# Excel® 2007 Advanced Report Development

Timothy Zapawa

Wiley Publishing, Inc.

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*For Lisa*

# About the Author

**Timothy Zapawa** (Saline, Michigan) obtained a baccalaureate in Accounting and Arabic from the University of Michigan in Ann Arbor in 1997. Prior to that, he served four years in the United States Navy, specializing in electronic communications. He has completed several certifications and professional examinations in a variety of financial and technical fields, including the Certified Public Accountant (CPA), Certified Management Accountant (CMA), Certified Financial Manager (CFM), Project Manager Professional (PMP), Microsoft Certified Systems Engineer (MCSE), and Microsoft Certified Database Administrator (MCDBA). Tim is currently an implementation director at Advantage Computing Systems, Inc. (`www.advantagecs.com`), a company that produces enterprise software for publishing companies and service bureaus. He leads teams of engineers, developers, and managers through software implementation projects. He has also developed several technical training courses for his company's clients, including modules on Business Intelligence, Crystal Reports, SQL programming for Oracle and SQL Server, and Excel PivotTable Reporting.

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My understanding of the reporting tools throughout this book is based on my 10 years of experience at Advantage Computing Systems (ACS), where I have been able to work with numerous organizations throughout the United States and England in developing reporting solutions. I'd like to thank the principals of ACS for fostering a first-rate business culture and a challenging work environment, and Tom Burbeck in particular for his valuable mentoring.

I'd also like to take this opportunity to give special thanks to my mom, who has always worked very hard to ensure that I've had the opportunity to succeed, and to my father-in-law, David Wu, for his ongoing encouragement and support.

Last, but most importantly, I'd like to again thank my wife, Lisa, for her continued support of the many late nights and weekends that went into this book.

# Introduction

If you are a SQL programmer, report developer, or sophisticated Excel user and want to learn more about Excel's reporting capabilities, this book is for you. In the pages that follow, I provide comprehensive information on both the technical and strategic areas of Excel report development—paying special attention to online transactional processing (OLTP) databases.

By reading this book and following the practice exercises scattered liberally throughout the chapters, you can learn to develop powerful and innovative reporting solutions using Microsoft Excel 2007. This book's step-by-step approach can help you steadily gain confidence in your ability to use Excel's reporting functions as you enhance your skills by working through the hands-on examples. Many of the examples offer an accompanying video on the book's companion web site that you can watch to ensure that you fully understand every step (see the section "On the Web Site" later in this Introduction).

## Highlights

This book covers a broad range of topics having to do with report development with Excel. Here are some of the highlights:

- Single-source coverage of Excel's report development features with notes, tips, warnings, and real-world examples at the end of each chapter
- Extensive and in-depth information on PivotTable and Spreadsheet report features, functions, and capabilities
- Thorough documentation of the Microsoft Query program included with Excel
- Comprehensive information on Excel's client-based OLAP cube tools for processing very large data sets from OLTP data sources

In addition, this book helps you thoroughly understand these main features of Excel's reporting technology:

- PivotTable reports: A powerful and dynamic reporting tool that allows users to analyze data sets by dragging-and-dropping fields into various report sections. Numerical data can be aggregated and summarized into a myriad of products and forms. Using this technology, you can rapidly move fields in and out of the report, change aggregations, and customize filters. Drill down on any subtotal or total cell to reveal the underlying data—and simply click the mouse button to refresh your report with the most up-to-date information from OLTP databases and other external data sources.
- Spreadsheet reports: A reporting tool that allows users to import data into a more traditional columnar-type format. After the data is in the Spreadsheet report, users have numerous options and powerful functions at their fingertips, such as filters, advanced sorts, conditional formatting, lists, and fill-down formulas. As is the case with PivotTables, Spreadsheet report data can be immediately refreshed with a click of a button.
- Parameter queries: One of the most powerful, overlooked, and undocumented areas of Excel reporting, parameter queries allow users to dynamically specify filters each time a Spreadsheet report or PivotTable list is updated. Using this feature, you can restrict the number of records returned from a data source before the data is even imported into Excel. This results in faster report runtimes and more concentrated focus of report information. Parameter queries are frequently used in conjunction with SQL stored procedures, views, and queries to target a specific range of data such as a date range, product line, region, or division.

## What You Need to Know

You don't have to know Structured Query Language (SQL) to get real value from this book. However, readers who are familiar with SQL programming will probably get the most out of it. Indeed, many SQL programmers find that Excel report development is the next logical progression in their technology education. Still, even if you are only an experienced user of Excel, you will learn a substantial amount about Excel reporting, especially in the earlier chapters where the graphical Excel tools are used to build SQL queries that run against external data sources such as delimited files, spreadsheets, and databases.

## What You Need to Have

To make the best use of this book, you need the following software installed on your computer:

- **Excel 2007:** Microsoft has made several enhancements to both the graphical display and report development features in this latest Excel release. If you are using an earlier version of Excel, you should purchase my first book entitled Excel Advanced Report Development (ISBN: 0764588117).
- **Microsoft SQL Server 2005:** Much of the material in this book is focused on report development using OLTP databases. Many exercises require access to the SQL Server AdventureWorksDW database that is included as part of a default installation of SQL Server 2005.
- **Microsoft SQL Server Analysis Services 2005:** This program is included on the Microsoft SQL Server 2005 CD-ROM. It should be installed so that you can follow along with the online chapter on Online Analytical Processing (OLAP) cubes.

# How This Book Is Organized

Because there are so many enterprise software systems in the marketplace, it's impractical to include report examples for each one of them. Instead, for most of the exercises and examples I've used Microsoft SQL Server's AdventureWorksDW database that is included as part of a default installation of SQL Server 2005.) This database provides an excellent example of how a data mart or data warehouse database might be organized. Using this database program, I think you can obtain a useful and informed perspective on how you might go about developing comparable reports for your enterprise systems.

I've organized this book to help readers of all skill levels. If you're new to Excel reports, you should start with Part I of the book. Advanced users who are already familiar with Excel's reporting features and with external data sources can skip to Part II, where the core features, functions, and components of Excel reports are covered. The appendixes in Part III provide references for installing the NorthwindCS database, configuring your Windows operating system to display extensions for known file types, and using basic SQL.

## Part I – Report Basics

This part consists of three chapters. Chapter 1 provides an introduction and orientation to the major types of Excel reports and reporting components. Chapter 2 introduces PivotTable report technology, providing a conceptual overview of how PivotTable report data is organized. Here, I demonstrate how data is summarized and presented in a PivotTable report. Chapter 3 provides an overview of the components and essential elements of an Excel 2007 PivotTable report.

## Part II – External Data

This section of the book includes six chapters – all covering external data from various perspectives. Chapter 4 provides an overview on accessing external data sources,

including the various types of ways that data can be accessed from Excel. In Chapter 5, I cover the five buttons of the Get External Data group that can be used to access data from text files, Access databases, web sites, OLAP cubes, and SQL/Oracle databases. Chapters 6-8 provide comprehensive coverage of the Microsoft Query program that can be used to build and/or process sophisticated SQL queries.

## Part III – PivotTable Reporting

The principal topics of Excel PivotTable reports are covered in Chapters 10-13. Chapter 10 includes material on PivotTable report design. Here you learn about the enhanced filtering, tools included in Excel 2007 along with the core PivotTable functions for sorting and grouping data, creating custom formulas, and working with inner and outer fields. Chapter 11 includes a comprehensive review of conditional formatting tools, report style template, and report layout options. I describe how data can be managed in Chapter 12 and then cover the graphical options available in PivotCharts in Chapter 13.

## Part IV– Spreadsheet Reporting

The principal topics of Excel Spreadsheet reports are covered in this part of the book, Chapters 14-16. I cover the core features and tools of Spreadsheet reports in Chapter 14, including filtering, navigation, and report management tools. Taking Excel reports to the next level, I demonstrate how several Spreadsheet reports can be linked to one another to develop a larger, automated report solution in Chapter 15. And in Chapter 16 I provide detailed information on Spreadsheet report formatting.

## Part V– Appendices

Appendix A includes an SQL reference. Here, basic and sophisticated query structures are dissected and reviewed in detailed. This appendix includes a review of string and mathematical operators, aggregate functions, and Case logic. Finally, a review of the clicking actions, pop-up menus, and tab functions of PivotTable reports are summarized into Appendix B.

# Conventions

To help you get the most from the text of this book and keep track of what's happening, I've used a number of conventions throughout the book.

**NOTE** **In text formatted like this you will find important "extra" information that is directly relevant to the surrounding text. By reading these Notes, Tips, Warnings, Cross-References, On the Web, and Watch the Video text boxes, you can get additional help and learn some special tips.**