

# Presentation of Business Analytics

## VS Code as a Tool for Business Analysts

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# Agenda

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The "One Window" Workflow

SQL Integration & AI Assistance

ETL Workflows in VS Code

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# Introduction

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# Why VS Code for Business Analysts?

## Traditional Challenges

- Multiple tools for different tasks
- Context switching overhead
- Collaboration difficulties
- Complex SQL query development
- Manual ETL processes

## VS Code Solution

- Unified development environment
- Integrated terminal and tools
- Version control built-in
- AI-assisted coding
- Extensive extension ecosystem

## The "One Window" Workflow

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# Everything in One Place

## THE ONE-WINDOW WORKFLOW: VS CODE FOR BUSINESS ANALYSTS

All Your Data. All Your Insights. All in One Place



# SQL Integration & AI Assistance

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# SQL Development Supercharged

## Key Extensions

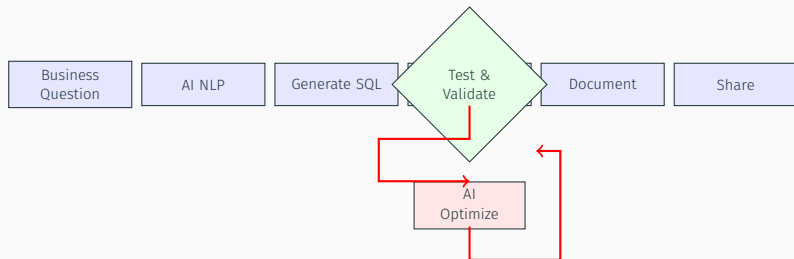
- **SQL Server (mssql):** Connect to databases, run queries
- **SQLTools:** Multi-database support
- **GitHub Copilot:** AI pair programmer
- **SQL Formatter:** Clean, readable code

## AI-Powered SQL Features

- Natural language to SQL conversion
- Query optimization suggestions
- Auto-completion of complex joins
- Error detection and fixes
- Query explanation generation



# AI-Assisted Query Writing Workflow



## Process Flow

1. Business Question → 2. AI Processing → 3. SQL Generation → 4. Validation → [If fails: AI Optimization] → 5. Documentation → 6. Results Sharing

# How AI Transforms Business Analysis

## AI Capabilities in VS Code

- **Natural Language to SQL:**
  - "Show top 10 customers by revenue"
  - "Compare sales this month vs last month"
  - "Find customers who haven't purchased in 90 days"
- **Smart Code Completion:**
  - Auto-completes table joins
  - Suggests WHERE clauses
  - Recommends aggregate functions

## Time Savings

- Query writing: **55% faster**

## Error Prevention & Learning

- **Syntax Checking:**
  - Highlights errors in real-time
  - Suggests fixes for common mistakes
  - Validates table/column names
- **Performance Optimization:**
  - Suggests indexes
  - Recommends query restructuring
  - Explains execution plans
- **Learning Assistant:**
  - Explains SQL concepts
  - Provides best practices
  - Teaches optimization

# ETL Workflows in VS Code

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# ETL Workflow Management

## Traditional ETL

1. Extract (Python/R script)
2. Transform (SQL/Pandas)
3. Load (Database tools)
4. Validate (Separate tool)
5. Document (Word/Excel)

Multiple tools & context switching

## VS Code ETL

1. All steps in one workspace
2. Integrated terminal for execution
3. Live data preview
4. Git version control
5. Markdown documentation

Single environment workflow

## **VS Code Tools:**

- Python/R extensions for transformation
- SQL tools for loading
- Jupyter for exploration
- Git for version control

## **Benefits:**

- 50% faster ETL development
- Better error tracking
- Reproducible workflows
- Team collaboration

# Jupyter Notebooks Integration

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# Interactive Data Analysis with Jupyter

## Benefits for Business Analysts

- Interactive Python/R execution
- Combine code, visualizations, and documentation
- Real-time data exploration
- Built-in data visualization
- Export to multiple formats

## Common Use Cases

- Exploratory data analysis
- Statistical modeling
- Data visualization
- Prototyping analytics
- Training documentation

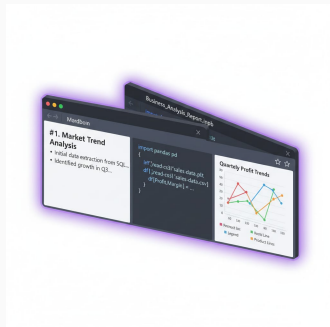


Figure 3: Jupyter in VS Code

# Collaborative Power

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# Enhanced Team Collaboration

## Git Integration

- Built-in source control
- Branch management
- Pull request workflows
- Code review tools
- Change history tracking

## Live Share

- Real-time collaboration
- Shared debugging
- Pair programming
- Shared terminals

## Extensions for Teamwork

- **GitLens:** Enhanced git features
- **Live Share:** Collaborative editing
- **CodeTour:** Guided walkthroughs
- **Reviewable:** Code review assistant
- **Project Manager:** Team workspace

## Efficiency Metrics

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# Measurable Productivity Gains

Task	Before (min)	After (min)	Savings
SQL Query Development	45	20	55%
ETL Pipeline Setup	180	90	50%
Data Validation	60	30	50%
Documentation	90	40	55%
Collaboration Setup	30	5	83%
<b>Total (Project)</b>	<b>405</b>	<b>185</b>	<b>54%</b>

Table 1: Time Savings with VS Code Workflow

## Key Efficiency Drivers

- Reduced context switching
- AI-assisted coding
- Integrated tools
- Automation through extensions

## Recommended Setup

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# Essential Extensions for Business Analysts

## Core SQL Tools

- SQL Server (mssql)
- SQLTools
- PostgreSQL
- MySQL
- SQL Formatter

## Data Science

- Jupyter
- Python
- R
- Pylance
- Data Preview

## Productivity

- GitHub Copilot
- GitLens
- Live Share
- Excel Viewer
- Markdown All in One

## Conclusion

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# Summary: Why VS Code Wins for Business Analysts

## Key Advantages

- **Unified Environment:** One tool for SQL, Python, documentation
- **AI-Powered Development:** Faster, smarter query writing
- **Seamless Collaboration:** Built-in Git and Live Share
- **Extensible Platform:** 40,000+ extensions available
- **Cost Effective:** Free and open source

## Business Impact

- Reduce analysis time by 50%+
- Improve data quality through better tooling
- Enhance team collaboration and knowledge sharing
- Accelerate onboarding of new analysts
- Create reproducible, documented workflows

# Questions?

Thank You!