Azure Databricks: Building a Chatbot Companion using AI/BI Genie

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Bio

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My experiences includes:

- Avanade
- CAE
- Air Canada

Expected Audience and Presentation Structure

✅ What We'll Cover:

– What is Genie and how it helps users get answers from data using natural language.
– How to prepare your data for Genie to understand the business context.
– How to guide Genie's responses using custom instructions, examples, and trusted assets.
– How to monitor results and make Genie smarter over time.

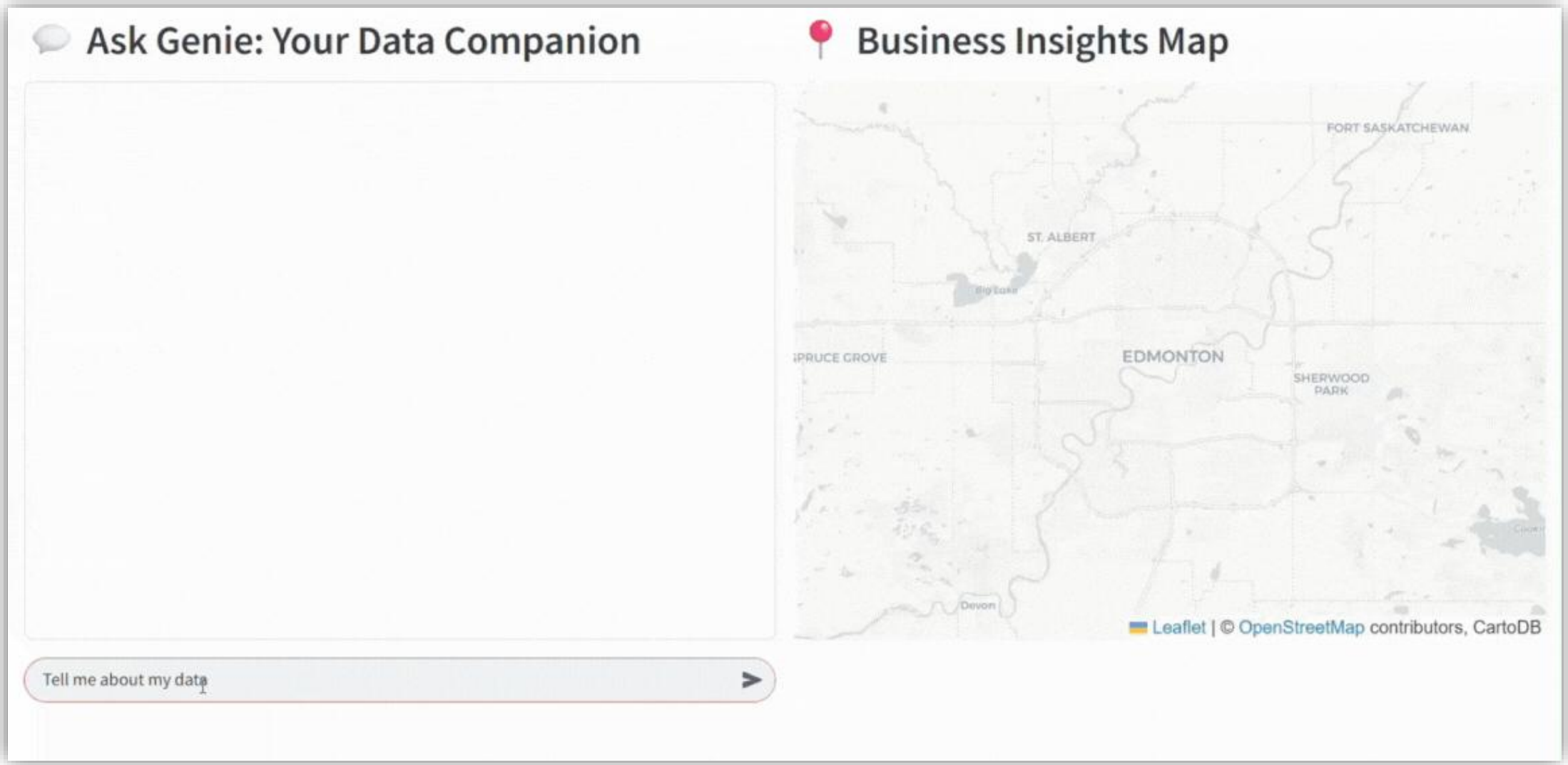
⚙️ Fundamental knowledge: Basic SQL and Databricks.

– Experienced with AI/BI Genie would be beneficial but not required.

The Reality of Self-Service Analytics

Image Credit: https://imgflip.com/i/9wxm75

What if you could talk to your data like this?



Meet Genie: Your Conversational Data Companion

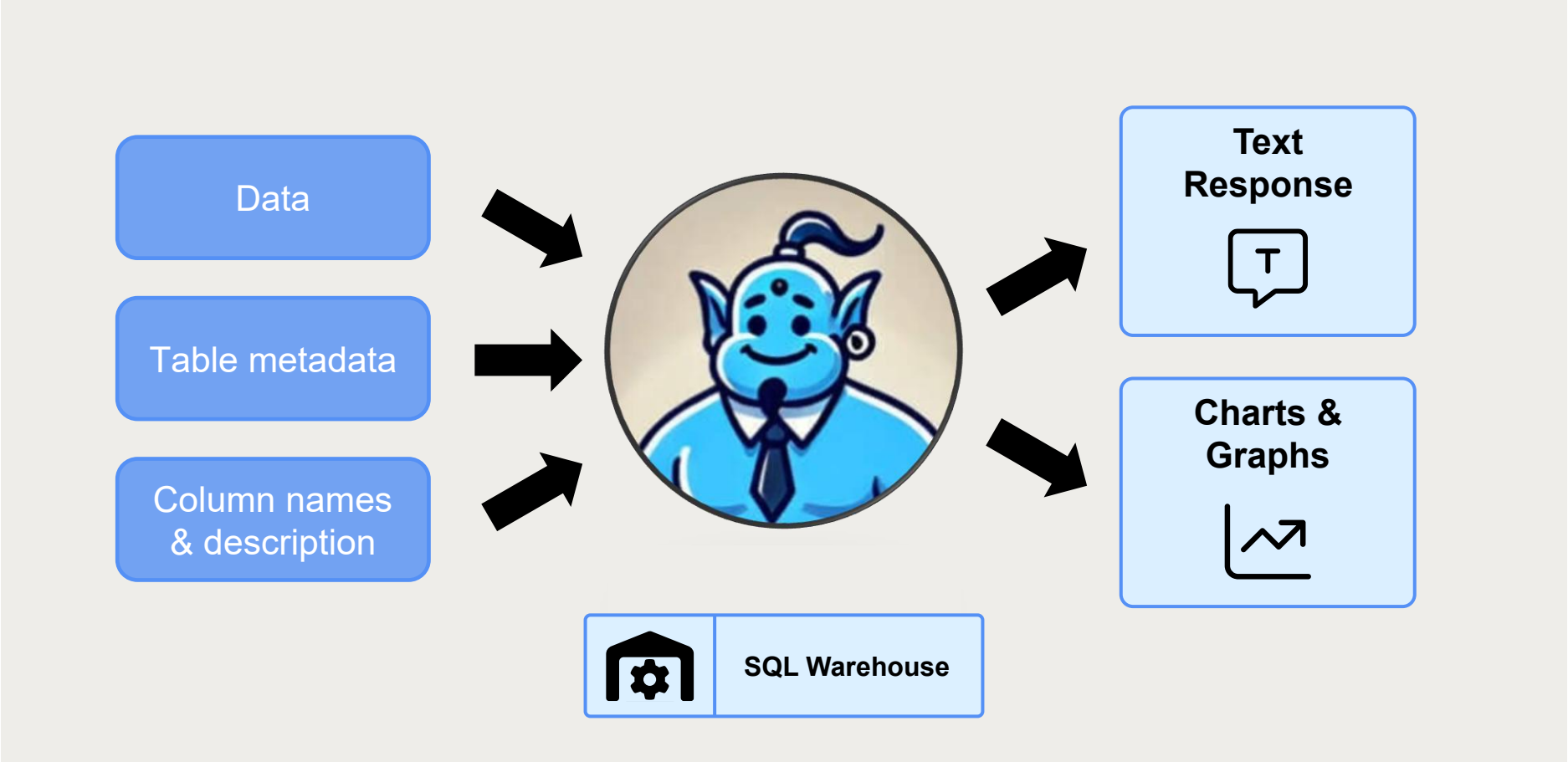
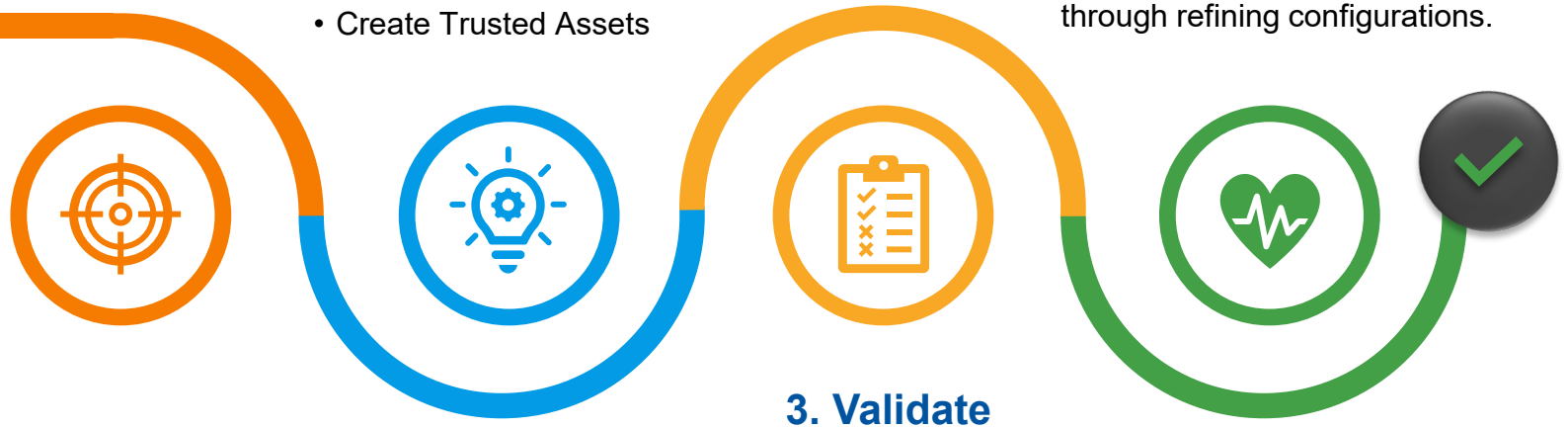


Image Credit: https://www.databricks.com/blog/onboarding-your-new-aibi-genie

Now… How do we get there?

Genie Lifecycle



1. Define & Prepare

Lay the foundation with business-aligned data

- Define the purpose and audience
- Select the right tables
- Improve Metadata Quality

2. Configure

Tailor Genie's logic, context and trusted assets

- Review Value Dictionaries
- Add Custom Instructions
- Create Trusted Assets

3. Validate

Quality control and validate results

- Improve accuracy through Benchmark testing.
- Validate results to measure accuracy.

4. Monitor & Refine

Monitor user responses and apply feedback

- Monitor user feedback
- Continuous Improvement through refining configurations.

Define & Prepare: Laying the Foundation

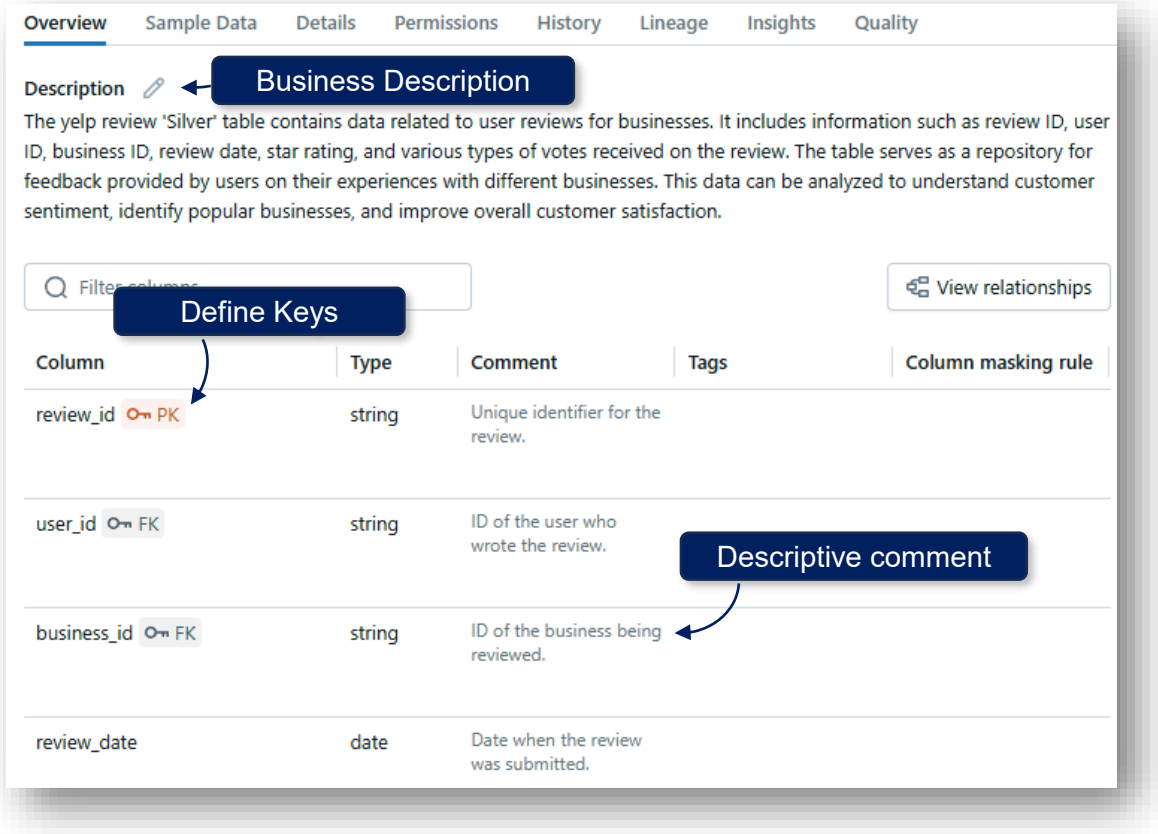
Metadata: Help Genie Understand How Your Data Connects

Purpose: Improve Genie's ability to generate accurate queries by clarifying data relationships and meaning through business-friendly metadata.

How: Leverage table description, column naming standards, column comments and table relationships (PK/FK) hints.

Tips

- ✓ Use descriptive, consistent column names (e.g. user_id, product_id, review_date).
- ✓ Add clear, business-friendly column comments. (e.g. Date when the review was submitted)
- ✓ Define PK/FK relationships. They serve as hints/guidance and not enforcement.



Configure: Tailor Genie's logic, context and trusted assets

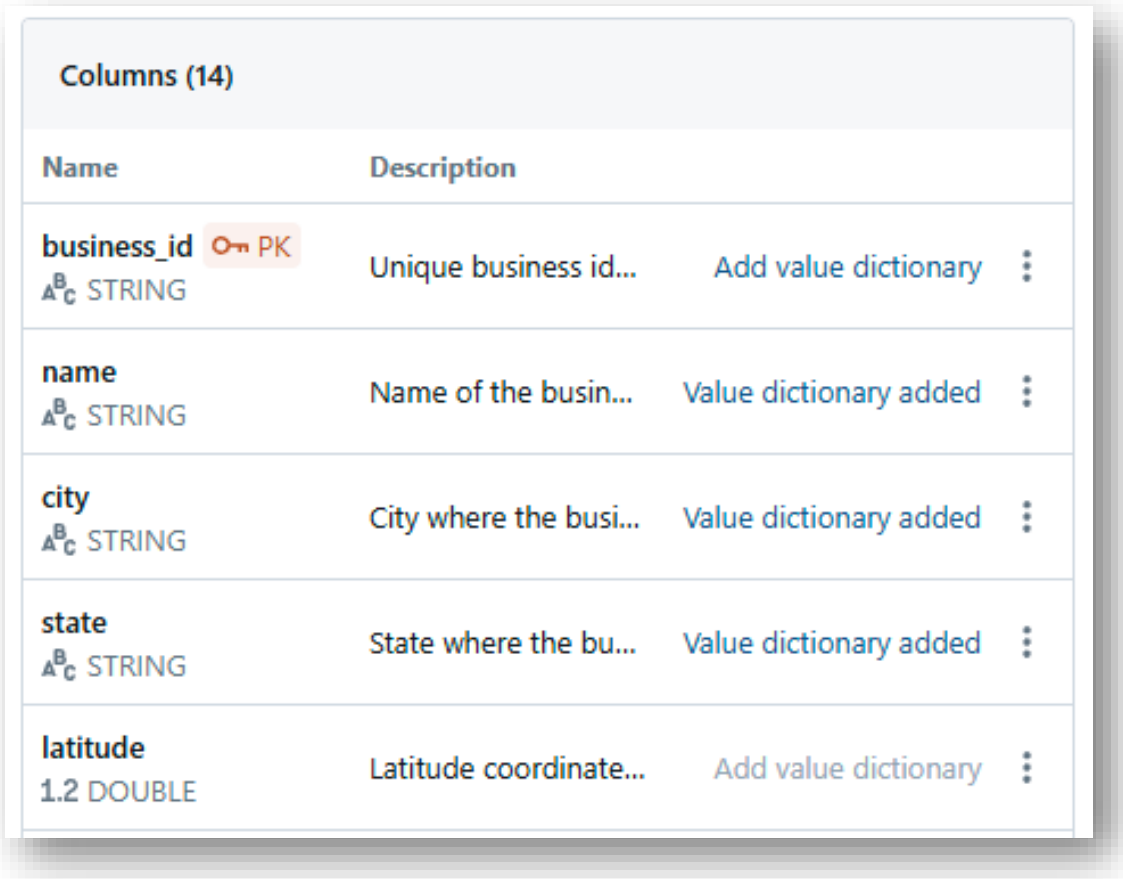
Value Dictionaries: Help Genie Interpret Business Terms Accurately

Purpose: Map domain-specific terms to specific column values in string fields so Genie can understand (e.g. customer_segment).

How: Genie automatically creates and manages list of values for eligible string columns.

Tips

- ✓ Enable dictionaries only for meaningful, well-maintained values. Refresh them regularly to keep value sets up to date.
  - ⚠️ Dictionaries are managed by Genie. It cannot be edited.
- ✓ For non-string columns, use Custom Instructions.
- ✓ Stay within limit of value dictionaries: **Public Preview**
  - 30 columns/Genie, 1024 distinct values, 127 max char.



Configure: Tailor Genie's logic, context and trusted assets

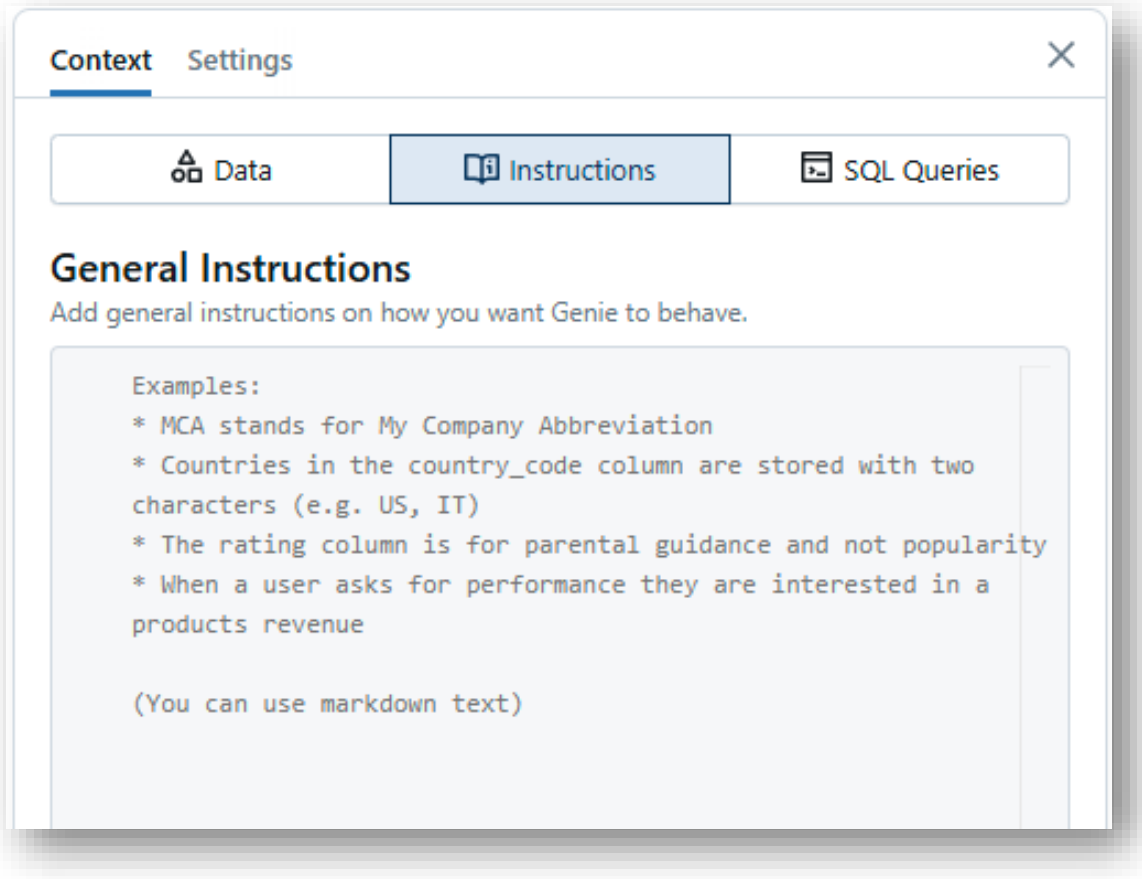
Custom Instructions: Guide Genie's Behaviour with Context, and Tone

Purpose: Shape Genie's response by defining how it should behave, what to prioritize, how to response and what to avoid.

How: Use Markdown to define Genie's behavior in a structured way.

Tips

- ✓ Organize using Markdown formatting: Heading, bullet lists.
- ✓ Be specific and concise – less is more when communicating intent (e.g. the fiscal year starts on May).
- ✓ Tailor language and expectations to your audience.
- ✓ Define any common terms and include reporting standards.



Configure: Tailor Genie's logic, context and trusted assets

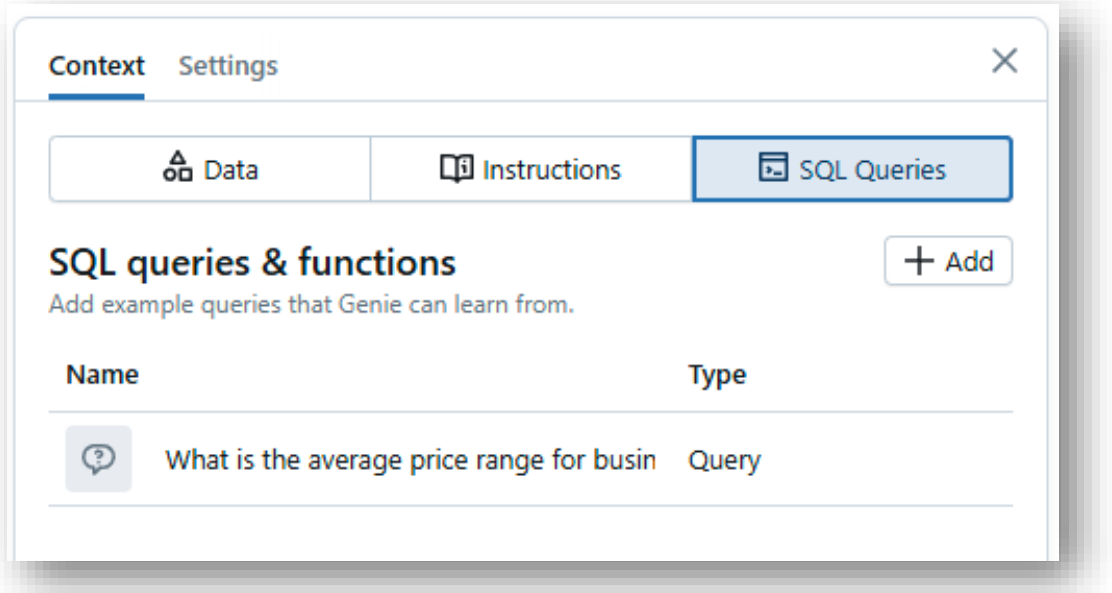
Trusted Assets: Prioritize Curated Logic to Deliver Accurate Response

Purpose: Ensure Genie uses vetted queries and functions to produce responses users can rely on.

How: Add "Trusted" SQL Queries and Functions with parameters for Genie to prioritize when answering questions.

Tips

- ✓ Trust only production-ready, business-approved assets.
- ✓ Use parameters for repeatable logic.
- ✓ Regularly review Trusted assets to ensure they are valid and relevant.



Validate: Quality Control and Validate Results

Benchmarking: Measure Genie's response accuracy

Purpose: Test the overall response accuracy using a pre-defined set of test questions and answers.

How: Create realistic questions the corresponding expected SQL query. Genie will compare its response with the provided query output

Tips

- ✓ Phrase each question 3 to 5 different ways to simulate realistic language variability from users.
- ✓ Include questions known to be ambiguous or frequently misunderstood.
- ✓ Repeat benchmarks regularly to monitor performance over time.

Monitor & Refine: Monitor User Responses and Apply Feedback

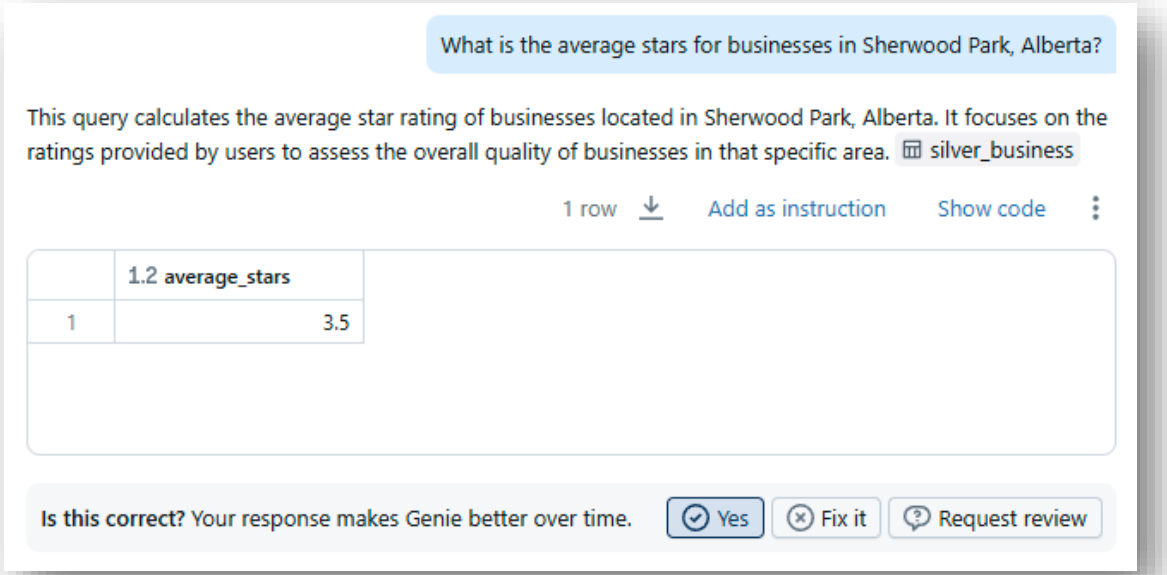
Feedback & Monitoring: Capturing and Actioning on User's Review

Purpose: Creates a continuous improvement loop by tracking user's feedback to improve performance.

How: Users provide feedback on responses. These signals are tracked and monitored to help identify areas where Genie refinements are required.

Tips

- ✓ Encourage users to give feedback (Yes, Fix it, or Request Review). They are crucial in helping improve the Genie.
- ✓ Establish a review process to "Close the loop".



Let's Build One – Configuring Genie in Azure Databricks

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Key Takeaways: Building a Trusted, Self-Serve Genie Space

- To democratize data, users need to “talk to the data” using natural language.
  - Genie enables this – but will only shines with a thoughtful setup.
- Metadata, Value Dictionaries and Trusted Assets help Genie interpret questions and generate reliable answers.
- Custom instructions align Genie’s tone, logic, and priorities with business context.
- Benchmarking and Feedback loops are essential to continuously improve the data companion’s accuracy and usability.

- The code is in my Github repo:
  - https://github.com/wilson-mok/demo/tree/main/2025/MSDEVMTL/2-Databricks-Chatbot-Companion

Thank you

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