# PROPOSED Title/SUBTITLE

Title: Practical Azure Data Studio

Subtitle: Microsoft’s Open Platform for Data Engineering and Analytics

# AuTHOR DATA

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# BOOK Description

This book introduces Microsoft Azure Data Studio and shows how anyone working with data -- data scientists, data analysts, database administrators, and developers -- can use Azure Data Studio to dramatically streamline and accelerate their daily work. Learn to connect to databases whether in the Azure cloud or hosted on premises in your corporate environment. You can even connect to databases from competing brands and from the world of open source. Then learn how you can query and analyze data – mining it for business insight -- using a fusion of languages such as Python, SQL, and PowerShell. Also take advantage of built-in functionality such as Jupytr Notebooks and Apache Spark.

Azure Data Studio is a quickly emerging software platform from Microsoft meant to be a free-form toolbox for all sorts of data manipulation and analytics tasks. Going beyond just querying interactively, this book shows how you can create and customize dashboards, and how you can maximize your work products, whether it’s a small code snippet, or an exhaustive notebook. You’ll learn how to benefit from Git and GitHub where your queries and analysis can be shared and improved by others in your organization, or even collaborate with those on the outside. You’ll even learn how to develop custom extensions by which you bring your own signature and functionality into the Azure Data Studio platform. If you’re involved in a role working with data and you are looking for an open architecture platform for exploring your data, managing your data, and for collaborating with colleagues to derive business value by analyzing that data, then this is the book you want to read, and Microsoft Azure Data Studio is the platform you ought to learn.

# UNIQUE Selling Points

* Shows how Azure Data Studio provides a modern approach for analyzing and exploring data
* Demonstrates data visualizations, customizable dashboards, shareable code snippets and notebooks
* Provides a case-study around creating a fully integrated, Azure Data Studio extension

# What READERS Will Learn?

* **Create and Share notebooks which encapsulate rich text, code, results, and links**
* **Discover a modern way to code, process, visualize, document and share data**
* **Implement source control and share your work effortlessly using Git**
* **Develop data centric solutions that work on multiple platforms**
* **Create custom extensions to integrate your own custom functionality**
* **Eliminate repetitive SQL queries with code snippets**
* **Enhance the Integrated Dashboards with your custom visualizations**
* **Execute command line tasks directly in the Integrated Terminal Window**

# Key Words

* Azure Data Studio
* SQL
* Databases
* Data Engineering
* Cloud Data
* Data Integration
* Data Warehouse
* Cross Platform Data
* Data + PowerShell
* Data + Python
* Code + Data
* SQL Server

# Audience

For data engineers and anyone who is involved in exploring and analyzing data. This audience includes data scientists, SQL developers, data analysts, and database administrators. For professionals involved in data integration and data warehousing, and for Python and PowerShell experts who are looking for a convenient workshop-style platform by which to use those languages for data science and analysis.

# Competition

**I don’t really see any direct competition (zero books *currently* on Amazon with “Azure Data Studio” in the title). Tangentially, here are three books that might have some overlapping content:**

* **Visual Studio Code Distilled: Evolved Code Editing for Windows, macOS, and Linux by Alessandro Del Sole (Apress)**
* **Visual Studio Code: End-to-End Editing and Debugging Tools for Web Developers by Bruce Johnson (Wiley)**

**The two books listed above cover a related product (Visual Studio Code), which happens to be a ‘parent’ product to “Azure Data Studio” within Microsoft’s software development ecosystem. As a result, certain features, such as *Source Code Management* are implemented in the same way.**

* **Hands-On Data Warehousing with Azure Data Factory: ETL techniques to load and transform data from various sources, both on-premises and on cloud by Christian Cote, Michelle Gutzait, et al. | May 31, 2018**

**The above book has content which will partially overlap with our proposed book, since one of the ‘extensibilities’ we plan to cover in ADS is the ability to directly interact with “Azure Data Factory”.**

# ESTIMATED Page/WORD Count

**250 pages**

# ESTIMATED Schedule

* Target due date for a first draft of the first three chapters: **Mar. 15th**
* Target due date for a first full draft of all the chapters: **June 30th**

# Author Bio/CV

**Jim** has worked in many facets of the IT business for over 30 years, with a focus on data warehousing, data integration, reporting and analytics, business intelligence, data modeling (relational, multi-dimensional), ELT/ETL frameworks, database architecture, and database performance tuning. In previous engagements, Jim has fulfilled roles as Data Architect, DBA, IT Director, and Senior Consultant. He also has experience in account management, marketing/technical support, and software application training. Jim has also had some extraordinary opportunities to lead IT organizations, with multi-national participants, on reconstruction projects based in Bosnia as part of the Dayton Peace Agreement, and more recently in Iraq with the US Department of State.

**Jim** is the President of BI Tracks Consulting and is on a mission to improve development processes centric to all forms of Data Engineering, as well as the overall care and feeding Data Warehouses.

**Jim** stumbled across “Azure Data Studio” (ADS) while attending the SQL PASS Summit 2019 in Seattle. After attending a few sessions, Jim realized that this product/platform could revolutionize how we interact, discover, process, and share data and analytics. Knowing that others could be just as excited with the potential of ADS, Jim decided to write this book.

# AUTHOR Platform

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**Introduction (6 pages)**

Back in 1980, while busily programming Basic on a Dec PDP-11 in Cincinnati, I was introduced by a friend to a new software product called ‘VisiCalc’. It was the burgeoning micro-computer era, and the infancy of personal software programs. My less than thoughtful reaction to the glowing green lines and text in VisiCalc, starting with ‘1A’ was “Meh… not really feeling it”. After all, who really needs an *Electronic* Spreadsheet!

I now realize how quickly I dismissed not only a revolutionary product, but an entirely new way to personally interact with software. Forty years later, donning a new hair color, and attending the SQL PASS Summit conference in Seattle, I was introduced to a new product called “Azure Data Studio”. This time my reaction was not: ‘Meh…’; it was: ‘Wow!’. Launched in September of 2018, ADS…

**What you need to get the most from this book**

Azure Data Studio is free for both private and commercial use, and can be downloaded from:  
<https://docs.microsoft.com/en-us/sql/azure-data-studio/download-azure-data-studio?view=sql-server-ver15>

Azure Data Studio runs on Windows, macOS, and Linux (refer to the above link for supported OS versions).

“Database Platforms” supported at the time of this writing are SQL Server and PostgreSQL, which includes On-premise and Cloud instances. If you do not have a database system handy, and would like to start with a *free and light-weight* version of SQL Server, you can download the ‘Express’ edition from: <https://www.microsoft.com/en-us/sql-server/sql-server-downloads>

…

# Part I: The Landscape

Before jumping into Azure Data Studio, it is worthwhile to step back to gaze on the big picture. There are at least four ways to accomplish the same task, and in perhaps very different ways. Despite our tendency to achieve as much as possible, in as little time as possible, it helps to view your work products based on shelf-life, reusability, orchestration, storage, sharing and even collaboration.

(include: What Azure Data Studio is Not)

## Chapter 1: Open Source, Cross-Platform, Multi-Database **(5 pages)**

I’ve had many strange looks after mentioning “Open Source” and “Microsoft” within the same sentence. However, that is only the beginning when it comes to Azure Data Studio (ADS), which offers both Cross-Platform and Multi-Database capabilities. This is not the Microsoft from the years of Steve Ballmer, who once referred to the *free* software Linux kernel as "communism". (Full disclosure: Mr. Ballmer has a new and open perspective today)

1. What “Open Source” means for this new breed of Microsoft Software
2. The new options provided by “Cross-Platform” computing
3. What “Multi-Database” means for your SQL experience

## Chapter 2: Everything Starts with a Connection **(10 pages)**

Most of what you do in Azure Data Studio will start with a connection. This ADS experience has some nice surprises compared to its older sibling: SQL Server Management Studio.

1. Creating, Using, and Managing Connections
2. Grouping and Color Coding your Connections
3. Central Management Servers Extension

## Chapter 3: SQL Editing Reimagined **(15 pages)**

As database professionals, we tend to spend a great deal of time in coding SQL statements. ADS provides a rich environment for this universal database task, encouraging bug-free code, reusability, parametrization, and more.

1. Entering Queries - IntelliSense, Snippets and Object Definitions
2. Saving Queries and Snippets
3. Top Down View with Minimap
4. SQL Queries via the Command Terminal

## Chapter 4: Visualizing and Exporting Your Queries **(10 pages)**

How far is a visualization away from the results of your queries? The refreshing answer in ADS is just ‘one click’. How about rendering as JSON, XML, or CSV you ask? About the same.

1. Anatomy of the Results Pane
2. Querying for Easy Visuals
3. Getting Pixel Perfect
4. Sharing your Results

## Chapter 5: Getting Things Done with Notebooks **(20 pages)**

Notebooks are a sleeping giant, poised to change about everything we do with data, analysis, and related processes. The ability to store Rich Text, Queries and Results in a tidy reusable package is groundbreaking enough. However, the broader impact of what can be accomplished using Jupyter Notebooks is truly stunning…

1. Notebook Building Blocks
2. The SQL Kernel Experience
3. Additional Kernel Options
4. Innovative Possibilities with Notebooks
5. Sharing your Notebooks and Narratives

## Chapter 6: Reaching Beyond SQL with PowerShell and Python **(15 pages)**

Not long ago you needed to use 2 or more applications when moshing your SQL code with languages such as Python or PowerShell. The user experience in ADS fuses this development paradigm into a single platform, leading to some surprising innovation, especially when developing data centric applications…

1. A New Home for PowerShell
2. Contributions from the Community – PowerShell’s dbatools
3. Python as your Portal to More Databases
4. Python and Machine Learning

## Chapter 7: Source Control by Design **(6 pages)**

Source Control is an indispensable capability, and would like to be your friend, but all too often obstructs developers, creating cryptic fails, with cries of anguish, where only a mystic can help. With Microsoft’s acquisition of GitHub, and seamless integration of Git in ADS, Source Control is friendly, protective, and highly functional…

1. What is Considered ‘Source’ Code?
2. What are the Options with ADS Source Control?
3. Configuring your Machine for Git

## Chapter 8: Free and Easy Extensions **(20 pages)**

Extensions are core to Azure Data Studio and represent a profound invitation from Microsoft to developers to play directly in the ADS ‘Marketplace’. This chapter will cover of some indispensable and totally free Extensions, which also happen to be just a few clicks away…

1. Installing and Managing your Extensions
2. ‘Sand Dance’ for Azure Data Studio
3. SQL Server Schema Compare
4. PowerShell for ADS
5. Redgate SQL Search

# Part II: The Deep Dives

This next section seeks to dig deeper into many of the topics and features introduced in Part I. The reader will find both concrete and reusable examples in each dive. This chapter should also show feature synergy, revealing that the Whole of ADS is greater than a sum of its enumerated Parts…

## Chapter 9: Creating Snippets **(12 pages)**

All too repetitive typing of SQL is the mother of all things now baked into ‘Snippets’. As developers, we of course have created ways to mitigate the unfortunate circumstance of time eating keystrokes, but is there a better way?

1. Creating and Managing Snippets
2. Options for Parameters and Drop-downs
3. Management of Verbose and Numerous Snippets

## Chapter 10: Customizing your Dashboards **(12 pages)**

Everyone loves dashboards. They provide compact, strategic visuals which can be informative, reassuring, and even actionable. However, despite their popularity, dashboards and visualizations can be difficult stand-up, and keep relevant. Azure Data Studio is here to help…

1. Dashboards and Widgets
2. SQL Queries and your Widgets
3. Drill-in with Insight Detail Pages

## Chapter 11: Notebooks Gone Wild **(12 pages)**

As discussed in Chapter 5, Notebooks have many uses and will likely proliferate in your world. This chapter goes undercover to see why and how Juypter Notebooks rock…

1. Feels Like a Book, Build on Json
2. Organizing, Navigating, Sharing and Trusting
3. Getting at Big Data with Spark
4. Notebooks creating Notebooks – Say What?

## Chapter 12: The Fully Integrated Terminal Window **(10 pages)**

Today the command-line interface is resurgent, expedient, and powerful. So why require a busy data professional to click around for a supplemental Terminal application? Azure Data Studio bakes-in a Terminal based user experience for both convenience and versatility…

1. Multi-Session and Multi-Lingual
2. Key Bindings – Mouse Optional
3. PowerShell Core and Living Cross-Platform

## Chapter 13: Protect, Version, and Collaborate with Git **(8 pages)**

ADS is “source controlled”, and you can see it right here: <https://github.com/microsoft/azuredatastudio>. Why not follow the lead from Microsoft and get real with Git and GitHub. It’s all built-in, it’s free (within limits), and now it’s even easy…

1. Start with a GitHub account
2. Source Repositories, Cloning and Sharing
3. Stage, Commit, and Sync

## Chapter 14: Using Python to Extend Your Platform Reach **(15 pages)**

Up to this point we have limited our database reach to SQL Server and PostgreSQL. But what about other relational databases? In this chapter we will demonstrate how ADS can be used to interact with the ‘snowflake’ Data Warehouse platform…

1. The snowflake CLI
2. Python and the first-class snowflake connector
3. Loading and Querying snowflake

## Chapter 15: Using PowerShell to Integrate with Azure Data Factory **(15 pages)**

Did we forget about the ‘Azure’ in Azure Data Studio? Not at all. Let’s use PowerShell and Azure Data Factory 2.0 to see what is possible in the ELT/ETL space with ADS…

1. The AZ PowerShell Module
2. Getting connected in Azure Data Factory
3. Working with Datasets
4. Invoking a Pipeline to Copy Data

## Chapter 16: Building an Official Extension **(20 pages)**

Yes, you can build an extension for ADF. Whether your aspirations are grand or modest, Microsoft makes this possible for mere mortals. Here’s how…

1. Installing Prerequisites - Node.js and Visual Studio Code
2. Choosing your Type – Extension Categories
3. Testing, Creating and Sharing your Extension
4. Expanding your vision

# Part III: The Case Study

This section will be the deepest of our deep dives. We set out to try, discover, learn, apply, and then rinse/repeat. Here is what we have learned so far about Azure Data Studio in the real world of applications.

## Chapter 17: Application Integration with ADS **(25 pages)**

Azure Data Studio provides a revolutionary shift to how you interact with databases; but what about your database applications? After all, most data are entered, processed, and reported/visualized via software applications, whether purchased separately or developed in-house.

1. Introduction to the Application
2. The Anatomy of an ADS Extension
3. Redefining Agile
4. Leveraging all the SQL Editor Features
5. Integrating with Custom Forms
6. Possibilities when using the Integrated Terminal

# Part IV: The Appendixes

## Appendix A: The Plan to Keep this Book Fresh and Relevant **(4 pages)**

Since Azure Data Studio this is such a fast-moving product, with a new release every month, Appendix ‘A’ will describe the strategy to provide on-line updates, most likely in the form of ‘Azure Data Studio’ Notebooks, via GitHub.

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