# Queen Elizabeth Hospital

A Review of ORIOLE:

Current Capabilities

Redwing Business Intelligence Ltd

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## Review of ORIOLE:  current capabilities

## Contents

# Review of ORIOLE: current capabilities

## Summary

A question was raised regarding system capabilities.  The areas of interest were Session Closures and Theatre Case Cancellations.  The next section of this document describes and shows samples of the existing quarterly activity reporting, that was produced by dint of much manual effort.

This issue is this: does Oriole have the capabilities within it today to generate the required analytics?

It's clear from the results described below, that the ORIOLE system for Operating Theatres Intelligence **does** indeed have the current capability to produce the required information.
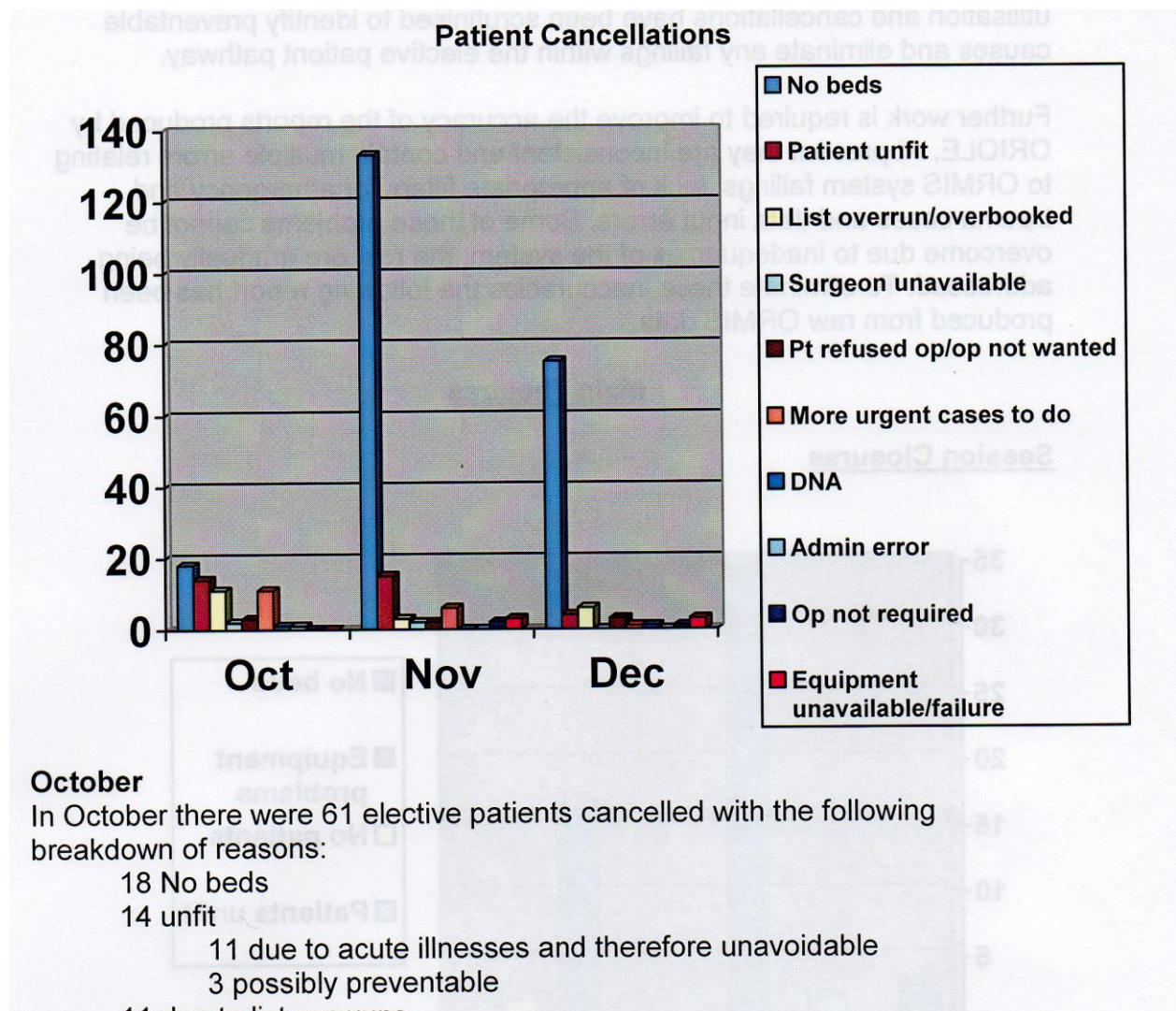
## Methodology

- First, for each of Theatre Cases and for Session Closures, an analysis was done of whether the basic information was actually present in the data warehouse (the cube).  All required information was indeed present within the data warehouse, and very easily accessible using point, click, drag-and-drop of the appropriate selections in the Cube Browser.  Please note that the Cube Browser is in SQL Server Management Studio, which is an Informatics tool.

- Second, existing canned reporting was looked at to see if it would produce the information required.  It was determined that it would *not* produce the specific analytics required.

- This lack of canned reporting capability was considered quite acceptable.  The canned reporting was only ever intended to cover 80% of known initial requirements.   Ad-hoc and new reporting had always been intended to be produced in the first instance using Excel, as is demonstrated in this document.  Excel is the way to cater for the unanticipated 20%.

    o Should the new report be a one-off, then it would be produced in Excel (with or without the use of PowerPivot as appropriate).

    o Should the new report be a regular requirement, then it would be produced in Excel (with or without the use of PowerPivot as appropriate).  Afterwards, it would be added to Excel Services or the PowerPivot Gallery as appropriate, so that anyone may run the new report on-demand.

    o Should monitoring of the new Excel report indicate that it was being run very frequently, and consuming a lot of resources, then it should be re-written as a canned report and added to the standard report library.

- Finally, Excel was used as a simple reporting tool, again using point, click, drag-and-drop of the appropriate selections.  This method required nothing more specialised than Excel on the desktop, which is indeed an end-user tool, and which was intended to be available to everyone.   The later sections of this document give very detailed step-by-step instructions.

- It is important to have the right desktop tool, which is the current version of Excel (i.e. Excel 2010).  Once you have that, the entire data warehouse is open to you.
  It's also necessary to have a reasonably up-to-date version of Internet Explorer to be able to use the canned reporting properly (i.e. at least IE8).

# Quarterly Activity Reporting Requirement

## Theatre Case Cancellation

**Patient Cancellations**



**October**
In October there were 61 elective patients cancelled with the following breakdown of reasons:
          18 No beds
          14 unfit
                    11 due to acute illnesses and therefore unavoidable
                    3 possibly preventable
          11 due to list overruns

The requirement is to be able to count Theatre Case Calculations by reason for cancellation, and to drill into the underlying data to find the specific reasons for cancellation.
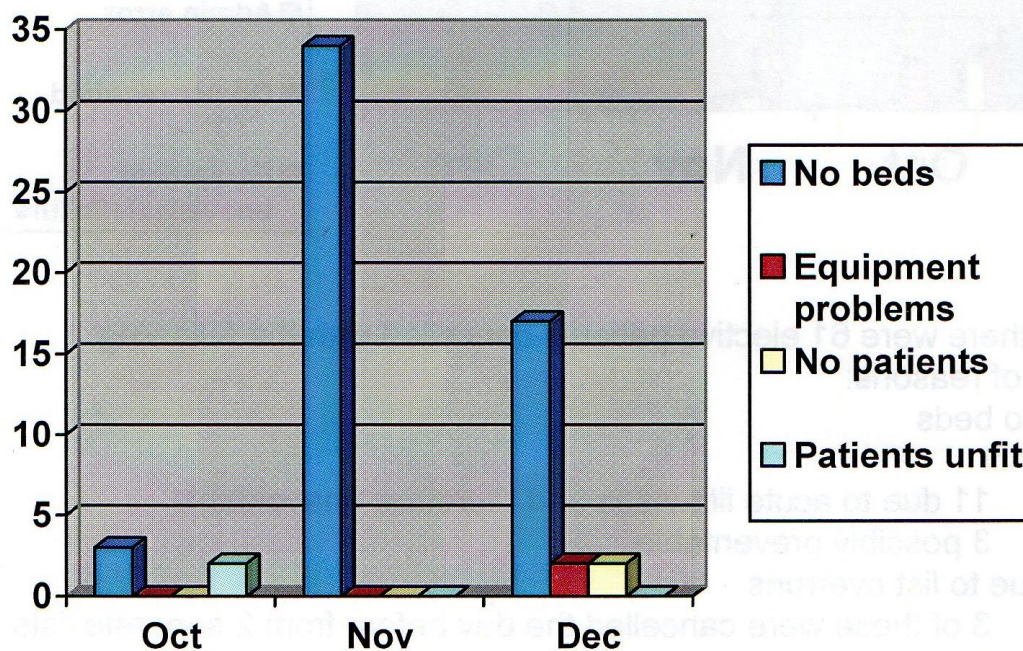
The need at this time is to demonstrate that this can be done using the common or garden desktop analytics tool, Excel.

Note that canned reports can be exported in Microsoft Word format, or simply pushed directly to Subscribers on a periodic basis,

**Given this requirement is quarterly, Redwing recommends a canned report..**

## Session Closure Requirement

## Session Closures



In October 3 sessions were cancelled due to bed shortages with two others cancelled as patient was unfit. Both these were major cases which is why the whole session was lost.

The requirement is to be able to count Session Closures by reason for closure, and to drill into the underlying data to find the specific reasons for closures.

The need at this time is to demonstrate that this can be done using the common or garden desktop analytics tool, Excel.

Note that canned reports can be exported in Microsoft Word format, or simply pushed directly to Subscribers on a periodic basis,

**Given this requirement is quarterly, Redwing recommends a canned report.**

## Analysis of Theatre Cases

### Measures (the things we can add up) that are available for analysis of Theatre Cases.

The ones circled in red are the ones of interest.   Cancelled Within A Day is the Case Count for Theatre Cases where the time of cancellation is with 24 hours of the projected operation date and time.

The dimension attributes in green are also of interest.
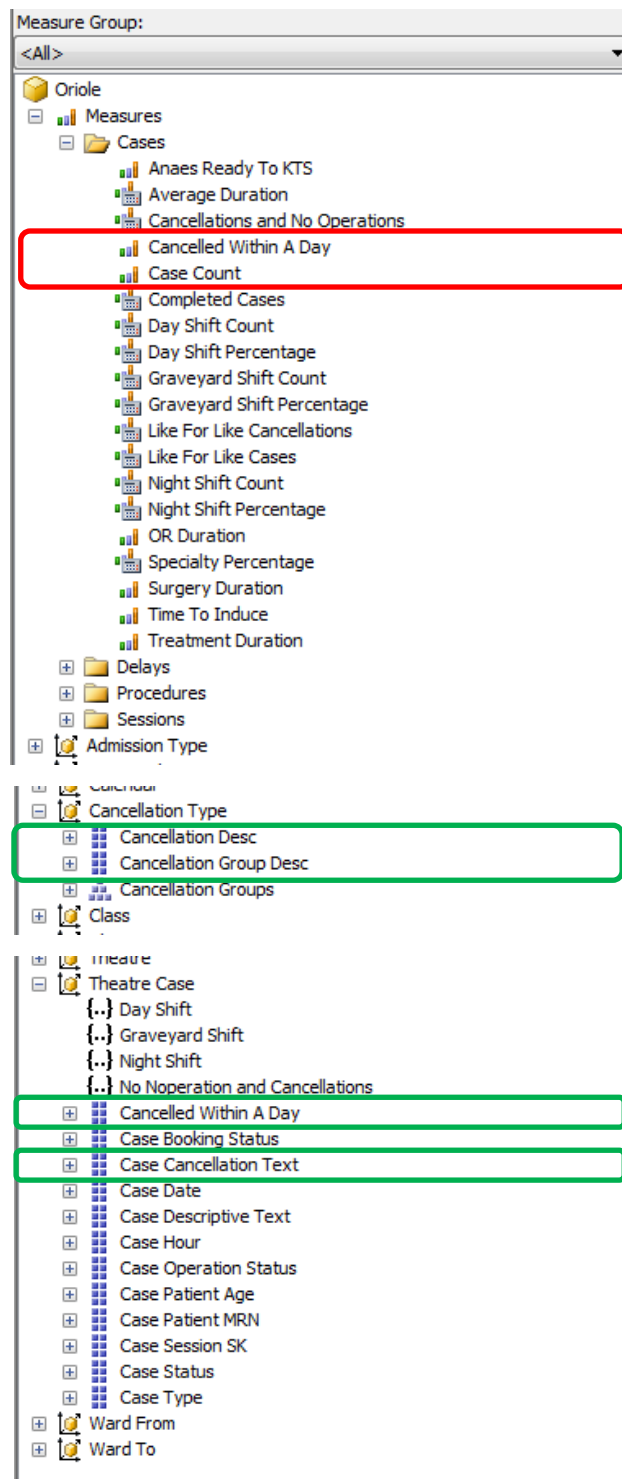
This is how Cancellation information looks in the data warehouse (cube) browser.  Note that one cell has been picked.  It is highlighted.  When the right mouse button is clicked, the pop-up contextual menu appears.  The choice being made in this example is to list the underlying data.



When *List Cancellation text* is picked, this *drillthrough* pop-up appears, showing the detail supporting the number 8 in the cross-tab table in the browser:



Both the numbers and the underlying data are available for reporting.  Of course, the text must be entered into ORMIS in the first place.  It will not be available for any reporting otherwise.

==The conclusion from all this is that the ORIOLE data warehouse== ***does*** ==indeed contain all the information on Theatre Case Cancellations that could be required for any analysis, assuming it had been entered in the first place.  Of course, if not, then not even going back to ORMIS will help.==

## Analysis of Sessions

### Measures (the things we can add up) that are available for analysis of sessions.

The ones circled in red are the ones of interest.

## Measures of interest

| | |
|---|---|
| Session Count | Raw count of sessions |
| Single Double | Count of sessions where half day sessions count as 1, an all-day session counts as 2. Single Double is always bigger than Session Count. |
| Unfunded Sessions | 'Single Double' where there is *no* funding |
| Funded Sessions | 'Single Double' where there *is* funding |
| Planned Closures | The amount by which Funded Sessions is to be reduced for reasons such as Audit or Consultant Surgeon Annual Leave |
| Planned Sessions | Funded Sessions *minus* Planned Closures |
| Unplanned Closures | The amount by which Planned Sessions is to be reduced for reasons such as No Beds Available or Equipment Failure |
| Open Sessions | Planned Sessions *minus* Unplanned Closures |

Here's a diagram showing an example of these calculations:

## Session Type Breakdown and KPI Calculation
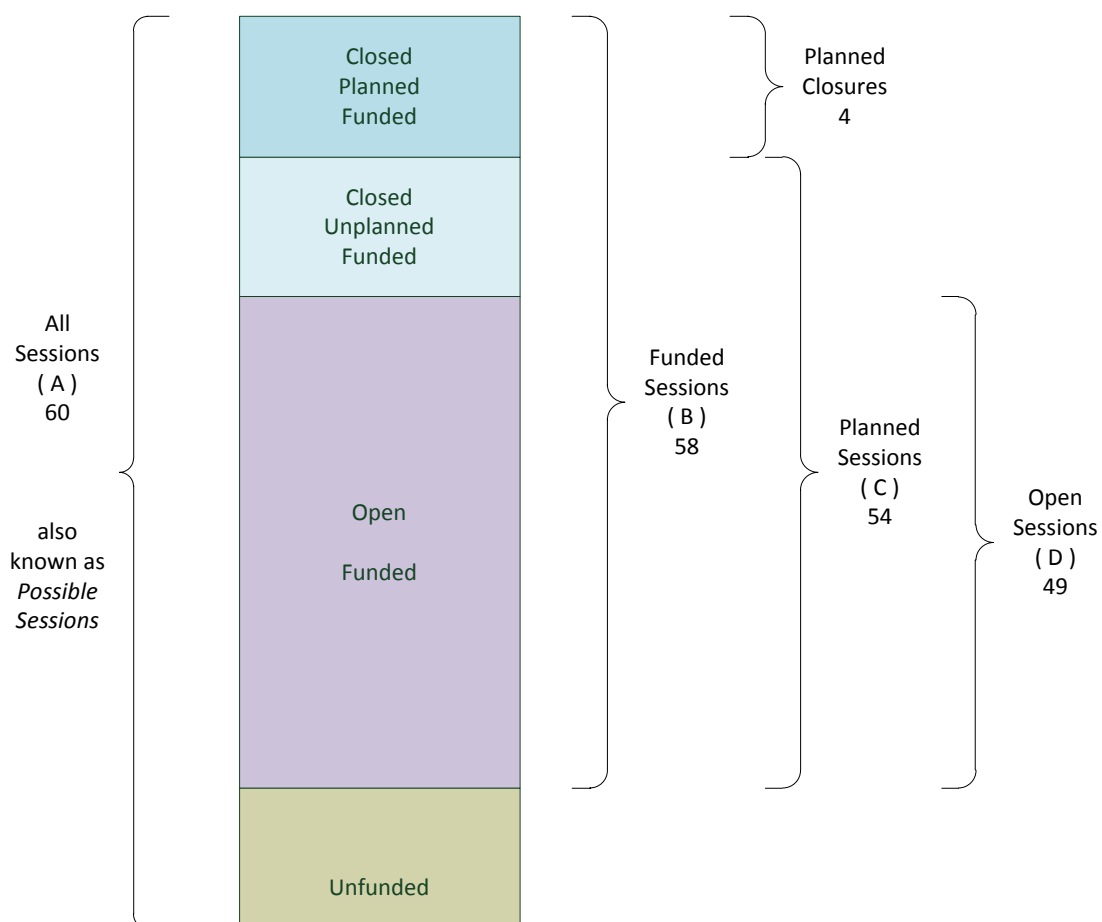
## List of all possible Session  Closure and Reinstatement Codes that could be used

- Closure Type
  - Closure Code
  - Closure Complete
  - Closure Desc
    - Members
    - Closure Desc
      - Member Properties
        - Anaesthetic Staff shortage
        - Anaesthetist unavailable
        - Audit
        - Bank Holiday
        - Consultant Anaesthetist Annual Leave
        - Consultant Anaesthetist professional leave
        - Consultant Anaesthetist sick leave
        - Consultant Surgeon annual leave
        - Consultant Surgeon on professional leave
        - Consultant Surgeon Sick Leave
        - Education Half day
        - Emergencies/trauma
        - Equipment failure
        - Equipment/environment failure
        - ITU/HDU beds unavailable
        - No Beds Available
        - Open / Not Closed
        - Other
        - Planned closure
        - Planned maintenance
        - Redevelopment
        - Routine Maintenance
        - Session transferred to other theatre
        - Surgeon Unavailable
        - Theatre Staff Shortage
        - Theatre staff unavailable
        - Theatre Washdown
        - Too short notice
        - Unscheduled Maintenance
        - Ward beds unavailable
  - Closure Group
    - Members
    - Closure Group
      - Member Properties
        - Open
        - Planned
        - Unplanned
- Consultant
- Delay Source
- Delay Type
- Instrument Nurse
- Procedure Code
- Recovery In Charge
- Reinstatement
  - Category Desc
  - Reinstatement Desc
    - Members
    - Reinstatement Desc
      - Member Properties
        - 
        - Cancelled in Error
        - Covered by Other Anaesthetist
        - Covered by Other Consultant
        - Covered by Other Staff
        - Unknown
  - Code Categories
- Scrub Nurse

## Browsing the Data Warehouse (Cube)

Using a test database of realistic but not real data, the following results were obtained with the Cube Browser.  This is for a single month, but could be any time period desired.:

**Result 1.  The measures alone.**

Drop Filter Fields Here

| Month ▼ |Date| |
|---|---|
| ⊞ July 2011 | |

| Session Count | Single Double | Unfunded Sessions | Funded Sessions | Planned Closures | Planned Sessions | Unplanned Closures | Open Sessions |
|---|---|---|---|---|---|---|---|
| 456 | 515 | 6 | 509 | 13 | 496 | 29 | 467 |

This makes perfect sense.  Everything is in order:

| | |
|---|---|
| Session Count | 456 |
| Single Double | 515 |
| Unfunded Sessions | 6 |
| Funded Sessions | 509 ( = 515 – 6 ) |
| Planned Closures | 13 |
| Planned Sessions | 496 ( = 509 – 13 ) |
| Unplanned Closures | 29 |
| Open Sessions | 467 ( = 496 – 29) |

**Result 2.  Broken down by reinstatements.**

Drop Filter Fields Here

| | Month ▼ |Date| | | | | | |
|---|---|---|---|---|---|---|---|
| | ⊞ July 2011 | | | | | | |

| Reinstatement Desc ▼ | Session Count | Single Double | Unfunded Sessions | Funded Sessions | Planned Closures | Planned Sessions | Unplanned Closures | Open Sessions |
|---|---|---|---|---|---|---|---|---|
| (Blank) | 440 | 499 | 6 | 493 | 13 | 480 | 29 | 451 |
| Cancelled in Error | 2 | 2 | | 2 | | 2 | | 2 |
| Covered by Other Consultant | 4 | 4 | | 4 | | 4 | | 4 |
| Covered by Other Staff | 10 | 10 | | 10 | | 10 | | 10 |
| Grand Total | 456 | 515 | 6 | 509 | 13 | 496 | 29 | 467 |

Reinstatement statistics are useful to know, but the salient point here is that Reinstated Sessions fall into the Open Sessions category.

**Result 3.  Broken down by Closure Group and specific Closure Type.**

| Closure Group ▾ | Closure Desc ▾ | Session Count | Single | Double | Unfunded Sessions | Funded Sessions | Planned Closures | Planned Sessions | Unplanned Closures | Open Sessions |
|---|---|---|---|---|---|---|---|---|---|---|
| ⊟ Open | Open / Not Closed | 426 | 483 | 6 | | 477 | | 477 | 10 | 467 |
| | Total | 426 | 483 | 6 | | 477 | | 477 | 10 | 467 |
| ⊟ Planned | Audit | 5 | 5 | | | 5 | 5 | 0 | | |
| | Consultant Surgeon annual leave | 7 | 7 | | | 7 | 7 | 0 | | |
| | Routine Maintenance | 1 | 1 | | | 1 | 1 | 0 | | |
| | Total | 13 | 13 | | | 13 | 13 | 0 | | |
| ⊟ Unplanned | Anaesthetist unavailable | 1 | 1 | | | 1 | | 1 | 1 | |
| | ITU/HDU beds unavailable | 1 | 1 | | | 1 | | 1 | 1 | |
| | No Beds Available | 1 | 1 | | | 1 | | 1 | 1 | |
| | Other | 3 | 3 | | | 3 | | 3 | 3 | |
| | Session transferred to other theatre | 4 | 4 | | | 4 | | 4 | 4 | |
| | Surgeon Unavailable | 3 | 3 | | | 3 | | 3 | 3 | |
| | Theatre Staff Shortage | 2 | 3 | | | 3 | | 3 | 3 | |
| | Theatre staff unavailable | 2 | 3 | | | 3 | | 3 | 3 | |
| | Total | 17 | 19 | | | 19 | | 19 | 19 | |
| Grand Total | | 456 | 515 | 6 | | 509 | 13 | 496 | 29 | 467 |

Note that empty rows are not shown, so this month, the test data did not have any Theatre Washdowns, for example.  Open sessions are included, and show up in the Grand Totals.

The next image shows Open sessions filtered out  *and* with empty rows present.

Here's what it looks like.  Note that the numbers and totals remain the same:

| Dimension | Hierarchy | Operator | Filter Expression |
|---|---|---|---|
| Closure Type | ▦ Closure Group | Not Equal | { Open } |
| <Select dimension> | | | |

| | | July 2011 | | August 2011 | | September 2011 | | Grand Total | |
|---|---|---|---|---|---|---|---|---|---|
| Closure Group ▾ | Closure Desc ▾ | Session Count | Single Double | Session Count | Single Double | Session Count | Single Double | Session Count | Single Double |
| ⊟ Planned | Audit | 5 | 5 | 5 | 5 | | | 10 | 10 |
| | Bank Holiday | | | 48 | 56 | | | 48 | 56 |
| | Consultant Anaesthetist Annual Leave | | | | | 2 | 2 | 2 | 2 |
| | Consultant Surgeon annual leave | 7 | 7 | 5 | 5 | 5 | 5 | 17 | 17 |
| | Consultant Surgeon on professional leave | | | | | 2 | 2 | 2 | 2 |
| | Planned closure | | | 3 | 3 | | | 3 | 3 |
| | Routine Maintenance | 1 | 1 | | | | | 1 | 1 |
| | Total | 13 | 13 | 61 | 69 | 9 | 9 | 83 | 91 |
| ⊟ Unplanned | Anaesthetic Staff shortage | | | 1 | 1 | | | 1 | 1 |
| | Anaesthetist unavailable | 1 | 1 | 1 | 1 | | | 2 | 2 |
| | Consultant Surgeon Sick Leave | | | 4 | 4 | | | 4 | 4 |
| | ITU/HDU beds unavailable | 1 | 1 | 1 | 1 | 2 | 3 | 4 | 5 |
| | No Beds Available | 1 | 1 | 20 | 23 | 9 | 9 | 30 | 33 |
| | Other | 3 | 3 | 18 | 19 | 9 | 11 | 30 | 33 |
| | Session transferred to other theatre | 4 | 4 | 2 | 2 | 1 | 1 | 7 | 7 |
| | Surgeon Unavailable | 3 | 3 | 6 | 6 | 3 | 3 | 12 | 12 |
| | Theatre Staff Shortage | 2 | 3 | 1 | 1 | | | 3 | 4 |
| | Theatre staff unavailable | 2 | 3 | 2 | 3 | 1 | 1 | 5 | 7 |
| | Ward beds unavailable | | | 7 | 8 | 2 | 2 | 9 | 10 |
| | Total | 17 | 19 | 63 | 69 | 27 | 30 | 107 | 118 |
| Grand Total | | 30 | 32 | 124 | 138 | 36 | 39 | 190 | 209 |

In July, we had a raw count of **30 sessions closed**.

**Result 4.  Theatre Closure KPIs.**

We can, of course, generate all possible KPIs around closures.

| | | |
|---|---|---|
| **Month** ▾ |Date | |
| ⊞ July 2011 | | |
| Overall Closure Rate | Unplanned Closure Rate | Planned Closure Rate |
| 8.25% | 5.85% | 2.55% |

## Getting the most detailed level of data (the atomic transactions)

As before, we could right-click and get a popup.

If we did that, here's the data view (split over two lines):

**Data Sample Viewer (first 1000 records)**

| [$Session].[D ACTION] | [$Session].[ | [$Session].[S | [$Session].[Session Utilisation Category] | [$Session].[Session Type] | [$Session].[Session Funding] |
|---|---|---|---|---|---|
| (null) | 20110702 | 1012 | Funded - Closed - Unplanned | Elective | Funded |

| [$Session].[Session Period] | [$Closure Type].[Closure Desc] | [$Closure Type].[Closure Group] | [$Reinstateme | [$Theatre].[T | [$Session Consultant].[Staff Surname] |
|---|---|---|---|---|---|
| Morning | ITU/HDU beds unavailable | Unplanned | (null) | RT2 | MCMAHON |

However, we can also list the raw data directly (all lowest-level data is in the cube). This is for July:

| | Session Date | Planned Session Start | Planned Session Finish | | | Date Closed | Session Type |
|---|---|---|---|---|---|---|---|
| 1 | 20110726 | 2011-07-26 13:30:00.000 | 2011-07-26 17:00:00.000 | | Audit | 2011-07-18 00:00:00.000 | Unknown |
| 2 | 20110708 | 2011-07-08 09:00:00.000 | 2011-07-08 12:30:00.000 | | Consultant Surgeon annual leave | 2011-05-23 00:00:00.000 | Unknown |
| 3 | 20110724 | 2011-07-24 14:00:00.000 | 2011-07-24 17:30:00.000 | | Consultant Surgeon annual leave | 2011-05-23 00:00:00.000 | Unknown |
| 4 | 20110729 | 2011-07-29 09:00:00.000 | 2011-07-29 12:30:00.000 | | Consultant Surgeon annual leave | 2011-05-23 00:00:00.000 | Unknown |
| 5 | 20110704 | 2011-07-04 14:00:00.000 | 2011-07-04 17:30:00.000 | Doing a general list at Eccleston | Session transferred to other theatre | 2011-06-14 00:00:00.000 | Unknown |
| 6 | 20110710 | 2011-07-10 09:00:00.000 | 2011-07-10 12:30:00.000 | | Session transferred to other theatre | 2011-05-22 00:00:00.000 | Unknown |
| 7 | 20110724 | 2011-07-24 09:00:00.000 | 2011-07-24 12:30:00.000 | | Session transferred to other theatre | 2011-07-05 00:00:00.000 | Unknown |
| 8 | 20110730 | 2011-07-30 09:00:00.000 | 2011-07-30 12:30:00.000 | | Consultant Surgeon annual leave | 2011-05-23 00:00:00.000 | Unknown |
| 9 | 20110730 | 2011-07-30 14:00:00.000 | 2011-07-30 17:30:00.000 | | Consultant Surgeon annual leave | 2011-04-26 00:00:00.000 | Unknown |
| 10 | 20110702 | 2011-07-02 08:30:00.000 | 2011-07-02 12:30:00.000 | No ICU bed available | ITU/HDU beds unavailable | 2011-07-02 00:00:00.000 | Elective |
| 11 | 20110725 | 2011-07-25 09:00:00.000 | 2011-07-25 17:30:00.000 | All day session closed because of staff illness | Theatre Staff Shortage | 2011-07-25 00:00:00.000 | Elective |
| 12 | 20110726 | 2011-07-26 13:30:00.000 | 2011-07-26 18:00:00.000 | Audit | Audit | 2011-05-30 00:00:00.000 | Elective |
| 13 | 20110718 | 2011-07-18 08:30:00.000 | 2011-07-18 13:30:00.000 | No surgical beds available | No Beds Available | 2011-07-17 00:00:00.000 | Elective |
| 14 | 20110719 | 2011-07-19 08:30:00.000 | 2011-07-19 13:30:00.000 | Critical theatre staff sick | Theatre Staff Shortage | 2011-07-18 00:00:00.000 | Elective |
| 15 | 20110726 | 2011-07-26 09:00:00.000 | 2011-07-26 12:30:00.000 | No Surgeon | Anaesthetist unavailable | 2011-07-18 00:00:00.000 | Elective |
| 16 | 20110726 | 2011-07-26 14:00:00.000 | 2011-07-26 17:30:00.000 | Audit | Audit | 2011-05-30 00:00:00.000 | Elective |
| 17 | 20110704 | 2011-07-04 14:00:00.000 | 2011-07-04 17:30:00.000 | Session transferred to Day | Session transferred to other theatre | 2011-07-03 00:00:00.000 | Elective |
| 18 | 20110729 | 2011-07-29 09:00:00.000 | 2011-07-29 12:30:00.000 | | Consultant Surgeon annual leave | 2011-05-23 00:00:00.000 | Unknown |
| 19 | 20110729 | 2011-07-29 13:00:00.000 | 2011-07-29 16:30:00.000 | | Consultant Surgeon annual leave | 2011-05-23 00:00:00.000 | Unknown |
| 20 | 20110726 | 2011-07-26 14:00:00.000 | 2011-07-26 17:30:00.000 | Audit | Audit | 2011-05-30 00:00:00.000 | Elective |
| 21 | 20110724 | 2011-07-24 09:00:00.000 | 2011-07-24 12:30:00.000 | There are no staff or patients availabe | Theatre staff unavailable | 2011-07-24 00:00:00.000 | Elective |
| 22 | 20110708 | 2011-07-08 14:00:00.000 | 2011-07-08 17:30:00.000 | No patients | Other | 2011-07-10 00:00:00.000 | Elective |
| 23 | 20110710 | 2011-07-10 14:00:00.000 | 2011-07-10 17:30:00.000 | All the patients on the list were done in the morni… | Other | 2011-07-11 00:00:00.000 | Elective |
| 24 | 20110712 | 2011-07-12 14:00:00.000 | 2011-07-12 17:30:00.000 | Only one patient - unfit so session closed | Other | 2011-07-12 00:00:00.000 | Elective |
| 25 | 20110726 | 2011-07-26 14:00:00.000 | 2011-07-26 17:30:00.000 | Air con maint | Routine Maintenance | 2011-07-18 00:00:00.000 | Elective |
| 26 | 20110723 | 2011-07-23 14:00:00.000 | 2011-07-23 17:30:00.000 | No surgeon - in Day | Surgeon Unavailable | 2011-07-22 00:00:00.000 | Elective |
| 27 | 20110727 | 2011-07-27 09:00:00.000 | 2011-07-27 18:00:00.000 | Session close - staff sickness | Theatre staff unavailable | 2011-07-31 00:00:00.000 | Urgent/Trauma |
| 28 | 20110712 | 2011-07-12 09:00:00.000 | 2011-07-12 12:30:00.000 | No general surgeon and not enough staff to offe… | Surgeon Unavailable | 2011-07-04 00:00:00.000 | Unknown |
| 29 | 20110715 | 2011-07-15 13:30:00.000 | 2011-07-15 17:00:00.000 | | Surgeon Unavailable | 2011-07-10 00:00:00.000 | Unknown |
| 30 | 20110726 | 2011-07-26 13:30:00.000 | 2011-07-26 17:00:00.000 | | Audit | 2011-07-18 00:00:00.000 | Unknown |

**Note 30 rows**; this is consistent with the totals shown in the cube browser

Note *Session Type*. Some sessions are identified as Unknown. This is how the data was originally entered into ORMIS.

Note also the comment column in the middle. There is a place for text to be entered describing the reason for Session Closure. If it is not entered into ORMIS, it is not available for analysis.

The conclusion from all this is that the ORIOLE data warehouse **does** indeed contain all the information on Session Closures that could be required for any analysis, assuming it had been entered in the first place. Of course, if not, then not even going back to ORMIS will help.

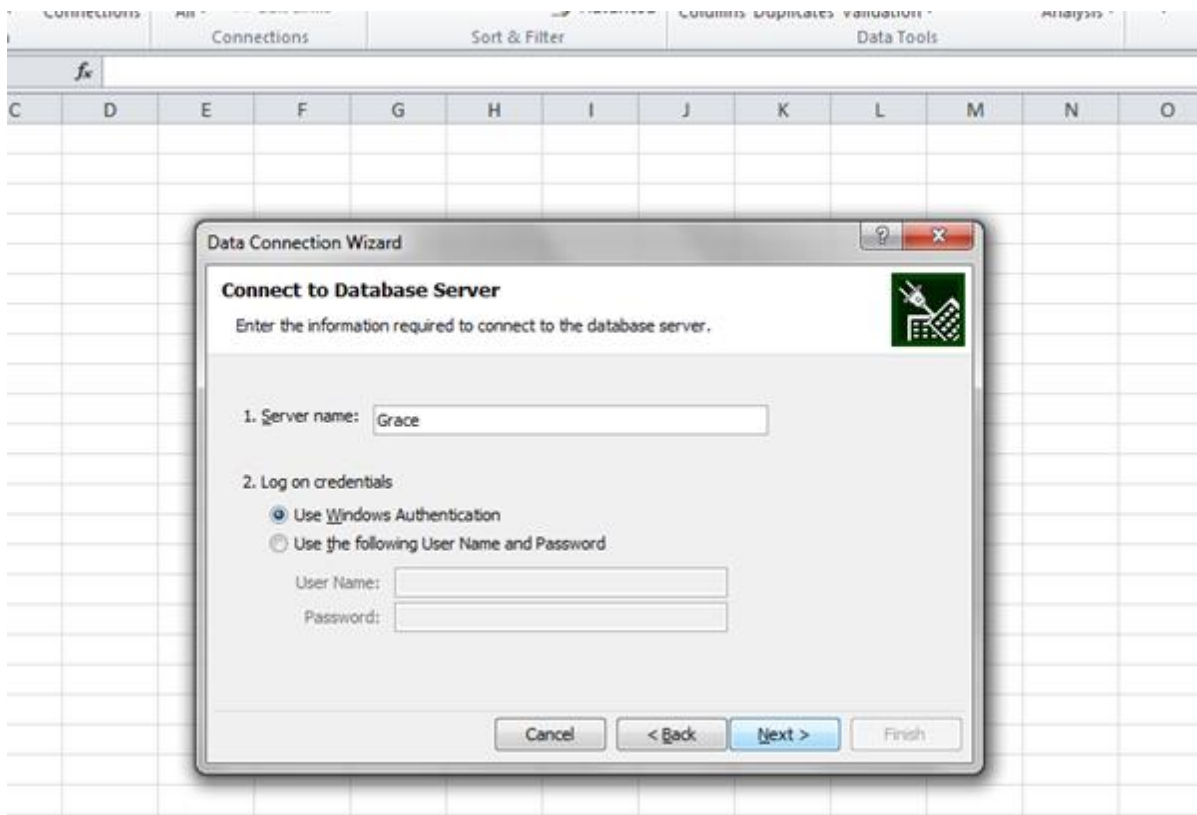# Reporting: connecting to the data warehouse

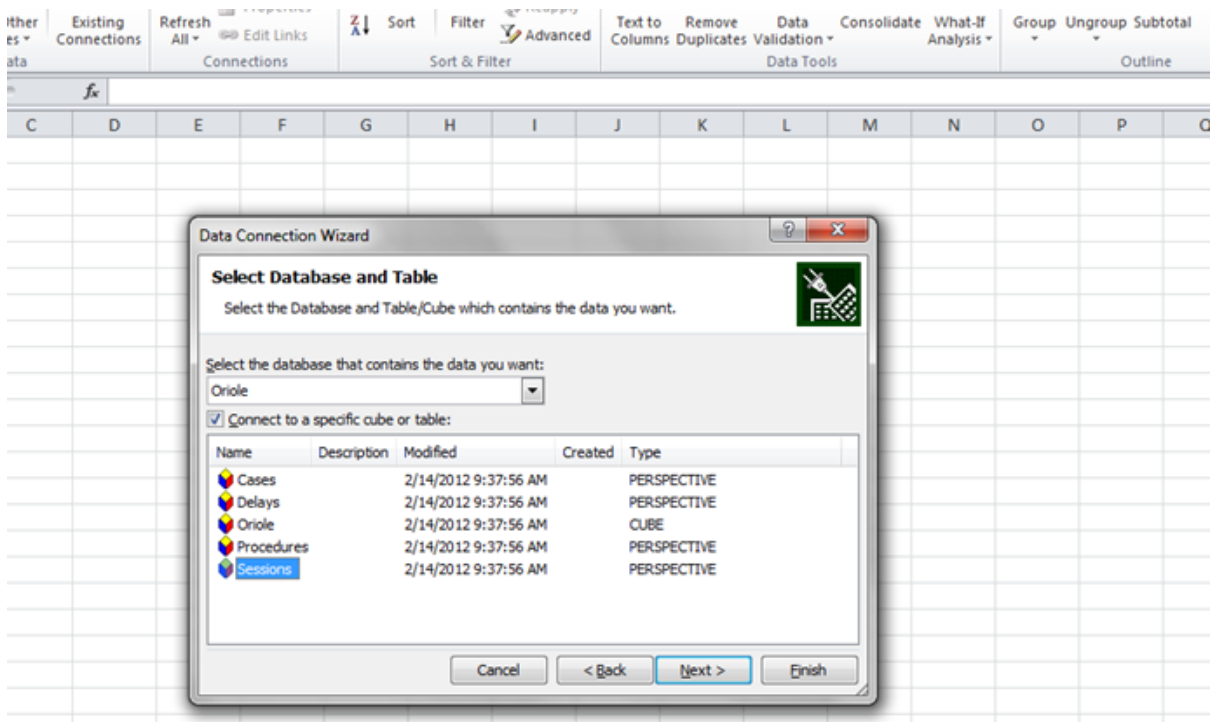Starting with a blank Excel 2010 worksheet
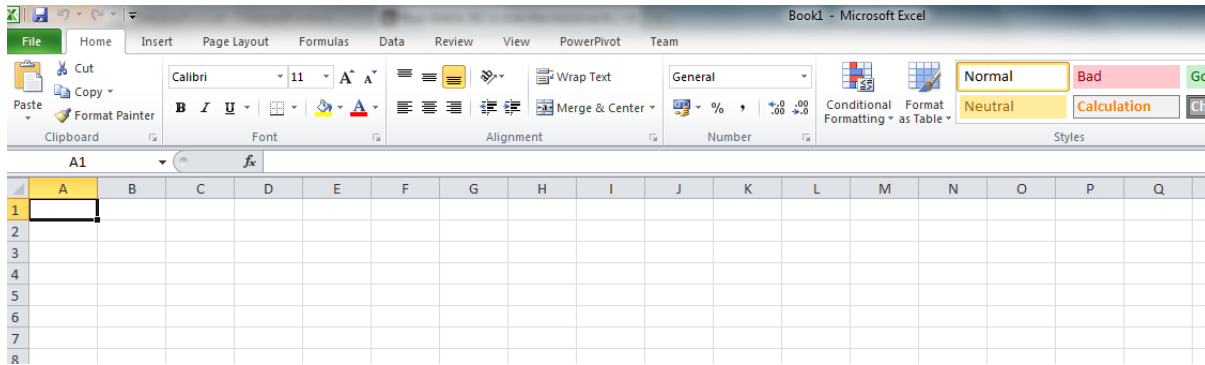


Select the Data tab and highlight 'From Analysis Services' from the 'Get External Data' section
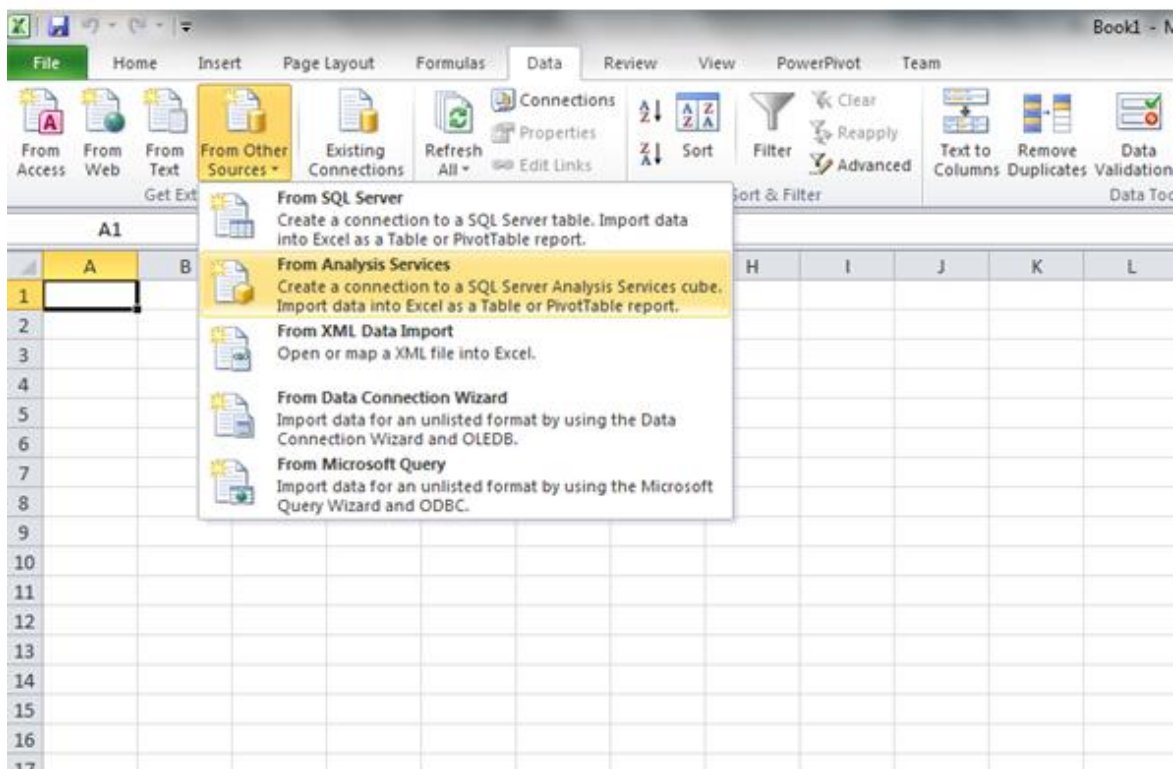
A dialog box appears.  Complete the server name, allow the default 'Use Windows Authentication' and click 'next'



And another dialog box appears

This is interesting.  The last column says Type, and under it, is PERSPECTIVE and CUBE.

CUBE is the entire data warehouse.  Don't use that one, it is too complex, and we want separate reporting for Sessions and Theatre Cases.  Each PERSPECTIVE is a subset of the warehouse, showing just the relevant parts.

At this time, make sure that Oriole appears in the drop-down list box labelled 'Select the database that contains the data you want', highlight Sessions, tick the check box labelled 'Connect to a specific cube or table' and then click Next.  (Note that the Oriole database contains the CUBE and the PERSPECTIVEs.)

This should bring up the Data Connection Wizard.
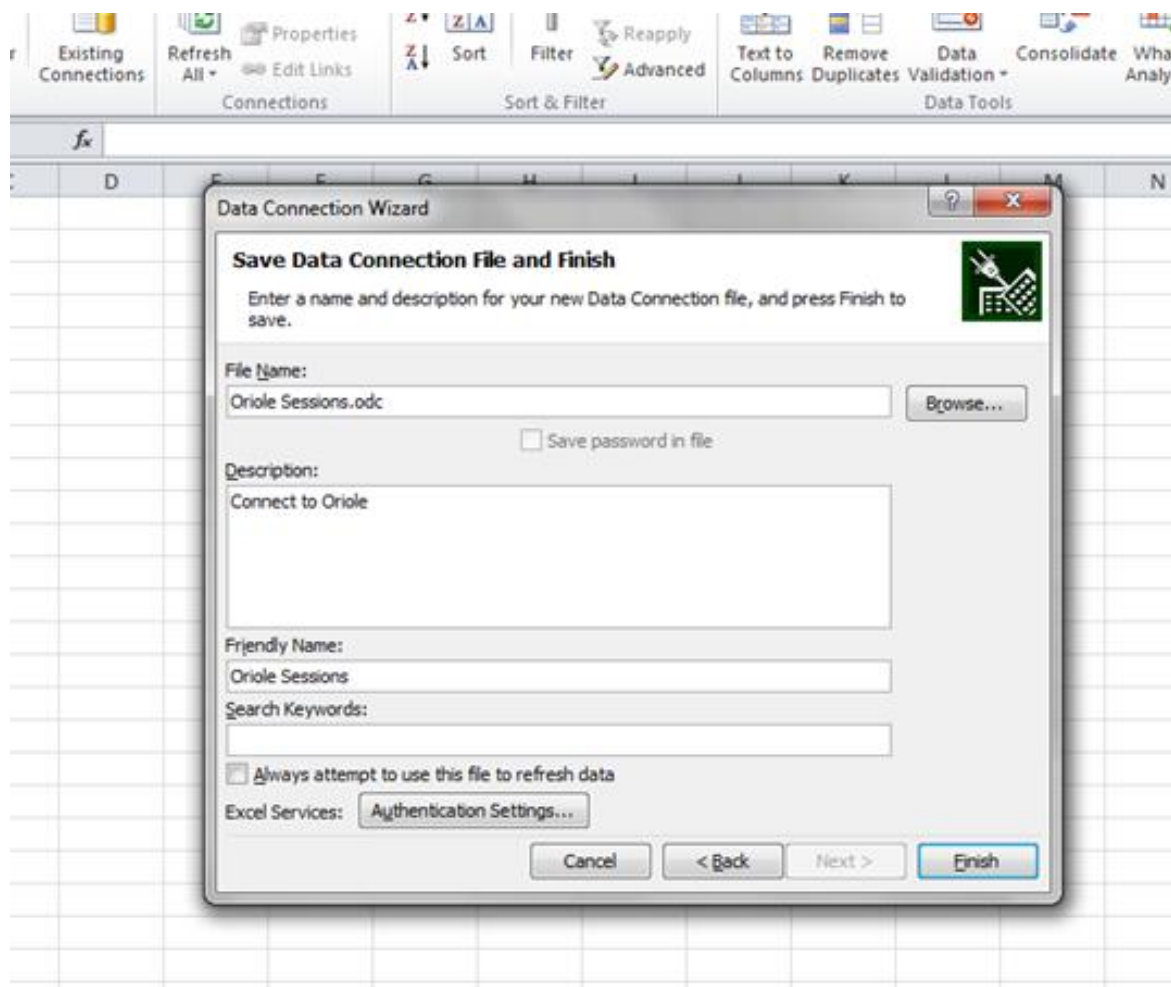


As you can see, we've labelled it 'Oriole Sessions' and this is the last step in connecting to the data warehouse.

Click 'Finish.

Later, you can repeat these steps, but choose the Cases perspective, to create a data connection to the Theatre Cases perspective in the cube.

With the Data connection established, we're now going to Import Data.

After the finish button was clicked, you will get a dialog box like this:
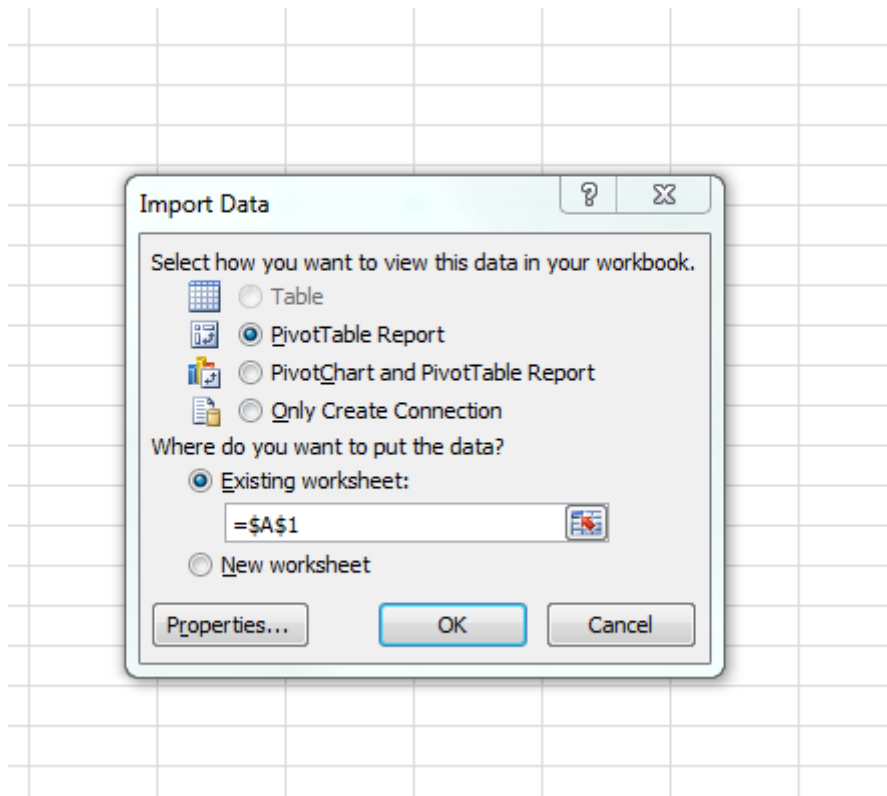


The default is good here.  Click OK to create a PivotTable report.  We're not going to create any charts, or do more fancy stuff with PowerPivot and the DAX Data Expressions language.  This is going to be quite basic.   Bells and whistles can be added later.

This is a basic Excel spreadsheet.  It is connected directly to the Sessions Perspective of the data warehouse, and has access to all of the data we looked at in *Analysis of Sessions*.
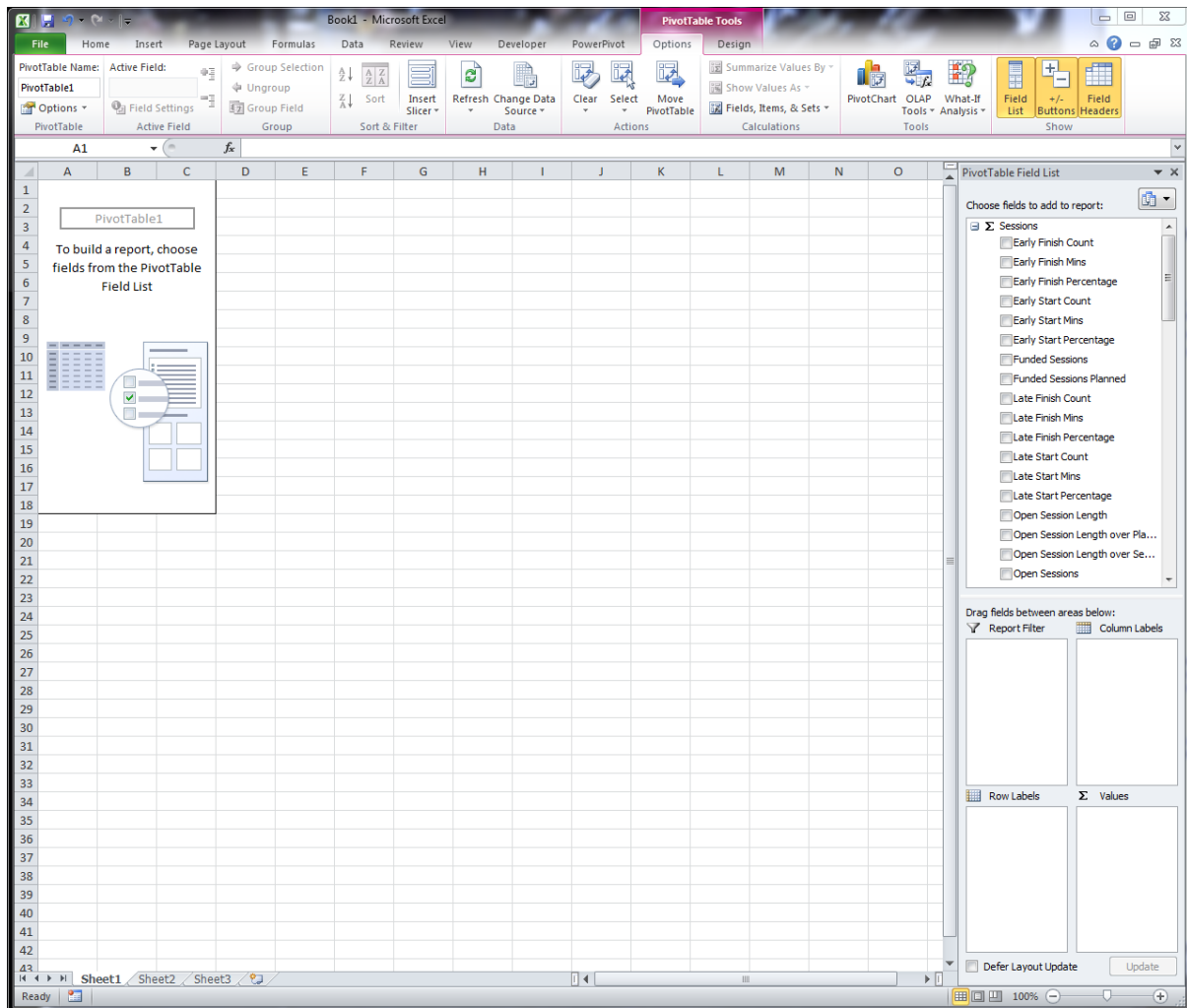
There are three things to note here:

- The PivotTable File List pane on the right of the main window;

- The three highlighted buttons for controlling what you see and what you don't; and

- The PivotTable tools tab at the top of the Ribbon.  In the image above, the Options tab is selected.  The image below show the Design tab.
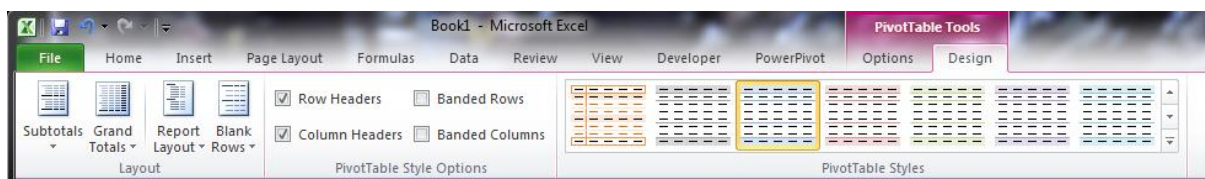
## Reporting: develop a spreadsheet.

If you have never worked with PivotTables before, then here's a good general guide.

Here is a useful webcast (SQL Server 2008 R2 Analysis Services: Creating Excel 2010 PivotTable and Developing Report with Analysis Services Cube.

Please note that clicking a cell outside the chart or table area removes the field list from view.

The first step is to pick the fields to add to the report in the PivotTable Field List.

Pick Session Count, and the spreadsheet will change to this:



Note that the Session Count is checked, and it appears in the Values section at the lower right.

Time to add a date filter.

1. Scroll down the Field List until you get to Calendar.

2. Drag Y-M-D to Report Filter.  You will note a check mark appear, and there will be a Y-M-D in cell A1.  It will say All in B1, and there will be a down arrow.

3. Click on the down arrow.  You will get a selection pop-up.

4. Put a tick in the 'Select multiple items box', then click on the + sign next to the word All.

5. The years will appear.  Remove the tick from the box next to All.

6. Click the + next to Calendar 2011.n  The months of 2011 should appear. Put ticks next to July, August, and September.

The screen should look like this:
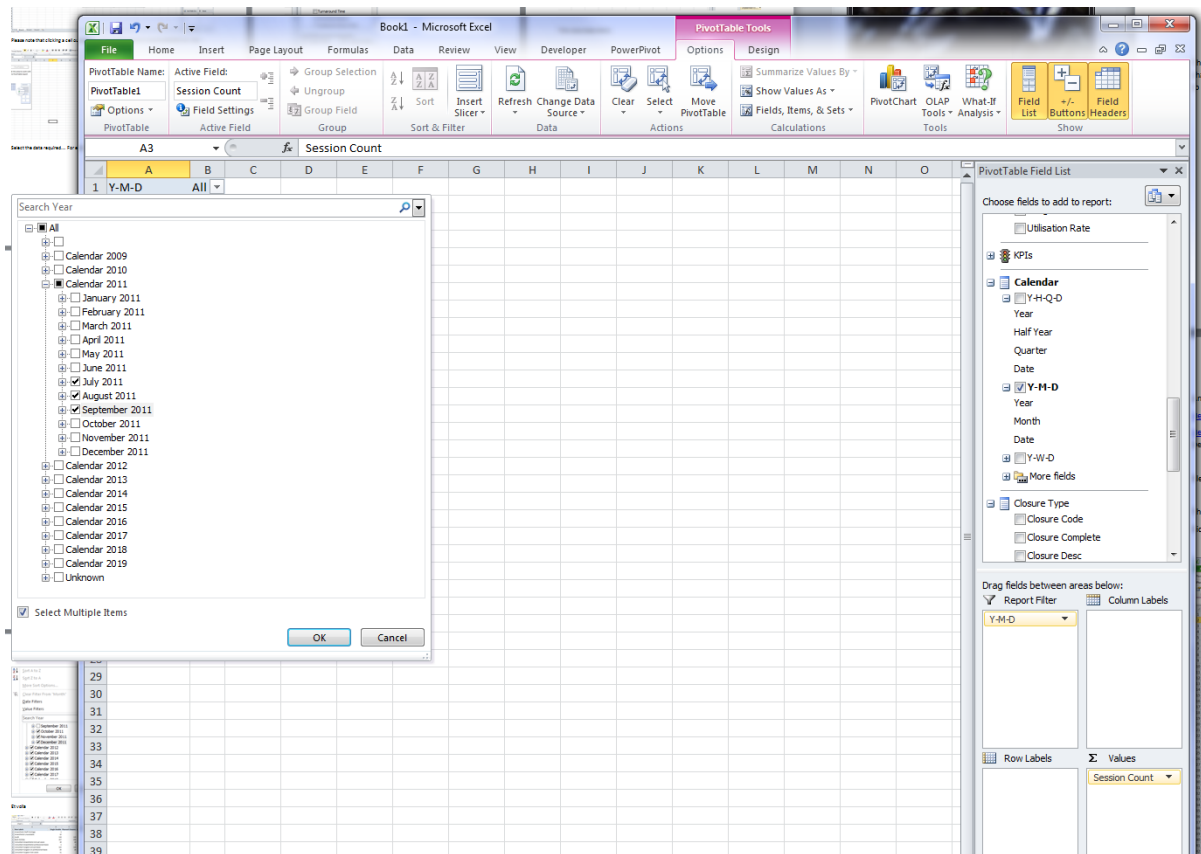


You've just done a Report Filter multi-select, picking out the three months.

Of course, you don't have to pick the *same* three months.  It depends on what you are interested in.

Don't forget to click OK at the end!  The screen should now look something like the image below. Note the filter icons in the PivotTable Field List.

Now, drag Y-M-D into the Column Labels section.



It has disappeared from A1 and B1, and re-appeared as a *filtered (*note the icon in B3) set of column labels.  Open up the labels by pressing the + in B4.



If you look on page 7 under *Browsing the Data Warehouse*, you will see a value of 456 for July's Session Count.  It's the same 456 as in B6.  That's because it is the same data.  **Not** a copy of that data.  This is reading the data warehouse directly, just like the Cube Browser.

It's the real thing.

Now, drag Closure Group and then Closure Desc from under Closure Type to Row Labels.  Your screen should look like this:
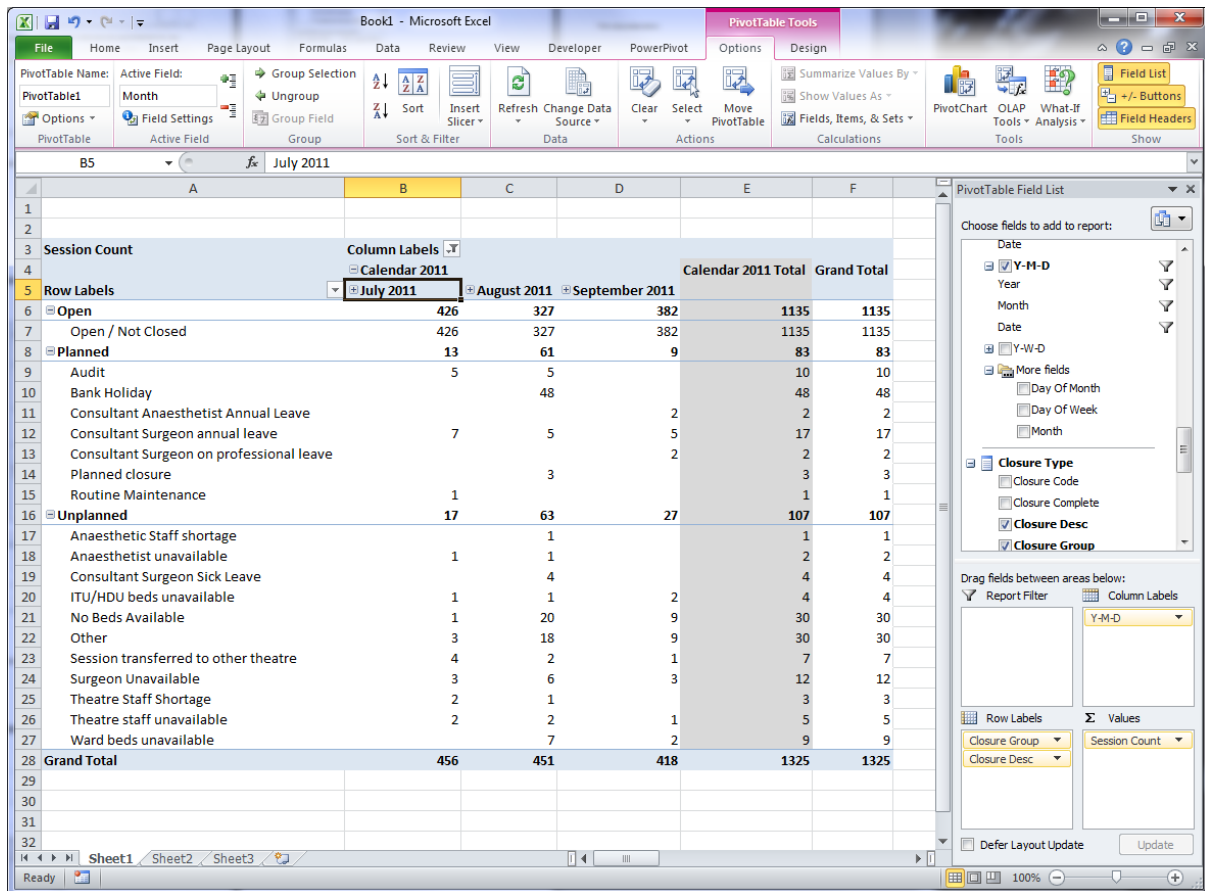


Almost there.

We are now going to change the Row Labels to add a multi-select filter.  We're going to lose the Open Sessions.

Note that B3 has a down a down arrow plus a filter icon.

Note that A5 has just a down arrow.

Click on the down arrow in A5, where it says Row Labels.  You get a selection pop-up and the first thing It says is Select Field.  Click on it, and you will see that it offers the options of with Closure Group or Closure Desc.  Leave it at Closure Group.

In the lower section, remove the tick from the box next to Open..

Click OK, and you screen should look like this:

| Session Count | Column Labels | | | | |
|---|---|---|---|---|---|
| | Calendar 2011 | | | Calendar 2011 Total | Grand Total |
| Row Labels | July 2011 | August 2011 | September 2011 | | |
| Planned | 13 | 61 | 9 | 83 | 83 |
| Audit | 5 | 5 | | 10 | 10 |
| Bank Holiday | | 48 | | 48 | 48 |
| Consultant Anaesthetist Annual Leave | | | 2 | 2 | 2 |
| Consultant Surgeon annual leave | 7 | 5 | 5 | 17 | 17 |
| Consultant Surgeon on professional leave | | | 2 | 2 | 2 |
| Planned closure | | 3 | | 3 | 3 |
| Routine Maintenance | 1 | | | 1 | 1 |
| Unplanned | 17 | 63 | 27 | 107 | 107 |
| Anaesthetic Staff shortage | | 1 | | 1 | 1 |
| Anaesthetist unavailable | 1 | 1 | | 2 | 2 |
| Consultant Surgeon Sick Leave | | 4 | | 4 | 4 |
| ITU/HDU beds unavailable | 1 | 1 | 2 | 4 | 4 |
| No Beds Available | 1 | 20 | 9 | 30 | 30 |
| Other | 3 | 18 | 9 | 30 | 30 |
| Session transferred to other theatre | 4 | 2 | 1 | 7 | 7 |
| Surgeon Unavailable | 3 | 6 | 3 | 12 | 12 |
| Theatre Staff Shortage | 2 | 1 | | 3 | 3 |
| Theatre staff unavailable | 2 | 2 | 1 | 5 | 5 |
| Ward beds unavailable | | 7 | 2 | 9 | 9 |
| Grand Total | 30 | 124 | 36 | 190 | 190 |

And there it is.

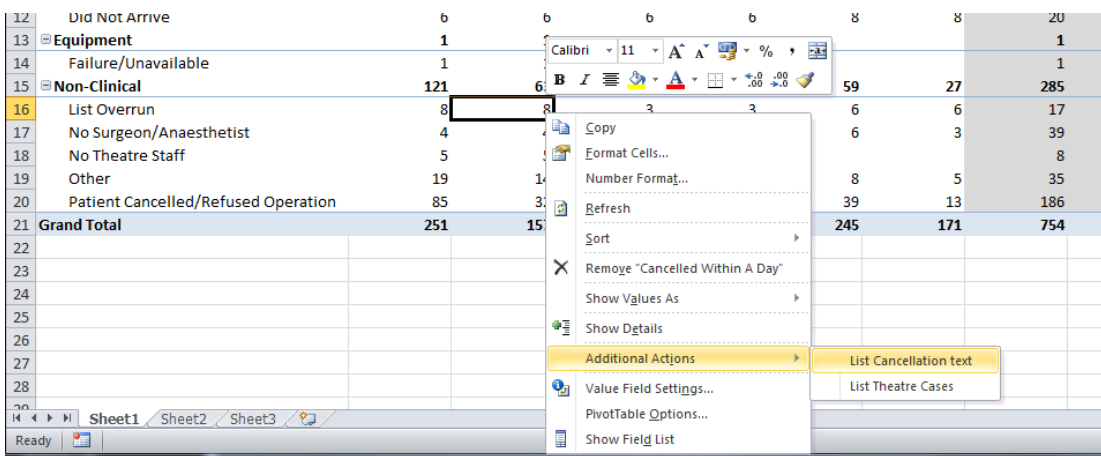A few cosmetic changes and it's just like it appeared in the Cube Browser that's built into SQL Server.

| Session Count | | | | Quarter Total |
|---|---|---|---|---|
| | July 2011 | August 2011 | September 2011 | |
| Planned | 13 | 61 | 9 | 83 |
| Audit | 5 | 5 | | 10 |
| Bank Holiday | | 48 | | 48 |
| Consultant Anaesthetist Annual Leave | | | 2 | 2 |
| Consultant Surgeon annual leave | 7 | 5 | 5 | 17 |
| Consultant Surgeon on professional leave | | | 2 | 2 |
| Planned closure | | 3 | | 3 |
| Routine Maintenance | 1 | | | 1 |
| Unplanned | 17 | 63 | 27 | 107 |
| Anaesthetic Staff shortage | | 1 | | 1 |
| Anaesthetist unavailable | 1 | 1 | | 2 |
| Consultant Surgeon Sick Leave | | 4 | | 4 |
| ITU/HDU beds unavailable | 1 | 1 | 2 | 4 |
| No Beds Available | 1 | 20 | 9 | 30 |
| Other | 3 | 18 | 9 | 30 |
| Session transferred to other theatre | 4 | 2 | 1 | 7 |
| Surgeon Unavailable | 3 | 6 | 3 | 12 |
| Theatre Staff Shortage | 2 | 1 | | 3 |
| Theatre staff unavailable | 2 | 2 | 1 | 5 |
| Ward beds unavailable | | 7 | 2 | 9 |
| Grand Total | 30 | 124 | 36 | 190 |

Here is Theatre Case Cancellations:

| Row Labels | Calendar 2011 | | | | | | Calendar 2011 Case Count | Calendar 2011 Cancelled |
| | July 2011 | | August 2011 | | September 2011 | | | |
| | Case Count | Cancelled Within A Day | Case Count | Cancelled Within A Day | Case Count | Cancelled Within A Day | | |
|---|---|---|---|---|---|---|---|---|
| **Bed Shortage** | **8** | **8** | **94** | **94** | **73** | **73** | **175** | **175** |
| ICU/HDU Bed Shortage | 3 | 3 | 8 | 8 | 5 | 5 | 16 | 16 |
| Ward Bed Shortage | 5 | 5 | 86 | 86 | 68 | 68 | 159 | 159 |
| **Clinical** | **115** | **79** | **53** | **39** | **105** | **63** | **273** | **181** |
| Operation not Required | 85 | 52 | 28 | 20 | 75 | 37 | 188 | 109 |
| Patient Unfit | 30 | 27 | 25 | 19 | 30 | 26 | 85 | 72 |
| **D.N.A.** | **6** | **6** | **6** | **6** | **8** | **8** | **20** | **20** |
| Did Not Arrive | 6 | 6 | 6 | 6 | 8 | 8 | 20 | 20 |
| **Equipment** | **1** | **1** | | | | | **1** | **1** |
| Failure/Unavailable | 1 | 1 | | | | | 1 | 1 |
| **Non-Clinical** | **121** | **63** | **105** | **58** | **59** | **27** | **285** | **148** |
| List Overrun | 8 | 8 | 3 | 3 | 6 | 6 | 17 | 17 |
| No Surgeon/Anaesthetist | 4 | 4 | 29 | 21 | 6 | 3 | 39 | 28 |
| No Theatre Staff | 5 | 5 | 3 | 3 | | | 8 | 8 |
| Other | 19 | 14 | 8 | 7 | 8 | 5 | 35 | 26 |
| Patient Cancelled/Refused Operation | 85 | 32 | 62 | 24 | 39 | 13 | 186 | 69 |
| **Grand Total** | **251** | **157** | **258** | **197** | **245** | **171** | **754** | **525** |

Again, the numbers are good.

And again, we can click on a specific cell for more detail.  This is called *drillthrough.*



And the raw atomic data:



This demonstrates that everything we could do by interrogating the data warehouse directly using the tools in SQL Server, we can also do using Excel 2010 on the desktop.