

Business Intelligence in Microsoft SharePoint 2013

Norman P. Warren, Mariano Teixeira Neto, Stacia Misner, Ivan Sanders, and Scott A. Helmers



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Business Intelligence in Microsoft SharePoint 2013

Improve Business Intelligence (BI) in your company with tools in Microsoft SharePoint 2013 and SQL Server 2012—and foster better, faster, more relevant decisions. In this practical book, a team of SharePoint and BI experts show you step-by-step how to apply these Microsoft technologies in specific BI scenarios. It's ideal whether you're a SharePoint administrator, SQL Server developer, or business analyst.

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For Business Intelligence developers, SharePoint administrators, and business analysts.

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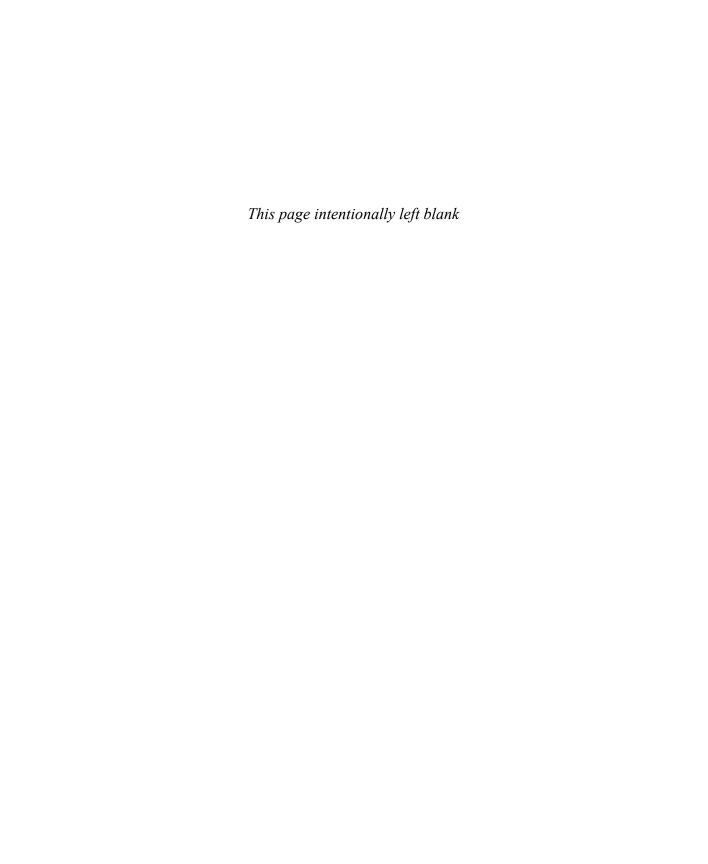
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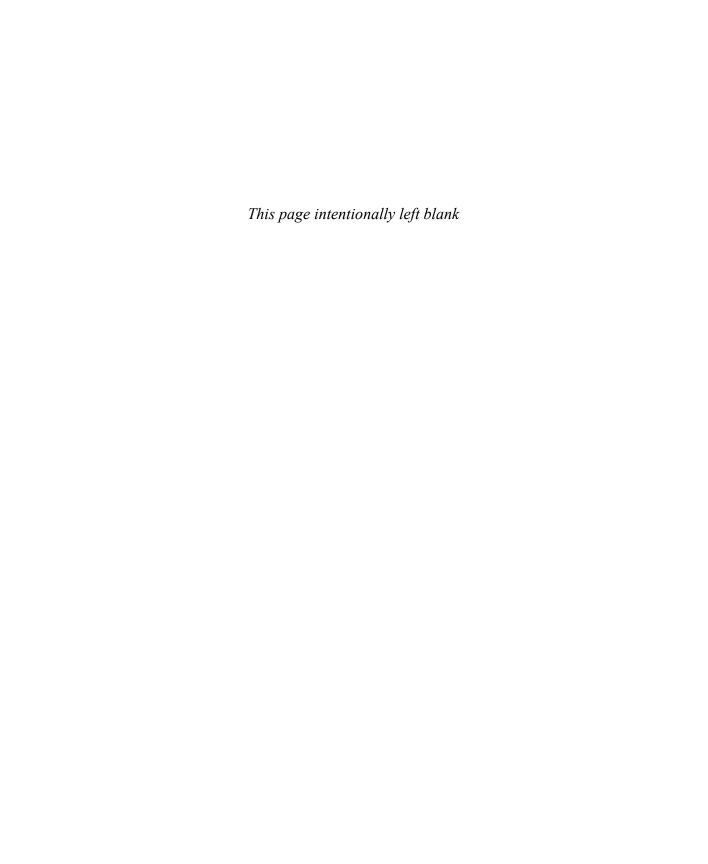
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Introduction

Welcome to *Business Intelligence for Microsoft SharePoint 2013*. Whether you are a SQL Server business intelligence (BI) developer, a SharePoint Administrator, or a data scientist, this book shows you how Microsoft is delivering on its commitment to provide useful and actionable insights by way of BI to its customers. It provides a quick dive into new Microsoft SharePoint 2013 BI features and offerings and complementing new SQL Server 2012 BI features and tools.

This book provides a getting started guide for many of the SharePoint application services dedicated to BI. Additionally, it introduces features for managing SQL Server 2012 Reporting Services Power View reports and Excel 2013 PowerPivot in SharePoint.

The SharePoint Server 2013 application services that provide functionality to the BI stack include the following:

- **Excel Services** A SharePoint Server 2013 service application that you can use to manage, view, interact, and consume Microsoft Excel client workbooks on SharePoint Server.
- **Visio Services** A service with which users can share and view Visio diagrams on a SharePoint website. This service also makes it possible for you refresh and update data-connected Microsoft Visio 2013 diagrams from a variety of data sources.
- **PerformancePoint Services** A performance management service that you can use to monitor and analyze your business. This service provides flexible, easy-to-use tools for building dashboards, scorecards, reports, and key performance indicators (KPIs).

Integrating Microsoft Office 2013, SharePoint Server 2013, and SQL Server 2012 provides the following tools and feature sets, primarily for self-service BI:

- PowerPivot in Excel 2013 and SharePoint 2013 A SharePoint 2013 application service (included in SQL Server 2012) and an extension to Excel that adds support for large-scale data. It includes an in-memory data store as an option for Analysis Services. Multiple data sources can be merged to include corporate databases, worksheets, reports, and data feeds. You can publish Excel documents to SharePoint Server 2013.
- Power View in Excel 2013 and SharePoint 2013 With Power View, the Excel user can easily and quickly turn raw data into beautiful visualizations that reveal patterns and relationships that exist in that data.

SharePoint administrators, business users, and BI developers, as well as other users and consumers of BI, will want to understand each of these client tools and services and how they work together to bring BI to more people through SharePoint.

Who this book is for

In a sense, this book is written to the data scientist. What is a data scientist? A valid description would be someone who has 25 percent business knowledge, 25 percent analytics expertise, 25 percent technological capabilities, and 25 percent visualization experience. The following table describes the breakdown of skills.

Part of a data scientist	Skills taught in this book
25 percent business knowledge	We explain the reasons for business intelligence (Chapter 1) and when and where you would use each tool (Chapter 2). We also explain where "big data" fits (Appendix B).
25 percent analytics experience	We show you the new analytic and reporting features in Excel 2013 (PowerPivot and Power View), PerformancePoint, and Visio. We provide steps on how to use them with a data warehouse database.
25 percent technological capabilities	We explain how to connect to the data, model it, and automate a data refresh (Chapter 3). We also give you the resources to install the complete stack (Office 2013 + SQL Server 2012 + SharePoint 2013) for making all the tools come together (Appendix A).
25 percent visualization	All the tools have visualization features. In particular, Power View in Excel 2013 (Chapter 5) shows how to very quickly create visualizations from the data that is pulled into PowerPivot in Excel 2013.

Although anyone interested in using advanced tools to gather and present BI can benefit from this book, it should also prove especially valuable to the SharePoint administrators, business users, and BI developers.

SharePoint administrator/developer

Just as a SQL BI developer peeks into SharePoint 2013 products, we want SharePoint administrators to peek into the tasks involved in developing BI solutions and getting to trusted data. A SharePoint administrator must be aware that you typically can't just "turn on" BI in SharePoint or in SQL Server; rather, you must set up some processes or use existing, trusted data. A SharePoint administrator should also be aware of the newest BI features and tools as well as existing technologies, and have some idea of how to set them up. In this book, we give SharePoint administrators an overview of the latest available BI tools and how they work with SharePoint 2013. This book strives to give SharePoint administrators an understanding of the work and expertise required for an extensive range of possible BI implementations.

Your advantage is that Microsoft is delivering on its promise to simplify the integration of self-service BI tools. Your other advantage is that as a SharePoint expert, you already know how to construct the self-service concept.

Business user and data scientist

In this book, the term "business user" describes people who are eager to understand the technologies that can help them, their teams, and their company or organization to measure, explore data, analyze, forecast, and report on the most important aspects of their business by using the company's business data.

A business user might also be a technical decision-maker, deciding which products work best for the individual, team, or organization. By understanding how technology and business needs meet through reporting, measuring, analyzing, and more, we hope that business users will see a return on investment through increased accountability and better alignment with organizational goals.

Using SharePoint 2013 and other stand-alone tools, business users can benefit from learning about the end-to-end process for surfacing and presenting insights to decision-makers. Business users know that trusted insights can change behavior and decisions, which can ultimately help to lead a company in the right direction.

Business users who can benefit from the integrated BI tools offered by Microsoft Office, Share-Point, and SQL Server include the following:

- Data scientists
- Business analysts
- Business decision-makers
- Knowledge workers
- Line workers
- ...and more

Note that the data scientist is a new role that is being deployed in companies. As you will find, this book does not specifically target one group because we are aware that in many situations IT professionals and business users wear more than one hat.

Each of the preceding roles has its own unique accountabilities. For each role, we provide simple examples showing how to create BI end results such as the following:

- Reports
- A dashboard in PerformancePoint Services
- KPIs that can be presented by using various tools
- PivotTables in Excel

End users might also want to know how to do some tricks in SharePoint, such as how to add a rating system in a SharePoint list, view a blog post, implementing collaborative decision-making in SharePoint 2013, or rating BI assets.

BI developer

Put simply, the BI developer's task is to establish trusted data sources (tabular data and Online Analytical Processing [OLAP] cubes) in SQL Server for the various services (Excel, Visio, PerformancePoint) and for PowerPivot and SQL Server Reporting Services. Broadly, BI developers can also help with report design, training, and back-end maintenance such as deploying models and automating a data refresh. All of these things are covered in this book. BI developers also help to create connections to the trusted data sources and help ensure that the data is the right data.

Organizational BI begins by establishing a single source for trusted data. If users cannot trust the data that's in front of them to make decisions, they won't trust the tools that deliver the data. They will abandon those tools to seek some other way to get the right data, which likely means abandoning their considerable investment in those tools, in both time and money, to invest in new ones.

Data can come from a variety of sources, and in many cases, companies have spent lots of money and time to establish a repeatable Extract, Transform, and Load (ETL) process. This requires a BI developer who knows something about data warehouses (SQL Server), integrating data from various sources by using SQL Server Integration Services, and developing Transact-SQL (T-SQL) procedures. If a company decides that creating OLAP cubes is worth the effort, it will also hire (or train) SQL Server Analysis Services experts to do the job. Microsoft has provided the tools to tie all this data together, and this book can help you use them to get the best value from your data management tools.

Using the information in this book, BI developers can help decide which tools to use to surface the data. They can also communicate closely with the SharePoint Administrator for cases in which trusted data must be shared.

In this book, the authors provide a longer discussion about the new SQL Server 2012 Business Intelligence Semantic Model (BISM) model, and a shorter discussion of SQL Server Analysis Services OLAP cubes, because OLAP cubes are the ideal data sources for organizational BI using Performance-Point Services, for data sources used by the other services (such as Excel Services, Visio Services, and others). The BISM model applies more to "personal BI" using PowerPivot in Excel and SharePoint and Power View in Excel and SharePoint.

How this book is organized

This book gives you a comprehensive look at the various features that you will use. It is structured in a logical approach to all aspects of using BI tools that integrate with SharePoint 2013.

Chapter 1, "Business intelligence in SharePoint 2013," introduces BI for SharePoint 2013. BI is a difficult concept to pin down precisely, because it covers a wide range of products and technologies and thus means slightly different things to different people. This chapter discusses exactly what the authors mean by the term "business intelligence," the Microsoft approach to BI, and how SharePoint fits into the picture.

Chapter 2, "Planning for business intelligence adoption," provides instruction on which tool to use. People often ask which tools they should use when trying to select among a variety of Microsoft offerings. They're often confused and need information as to why they might want SQL Server Reporting Services in SharePoint over PerformancePoint Services, or why they might use the Excel 2013 PowerPivot Add-in instead of Excel or Excel Services. After all, each product connects to a database and surfaces data from an OLAP cube.

The difficulties of making such decisions are compounded because different teams and companies are at different stages in their ability to surface data to business users for optimal decision making. Overall, this chapter prepares you for adoption of the right tools for the right job by answering questions about which tools to use, clarifying the purposes and capabilities of the various products, and helping you choose which ones are most appropriate for your situation.

Chapter 3, "The lifecycle of a business intelligence implementation," discusses the process and approach to formalizing a self-service scenario, as described in Chapters 4 and 5, to importing a PowerPivot model into Visual Studio and deploying to SQL Server 2012 Analysis Services.

Chapter 4, "Using PowerPivot in Excel 2013," introduces PowerPivot in Excel 2013. The PowerPivot and Data Model experience is designed to feel as seamless as possible to an Excel user. Because PowerPivot and the Data Model use the xVelocity engine, it extends Excel so that you can work with millions of rows. Moreover, operations—even with huge volumes of data—are fast! Aggregations that might have taken a day to calculate in SQL Server Analysis Services take only seconds in PowerPivot. In this chapter, you'll see how to mash-up data from different sources, share that data securely via SharePoint, create Data Analysis Expressions (DAX) queries, and more.

Chapter 5, "Using Power View in Excel 2013," introduces another enhancement to Excel: Power View. Using Power View, the Excel user can easily and quickly turn raw data into beautiful visualizations that reveal patterns and relationships existing in that data. These visualizations can use data imported into an Excel workbook's Data Model or the more advanced PowerPivot model. This chapter shows you how to add Power View sheets to a workbook, work with each type of visualization supported in Power View, and use interactive features such as drilling, animated scatter charts, highlighting, and filtering.

Chapter 6, "Using Excel Services in SharePoint 2013," provides instruction for sharing your Excel file in SharePoint 2013. Most BI begins in Excel, which can be considered the most pervasive BI tool that exists. But, sharing Excel files has always been a huge challenge. Excel Services not only provides the ability to share Excel-based content safely and securely, it also adds powerful management capabilities. Such features as the PivotTable and PivotChart in Excel improve the look and feel of how data is presented. Among several hands-on examples, you'll see how to create a PivotTable and slicers to provide slice-and-dice capability on the screen for analysis, and how to add your PivotTable to a simple dashboard webpage so that you can share it.

Chapter 7, "Using PowerPivot in SharePoint 2013," introduces you to PowerPivot for SharePoint and its functionalities that take Excel Services to the next step. This chapter demonstrates how to publish a PowerPivot workbook to SharePoint and how to schedule data refreshes, how to use workbooks as data sources for other applications, and it explains how IT professionals can manage PowerPivot for SharePoint by using the PowerPivot Management Dashboard.

Chapter 8, "Using PerformancePoint Services," shows the exciting solutions that PerformancePoint Services offers in its ability to show a dashboard that reflects KPIs, such as the available disk space of managed servers. This chapter explains how to create a dashboard with scorecards, KPIs, reports, and connections to data sources.

Chapter 9, "Using Visio and Visio Services," demonstrates the business intelligence value that Visio offers. You've probably used Visio to create flowcharts, or perhaps network diagrams, or maybe an org chart or a floor plan. But, should Visio be an integral part of your BI solutions? The goal of this chapter is to provide a "yes" answer to that question by demonstrating the BI value that Visio offers, both by itself and when integrated with the products described in other chapters in this book. You will see examples that employ colorful, data-rich diagrams that you can view with a web browser and that update automatically when the underlying data changes.

Chapter 10, "Bringing it all together," helps you capitalize on the concepts and products discussed in all the preceding chapters by walking through the steps to create a dashboard that shows data from various sources, such as Excel Web Access Web Parts.

Appendix A, "Installing and configuring scripts to run a demo environment," provides system requirements for your demo environment; detailed setup and configuration instructions, including downloadable scripts; and helpful screen captures so that you can get up and running quickly to work through the book's exercises. We also provide instructions for configuring SQL Server 2012, Share-Point Server 2013, and Office Professional 2013, along with links to relevant sites.



Note Trial versions of SQL Server 2012, SharePoint Server 2013, and Office Professional 2013 are available for evaluation from Microsoft. For information, please visit http://technet.microsoft.com/en-us/evalcenter/.

Appendix B, "Microsoft and 'Big Data'", introduces you to "Big Data" and the role SharePoint 2013 plays and will play in getting value from Big Data investments. We provide instruction for how Microsoft HDInsight integrates with Hadoop to query and visualize data. You will learn how the tools described in this book are relevant to getting value from disparate data sources and (un)structured data.

What's not covered in this book

Even though this book covers a wide range of products, it doesn't cover everything. We chose to concentrate instead on those technologies that we believe make up the core Microsoft BI tools. Three of the following BI tools are a part of SharePoint Server 2013, and one of them Reporting Services, is part of the SQL Server 2012 platform, offering strong reporting and report management features in SharePoint.

This brief section explains which technologies we chose not to discuss, but if these technologies also suit your needs, you might consider how you can implement them.

Access Services

Microsoft Access is a relational database management system. Software developers and data architects can use Access to develop application software, and "power users" can use it to build individual and workgroup-level applications.

Access Services is a service application with which you can host Access databases within SharePoint Server 2013. Through Access Services, users can edit, update, and create linked Access 2013 databases, which are then both viewed and manipulated by using either a web browser or the Access client. In other words, Access Services extends "access" to Access so that even users who don't have the Access client installed on their desktop can perform operations with the Access application through Access Services.

An Access web app is a new type of database that you build in Access and then use and share with others as a SharePoint app in a web browser. After you create the Access App, you can import data from Access desktop databases, Excel files, Open Database Connectivity (ODBC) data sources, text files, and SharePoint lists. Because all data is now stored in SQL Server, you can use a tool of your preference to create reports. You are able to connect to the SQL database by using ODBC and can take advantage of existing skillsets you might have—for example, Excel, and Power View.

There is a self-service element to Access that lets users incorporate rapid application development (RAD) principles to more quickly create data-driven websites without coding in Microsoft ASP.NET. This is attractive to smaller companies that have fewer IT resources—sometimes only one or two IT workers. Access and Access Services also become attractive to larger companies when projects are prioritized into already-full IT development schedules, or when users want to provide a very quick proof-of-concept data-driven website.

SQL Server 2012 Reporting Services in SharePoint

SQL Server 2012 Reporting Services (SSRS) with SharePoint integration has several new features, including support for Power View, SharePoint mode for support of SharePoint 2013, a new version of Reporting Services Add-in for SharePoint 2010 and 2013, and the ability to interact with reports in Apple Safari on iOS devices. Although we include a chapter about Power View in Excel 2013, we don't discuss thoroughly Power View in SharePoint nor do we discuss SSRS Report Builder.

SSRS Report Builder is a report-authoring tool with which you can create ad hoc reports quickly. The tool helps report creation, collaboration, and consistency by enabling business users to create and share report components that can be accessed via a shared component library.

We didn't quite omit this topic entirely; Chapter 3 includes a somewhat longer summary of what SQL Server Reporting Services is.

Business Connectivity Services

Microsoft Business Connectivity Services (BCS) provides read/write access to external data from Line-of-Business (LoB) systems (such as Microsoft Dynamics, Oracle, or Siebel), web services, databases, and other external systems from within Microsoft SharePoint 2013. SharePoint 2013 has product features that can use external data directly, both online and offline. BCS enables tools such as Microsoft Visual Studio 2013 and Microsoft SharePoint Designer 2013 to help make connections to the external data. Improvements to SharePoint 2013 include Open Data Protocol (OData) support and support for self-contained apps for SharePoint—developers can package Business Data Connectivity (BDC) models in an app for SharePoint.



Note OData is an industry-standard web protocol that is used to access data from external systems.

Duet Enterprise

You might have asked, "How is Duet Enterprise different from BCS if it connects to Enterprise Resource Planning data?" Duet Enterprise is an application built on the SharePoint 2013 platform, and it uses BCS in conjunction with SAP data. Duet Enterprise was developed jointly by two companies: SAP and Microsoft. SAP is a German software company known primarily for its SAP Enterprise Resource Planning and SAP Business Objects products. Duet Enterprise enables all employees to consume and extend SAP applications and data through SharePoint 2013 and Office 2013. Duet Enterprise combines the collaboration and productivity supported by SharePoint and Office with the business data and processing functionality of SAP applications.

For SAP users, Duet reduces the learning curve and provides wider access to enterprise information and policies, resulting in greater user adoption. As a result, organizations can increase corporate policy compliance, improve decision-making, and save time and money. We mention the product here because there are a lot of SAP customers and a lot of SAP data; making that data available to many users was previously difficult or impossible.

Duet's plan is to continue developing interoperability between SAP and SharePoint in areas such as system management, single sign-on, and more. By blending the worlds of process and collaboration, end-to-end solutions will form as tools and feature extensions become available.



More Info To learn more, go to http://www54.sap.com/solutions/tech/collaboration-content-management/software/duet-enterprise/index.html.

Web analytics

Web Analytics in SharePoint Server 2010 has been discontinued and is not available in Share-Point 2013. Analytics processing for SharePoint 2013 is now a component of the Search service.

The reason for the change is this: a new analytics system was required for SharePoint 2013 that included improvements in scalability and performance, and that had an infrastructure that encompasses SharePoint Online. The Analytics Processing Component in SharePoint 2013 runs analytics jobs to analyze content in the search index and user actions that are performed on SharePoint sites.

SharePoint 2013 still logs every click in SharePoint sites and still provides a count of hits for every document. User data is made anonymous early in the logging process and the Analytics Processing Component is scalable to the service.

This analytics data is used in SharePoint 2013 to provide new item-to-item recommendation features; to show view counts that are embedded in SharePoint 2013 and Search Server user interface; to provide a report of the top items in a site and list; and to influence the relevancy algorithm of search.

Even though Social features and Search in SharePoint 2013 are not BI tools, you should consider how to use them to help make BI reports, data dictionaries, and other BI assets more discoverable. More sharing and conversations around BI assets will help you to take advantage of collective and interactive discoveries from insights.

Conventions used in this book

This book presents information by using conventions designed to make the information readable and easy to follow.

- Each exercise consists of a series of tasks, presented as numbered steps, listing each action you must take to complete the exercise.
- Boxed elements with labels such as "Note" provide additional information or alternative methods for completing a step successfully.

Companion content

Chapters in this book include exercises by which you can interactively try out new material learned in the main text. Sample projects are in their post-exercise formats and can be downloaded from the following page:

http://aka.ms/BI_SP2013/files

Follow the instructions to download the file. The following chapters include content that you can use:

Chapter	Description of content
Chapter 3	Solution files for AdventureWorks model in SQL Server Data Tools
Chapter 4	Completed Excel 2013 file with a PowerPivot model
Chapter 5	Completed Excel 2013 file with a Power View report
Appendix A	Scripts and sample databases (see note)



Note Trial versions of SQL Server 2012, SharePoint Server 2013, and Office Professional 2013 are available for evaluation from Microsoft at http://technet.microsoft.com/en-us/evalcenter/.

System Requirements

Appendix A provides Windows PowerShell scripts and instructions to install and configure trial versions of SQL Server 2012 SP1, SharePoint 2013, Office 2013, and sample code. The software and configuration described are necessary to complete the practice exercises in this book. Additionally, you will need the following hardware to complete the practice exercises in this book:

- A 64-bit computer, 4 cores for small deployments (fewer than 1,000 users)
- 16 GB of RAM for medium deployments (between 1,000 to 10,000 users)
- 80 GB of available hard disk space
- Internet connection to download software or chapter examples

Depending on your Windows configuration, you might require Local Administrator rights to install or configure.

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The Authors May, 2013

Support and feedback

The following sections provide information on errata, book support, feedback, and contact information.

Errata

We've made every effort to ensure the accuracy of this book and its companion content. Any errors that have been reported since this book was published are listed on our Microsoft Press site:

http://aka.ms/BI_SP2013/errata

If you find an error that is not already listed, you can report it to us through the same page.

If you need additional support, email Microsoft Press Book Support at

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Please note that product support for Microsoft software is not offered through the addresses above.

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Business intelligence in SharePoint

This chapter introduces the definition of business intelligence (BI) and explains why it is important to you, your team, and your organization. It also discusses the platforms and tools used to deliver pervasive BI for a wide variety of users. At the end of the chapter, we provide a peek at what you can do with BI in SharePoint.

This book is a collaborative effort to show how Microsoft and Microsoft SharePoint BI offerings can help businesses and technical personnel solve common business problems.

Bl in SharePoint is less about a specific technology or product tailored to the needs of a small percentage of users, and more about a "buffet" of offerings that can aid customers who are trying to solve a specific problem. One common customer complaint is that much of the published documentation and content is too product-specific, which makes it difficult to get the big picture. Providing that big picture while also providing quick how-to instructions for getting started is one rationale for this book.

Even more important, customers need to know which Microsoft offerings they should choose from the buffet to address which problem. Perhaps one day, the handful of tools that offer a method for creating key performance indicators (KPIs) will merge into a single product, but for now, customers are confused and need guidance as to when they should use Microsoft SQL Server Reporting Services in SharePoint 2013 rather than PerformancePoint Services, or why they would use PowerPivot for Excel 2013 instead of Microsoft Excel or Excel Services. Chapter 2, "Planning for business intelligence adoption," offers this guidance, looking at the tools from several angles, including a BI maturity model.

Leading up to BI

So, exactly what does "business intelligence" mean? We could provide a simple, tool-centric definition, but we have decided to give you the context that can help you make the most sense of what BI is, why it's important, and what forces are propelling its integration into nearly all aspects of companies.

It's fitting to introduce BI with an observation made by Steven R. Covey in his book *The Seven Habits of Highly Effective People* (2004, Free Press). He observed that an airplane that travels from Boston to Los Angeles is off-course for 90 percent of the journey, but the airplane successfully reaches its destination because the pilot makes continuous course corrections based on instruments that monitor the flight and provide feedback.

1

Much like an airplane, if a company is not steered, it will likely be off course most of the time. Figure 1-1 shows an example of the analogy. Most companies have a goal or destination, sometimes called a vision, and to reach that destination, they rely on business insights. These insights are provided by instruments or measurement tools that help monitor and analyze past, current, and projected future performance. They give managers the information that they need to make changes, or "course corrections." Insights come in the form of reports, scorecards, KPIs, dashboards, and other information vehicles, supported by a concept called "trusted data."

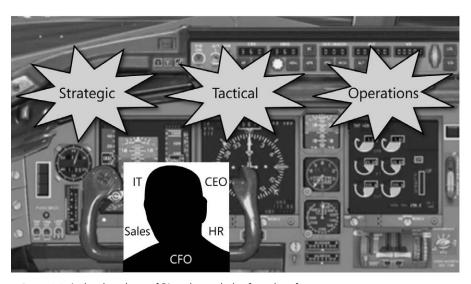


FIGURE 1-1 A visual analogy of BI as the cockpit of an aircraft.

Tools such as these as well as others can help a company see the relationships between their business and its highest priorities and strategies. Decision-makers want the visual experience that dashboards offer so that they can determine at a glance whether they're driving their company toward its destination.

Fortunately, airplanes are predictably more successful at reaching their destinations than companies are in successfully reaching their goals. Is this success due to the science and precision of the measurement tools used in the aviation industry?

Over the years, weather conditions, patterns, and other variables that affect flight and direction—originally considered immeasurable—have become increasingly more measurable and accurate. New instruments were developed and produced to give pilots precise location coordinates.

Now, the same is occurring for businesses. In his book *How to Measure Anything: Finding the Value of "Intangibles" in Business* (2010, Wiley), Douglas W. Hubbard lists a few real-life examples of variables that companies previously chose not to measure because they were presumed to be immeasurable, including the following:

- The flexibility to create new products
- Management effectiveness
- Productivity of research
- Risk of bankruptcy
- Quality

Accounting professionals and academics, including Robert S. Kaplan, Baker Foundation Professor at Harvard Business School, have developed methodologies for measuring many elements in business that were previously thought of as immeasurable in the performance of companies. Kaplan and David Norton proposed the concept of a Balanced Scorecard (BSC) as a means of measuring the performance of a business strategy. The BSC encapsulates the following four main areas that capture performance metrics:

- Financial Measures of profitability and market value to satisfy owners and shareholders
- Internal business processes Measures of efficiency and effectiveness for producing a product or service
- **Customer satisfaction** Measures of perceived quality, low cost, and other related factors to show how well a company satisfies its customers
- Innovation and learning Measures of a company's ability to develop and utilize human resources to meet strategic goals in the present and future

These areas can be referred to as Finance, Operations, Sales, and Human Resources. Or, to condense even further, you can refer to them simply as *FOSH metrics*.

Additional perspectives can include community and social impact, government relations, and others. These measures of success are sometimes called critical success factors. The BSC and other methodologies, such as Six Sigma,¹ help companies to follow the pattern shown in Figure 1-2.

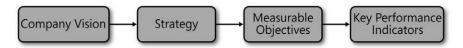


FIGURE 1-2 From company vision to key performance indicators.

A company vision statement or mission statement is important for getting a company to focus on what makes it successful. There is an old saying, "You must stand up for something, or you will fall for everything." The vision statement helps a company filter which voices it will listen to, because the vision defines its purpose and reason for existence. Typically, upper management communicates the vision or mission statement to the company.

¹ Originators of Six Sigma: http://web.archive.org/web/20051106025733/http://www.motorola.com/content/0,,3079,00. html.

A strategy is a set of policies, procedures, and approaches to business that is intended to produce long-term success. The strategy reflects the mission of the company.

The mission is also used to develop measurable objectives. When established, objectives help determine KPIs, which are quantifiable measurements that reflect critical success factors.

KPIs make it possible to monitor the metrics that are aligned with principal objectives. Then, managers or employees can analyze issues that surface from data that indicate conditions in need of more attention (these were once called "exception reports"). Action can then be taken to "correct the course" so that the company reaches its destination. As you will see in this book, in addition to KPIs, visualizations that include interactive charts and graphs, maps, bubble charts and more prove to become very powerful because they change behavior and lead to more data drive-decisions.

For illustration purposes, the following example shows how an organization—Adventure Works Bike Company—designs a KPI, turning data into actionable information:

- Mission: To design, build, and market bikes to meet the needs of the mountain bike community
- Strategy: To improve customers' satisfaction
- Objective: To increase repeat customer store sales by 20 percent
- **KPI:** The number of quarterly repeat customer sales

To achieve the objectives, the decision-makers in the Adventure Works Bike Company ask the following questions about the business:

- What has happened? (monitoring)
- What is happening? (monitoring)
- Why is it happening? (analyze)
- What will happen? (forecast based on analyzing)
- What do we want to have happen? (new hunches spurring new actions based on what you know)

Part of the problem when trying to arrive at the answers to these questions is that much of the data needed is in a raw format stored in Line-of-Business (LoB) systems and other disparate, disconnected business areas. Chapter 3, "The lifecycle of a business intelligence implementation," explains how companies accomplish providing access to this data in a usable form.

Beware of losing sight of what matters most

Companies that develop a vision or mission statement (define who they are and what success is), make goals, and monitor those goals can then re-evaluate and flourish. This approach is used by corporations, teams, departments, and not least, individuals (us). Unfortunately, what happens often is that organizations lose focus of the vision and are deterred or distracted.

The result of focusing on the wrong things

This is illustrated in the experience of a tragic airplane accident² that occurred more than 36 years ago. In the middle of the night, a Lockheed 1011 jumbo jet fatally crashed into the Florida Everglades. All vital parts and systems of the airplane were working perfectly, and the plane was only 20 miles away from its landing site.

During the approach, a green light failed to illuminate, and the pilots discontinued the approach. The aircraft was set to a circular holding pattern over the pitch-black Everglades while the crew focused on investigating the failed light. The pilots became so preoccupied with the light that they failed to notice the plane was gradually descending toward the dark swamp. By the time someone noticed what was happening, it was too late to avoid the disaster.

The malfunctioning light bulb didn't cause the accident; it happened because the crew placed its focus on something that seemed to matter at the moment, causing them to lose sight of what truly mattered most.

The tendency to focus on the insignificant at the expense of the profound can happen not only to pilots but to companies, departments, teams, and individuals. Sometimes the things that distract are not necessarily bad; in fact, they often seem right.

As you will see, BI helps bring to life the mantra, "what is measured gets managed." We believe it is worth the time and efforts to ensure that you are measuring the right things. When you know what to measure, you can stay on course and not be distracted by the insignificant.

What is BI?

Simply put, BI comprises the tools that help companies to execute performance management. Performance management can be defined as a series of organizational processes and applications designed to optimize the execution of business strategy.

In this book, we extend this definition of BI to include tools that help individuals, teams, and organizations simplify information discovery and analysis, making it possible for decision-makers at all levels of an organization to more easily access, understand, analyze, collaborate, and act upon information—anytime and anywhere.

In this way, to improve organizational effectiveness, Microsoft BI tools make it possible for you to create and manage information through an integrated system that includes core business productivity features, such as collaboration tools, search capabilities, and content management.

This book provides high-level information about the available tools so that you can determine which tools can best help you reach your destination as an individual, team, or organization.

² The Crash of Flight 401 (source: http://aviation-safety.net/database/record.php?id=19721229-0&lang=en).

The need for BI today

This following story³ illustrates the importance of winnowing the data that's truly relevant from massive amounts of raw data and explains how to incorporate that important data into a BI solution:

Two men formed a partnership. They built a small shed beside a busy road. They rented a truck and drove it to a farmer's field where they purchased a truckload of melons for a dollar per melon. They drove the loaded truck to their shed by the road, where they sold their melons for a dollar per melon. They drove back to the farmer's field and bought another truckload of melons for a dollar per melon. Transporting them to the roadside, they again sold them for a dollar per melon.

As they drove back toward the farmer's field to get another load, one partner said to the other, "We're not making much money on this business, are we?"

"No, we're not," his partner replied. "Do you think we need a bigger truck?"

You'll probably agree that we don't need a bigger truckload of information. Like the partners in the story, our bigger need is a clearer focus on how to value and use the information we already have. Today's workplace tends to inundate people with information instead of using the right amount of data to focus on the right problems.

The amount of data that businesses accumulate will continue to grow, and Microsoft and other companies will continue to develop better methods for moving, storing, retrieving, and displaying that data in meaningful ways. Companies must continue to increase their capacity to discover useful data, which will likely come from various systems and will require planning and collaboration to utilize effectively. Best practices must be developed for converting that relevant information into different forms or visualizations that can help provide insights and change behavior. See Appendix B, "Microsoft and "Big Data"," to learn how Microsoft is positioning itself to extract, structure, and get value from Big Data.

In the words of Bill Baker, former general manager of BI applications for the Microsoft Office Business Platform, "There is no substitute for getting the design right, getting the data right, training your users, and in general providing them the least amount of data and the most amount of guidance."

T.S. Eliot, in his poem, "Choruses from The Rock," described the situation as an "endless cycle" in which "wisdom" is "lost in knowledge" and "knowledge" is "lost in information."

Focusing on good BI addresses the problem of losing wisdom in knowledge and losing knowledge in information. And, as you might have experienced in the work place, bad patterns can seem like an endless cycle. BI simplifies information discovery and retrieval, making it possible for decision-makers at all levels of an organization to more easily access, understand, analyze, share, and act on information by helping them reach insights. Insights provide the impetus to improve the behavior of individuals, teams, and organizations. "Insights" is the word Microsoft uses to encapsulate what SharePoint 2013 provides to customers in the way of BI.

³ Do you think we need a bigger truck? (Source: https://www.lds.org/general-conference/2001/04/focus-and-priorities?lang=enq).

What is self-service BI?

Self-service business intelligence (SSBI) is an approach to data analytics by which business users can access and work with corporate information without large investments and involvement from the IT department. The self-service approach makes it possible for end users to create personalized reports and analytical queries while freeing up IT staffers to focus on other tasks, potentially benefiting both groups.

IT must still set up self-service BI so that users can take advantage of the underlying data systems that help make trusted data available (discussed in Chapter 3), deploy the tools, and provide enough assistance and training to execute a successful implementation.

It should be noted that self-service BI does not replace corporate BI; rather, it supplements it by providing business users with the features and tools that simplify creating interactive analytics.

Microsoft's vision for BI and self-service BI

It continues to be Microsoft's vision to provide BI tools that give *all* employees access to the data required for making informed decisions. Employees must also have the flexibility to work in familiar ways, using tools such as Excel and Microsoft Visio. The fact that Microsoft continues to deliver tools that are self-service and meant for all is most evident with the release of Excel 2013, for which the SQL Server 2012 code base for the latest ad hoc reporting tool, Power View, has been included as an option for users. Also, PowerPivot is no longer a separate download but part of Excel 2013. If you think about how many people use Excel, you can easily see that it is the most commonly used BI tool.

The analytical paradox states, "Those who make the most decisions have the least information. Those who make the fewest decisions in the middle of the organization have the most information." Employees on the front line have the ability to take action on insights derived from analytical capabilities but rarely have the information required to reach those insights on their own. They must ask the IT department—and then get in line when requests for information from systems are backlogged. Figure 1-3 summarizes Microsoft's vision and the direction it has taken to deliver BI to people to help them solve the analytical paradox (source: http://www.slideshare.net/nicsmith/business-intelligence-deck-final).

Modern computing power is making BI more and more available to all employees in an organization so that they can make faster, more informed decisions. Microsoft has worked hard to deliver on the vision and strategy by building the tools that are highlighted in this chapter and in this book.

⁴ Joey Fitts (http://vimeo.com/11756037), author of the book Drive Business Performance: Enabling a Culture of Intelligent Execution.

Microsoft Vision & Strategy Democratizing Business Intelligence

Improving organizations by providing business insights to all employees leading to better, faster, more relevant decisions

- Delivered through a familiar environment
- Integrated into a business productivity infrastructure
- Built on a trusted & extensible platform

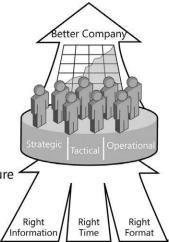


FIGURE 1-3 The Microsoft Vision and Strategy.

Figure 1-3 illustrates the flow of right information being delivered at the right time and in the right format and to the right people. Finding the right amount of information to deliver is critical so as not to overwhelm business users and, at the same time, help them stay focused. The flow of information in the illustration touches three decision levels: Strategic, Tactical, and Operational. Each of these is described as follows:

- Strategic At the executive level, decisions are made that center around what a company is going to do at large, comprising choices such as product lines, manufacturing methods, marketing techniques, and channels.
- **Tactical** Decisions made at this level support the strategic decisions made at the executive level. At this level, analysts examine whether forecasts meet the financial targets set forth in the one-to-five-year plan. If they do not, the elements of the forecasts must be changed. For example, a financial forecast is created in part for the purpose of measuring and monitoring against a firm's own general targets as compared to investor expectations. Investor expectations are based on a number of variables, which include industry average, the economy, and so on.

At this level, pro forma statements are used to accomplish the following objectives:

- Estimate the effect of proposed operating changes, which makes it possible for managers to conduct "what-if" analysis.
- Anticipate the firm's future financing needs.
- Forecast free cash flows under different operating plans, forecast capital requirements, and then choose the plan that maximizes shareholder value.
- **Operational** Operational decisions comprise those made daily by all employees to support tactical decisions. Their impact is immediate, short term, short range, and usually low cost. The

consequences of a bad operational decision are usually minimal, although a series of bad or sloppy operational decisions can cause harm. But when taken together, operational decisions can have an impact on the success of the company realizing its vision.

Is all of this just another attempt toward a "BI for everyone" utopia? We don't believe it is. We think it is important for you to be aware of the work that might be necessary to prepare data so that insights can be made available to more people—people in positions to do something about problems or make adjustments toward a better company. We believe it's worth your time to review the BI maturity model discussed in Chapter 2, which gives you an idea of where your department or company is in terms of making trusted data available and of having a culture geared toward executing on intelligence. The BI maturity model leads to a well-supported, concerted effort to get data from systems in a state that can be trusted to help support agile decisions.

Many companies use Excel for gathering BI and yet still have an infinite number of "versions of the truth." Also, companies often have some people who are louder than others or have more clout, so those are the folks who end up getting what they need from the IT department to create reports. Others know how to create more visual reports and, as a result, are more successful in getting their data in front of the decision-makers, even when their data is not validated.

We wouldn't have written this book if we didn't genuinely believe that you can make a difference in this space to help make the promises of BI become reality.

What SharePoint does for BI

SharePoint Server 2013 can be used with SQL Server reporting and BI tools to make BI data available in meaningful ways. SQL Server provides the primary data infrastructure and BI platform for giving report authors and business users trusted, scalable, and secure data.

Many good reasons support the partnering of SQL Server and SharePoint product groups to integrate products such as PowerPivot and SQL Server Reporting Services, with which you can share and organize BI assets in SharePoint lists and document libraries.

The following is a list of benefits that SharePoint Server products provide:

- If users have adopted SharePoint, they are accustomed to self-service site creation and design and thus will more likely move toward self-service reporting and analytics, particularly with Power View and PowerPivot in Excel.
- Source data refresh is configured and scheduled in SharePoint. From the Central Administration website, you have interactive reports that help you to manage and analyze all scheduled jobs that refresh source data. For more information see Chapter 7, "Using PowerPivot for SharePoint 2013."
- Users can capitalize on the scalability, collaboration, backup and recovery, and disaster recovery capabilities inherent in SharePoint 2013 to manage BI assets created in PowerPivot, Excel, Visio, Report Designer, Power View, Report Builder, and PerformancePoint Dashboard designer.

- Use of trusted locations limits access to PerformancePoint Services content types, Excel Services, and Visio Services files.
- When security and data source connections are established, publishing to a SharePoint website is a quick way to share BI assets that ultimately help employees make better decisions, faster.
- In SharePoint Server, with Analysis Services SharePoint Mode and PowerPivot, Excel Services, Visio Services, and PerformancePoint Services functioning as service applications, Visio Web Drawing files, Excel workbooks, and PerformancePoint dashboards and dashboard items are stored and secured within SharePoint lists and libraries, providing a single security and repository framework.

The BI stack: SQL Server + SharePoint + Office

The architectural diagram presented in Figure 1-4 (described in detail on the Microsoft TechNet site in "Architecture for Business Intelligence in SharePoint Server 2013") provides another, more technical visual aid for how each of the pieces work together.

The following is a very brief summary of what's new for BI in SharePoint 2013.

- Ad hoc report authoring in the browser by using Power View
- In Excel 2013, the SQL Server 2012 code base for the latest ad hoc reporting tool, Power View, is included. Also, PowerPivot is no longer a separate download but is an integral part of Excel 2013.

Report authoring is discussed in the next section. Report viewing can occur in just about any browser, in Microsoft Office, on Windows 8 phones and other table devices (such as Surface and iPad), and in SharePoint Search.

Presentation Tier

Report viewing

Browser, Microsoft Office, mobile, and Search

Report authoring

Browser (PowerPilot), Microsoft Office, PerformancePoint Dashboard Designer, and more

Application Tier

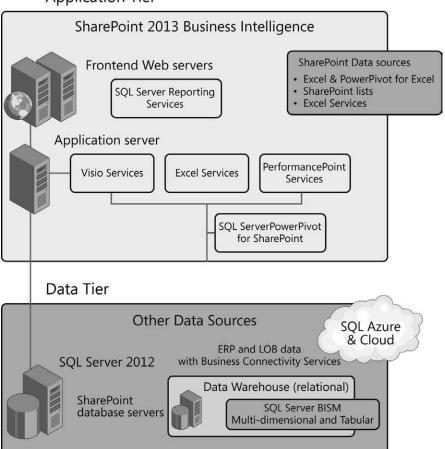


FIGURE 1-4 SharePoint 2013 Services for BI.

Authoring in Microsoft BI tools

When it comes to SharePoint and BI, the essential objective is to have the ability to create insights in the authoring tools that are spread among Office, SharePoint, and SQL Server (see Table 1-1) and then to share the results in charts, reports, dashboards, and KPIs. These insights can be shared with the organization, the team or community, or with the individual via a browser.

TABLE 1-1 Microsoft BI authoring tools and platforms

Product or platform	Authoring tool	Comments	
Microsoft Office 2013 desktop applications	PowerPivot and Power View in Excel 2013, Visio 2013 (Professional or Premium)	Before publishing a worksheet to SharePoint using Excel Services or Visio Services, you must have al- ready authored and—if applicable— connected to a data source.	
SharePoint Server 2013	Dashboard Designer and Web Parts that offer KPIs	You start Dashboard Designer from a SharePoint website.	
		BI Web Parts are available to use individually to create simplified KPIs.	
		Each client tool also provides Web Parts to extend your ability to render reports.	
SQL Server 2012	SQL Server Reporting Services Report	Report Builder and Report Designer was originally designed to help you create reports.	
	SQL Server Data Tools (Visual Studio with same functionality as PowerPivot but deploy to SSAS)	PowerPivot for SharePoint is a SharePoint shared service that integrates PowerPivot into your SharePoint environment. Access a deployed SSDT project via a connection file.	
	Excel: consumes Analysis Services/ Tabular data via an ODC or BISM		
	connection file PowerPivot for SharePoint		

Examples of BI in SharePoint 2013

The following sections look at ways that you can take advantage of SharePoint 2013 features for developing and strengthening your BI capabilities.

PerformancePoint and the BI stack

Figure 1-5 demonstrates how a solution using PerformancePoint Services in SharePoint 2013, integrated with SQL Server 2012, provides KPIs that drive decisions in an IT department. The IT Operations scorecard shows how simple it is to see where database space, as a percentage, is not meeting its target. After the following illustration is a brief explanation that maps what is going on under the hood.

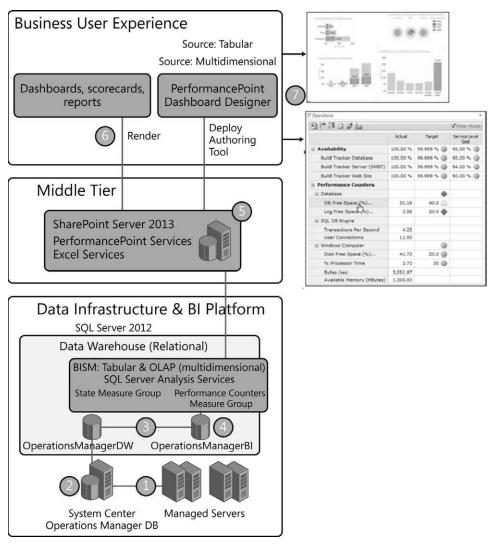


FIGURE 1-5 From SCOM to PerformancePoint.

- **1.** System Center Operations Manager (SCOM) collects monitor state and performance counter data from managed servers.
- **2.** The Operations Manager database collects data from the managed servers. Data is preaggregated and stored in tables designed to support production reporting requirements.
- 3. A small subset of data in the Operations Manager data warehouse (OperationsManagerDW) is transformed and loaded into the BI framework database (Operations Manager BI). This database contains the star schemas for the Analysis Services Online Analytical Processing (OLAP) cubes. Alternatively, users can load data into a tabular model from the data warehouse to make data available in either a pivot table in Excel 2013 or in Power View in Excel 2013.

- **4.** Analysis Services OLAP cubes are built and processed from data stored in the Operations Manager BI database.
- 5. Data from the OLAP cubes is used to populate PerformancePoint Server scorecards, dashboards, and analytic reports. These components are originally created by using the PerformancePoint Services 2013 Dashboard Designer.
- **6.** Scorecards, dashboards, and analytic reports are made available to the user community through SharePoint Server. After the scorecards, dashboards, and analytic reports are initially created and deployed, they should not need to be deployed again. These components are refreshed as new data becomes available in the OLAP cubes.
- **7.** Alternatively, data that is stored in the tabular database is made available to authoring tools such as Excel 2013 and Power View in Excel 2013.

The IT Operations scorecard on the right side of Figure 1-5 reveals (flagged by the red diamonds) that free-space targets for the database are not being met.

Power Pivot and BISM Model: A Fulfillment Report for Tracking Products

This example demonstrates the ease and simplicity of creating an interactive Power View report. But, don't misunderstand; getting to trusted data is not as simple as this example might illustrate. The data that supports it has been massaged, reviewed, and more over the course of several months. This is a high-level view of the process and steps for getting to a successful product fulfillment dashboard.

The story and report requirements

A team at the call center for Lucerne Publishing manages the fulfillment of orders; specifically, highend user-created books. These books are created online with existing family pictures in the form of images and often content from individual social networking sites. The team needed an interactive report with which it could manage the fulfillment of orders by monitoring the various states of an order as they relate to the fulfillment of that order. This helps it manage third-party vendors who assist in fulfilling a book order.

Choosing a tool, introducing self-service BI, and planning for adoption

After having an understanding of the team culture, existing infrastructure, and having chosen a tool-set for BI, as described in Chapter 2, the IT team chose to set up self-service analytics by using Power View and underlying data from their data systems, imported into PowerPivot in Excel 2013.

Understanding the culture The call center at Lucerne Publishing is an important part of the company that maintains a healthy autonomous culture. One user close to all of the teams had already learned PowerPivot and Power View and was available to assist users with learning and adoption of new reporting options. The team was well aware that if they approached other teams in the company, they would likely be put in a waiting period for lack of resources and priority.

BI maturity Users were already accustomed to using Reporting Services reports for filtering, searching, and analyzing data to manage the order fulfillment. They wanted a report with interactive visuals for analysis and actionable insights.

Discovering a visual concept for a report

The manager of the company data servers had a good understanding of the team's needs and what a visual, interactive fulfillment bar chart should look like. They further investigated by searching on Bing/images for more examples. Figure 1-6 presents just one example that was found. Quickly, the goal was set to create a similar report with Lucerne Publishing data.

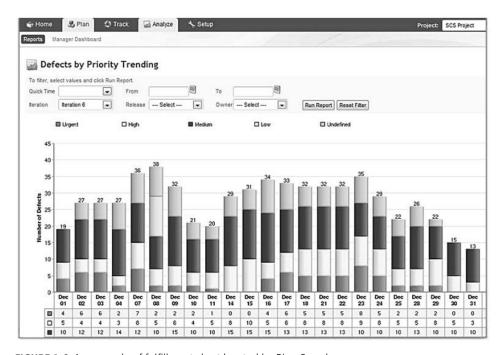


FIGURE 1-6 An example of fulfillment chart located by Bing Search.



Tip A great method for brainstorming on chart types and uses is to search on Bing/images with keywords specific to your need.

The steps to implementation

What follows are high-level descriptions of the steps to take to implement the described fulfillment report.

Determine data sources and importing data

In this example, there is data ready for reporting. Because the data server developer understands the need for a report and existing SQL Server Reporting Services (SSRS), reports are already supported by the data he manages; thus, this is not as difficult process. Of course, every use case is different and data preparation might be more work-intensive.

Import data into PowerPivot, explore data, and design

PowerPivot in Excel 2013 is the choice for creating proof-of-concepts and for making ad hoc reports. Users are able to schedule a data-refresh in SharePoint. Sometimes, the next logical step is to formalize the PowerPivot report by importing it into the tabular modeling tool in SQL Server Data Tools (SSDT). At that point, you can automate a data-refresh (or processing) on a more flexible schedule.

You will find that exploring data in the PowerPivot window is fast and simple. You can filter on columns and quickly determine what additions should be made to the model by way of calculated columns and measures such as calculations.

In this case, the SQL table already updates the all-important date/time stamp for each status of the fulfillment process. Occasionally, however, you will perform a Data Analysis Expressions (DAX) formula to enrich the data. Figure 1-7 shows is an example of a simple calculated column to provide in a Pivot Table or Power View the duration of time from when the PO was created to Rendered (or printed), in a user-friendly format.

	f₂ = F([Days]>1, CONCATENATE([Days]&" days ", [PO-RenderDuration1]),[PO-RenderDuration1])					
•	PO Assigned 💌	PONumber 🔽	POLineNumber 🔽	Fulfiller 🔽	PO-RenderDuration1	PO-Render Duration 💽
	05/18/12 7:08 PM	95	1	Warehouse	0 hrs 3 min	0 hrs 3 min
	04/08/12 9:30 PM	95	1	Warehouse	0 hrs 3 min	0 hrs 3 min
	03/24/12 4:32 PM	95	1	Warehouse	0 hrs 2 min	0 hrs 2 min
	04/26/12 5:00 PM	95	1	Warehouse	0 hrs 1 min	0 hrs 1 min
	04/06/12 9:17 AM	95	1	Warehouse	0 hrs 1 min	0 hrs 1 min
	03/30/12 10:14	95	1	Warehouse	14 hrs 17 min	3 days 14 hrs 17 min

FIGURE 1-7 PowerPivot Window and DAX for showing time between PO and Rendering.

Here are the equations used to calculate Seconds, Minutes, Hours and Days.

Days:

```
=IF(ISBLANK([Rendered]), 0, FLOOR(1. * ([Rendered]-[PO Assigned]), 1))

Hours:

=IF(ISBLANK([Rendered]), 0, FLOOR(MOD(24. * ([Rendered]-[PO Assigned]), 24), 1))
```

Minutes:

```
=IF(ISBLANK([Rendered]), 0, FLOOR(MOD(24. * 60 * ([Rendered]-[PO Assigned]), 60), 1))
    Seconds:
=IF(ISBLANK([Rendered]),0, 24. * 60 * 60 * ([Rendered]-[PO Assigned]))
    Concatenating:
=CONCATENATE(MyCanvas[PO-RenderHours]&" hrs ", [Minutes]&" min")
```

Figure 1-8 depicts a finished view of the PivotTable in Excel 2013, where you will test your measures and calculated columns.

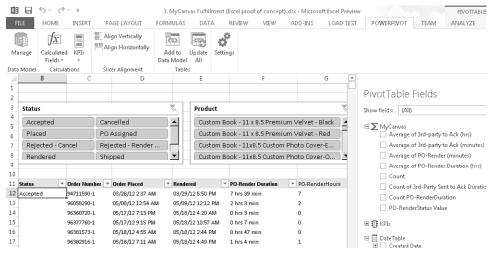


FIGURE 1-8 A pivot table showing data for Lucerne Publishing.

Create the Power View report

The next step is to create a Power View report from the data collected in PowerPivot in Excel 2013. Refer to Chapter 5, "Using Power View in Excel 2013," to learn how to create reports in Power View. There are also excellent articles for creating user-friendly reports and dashboards.

Publish to SharePoint

As a best practice, publish the Excel 2013 workbook with a PivotTable and Power View example so that users can explore the data in the PivotTable and discover the mechanisms in Power View for analyzing via the cross-filtering slicers and visuals (Figure 1-9).

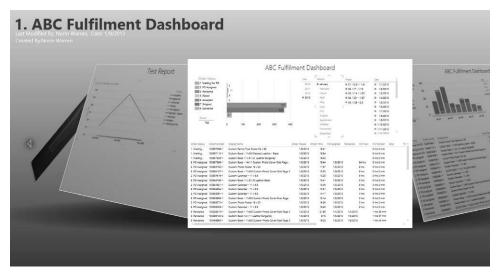


FIGURE 1-9 The Lucerne Publishing fulfillment report in presented in Power View for SharePoint.

Modify according to user needs

You modify the report by working on the model. For example, you might simplify or clarify labels or add value by simplifying the data table for time intelligence and showing the time difference between each state of an order.

Automate and formalize in SQL Server Data Tools

The data for this particular report needs to be refreshed every 15 minutes, and for this reason we need to import the PowerPivot into SQL Server 2012 Data Tools, deploy to Analysis Services, and set up a job that refreshes the data more frequently. We also want to optimize the data-refresh by creating partitions and only refreshing the *MyCanvas_Current* partition, and processing (refreshing) the partition, *MyCanvas_Historical*, only once.

This process is all described in Appendix B.

Sharing with other teams (building user adoption)

Your efforts to promote an extremely useful report should not end until you have shared the report with other team managers. You now have an example and some code from which you can draw and reproduce with other teams. This specific example was reproduced for DNA fulfillment and vendor management analytics and reporting.

Capture what customers say and how the interactive report helps them take preemptive action on delayed states in the fulfillment process. Make these comments available to other groups that can also benefit.

A summary of the fulfillment example

Figure 1-10 illustrates just one of many examples that can become realities as you either combine or adopt one of several available tools in SharePoint 2013, SQL Server 2012, and Office 2013.

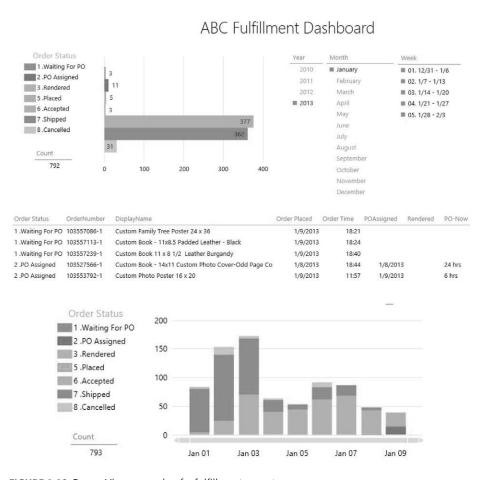


FIGURE 1-10 Power View example of a fulfillment report.

Creating a report by using an Odata feed from a SharePoint list

It's simply amazing to be able to refresh and consume data from a SharePoint 2013 or 2010 list by way of an Odata feed in SharePoint 2013. An extremely useful approach is to provide interactive visualizations to the SharePoint lists to which users have been adding, sometimes for a very long time.

Figure 1-11 shows a list that was updated for three years. From discussions with the users, they asked that the reasons for reshipment be divided into three sections to show responsibility for replacements and reshipments of products.

Replacement Reasons

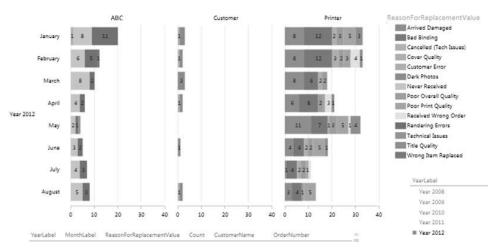
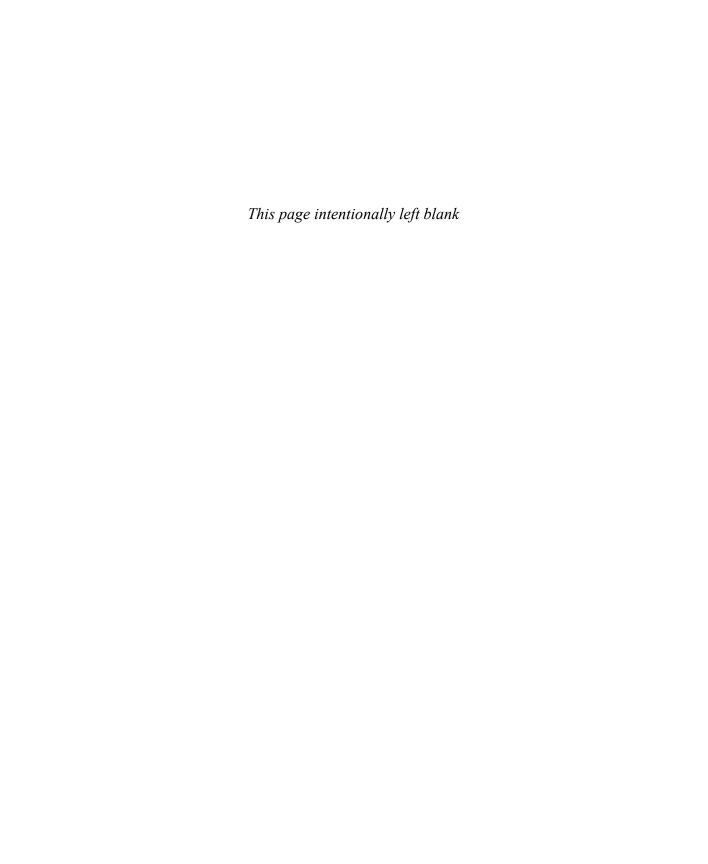


FIGURE 1-11 Power View example derived from SharePoint list data.

Summary

In this chapter, we discussed the purpose and need for BI in a language that is directed at the business user. It showed that companies are much like aircraft in that they have a destination or goal and must constantly react to feedback provided by instruments that measure and monitor the status of various inputs. Those instruments are the BI tools we implement so that we have a method for visualizing metrics that tell us what has happened, what is happening, why it is happening, and what will happen to our business.

The chapter also explained Microsoft's vision for BI. It explained what SharePoint does for BI and provided a couple of examples to show the benefits of using SharePoint 2013 in any BI implementation.



Using PowerPivot for SharePoint 2013

There are many tools that the business user, or the information worker, can reach to, but by far it is Microsoft Excel that is used most often. A great deal of today's business decisions are based on an Excel workbook. However, there are some drawbacks inherent to this approach, and a few caveats must be issued:

- It's fairly common to share those workbooks by email or in a file share. This can potentially raise security issues.
- It's hard to assure that everybody working with a given workbook is using the same version, because access to that workbook is neither monitored nor controlled.
- Refreshing the workbooks with new data can be a lot of work, and potentially, it's a chore that needs to be done frequently.
- Often, the data sources for those workbooks is used without the knowledge IT personnel.

Therefore, a natural yet inevitable mild tension exists between the users (who want to get things done quickly) and the IT department (which wants control). There is nothing wrong with the position of either side. It's just how things are.

To address the needs from the business user's perspective but at the same time not forget about the legitimate concerns of IT, Microsoft developed PowerPivot for Excel, PowerPivot for SharePoint, and Power View. Together, they are Microsoft's core implementation of Self-Service Business Intelligence.

PowerPivot might not solve all the problems, but it is a paradigm-shifter that is bringing business intelligence (BI) to the business analyst. Here are just a few of the benefits that PowerPivot brings to the table:

■ A secure mechanism for sharing the reports You can publish the workbook to SharePoint, where it becomes an interactive web application through the Excel Services. Users have to download the workbook; they can open and interact with it in the browser. There is less risk to sensitive data, and when you publish a new version, everyone receives it the next time they visit the site.

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- **Scheduled, automatic report refresh** You can configure the workbooks to be automatically refreshed periodically without human intervention.
- **Transparency for IT** After the workbook is published to a SharePoint location, everything happens within the realm of IT. IT is able to set the security of the workbooks through Share-Point, learn which data sources are being used by the PowerPivot workbooks, and learn what workbooks are actually being used and by whom. The list goes on and on.

In a few words, PowerPivot for SharePoint 2013 is the integration of the Microsoft SQL Server Analysis Services 2012 SP1 engine with SharePoint 2013. With PowerPivot for SharePoint, the user can securely share, manage, and refresh the workbooks, and IT can securely manage and learn about the workbook's usage.

A brief history

The genesis of PowerPivot derived from two Microsoft internal papers. The first paper was about the concept of a BI *sandbox*, which would be a product that would make the creation of BI applications much easier and in a controlled environment that would include relational databases, multidimensional databases, and a reporting tool. As this first paper gradually shaped PowerPivot from the concept to the product, many of the original ideas changed (originally, Microsoft Access was the client application, not Excel), but many that remained are the soul of PowerPivot.

The second paper was about an in-memory BI engine. The business idea was to take advantage of the market trends in computer hardware (such as decreasing RAM prices, and the increased adoption of multicore processors) that would make an in-memory engine feasible. The in-memory engine described in the second paper would make some of the ideas in the first paper possible.

Both papers were accepted, and a small incubation team was created to explore the concepts further. This incubation team existed during the SQL Server 2008 R2 development wave, writing specifications, plans, code, and tests under the codename *Gemini* for what is now PowerPivot. PowerPivot for Excel 2010 and PowerPivot for SharePoint were released in May, 2010 as part of Microsoft SQL Server 2008 R2.

In the latest release, PowerPivot and Microsoft Office have been drawn into an even closer relationship. As discussed in Chapter 4, "Using PowerPivot in Excel 2013," and Chapter 6, "Business intelligence with Excel Services 2013," PowerPivot and Office are much more integrated. In PowerPivot for SharePoint 2013, there isn't much new exposed functionality, but it was completely redesigned under the hood to make it more reliable and scalable.

When do I use PowerPivot for SharePoint?

After you have created PowerPivot workbooks by using your desktop Excel application, you'll probably want to do the following:

- Refresh workbooks periodically and automatically
- Ensure that all the workbook's users see its most current version
- Turn your workbook into a web BI application, viewing and interacting with it in the browser
- Make your workbook a data source for others
- Have a special SharePoint document library with enhanced functionality and visualization modes, called PowerPivot Gallery
- Empower the IT professionals with tools to assist with the management of the PowerPivot workbooks.

PowerPivot for SharePoint is designed to meet the requirements of all the preceding scenarios, giving you a way to share, refresh, and update workbooks in a secure manner that adheres to IT security policies while providing users with the means to interact with the content of the workbooks from their browsers.

Getting started

This section briefly introduces you to installing PowerPivot for SharePoint 2013.

Installing PowerPivot for SharePoint

An IT professional must perform the installation of PowerPivot for SharePoint because it will require administrative access to servers. It can potentially be a very complex task depending on how your SharePoint farm is configured. Here are a couple of good white papers on how to set up PowerPivot for SharePoint that the IT professionals can review:

- Installing Analysis Services Server in SharePoint Mode for SharePoint 2013:
 - http://technet.microsoft.com/en-us/library/jj219067.aspx
- Installing PowerPivot for SharePoint Add-In:
 - http://technet.microsoft.com/en-us/library/fe13ce8b-9369-4126-928a-9426f9119424

Publishing to SharePoint

After you create a PowerPivot workbook by using PowerPivot for Excel, you'll likely want to share it with others in your department or organization. Your workbook becomes much more useful when others can use it.

To publish your workbook, perform the following procedure:

- 1. In Excel, on the ribbon, click the File tab to display the Backstage view.
- 2. Click the Save As tab, as shown in Figure 7-1.
- **3.** In the Save As section, select Computer and then click the Browse button.
- Type the URL for the SharePoint site to which you want to upload the workbook and click Save.

If you are publishing to a SharePoint site that has PowerPivot for SharePoint installed, you should publish it to the PowerPivot Gallery. The PowerPivot Gallery is a special PowerPivot-enable SharePoint document library that provides additional functionality beyond what's available in the standard SharePoint 2013 document libraries.

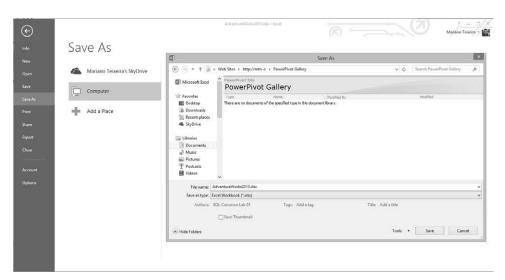


FIGURE 7-1 Publishing a PowerPivot workbook to SharePoint.

The PowerPivot Gallery

The PowerPivot Gallery is a visually rich SharePoint document library that is installed with PowerPivot for SharePoint. Its enhanced visual presentation helps you to better interpret the data in each sheet of a PowerPivot workbook in the Gallery, as demonstrated in Figure 7-2.



FIGURE 7-2 The PowerPivot Gallery.

Clicking a specific sheet in the PowerPivot workbook opens the workbook in the browser where you can further analyze it, as illustrated in Figure 7-3.

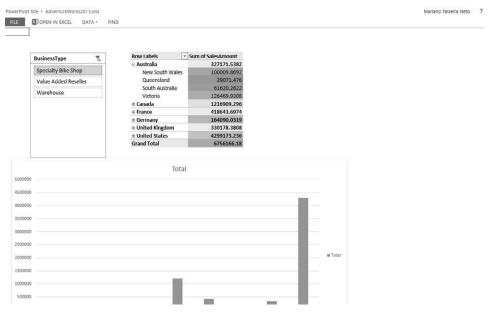


FIGURE 7-3 Analyzing a PowerPivot workbook in the browser.

Scheduling data refreshes

PowerPivot for SharePoint provides a data-refresh feature that can automatically retrieve updated information from the external data sources you used to build the workbook originally. Any Power-Pivot workbook owner can schedule data refresh for workbooks saved to the PowerPivot Gallery or to any other PowerPivot-enabled SharePoint document library. To manage data refresh, perform the following procedure:

- 1. In your document library, select the workbook for which you want access refresh settings and then click the More Options button (the ellipsis icon).
 - A dialog box opens showing the workbook's current authentication settings
- 2. In the lower-right corner of the dialog box that opens, click the More Options button (again, the ellipsis icon), as depicted in Figure 7-4.

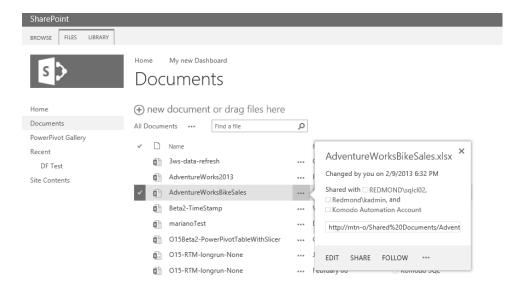


FIGURE 7-4 Accessing the dialog box for a workbook.

3. On the menu that appears, click Manage PowerPivot Data Refresh to schedule a data refresh, as shown in Figure 7-5.

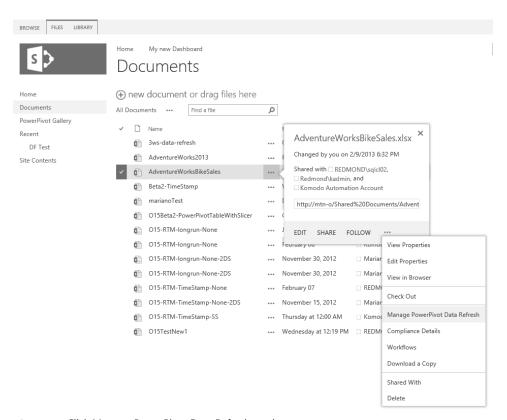


FIGURE 7-5 Click Manage PowerPivot Data Refresh on the menu.

PowerPivot Gallery offers another way to get to the data refresh feature. To schedule a data refresh through the PowerPivot Gallery, SharePoint users who have Contributor permission can click the Calendar icon shown for each workbook in a PowerPivot Gallery (see Figure 7-6). Note that if the user does not have sufficient privileges on the workbook, the Calendar icon is not available on the page.



FIGURE 7-6 Accessing PowerPivot Data Refresh from a PowerPivot Gallery by using the Calendar icon.

Regardless of how you get to the Manage Data Refresh page, the details on it are the same. Figure 7-7 shows the initial view of the page.

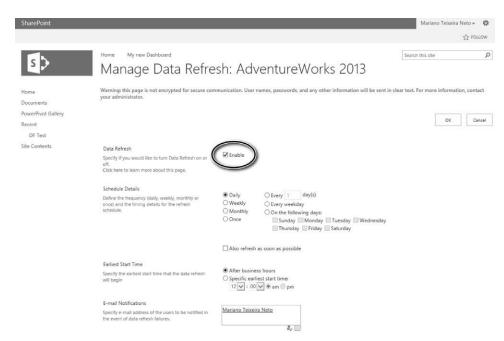


FIGURE 7-7 Enabling Data Refresh in the Manage Data Refresh page.

4. Select the Enable check box to make the page active so that you can fill in the values that you want to use.

The Manage Data Refresh page is organized into six sections. Table 7-1 presents an overview of each section, and detailed descriptions are given in the subsections that follow.

TABLE 7-1 Manage Data Refresh page sections

Section	General description
Data Refresh	Enable or disable a data refresh schedule.
Schedule Details	Define the frequency and timing details of a data refresh.
Earliest Start Time	Specify the earliest start time for a data refresh.
E-mail Notifications	Specify the e-mail address of the users to be notified in the event of data refresh failures.
Credentials	Provide the credentials that will be used to refresh data on your behalf.
Data Sources	Select which data sources should be automatically refreshed. You also use this section to create custom schedules that vary for each data source, or specify different authentication methods for each data source.

Data Refresh

To enable or disable a data refresh schedule, select or clear the Enable check box on the Manage Data Refresh page. If this check box is selected, you can edit all parts of the data refresh schedule. If the check box is cleared, the page is read-only, and after you click OK, subsequent data refresh operations are disabled for that workbook.

Schedule Details

In the Schedule Details section, you can specify the frequency and timing details of the data refresh. There are four options from which to choose:

- Daily
- Weekly
- Monthly
- Once

With the Daily option (see Figure 7-8), you can schedule data refresh to occur every n day(s), every weekday, or on specific days of the week.

Schedule Details Define the frequency (daily, weekly, monthly or once) and the timing details for the refresh schedule.	Daily Weekly Monthly Once	○ Every 1 day(s) ○ Every weekday ○ On the following days: □ Sunday □ Monday □ Tuesday □ Wednesday □ Thursday □ Friday □ Saturday
	Also refresh	as soon as possible

FIGURE 7-8 Daily schedule details options.

If you select the Also Refresh As Soon As Possible check box, data is refreshed as soon as the server can process it. This refresh occurs in addition to the periodic data refresh schedule. This option is available for periodic schedules only (that is, daily, weekly, and monthly schedules). Select this check box if you want to verify that the data refresh will run properly. For example, you might not know whether data credentials are configured correctly. This option provides a way to test the data refresh before its scheduled execution time. In short, checking the Also Refresh As Soon As Possible option refreshes the workbook as soon as possible one time, and then it is refreshed following your periodic schedule specification.

The Weekly option (see Figure 7-9) is for scheduling data refresh on a weekly basis such as every n week(s) or on specific days of the week.



FIGURE 7-9 The Weekly schedule details options.

The Monthly option (see Figure 7-10) schedules data refresh to run on a specific day of the month or on the first, second, third or last specific day of the week every *n* month(s).

Schedule Details Define the frequency (daily, weekly, monthly or once) and the timing details for the refresh schedule.	Oaily Weekly Monthly Once	O Day 1 The third	of every 1 Monday	month(s)	month(s)
	Also refresh as soon as possible				

FIGURE 7-10 The Monthly schedule details options.

The Once option (see Figure 7-11) is for scheduling a one-time data refresh operation that runs as soon as the server can process the request. After the data refresh is complete, the system disables this schedule. Notice that the Also Refresh As Soon As Possible check box is not available when this option is selected.

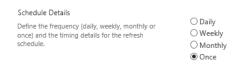


FIGURE 7-11 The Once schedule details option.

Earliest Start Time

In the Earliest Start Time section, you specify details regarding when you prefer data refresh to occur (Figure 7-12). You can enter a specific time before which data refresh should not commence, or you can choose to refresh data after business hours. This page does not determine the time at which the data refresh actually starts; instead, the schedule is queued and processed based on available resources. For example, if the server is busy with on-demand queries (which take precedence over data refresh jobs), the server waits to refresh your data until those queries have been processed. You can also choose to run a data-refresh operation after business hours. The administrator of the Power-Pivot Service Application for your organization determines the definition of "business hours."



FIGURE 7-12 The Earliest Start Time section on the Manage Data Refresh page.

E-mail Notifications

In this section of the Manage Data Refresh page, you can specify email addresses for individuals or groups who should be notified when a data refresh fails (Figure 7-13). You can receive notifications of successful data-refresh operations through the regular SharePoint alerting system for email notification. (The basis of the alert would be a new file added to the target document library.)



FIGURE 7-13 The E-mail Notifications section on the Manage Data Refresh page.

Credentials

PowerPivot for SharePoint uses the SharePoint Secure Store Service (SSS) to store any credentials used in data refresh. In the Credentials section of the schedule page, the schedule owner can specify the Windows credentials that are used to refresh data on his behalf. Any data source that uses trusted or integrated security is refreshed by using these credentials. For the data refresh to succeed, the selected credentials must have access to the data sources for the workbook. You can choose from one of the following options (see also Figure 7-14):

- Use the data refresh account configured by the administrator (this is the service application's unattended data refresh account)
- Use a specific Windows user name and password
- Use a predefined SSS target application ID that stores the Windows credentials that you want to use

Credentials	
Provide the credentials that will be used to refresh	 Use the data refresh account configured by the administrator
data on your behalf.	O Connect using the following Windows user credentials
	O Connect using the credentials saved in Secure Store Service (SSS) to log on to the data source. Enter the ID used
	to look up the credentials in the SSS ID box

FIGURE 7-14 The Credentials options on the Manage Data Refresh page—specifying an account configured by the administrator.

Both the PowerPivot data refresh account and the predefined SSS target application ID must be set up by a SharePoint administrator in Central Administration. Because these credentials are shared among all users, for instance, this option is typically used where additional credentials would be actually used for data access.

A schedule owner can also choose to type the Windows user credentials to be used on the data refresh, as illustrated in Figure 7-15. These credentials are securely stored in the SharePoint SSS.



FIGURE 7-15 The Credentials options on the Manage Data Refresh page—specifying Windows user credentials.

With the third option (see Figure 7-16), a schedule owner can specify credentials previously saved in a SSS Target Application ID. To use this option, you must enter the Target Application ID used to look up the credentials in the SSS. The Target Application ID specified must be a group entry, and both the interactive user and the PowerPivot System service account must have read access.



FIGURE 7-16 The Credentials options on the Manage Data Refresh page—specifying a Target Application ID.



Note Setting up and maintaining SSS is beyond the scope of this book. For more information about it, read the TechNet article at http://technet.microsoft.com/en-us/library/ee806866.aspx.

Data Sources

A workbook can have many data sources, each with different characteristics. Figure 7-17 shows that you can choose to create a data refresh schedule by using different settings for each data source, or even disable the data refresh for it (by clearing its corresponding check box). You can have, for instance, one data source scheduled to refresh daily and a second source scheduled monthly.



FIGURE 7-17 The Data Sources section on the Manage Data Refresh page.

The schedule definition page provides options for choosing the data sources to be refreshed, when to refresh them, and which security options to use for each one. It also provides fields for specifying database credentials or other non-Windows credentials used on the database connection.

You must select at least one data source to save the schedule. The data source's credentials are not used for impersonation but are instead included on the connection string as *UserName* and *Password*. These credentials override those used on the connection string for the original data import.

Figure 7-18 shows that different settings are available for each data source. You can specify a custom schedule data source or use the general schedule specified for the workbook.



Note The only modifiable elements in the connection string are the UserName and Password elements. To edit any of the other elements—for example, to change the source server name—you must download the workbook to your desktop, edit it in Excel 2013, and then republish it to SharePoint.

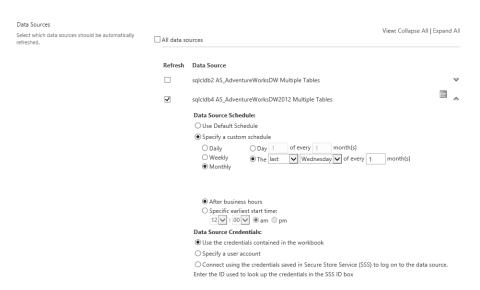


FIGURE 7-18 The Data Sources section, showing schedule and credential details for a data source.

Workbooks as a data source

You can use a workbook hosted in a SharePoint site only if you install PowerPivot for SharePoint 2013. With this feature, you can designate your workbook as a data source for others. For instance, you can create an Excel 2013 workbook (or other tools like Power View, Panorama, ProClarity, and so on) that uses another Excel 2013 workbook that is hosted in SharePoint 2013 with PowerPivot for SharePoint. In the Data Connection Wizard, in the Server Name text box, provide the URL for the workbook in SharePoint, as demonstrated in the Figure 7-19.



FIGURE 7-19 Using a workbook as a data source.

In the Log On Credentials section, choose the authentication method (in the example, we use Windows Authentication) and then click Next. On the Select Database And Table page of the wizard, the workbook is shown as a Model of type Cube, as illustrated in Figure 7-20.

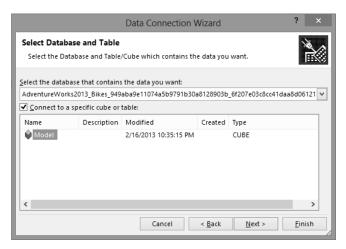


FIGURE 7-20 Selecting the data model from the workbook.

The actions to complete creating a connection to a data source are no different from the actions described in Chapter 4, in the section "Creating the Data Model" (see also Figure 4-5).

Monitoring with PowerPivot for SharePoint

The PowerPivot Management Dashboard provides administrators who are responsible for the server side of PowerPivot with the capabilities they need to understand usage patterns of the PowerPivot workbooks in SharePoint and to take appropriate actions. For example, the growing size of a particular workbook might indicate the need to acquire more memory. You can access the PowerPivot Management Dashboard by going to the SharePoint Central Administration page and then clicking General Application Settings, as depicted in the Figure 7-21.



Note To view some of the Dashboard controls, you need Silverlight installed on the computer on which you are browsing. If you do not have it installed, your browser should prompt you to install it from the web.

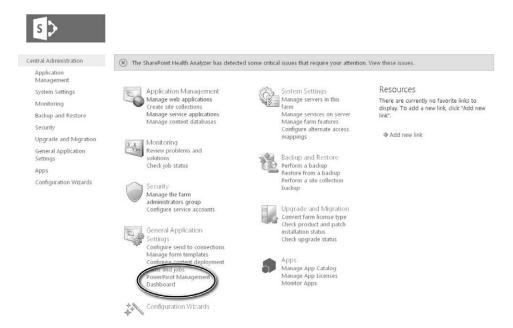


FIGURE 7-21 Accessing the PowerPivot Management Dashboard.

Clicking the PowerPivot Management Dashboard link takes you to the Dashboard page, as shown in Figure 7-22.

The PowerPivot Management Dashboard can be broken down into five main areas (Web Parts) Table 7-2 presents an overview of each area, and detailed descriptions are given in the subsections that follow.

TABLE 7-2 The PowerPivot Management Dashboard main areas

Web Part	Description
Infrastructure – Server Health	This section provides information about infrastructure; it shows the CPU and memory usage trends over time. It also contains a histogram of overall query response for the SQL Server Analysis Services in SharePoint mode.
Workbook Activity	This section provides a high-level representation of the number of users, the number of queries sent to a workbook, and the size of the workbook in time.
Actions	An administrator can use this section to configure PowerPivot-specific settings within a SharePoint farm.
Data Refresh	This section provides a breakdown of the recent activities and recent failures for PowerPivot data refresh in SharePoint.
Reports	An administrator can use this section to view the source Excel workbooks and databases used by the PowerPivot Management Dashboard

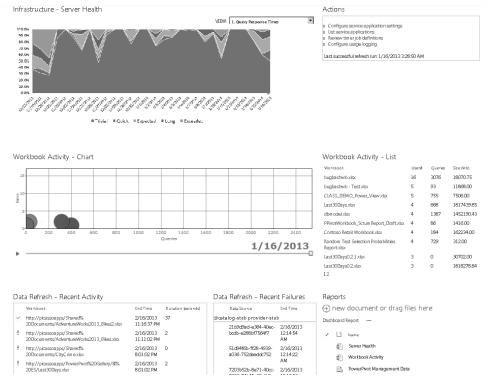


FIGURE 7-22 The PowerPivot Management Dashboard.

Infrastructure - Server Health

This section of the PowerPivot Management Dashboard provides indicators of the server's health. It does so through the following indicators:

- Query Response Times
- Average Instance CPU
- Average Instance Memory
- Activity
- Performance

Query Response Times

The Query Response Times view is the default view of the Server Health Web Part (see Figure 7-23). The purpose of this chart is to provide a quick overview so that you can determine whether the majority of the queries are running as expected or running too slowly.

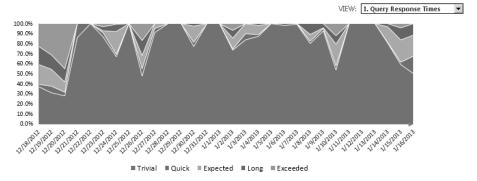


FIGURE 7-23 The Query Response Times view.

When query response time increases, you will want to determine which queries are running slowly, and why.

Table 7-3 summarizes the default query response time definitions. These definitions can be modified by selecting Central Administration | General Application Settings | PowerPivot | Configure Service Application Settings.

TABLE 7-3 Query Response Times category definitions

Category	Definition (in milliseconds)	
Trivial	0 < time < 500	
Quick	500 < time < 1000	
Expected	1000 < time < 3000	
Long	3000 < time < 10000	
Exceeded	≥10000	

Average Instance CPU

Switching to the Average Instance CPU view (see Figure 7-24) in the Server Health Web Part shows the CPU load on the SharePoint Application Server on which PowerPivot is installed.

Figure 7-24 shows that for that SharePoint Application Server, the CPU load is not an issue because, on average, it uses less than 30 percent of the CPU capacity.

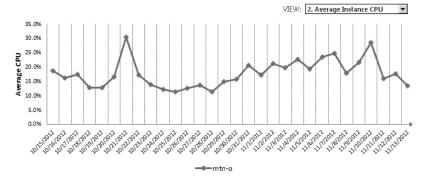


FIGURE 7-24 The Average Instance CPU view.

Average Instance Memory

Memory can become a concern for your environment because the Analysis Services in SharePoint Mode loads the workbook in memory. As the number of users and the size of their workbooks grow, they require an increasing portion of the server's memory. Taking a quick look at the Average Instance Memory view, you can easily see when more memory is being used over time, as demonstrated in Figure 7-25.

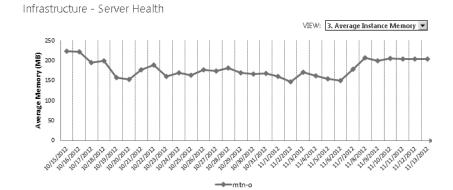


FIGURE 7-25 The Average Instance Memory view.

Activity and Performance

Although you can toggle between the Infrastructure – Server Health Activity and Performance views, you can get an even better view of this data by using the Workbook Activity And Server Health reports directly. To do that, click in either the Workbook Activity or the Server Health workbook located in the Reports area of the PowerPivot Management Dashboard (refer to Figure 7-22).

Workbook Activity

This area comprises two parts: a Chart and a List.

Chart

This Chart Web Part is a Silverlight control that displays a bubble chart. Figure 7-26 shows that the chart's axes represent the number of users and the number of queries sent to a workbook. A sliding bar indicates the date. As you move the pointer over each bubble, the name of the workbook it corresponds to and the number of users that are connected are displayed, along with the number of queries sent to the workbook. In addition, as you move the date sliding bar, it shows animation on bubble size, which represents how the size of the workbook is growing over time.

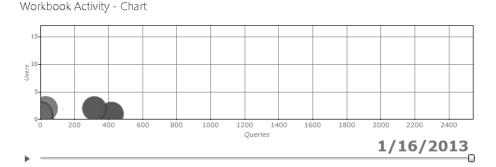


FIGURE 7-26 The Workbook Activity - Chart.

List

The Workbook Activity – List section provides a quick way to view the current activity attributes (workbook name, number of queries, users, and size) of the server, as demonstrated in Figure 7-27.

Workbook Activity - List			
Workbook	Users↓	Queries	Size (Mb)
bugbashwb.xlsx	16	3076	18070.75
bugbashwb - Test.xlsx	5	93	11868.00
CLASS_DEMO_Power_View.xlsx	5	755	7506.00
Last30Days.xlsx	4	668	1817439.85
dbmodel.xlsx	4	1387	1452190.43
PPivotWorkbook_ScrumReport_Draft.xlsx	4	86	1416.00
Contoso Retail Workbook.xlsx	4	184	162234.00
Random Test Selection Probabilities Report.xlsx	4	729	312.00
Last30Days0.2.1.xlsx	3	0	30702.00
Last30Days0.2.xlsx	3	0	1818278.84
12			

FIGURE 7-27 The Workbook Activity – List.

Data Refresh

The PowerPivot scheduled data-refresh mechanism has many activities that run in the background. In the PowerPivot Management Dashboard, you can find a section dedicated to reporting the recent data refresh–related activities in the environment.

Recent Activity

As the name suggests, this Web Part informs the data-refresh activity in this environment. It reports the most recent PowerPivot workbook data refreshes along with the time that it completed the refresh and its duration, as shown in Figure 7-28.

Data Refresh - Recent Activity

	Workbook	End Time	Duration (seconds)
~	http://picassoapps/Shared% 20Documents/AdventureWorks2013_Bikes2.xlsx	2/16/2013 11:16:37 PM	37
?	http://picassoapps/Shared% 20Documents/AdventureWorks2013_Bikes.xlsx	2/16/2013 11:11:02 PM	2
?	http://picassoapps/Shared% 20Documents/CityCrime.xlsx	2/16/2013 8:01:02 PM	0
9	http://picassoapps/PowerPivot%20Gallery/BI% 20ES/Last30Days.xlsx	2/16/2013 8:01:02 PM	2
9	http://picassoapps/PowerPivot% 20 Gallery/dbmodel.xlsx	2/16/2013 8:00:01 PM	0
9	http://picassoapps/Shared% 20Documents/CLASS_DEMO_Power_View.xlsx	2/16/2013 9:15:12 AM	12
?	http://picassoapps/PowerPivot%20Gallery/BI% 20ES/Last30Days0.5.xlsx	2/16/2013 9:02:00 AM	0
?	http://picassoapps/PowerPivot%20Gallery/BI% 20ES/Last30Days.xlsx	2/16/2013 9:01:43 AM	0
~	http://picassoapps/PowerPivot% 20Gallery/VSTS_NPD_M3_Backlog_SQL:xlsx	2/16/2013 9:01:25 AM	25
~	http://picassoapps/PowerPivot% 20Gallery/VSTS_NPD_M3_Backlog_SQL:xlsx	2/16/2013 9:00:11 AM	11
123	45678910		

FIGURE 7-28 The Data refresh – Recent Activity Web Part.

Clicking one of the workbooks in the Recent Activity report redirects you to that workbook's data refresh history page, on which you can find details related to the failure. Figure 7-29 shows the data refresh history page for the *AdventureWorks2013 Bikes2.xlsx* workbook.

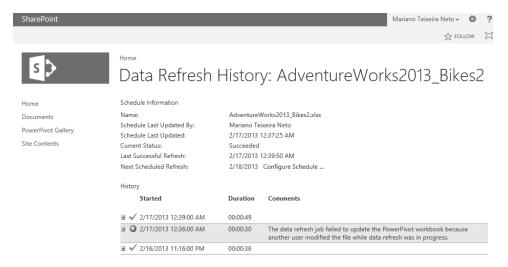


FIGURE 7-29 The Data Refresh History page.

Recent Failures

This Web Part focuses on reporting recent data refresh failures. With this information in hand, you can go back to Recent Activity Web Part and begin investigating the reason why a particular data refresh failed.

Reports

As shown in Figure 7-30, the Reports Web Part contains the Excel workbooks that are the source for the PowerPivot Management Dashboard charts. Clicking one of the workbooks opens that workbook in the browser, and you can identify the charts shown in the PowerPivot Management Dashboard.

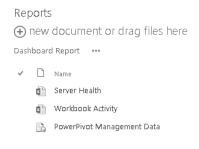


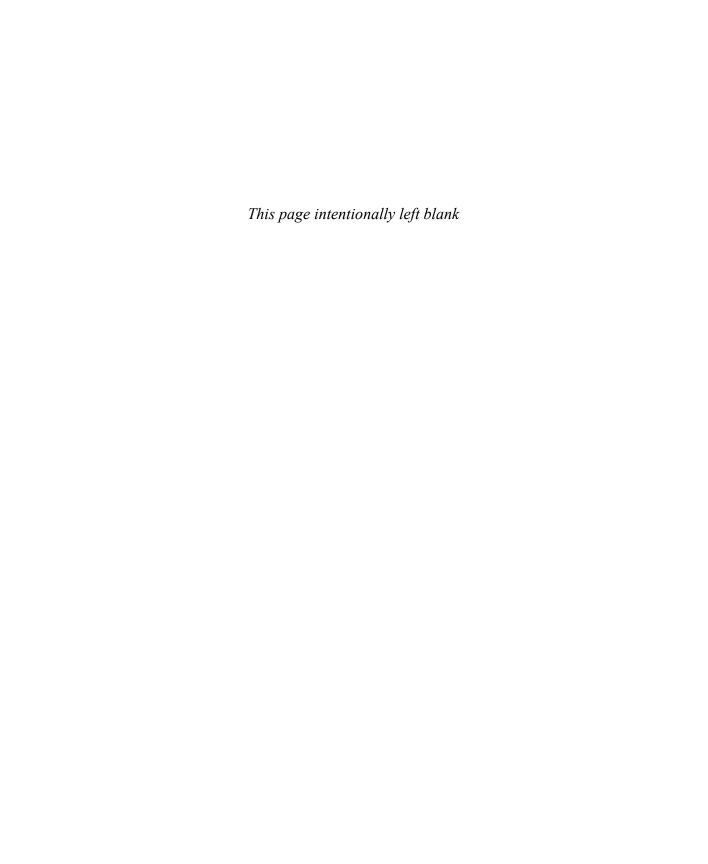
FIGURE 7-30 The Reports Web Part.

Summary

This chapter briefly introduced you to PowerPivot for SharePoint. It demonstrated how to publish a PowerPivot workbook to SharePoint and how to schedule data refreshes, and it explained how IT professionals can manage PowerPivot for SharePoint by using the PowerPivot Management Dashboard.

To learn more about PowerPivot, you can look for books dedicated to PowerPivot for Excel and to PowerPivot for SharePoint. You can also find more information by referencing the following resources:

- The official MSDN blog at http://blogs.msdn.com/b/analysisservices/.
- Rob Collie's blog at http://www.powerpivotpro.com (for PowerPivot for Excel). Rob Collie was a Program Manager in the Analysis Services team that worked on PowerPivot for Excel.
- Dave Wickert's blog at http://www.powerpivotgeek.com (for PowerPivot for SharePoint). Dave Wickert is a Program Manager on the Analysis Services team, working on PowerPivot for SharePoint.



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