Fast-track SSIS

Sample manual - first two chapters

Wise Owl Training

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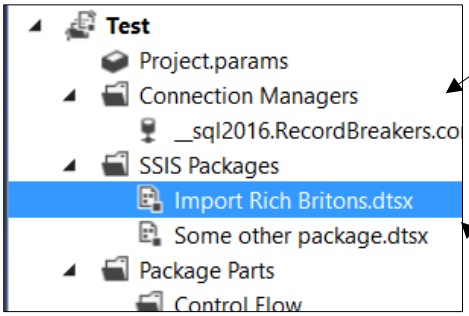
CHAPTER 1 - INTRODUCING SSIS

1.1 Overview of SSIS

SQL Server Integration Services (*SSIS*) is a program which allows you to build packages to Extract, Transform and Load data (it's often called an ETL application for this reason).

SSIS Packages and Solution Explorer

A package in SSIS is a file with the extension **.dtsx**:



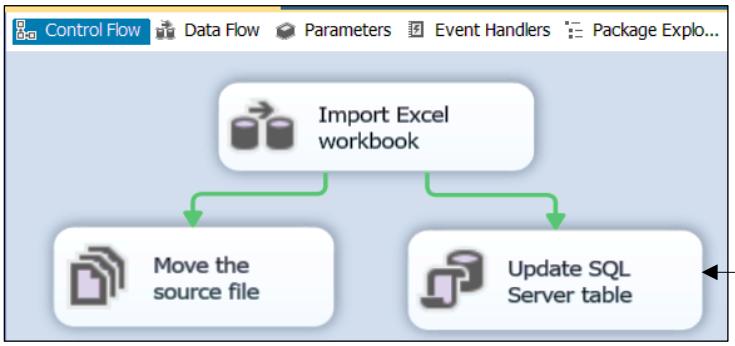
This window is called Solution Explorer (more on this shortly) – it allows you to navigate between the packages that you've created in SSIS.

This is what an SSIS package looks like in Solution Explorer before you open it. The **DTS** stands for **Data Transformation Services**, which is what SSIS used to be called about ten years ago!

A package consists of two main parts: *control flow* and *data flow*, as shown under separate headings below and overleaf.

Control Flow

The *control flow* part of a package consists of a series of instructions you ask SSIS to execute:

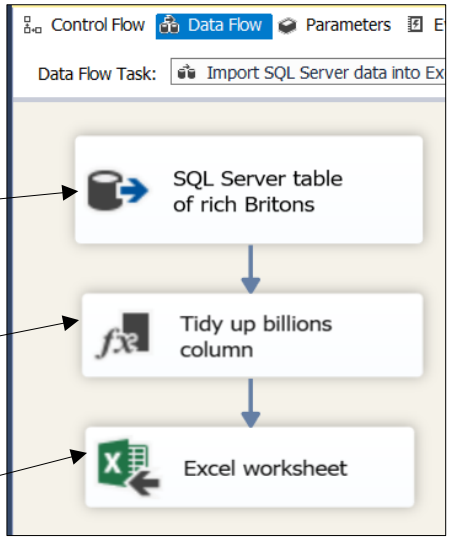


In this example, these are two file system tasks – SSIS will choose which one to run depending on the outcome of the previous task.

When you tell your child to tidy their room, do their homework and then come and help make dinner, this is a series of control flow *tasks (as well as being a tad optimistic).*

Data Flow

You can open any single data flow task to reveal instructions on how to load, transform and store data:

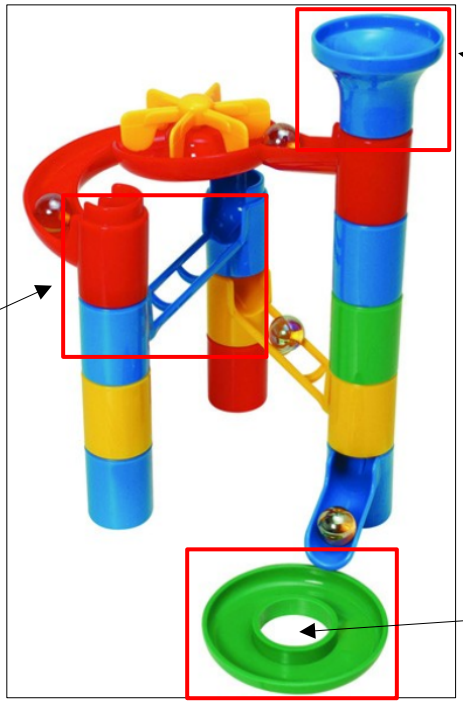


This is a *source* (where the data comes from – in this case a SQL Server table).

This is a *transform* (in this case, it's tidying up a numerical column).

This is a *destination* (where the data ends up – in this case in an Excel workbook).

A good analogy for data flow is a marble run:



a) A marble run can have one or more *sources* (where you put the marbles in).

b) You can have multiple *transforms*, which manipulate the marbles in some way.

c) Finally you can have one or more *destinations* (where the marbles come out the bottom).

At a rough guess, you typically will spend about 70% of your time in Integration Services inside data flow tasks, and 30% in control flow.

CHAPTER 2 - USING VISUAL STUDIO

2.1 Starting Visual Studio

Visual Studio and SQL Server Data Tools

Visual Studio is Microsoft's flagship development application – you can use it to create websites, mobile phone apps, SSIS packages and Windows applications, among other things:

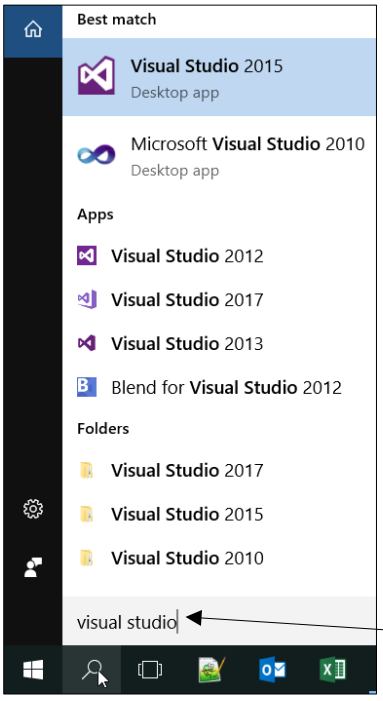
The part of Visual Studio which you use to create BI tools (in SSIS, Reporting Services and Analysis Services) also goes under the name *SQL Server Data Tools*, or *SSDT*.

- *Business Intelligence tools (including SSIS)*
- *ASP.NET (websites)*
- *Windows applications (Visual Basic and C#)*
- *Mobile phone apps (Apple and Android)*

What the above shows is that it doesn't matter whether you run Visual Studio or SQL Server Data Tools – the second is just a subset of the first.

Running Visual Studio

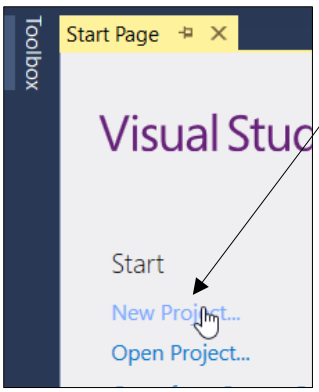
You can start Visual Studio in many ways – one method for Windows 10 is shown here:



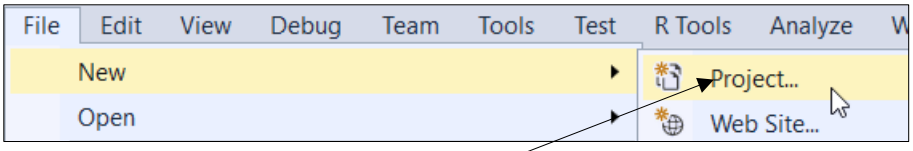
Click on the magnifying glass icon, then type in the program you want to run. This Wise Owl has got four different versions of Visual Studio on his computer! The one used in writing this manual was Visual Studio 2015.

2.2 Creating a Project

You store SSIS packages in a container called a *project*. Here's how to create one:



Either click on this link in the Visual Studio start page (the one which appears when you first load Visual Studio) …

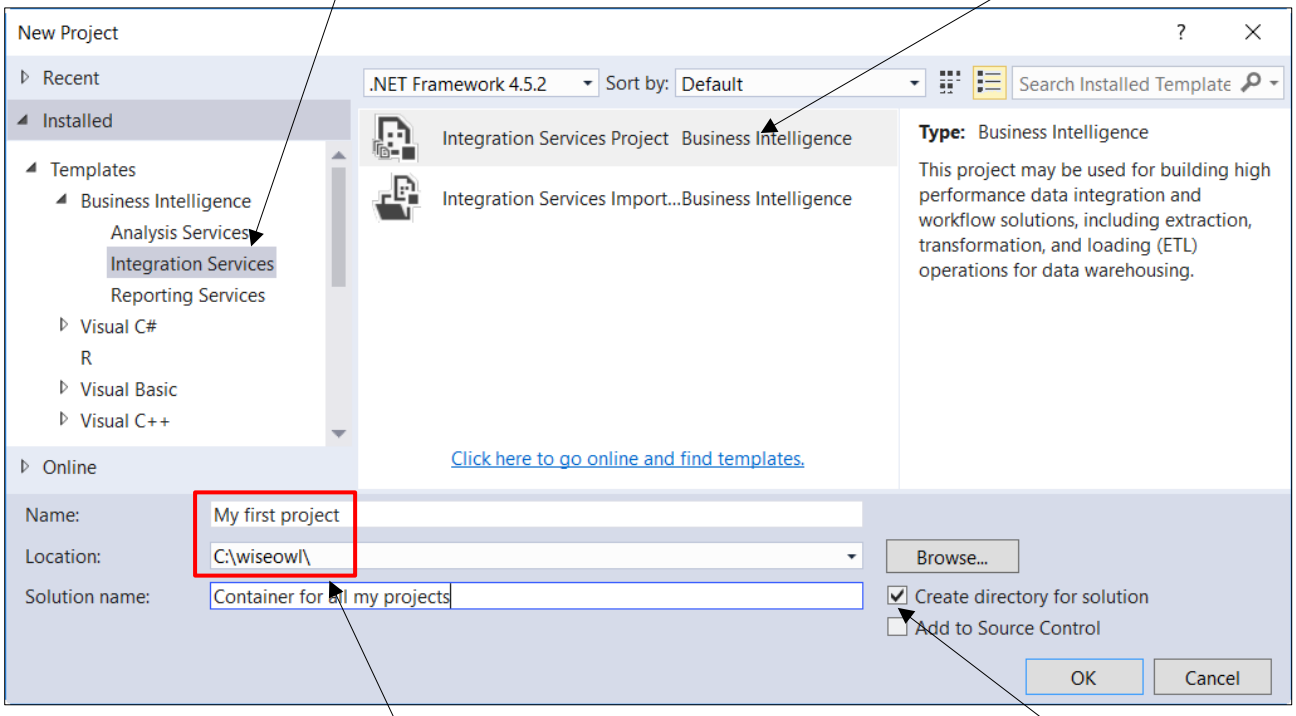


… or from the menu select **File** | **New** | **Project** … as shown above (you can also press Ctrl + Shift + N to do the same thing).

You can now give your project a name, and choose where to put it:

a) Ensure that you're creating **Business Intelligence** project, and choose SSIS rather than SSAS or SSRS.

b) Choose to create a new project (rather than importing an existing one).



c) Give your project a name (here we've used **My first project**), and click on the Browse... button to choose a sensible location for it.

d) Tick this box only if you want to create another folder level.

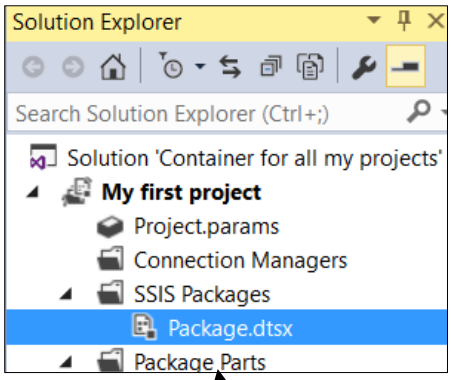
If you choose to create a directory for your solution as above, you'll end up with a long path!

Base location *Folder for solution* *Project folder*

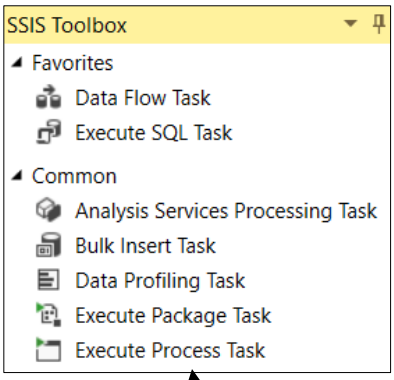
2.3 Visual Studio Windows

The Solution Explorer, Properties and SSIS Toolbox Windows

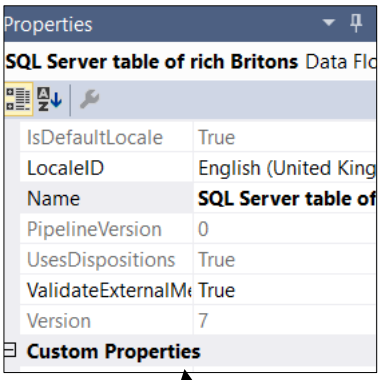
When using SSIS, there are three main windows that you will use:



Use *Solution Explorer* to add, view and edit packages and other files.

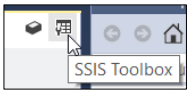


Use the *SSIS Toolbox* to add control or data flow tasks.



Use the *Properties* window to set selected items' behaviour.

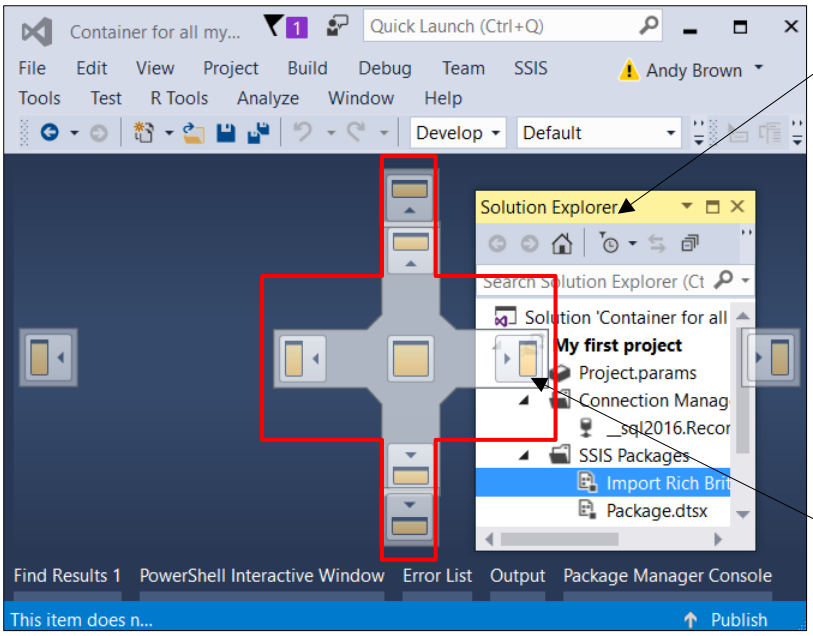
Here's how to display these three windows:

Window	Top menu	Keyboard	Other method
Solution Explorer	**View → Solution Explorer**	Ctrl + Alt + L	
SSIS Toolbox	**SSIS → SSIS Toolbox**		
Properties	**View → Properties Windows**	F4	

To get the SSIS toolbox menu to appear you often have to open a package and click on it first. Don't confuse the (invaluable) SSIS toolbox with the (useless, in this context) standard Visual Studio toolbox.

Floating Windows

You can click and drag on the title bar of any window to reposition it:

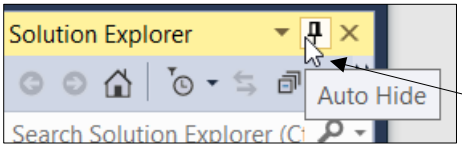


a) Click on the title bar of a window and drag it to move it.

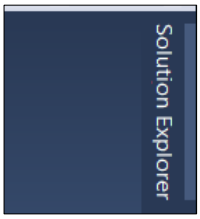
b) When you are on one of these symbols, release the mouse button and the window will be docked against the top, left, right or bottom of its parent window.

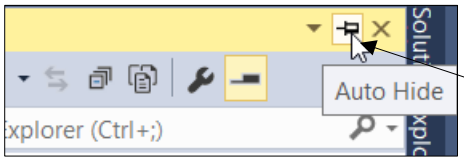
Auto-hiding Windows

You can click on the pin at the top right of any docked window to make it shrink when you're not using it:



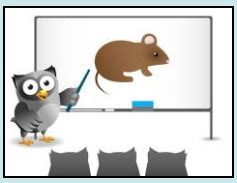
This window will be permanently visible, but if you click on the pin it will become horizontal, and the window will be auto-hidden.





This window will auto-hide itself, but if you click on the pin it will change to vertical and be permanently visible.

WHAT WE DO

		 ONLINE TRAINING	 MANCHESTER OR LONDON	 AT YOUR OFFICE	 BESPOKE CONSULTANCY
OFFICE 365	Microsoft Excel	✓	✓	✓	✓
	VBA macros	✓	✓	✓	✓
	Office Scripts	✓		✓	
	Microsoft Access				✓
POWER PLATFORM	Power BI and DAX	✓	✓	✓	✓
	Power Apps	✓		✓	
	Power Automate	✓	✓	✓	✓
SQL SERVER	Reporting Services	✓	✓	✓	✓
	Report Builder	✓		✓	✓
	Integration Services	✓	✓	✓	✓
	Analysis Services	✓		✓	
CODING LANGUAGES	SQL	✓	✓	✓	✓
	Visual C#	✓	✓	✓	✓
	Python	✓	✓	✓	✓

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