seen valuations that have been out to the tune of a billion dollars, and profit forecasts of millions turn into losses of the same. Companies go into administration and eventual receivership after an error in the forecasts have been identified, sending entire business models down the drain.

Even with this borne in mind, there seems like there is little incentive for many to get a model reviewed. As an unsecured creditor, perhaps it's even worse incentive to be a model reviewer! Seriously though, it's far more important to be aware of issues while they're just forecasts and before they become realities, when there's still time to plan and make changes to the business model.

So, with that in mind, what sort of model review do you need? There are a few different types:

- **Model Audit:** This is perhaps the most stringent of the types we can consider. An auditor will generally review all of the formulae in a model by check that they're calculating things and being used appropriately; they will use software to check that formulae are consistent across rows and down tables; they will look at the outputs of a model to check that they're reasonable and appropriate. At the end of the process, once all issues are satisfactorily responded to, the auditor will generally release an opinion letter that can be relied upon by stakeholders (usually negative assurance, i.e. nothing adverse has come to our attention that hasn't been rectified).
- **Model Review:** Similar to a Model Audit, but without the opinion letter at the end of the process. This is usually just as rigorous, but since the audit firm doesn't provide reliance at the end of process, this is generally cheaper.
- **Agreed Procedures Review:** This is not typically as rigorous as a Model Audit, generally because the review is being conducted to a fixed budget or targeted list of tasks. The goal is not to complete a comprehensive review, but rather, to focus on a few specific risk areas to obtain the best "bang for buck".

Usually, the process will involve inspecting more than one version (iteration) of the model – a model will go back and forth between the company and the auditor, as errors are identified, fixed, and sent back to be reviewed again. On average, for a reasonably large spreadsheet a Model Review or Model Audit might take between three and six iterations to identify and finalise all of the issues.

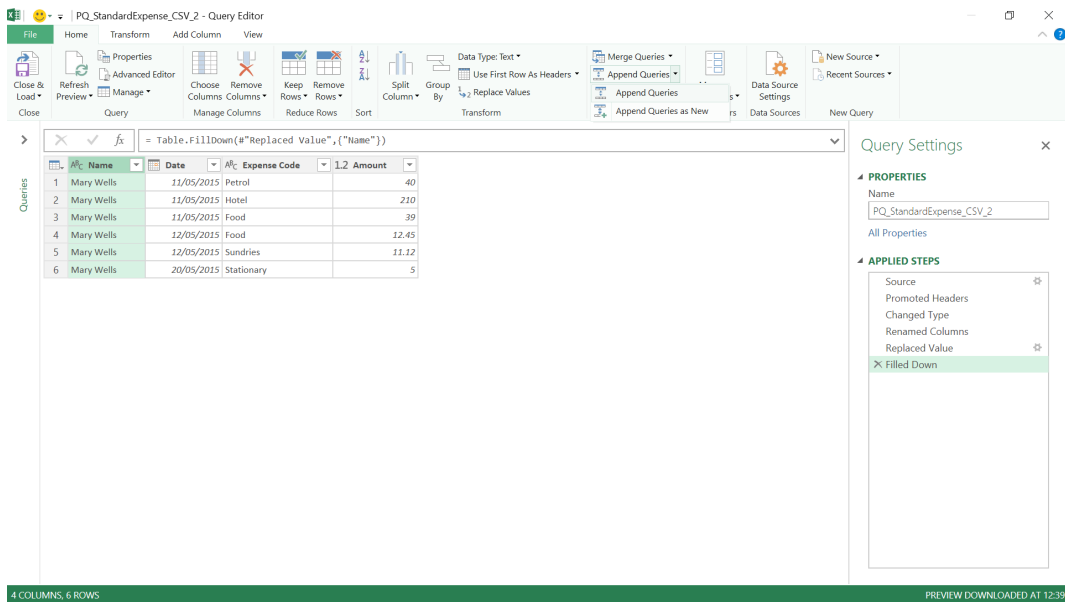
While we haven't made a big deal about this in the past, in addition to our modelling and training services, we also provide model audit and other review services. If you have a spreadsheet (or multiple!) that you need to rely on for business, and you want some assurance that your spreadsheets are reasonably robust, why not give us a call?

## Power Query Pointers

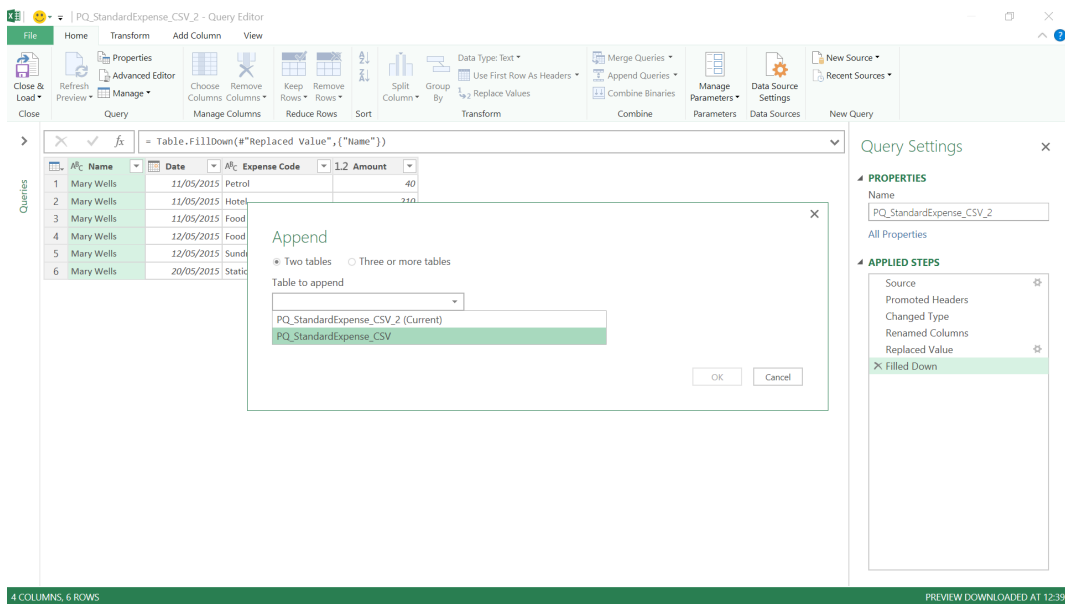
*Each month we'll reproduce one of our articles on Power Query (Excel 2010 and 2013) / Get & Transform (Excel 2016) from [www.sumproduct.com/blog](http://www.sumproduct.com/blog). If you wish to read more in the meantime, simply check out our Blog section each Wednesday. This month we look at appending.*

Whilst it is possible to extract multiple CSV (comma separated values) files at the same time (more on this in a later blog entry), imagine a scenario where similar files appear at intervals and need to be added to a table. This article continues where we left off last month, namely where a simple CSV file was extracted, transformed and loaded.

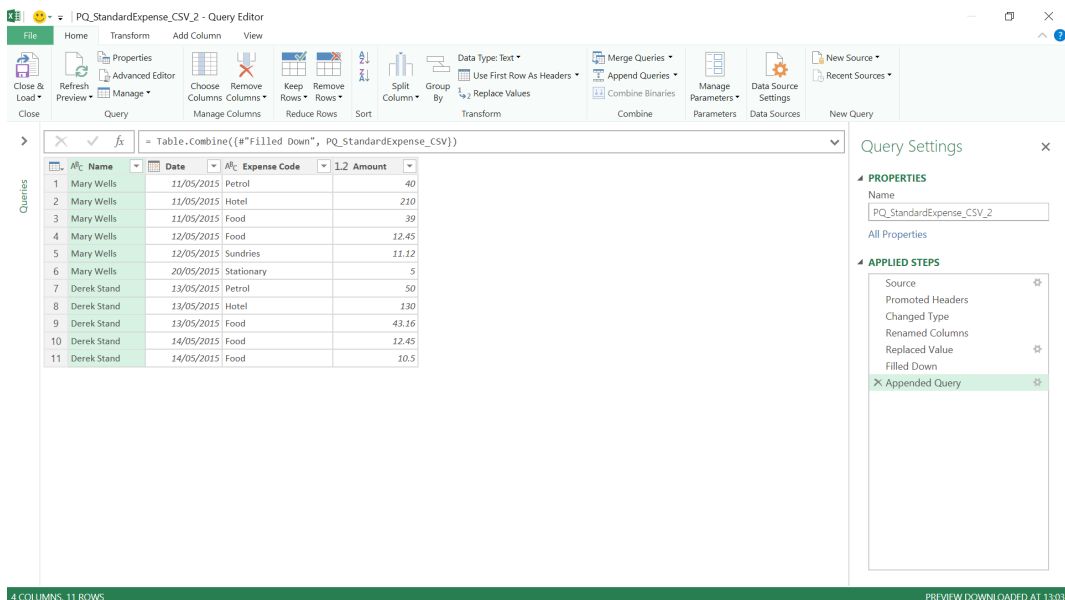
In the same workbook choose to create a new query, by using the 'From File' option and browsing to the location of another simple expense CSV file. Take the default options for uploading the file, and choose to 'Edit' in order to access the Power Query Editor screen. Once the data is in a similar format to the data already extracted from the first CSV file, the next step is to create an append query. The location of the 'Append' option varies slightly according to the Excel version – in Excel 2016 it is under 'Combine Queries', but in 2013 and 2010 it is on the 'Home' tab in the 'Combine group' option. The screenshot shown below is from Excel 2013:



As the dropdown shows, another query can be appended to this query, or another query can be combined with this query to create a new query. For the scenario where the expense files are always required to be uploaded together, the 'Append Queries' option is fine.

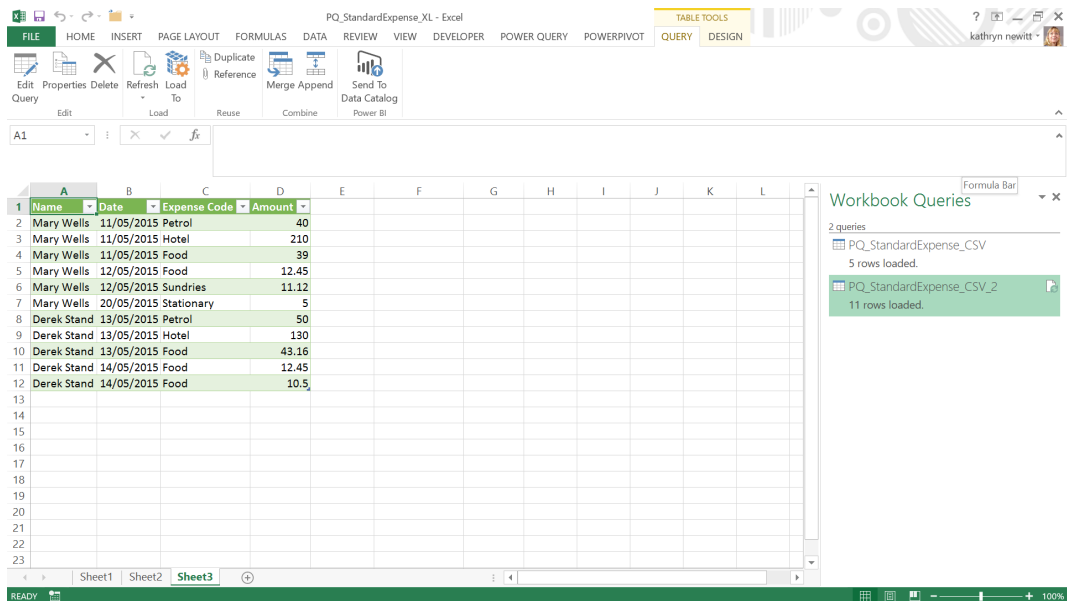


The 'Append' screen, as shown above, allows multiple queries to be combined, but for the purposes of this scenario, 'Two Tables' is appropriate. The other query is selected (all queries in the workbook are available).



The data appears in the same query, and a step is created in **M** code combining the data in the current query with the standard expense query that already exists. If any columns are duplicated, then check column names are the same (and in the same case) in both queries.

The total rows are shown at the bottom of the screen – simply close and load to see the data in an excel workbook:



Further files can be appended using the same method if they arrive after the first files have been appended – the option to append multiple queries also allows data to be combined easily.

## Power Query / Get and Transform March Updates

It's business as usual again as Microsoft's Power Query team ramp up the updates. March sees Microsoft announce two new data transformation and connectivity features for Get and Transform (Excel 2016) / Power Query (2010 and 2013) that have apparently been requested by many customers.

These updates are available as part of an Office 365 subscription for Excel 2016 users and by downloading the latest Power Query for Excel add-in for Excel 2010 and Excel 2013.

These updates include the following new or improved data connectivity and transformation features:

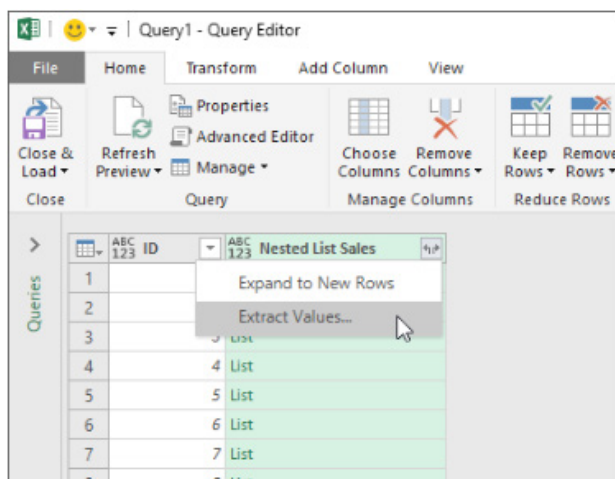
- New transformation—horizontal list expansion: with this update, it is now easier to extract data values from a column containing nested lists using the new **Extract Values** transformation command
- Enhanced SQL Server connector—support for SQL Failover option: this new option may be found under the **Advanced Options** section in the SQL Server connector dialog.

Let's take a look at each in turn.

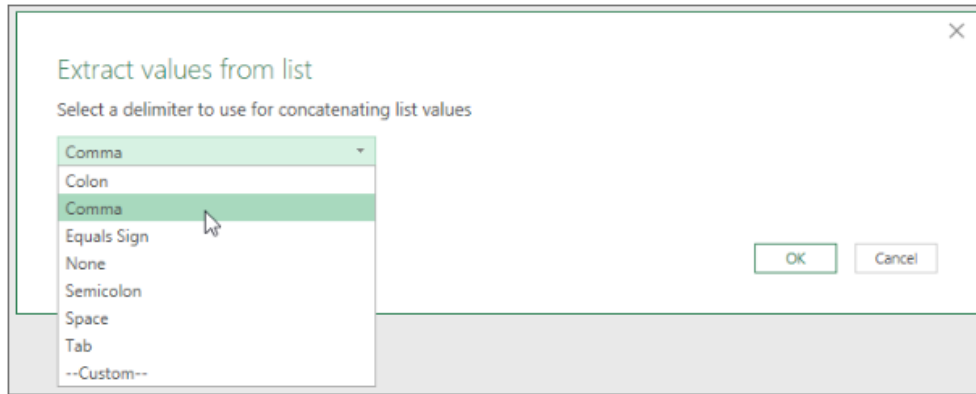
### ***New transformation—horizontal list expansion***

This update makes it easier to extract data values from a column containing nested lists. Before this update, you could expand nested lists within a column in a table, resulting in one new table row for each item within the nested list. This capability is accessible via the column headers in a List column, or by using the **Expand** Ribbon entry point.

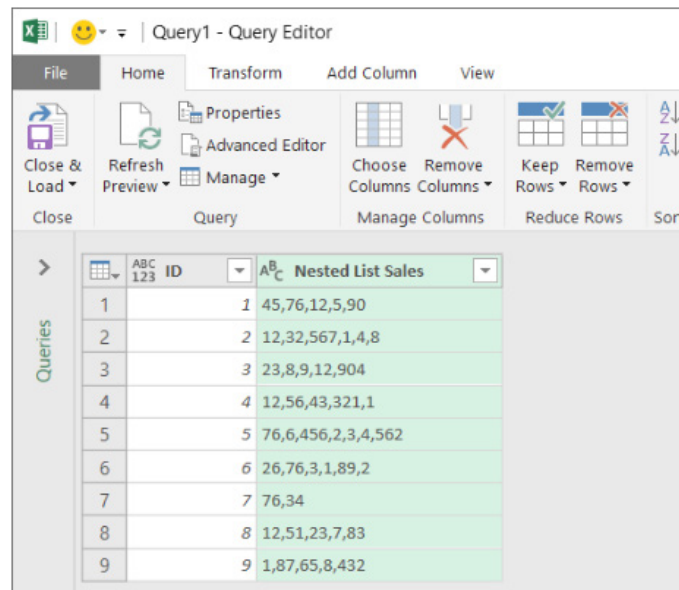
There's more though, as Microsoft has added a new **Extract Values** transformation command that allows users to extract values from a list into a new Text column, with a delimiter in between these values. This new transformation can be accessed from the column header when a column with nested Lists is selected:



Upon selecting this transformation, you're prompted to provide a delimiter to use in the new column. You can pick from a list of predefined delimiters or specify a custom one, which may also include special characters:

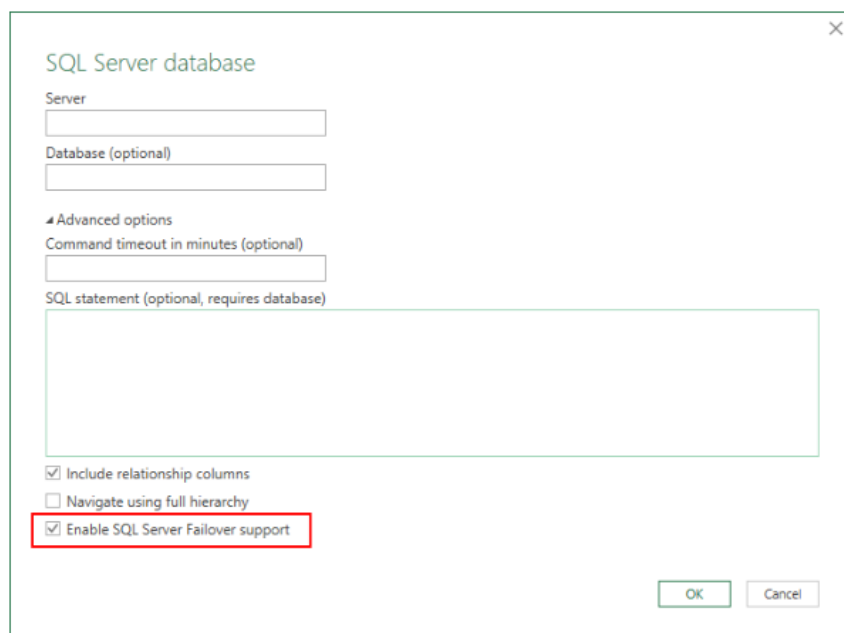


This transformation turns the column with nested lists into a Text column as showed below:



### ***Enhanced SQL Server connector—support for SQL Failover option***

The SQL Server connector has also been improved, with a new option added to enable SQL Server Failover support. This new option can be found under the Advanced Options section in the SQL Server connector dialog:



## Reader's Question

We were recently asked how can Office 365 commercial customers get access to all of the Earlybird Excel 2016 (and other Office 2016) features, as it's a little different to the steps required for Office 365 Home, Personal or University subscribers where you simply sign up to be an *Office Insider*.

Link to [How Office 365 commercial customers can get early access to new Office 2016 features.](#)

The answer in a nutshell is that you have to talk nicely to the administrator of your organisation that has an Office 365 commercial subscription plan that includes Office (it begs the question, how many don't?), such as Office 365 ProPlus, then they have the ability to provide you with early access to new features of Office 2016 for Windows desktops by opting into the *First Release* program. To get the earliest access to new features with First Release, your organisation must be on what Microsoft refers to as the Current Channel (talk to your administrator for more details). That's because these new features are provided in First Release for Current Channel builds only presently.

*First Release for Current Channel* builds provide your selected users with preview builds of Office containing the same features, at the same time, as those that are available to Office 365 consumer subscribers participating in the *Office Insider Slow* level of the *Office Insider* programmes.

To enable *First Release*, so that users may install a preview version of Office 2016 for Windows desktops from the Office 365 portal, an administrator has two choices, either add users individually or en masse.

In order to add users, an administrator must:

- Sign in to Office 365 with your organisation account
- Go to the Office 365 admin center
- Navigate to the **Settings > Organization profile**
- Next to **Release preferences**, click **Edit**
- To enable *First Release* for all users in the organisation, choose **First release for everyone**, then click **Next**, and say **Yes** to the confirmation. Skip to the last step
- To enable *First Release* for some people, choose **First release for selected users**, then click **Next**, and say **Yes** to the confirmation
- Choose **Add people** to add users individually. Search for their names and click + to **Add**
- When complete, click **Save** and then **Close**.

Now that the users have been specified, the administrator should return to the Office 365 admin center and go to **Office software > Software download settings**. On the **Software download settings** page, under **Software for PC**, it must be made sure that **Office** is **On** under the **2016 version** section and that **Every month (Current channel)** has been selected.

After you have done this, it's up to the users. They should go to the link <https://portal.office.com/OLS/MySoftware.aspx> and sign in with their account. Once the user is signed in, the user should see a choice to install Office with the new 2016 apps and should see the following note:

Your admin has enabled First Release, so you get early access to the latest Office features.

On this page, you should select **Install** to begin the installation.

If your administrator actually deploys Office for all users, they may administer the Office Deployment Tool to give users the same *First Release* build of Office as the steps above provide. To do this,

they should follow the steps below, but use **FirstReleaseCurrent** for the Channel setting instead.

So that's *First Release*. However, if you want access to the earliest preview builds, released more frequently, then consider installing builds from the Office *Insider Fast* level of the Office Insider program. Here, the Office Deployment Tool must be used to install these preview builds of Office. Users cannot simply install *Insider Fast* level builds from the Office 365 portal.

We must stress that the Office *Insider Fast* level is a consumer program and is not supported for enterprise use. This level is best for users who want to use the earliest preview builds, released more frequently, to identify issues, provide feedback to make Office better, and don't mind the risk in using unsupported builds.

If you are still feeling crazy, then the administrator should follow these steps:

- Download the latest Office Deployment Tool (Office 2016 version) from the Microsoft Download Center
- Double-click **OfficeDeploymentTool.exe** to extract the Setup.exe file and the sample configuration.xml file. Be sure the version of setup.exe is at least 16.0.7407.3600
- Use a text editor (such as Notepad) to edit the configuration.xml file like this:

```
<Configuration>
  <AddOfficeClientEdition="32"Channel="InsiderFast">
    <Product ID="O365ProPlusRetail">
      <Language ID="en-us" />
    </Product>
  </Add>
</Configuration>
```

This code installs a 32-bit version of Office 365 ProPlus in English from the Office Content Delivery Network (CDN) on the Internet. Office will also get automatically updated from the CDN when a new Office Insider Fast build is available.

If you want to install the 64-bit version of Office instead, replace the "32" with "64" for the OfficeClientEdition setting. If you have the Office 365 Business or Office 365 Business Premium plan, use "O365BusinessRetail", instead of "O365ProPlusRetail", for the Product ID in the configuration.xml file.

- Copy **setup.exe** and **configuration.xml** to the computer where you want to install Office. If Office is already installed on the computer, you need to uninstall Office and restart the computer before performing the next step
- From an elevated command prompt, go to the folder where you copied the files and run the following command:

**Setup.exe /configure configuration.xml**

This copies the Office files from the CDN on the Internet to the computer and starts the installation

- After the installation is complete, open an Office app, such as Excel (obviously!), and go to **File > Account**. Under the **Office Updates** section, you should see text that includes "Office Insider Fast".

We hope this helps. In future, we'd appreciate if Reader's Questions didn't require such trivial responses...

## The A to Z of Excel Functions: BESSELI

You have no idea how long we have waited with baited breath to talk about the Bessel functions in this newsletter. Oh, our editor could barely contain his excitement when he finally realised it would be *this* issue: we just had to prise the razor blades out of his hands. We've been having parties around the globe. Without doubt, this is one of the most talked about functions on the planet. If you are talking from Uranus that is.

Apologies to those that actually do use the **BESSEL** group of functions. I expect complaints from both of our readers this newsletter. Let's get on with it...

Before, we talk about **BESSELI**, let's first provide some background. Bessel functions were first defined by the mathematician Daniel Bernoulli and then generalised by Friedrich Bessel as the canonical solutions  $y(x)$  of the differential equation

$$x^2 \frac{d^2 y}{dx^2} + x \frac{dy}{dx} + (x^2 - \alpha^2)y = 0$$

(known as Bessel's differential equation) for an arbitrary complex number  $\alpha$ , the order of the Bessel function. Although  $\alpha$  and  $-\alpha$  produce the same differential equation for real  $\alpha$ , it is conventional to define different Bessel functions for these two values in such a way that the Bessel functions are mostly smooth functions of  $\alpha$ .

This is not meant to be a mathematical lecture. I will be out of my depth very quickly. Essentially, Excel has four modified Bessel functions, which may be used by specialists as and when needed. Let's go through them all here and then detox later. **BESSELI** returns the modified Bessel function which is equivalent to the Bessel function evaluated for purely imaginary arguments.

The **BESSELI** function employs the following syntax:

**BESSELI(x, n)**

The **BESSELI** function has the following arguments:

- **x**: required. This is the value at which to evaluate the function
- **n**: also required. This represents the order of the Bessel function. If **n** is not an integer, it is truncated accordingly.

It should be further noted that:

- If **x** is nonnumeric, **BESSELI** returns the #VALUE! error value
- If **n** is nonnumeric, **BESSELI** returns the #VALUE! error value
- If **n** < 0, **BESSELI** returns the #NUM! error value
- The **n**<sup>th</sup> order modified Bessel function of the variable **x** is:

$$I_n(x) = (i)^{-n} J_n(ix)$$

I am glad that clears that up then.

Please see our rather unimaginative example below:

	A	B	C	D	E
1	x	n	BESSELI	Formula	Description
2	1.5	1	0.981666	=BESSELI(A2,B2)	Modified Bessel function at 1.5 with an order of 1.
3					

## The A to Z of Excel Functions: BESSELJ

The **BESSELJ** function employs the following syntax to operate:

**BESSELJ(x, n)**

The **BESSELJ** function has the following arguments:

- **x**: required. This is the value at which to evaluate the function
- **n**: also required. This represents the order of the Bessel function. If **n** is not an integer, it is truncated accordingly.

It should be further noted that:

- If **x** is nonnumeric, **BESSELJ** returns the #VALUE! error value
- If **n** is nonnumeric, **BESSELJ** returns the #VALUE! error value
- If **n** < 0, **BESSELJ** returns the #NUM! error value
- The **n**<sup>th</sup> order modified Bessel function of the variable **x** is:

$$J_n(x) = \sum_{k=0}^{\infty} \frac{(-1)^k}{k! \Gamma(n+k+1)} \left(\frac{x}{2}\right)^{n+2k}$$

where:

$$\Gamma(n + k + 1) = \int_0^{\infty} e^{-x} x^{n+k} dx$$

is the Gamma function (ah yes, that makes it all clear now).

I present another out-of-my-depth example below:

	A	B	C	D	E
1	x	n	BESSELJ	Formula	Description
2	1.9	2	0.329926	=BESSELJ(A2,B2)	Bessel function at 1.9 with an order of 2.
3					

## The A to Z of Excel Functions: BESSELK

The **BESSELK** function employs the following syntax:

$$\text{BESSELK}(x, n)$$

The **BESSELK** function has the following arguments:

- **x**: required. This is the value at which to evaluate the function
- **n**: also required. This represents the order of the Bessel function. If **n** is not an integer, it is truncated accordingly.

It should be further noted that:

- If **x** is nonnumeric, **BESSELK** returns the #VALUE! error value
- If **n** is nonnumeric, **BESSELK** returns the #VALUE! error value
- If **n** < 0, **BESSELK** returns the #NUM! error value
- The **n**<sup>th</sup> order modified Bessel function of the variable **x** is:

$$K_n(x) = \frac{\pi}{2} i^{n+1} [J_n(ix) + iY_n(ix)]$$

where **J<sub>n</sub>** and **Y<sub>n</sub>** are the **J** (**BESSELJ**) and **Y** (**BESSELY**) Bessel functions, respectively.

Please see our highly informative example below:

	A	B	C	D	E
1	x	n	BESSELK	Formula	Description
2	1.5	1	0.277388	=BESSELK(A2,B2)	Modified Bessel function at 1.5 with an order of 1.
3					

## The A to Z of Excel Functions: BESSELY

The **BESSELY** function employs the following syntax to operate:

$$\text{BESSELY}(x, n)$$

The **BESSELY** function has the following arguments:

- **x**: required. The value at which to evaluate the function.
- **n**: also required. The order of the function. If **n** is not an integer, it is truncated accordingly.

It should be further noted that:

- If **x** is nonnumeric, **BESSELY** returns the #VALUE! error value
- If **n** is nonnumeric, **BESSELY** returns the #VALUE! error value
- If **n** < 0, **BESSELY** returns the #NUM! error value
- The **n**<sup>th</sup> order Bessel function of the variable **x** is:

$$Y_n(x) = \lim_{\nu \rightarrow n} \frac{J_\nu(x) \cos(\nu \pi) - J_{-\nu}(x)}{\sin(\nu \pi)}$$

where **J<sub>ν</sub>** is the **BESSELJ** function and the others are the usual trigonometric functions.



So let's take a look at this month's final highly informative example below:

	A	B	C	D	E
1	x	n	BESSELY	Formula	Description
2	2.5	1	0.145918	=BESSELY(A2,B2)	Weber's Bessel function at 2.5 and an order of 1.
3					

## Amsterdam Excel Summit: April 18 and 19, 2017



Just a final reminder – April sees in this year's Amsterdam Excel Summit. For our readers based in Europe, it will be presented by various MVPs and Microsoft staff from around the globe on Tuesday 18 April and Wednesday 19 April.

Technically, Tuesday 18<sup>th</sup> will be a “pre-conference masterclass” with the Summit the next day. Topics seem to be focusing on Power BI, Power Pivot and Power Query this year, reflecting the continuing end users’ moves toward these Business Intelligence tools.

This Summit has been an annual event since 2014, with each one bigger and better than its precedent <http://topexcelclass.com/index.php/amsterdam-excel-summit/>. Hope to see some of you there!

## Upcoming SumProduct Training Courses

Location	Course	Date	Duration
Sydney	Visual Basic for Applications	4th Apr 2017	1 day
Sydney	Excel Tips & Tricks	10th Apr 2017	1 day
Sydney	Financial Modelling	20th - 21st Apr 2017	2 days
Melbourne	Excel Tips & Tricks	29th May 2017	1 day
Melbourne	Financial Modelling	30th - 31st May 2017	2 days
Melbourne	Introduction to Financial Forecasting	1st Jun 2017	1 day
Perth	Excel Tips & Tricks	7th Jun 2017	1 day
Perth	Financial Modelling	8th - 9th Jun 2017	2 days
Sydney	Excel Tips & Tricks	13rd Jun 2017	1 day
Sydney	Financial Modelling	14th Jun 2017	1 day
Melbourne	Power Pivot, Power Query and Power BI	19th - 21st Jun 2017	3 days
Brisbane	Excel Tips & Tricks	26th Jun 2017	1 day
Brisbane	Financial Modelling	27th - 28th Jun 2017	2 days
Melbourne	Excel Tips & Tricks	3rd Jul 2017	1 day
Melbourne	Financial Modelling	4th - 5th Jul 2017	2 days
Sydney	Visual Basic for Applications	10th - 10th Jul 2017	1 day
Sydney	Power Pivot, Power Query and Power BI	17th - 19th Jul 2017	3 days
Adelaide	Power Pivot, Power Query and Power BI	24th - 26th Jul 2017	3 days
Sydney	Excel Tips & Tricks	31st Jul 2017	1 day
Sydney	Financial Modelling	1st - 2nd Aug 2017	2 days
Perth	Power Pivot, Power Query and Power BI	7th - 9th Aug 2017	3 days
Adelaide	Excel Tips & Tricks	14th - 16th Aug 2017	3 days
Adelaide	Financial Modelling	15th Aug 2017	1 day



## Referral Programme

Have you heard about the SumProduct Referral programme? If you successfully introduce us to a client we will pay you 10% of the net profits of the engagement won upon receipt of client payment. Sounds like a pretty good deal to us!

Terms and conditions apply. Referrer must be over 18 years of age, able to issue an invoice and not be an employee, director, agent or other related party of the client engaged. For further information, drop us a line at [contact@sumproduct.com](mailto:contact@sumproduct.com). We hope to hear from you!

Melbourne	Mergers and Acquisitions	21st - 24th Aug 2017	4 days
Brisbane	Power Pivot, Power Query and Power BI	28th - 30th Aug 2017	3 days
Melbourne	Excel Tips & Tricks	4th Sep 2017	1 day
Melbourne	Financial Modelling	5th - 6th Sep 2017	2 days
Melbourne	Power Pivot, Power Query and Power BI	12nd - 14th Sep 2017	3 days
Sydney	Excel Tips & Tricks	25th Sep 2017	1 day
Sydney	Financial Modelling	26th - 27th Sep 2017	2 days
Sydney	Power Pivot, Power Query and Power BI	16th - 18th Oct 2017	3 days
Melbourne	Excel Tips & Tricks	23rd Oct 2017	1 day
Melbourne	Financial Modelling	24th - 25th Oct 2017	2 days
Sydney	Visual Basic for Applications	6th Nov 2017	1 day
Sydney	Excel Tips & Tricks	13rd Nov 2017	1 day
Sydney	Financial Modelling	14th - 15th Nov 2017	2 days
Melbourne	Power Pivot, Power Query and Power BI	4th - 6th Dec 2017	3 days
Melbourne	Excel Tips & Tricks	11st Dec 2017	1 day
Melbourne	Financial Modelling	12nd - 13rd Dec 2017	2 days

## Key Strokes

Each newsletter, we'd like to introduce you to useful keystrokes you may or may not be aware of. This month we continue going through the function keys – this time, with the **F8** function key:

Keystroke	What it does
F8	Extends selection range
ALT + F8	Run macro
CTRL + F8	Size Window
SHIFT + F8	Adds to selection mode

There are over 540 keyboard shortcuts in Excel. For a comprehensive list, please download our Excel file a [www.sumproduct.com/thought/keyboard-shortcuts](http://www.sumproduct.com/thought/keyboard-shortcuts). Also, check out our new daily **Excel Tip of the Day** feature on the [www.sumproduct.com](http://www.sumproduct.com) homepage.

## Our 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**
- **Power BI, Power Query & Power Pivot**
- **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).

## Link to Others

These newsletters are not intended to be closely guarded secrets. Please feel free to forward this newsletter to anyone you think might be interested in converting to "the SumProduct way".

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 [www.sumproduct.com](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:



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

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