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UNLOCKING THE POTENTIAL OF MICROSTRATEGY

# Navigating Data Assets and Extraction Methods

# Introduction

The ability to turn raw data into actionable insights is a crucial asset for modern organizations. MicroStrategy, a leading business intelligence (BI) platform, plays a significant role in this transformation. Its robust suite of tools is designed to help organizations not only achieve this transformation but also effectively manage and extract its diverse assets—reports, dashboards, and visualizations—that empower data-driven decision-making.

This document explores the key assets within MicroStrategy, the challenges associated with managing these assets, and the methods to efficiently extract and utilize them. We will also highlight the importance of metadata governance and the crucial role of advanced tools in ensuring data accuracy and compliance, providing you with a sense of reassurance and security.

## Scenario 1: Understanding and Tracing Lineage in MicroStrategy

Data lineage is the backbone of accurate and reliable BI outputs. In MicroStrategy, understanding the lineage of assets is crucial for tracking the flow of data from its source through various transformations to its final presentation in reports and dashboards. This comprehensive view is essential for ensuring data accuracy, maintaining compliance, and efficiently troubleshooting any discrepancies.

### Case Study: Ensuring Financial Reporting Accuracy

A financial services company relies on MicroStrategy to generate critical financial reports. These reports are essential for internal audits, regulatory compliance, and executive decision-making. The accuracy of these reports is paramount; any anomalies could lead to significant issues, including regulatory penalties.

An inconsistency was detected in a revenue report. The finance team needed to trace the data back to its origins to identify and correct the discrepancy. Using Octopai, the team could visually map the entire data flow—from the source systems through various transformations to the final report. This capability allowed them to quickly pinpoint the issue, rectify the data, and ensure the accuracy and reliability of their financial reports.

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# Scenario 2: Viewing Asset Descriptions and Ownership

Effective management of BI assets in MicroStrategy requires more than just tracking data lineage; it also involves maintaining detailed descriptions of assets and knowing who owns them. This information fosters collaboration, ensures accountability, and maintains high data quality standards, giving you a sense of organization and control.

## Case Study: Managing BI Reports in a Retail Company

A retail company uses MicroStrategy to generate business intelligence (BI) reports that inform critical decisions regarding inventory management, sales performance, and customer behavior. With multiple departments accessing and modifying these reports, it's crucial to maintain a detailed record of who owns and modifies each report, along with a clear description of their purpose.

The marketing team noticed inconsistencies in a critical report, "Monthly Sales Performance," following a recent update. To resolve this, they needed to determine who made the changes, what they were, and whether they were authorized and documented. By leveraging Octopai's capabilities, the team could track the history of changes made to the report, including the identity of the modifier, the date of the change, and the specific alterations made. This detailed change history, combined with asset ownership information, ensured that the marketing team could quickly identify the root cause of the inconsistencies, ensuring that the report aligned with the company's data quality standards.

# Scenario 3: Governance of Metadata

Metadata governance in MicroStrategy is not just a best practice, it's a necessity. It involves establishing and enforcing policies for managing and utilizing data assets. This governance is a key factor in ensuring that metadata is consistent, reliable, and accessible to authorized users, thereby supporting informed decision-making and operational efficiency.

## Case Study: Ensuring Data Consistency and Compliance in a Healthcare Organization

A healthcare organization uses MicroStrategy to manage and analyze sensitive data such as patient records, treatment outcomes, and operational metrics. Given the stringent regulatory requirements in the healthcare industry (such as HIPAA in the United States), it is crucial to enforce strict metadata governance to ensure data quality, security, and compliance.

Inconsistencies were observed in patient treatment reports across different departments,

leading to potential compliance risks. To address this, the organization needed to establish a robust metadata governance framework that standardized data definitions, enforced security policies and ensured that all data complied with regulatory requirements.

Using Octopai, the healthcare organization could visualize and manage the entire data lifecycle, from definition to transformation to final usage. This governance framework ensured compliance with regulations and facilitated consistent data usage across various departments, thereby improving operational efficiency and reducing the risk of non-compliance.

## Leveraging MicroStrategy APIs and Tools

MicroStrategy offers a range of APIs and tools to address the challenges associated with managing and extracting BI assets. These resources enable users to access detailed information about asset lineage, descriptions, ownership, and change history and to integrate various technologies to enhance metadata governance.

## MicroStrategy's suite of assets includes:

1. Reports: The fundamental units of analysis in MicroStrategy provide detailed data in tabular or graphical formats.

2. Documents: Advanced BI documents that combine multiple datasets, visualizations, and layouts into a single view.

3. Dossiers: Interactive and shareable collections of data visualizations, similar to a dashboard.

4. Attributes: Descriptive data elements representing categorical data, such as customer names or product categories.

5. Facts: Numerical data elements representing quantitative data, such as sales figures or quantities.

6. Metrics: Calculated values derived from facts, often used in aggregations or computations, such as averages or sums.

7. Tables: Database tables that store raw data.

8. Logical Tables: Virtual tables in MicroStrategy representing data from one or more physical tables.

9. Projects: Collections of related objects within MicroStrategy, providing a structured environment for BI development.

10. Intelligent Cubes: Multi-dimensional data structures that allow for high-speed, multi-dimensional analysis.

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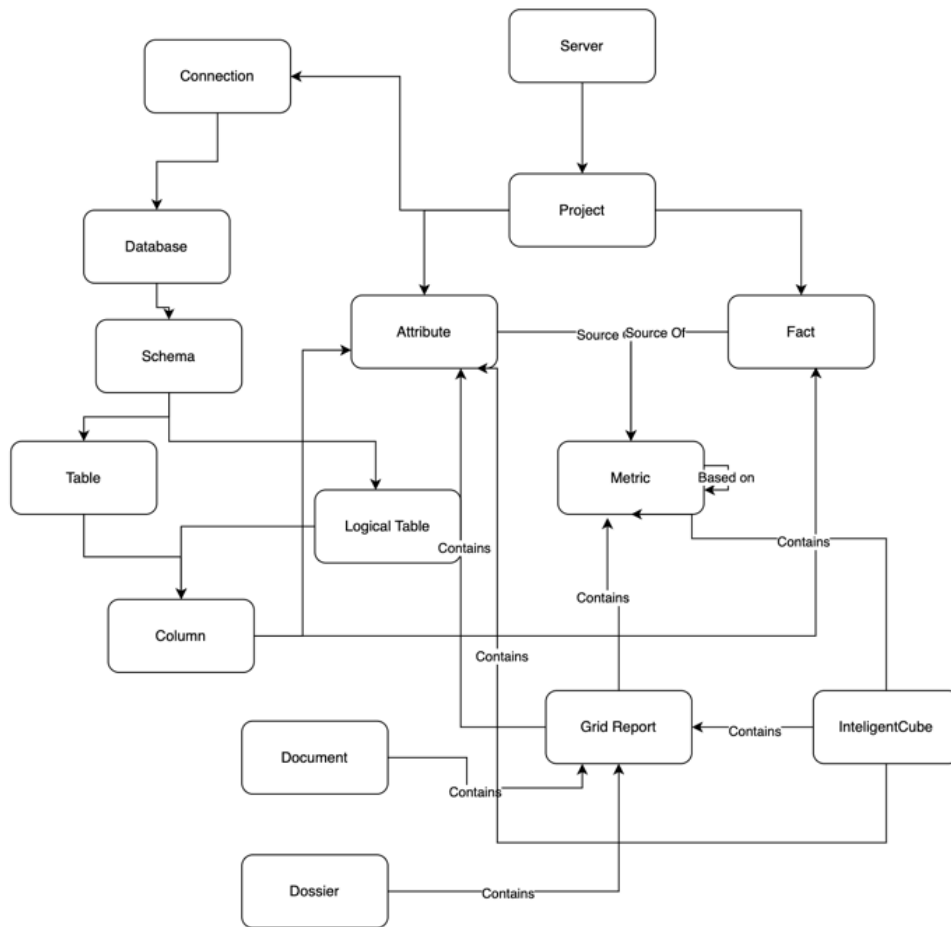
These assets can be effectively managed and utilized by leveraging MicroStrategy's APIs, which allow for the extraction of detailed information on lineage, descriptions, ownership, and change history. Additionally, integrating these APIs with other tools can significantly enhance metadata governance, ensuring that data assets are consistent, reliable, and compliant with organizational standards.

**See Appendix A for a complete list of asset attributes supported in the Octopai Knowledge Hub.**

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# Extraction of MicroStrategy Assets

The extraction process in MicroStrategy is fundamental to managing and utilizing the platform's extensive data assets. This process involves several critical steps to ensure that the extracted data is both accurate and meaningful.

### Step 1: Java SDK Integration for Asset Scanning

The extraction process begins with integrating a Java SDK that connects directly to the MicroStrategy project. This SDK scans all objects within the MicroStrategy environment, including attributes and metrics. For example, when extracting a metric, the SDK provides the RootExpressionXML, a representation of the metric's underlying components in ID form. This XML output is crucial for building a comprehensive lineage of the metric and tracing how it interacts with other metrics and attributes within the system.

### Step 2: Executing Command Scripts for XML Extraction

After the SDK has listed all relevant objects, the next phase involves running command scripts - CmdScript- for each object. These scripts return XML files containing detailed metadata about each object, including attributes, reports, dossiers, and documents. The XML files offer insights into which attributes and metrics are used to build reports or Intelligent Cubes, and how these components are interconnected. This detailed mapping is essential for understanding the structure and dependencies of each asset.

### Step 3: Governance of Metadata

Effective metadata governance is essential for ensuring data assets are consistently managed, secure, and compliant with organizational standards. This governance involves establishing clear policies and procedures for data quality, security, and compliance. By enforcing these standards, organizations can ensure that metadata remains reliable and accessible to authorized users, thereby supporting better decision-making and operational efficiency.

## Leveraging MicroStrategy APIs and Tools

MicroStrategy provides a robust set of APIs and tools designed to facilitate the extraction and management of BI assets. These APIs enable users to access detailed information about asset lineage, descriptions, ownership, and change history. Additionally, these tools can be integrated with other technologies to enhance metadata governance, ensuring that data assets are effectively managed and aligned with regulatory requirements.

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# Additional Considerations for MicroStrategy

## Understanding Report and Dossier Dependencies

In MicroStrategy, reports and Intelligent Cubes often depend on specific attributes and metrics, and understanding these dependencies is crucial for maintaining the integrity of BI outputs. Dependency mapping is a powerful tool that helps users comprehend the interconnections between different BI assets and their underlying data structures.

## Logical Tables and SQL Queries

When dealing with tables in MicroStrategy based on SQL queries, the General Server Parser (GSP) engine can be used to parse these queries. This parsing process is critical for identifying the data flow of columns and tables, which is essential for accurate data lineage tracking. Understanding these SQL queries ensures the data lineage is accurately maintained, which is vital for compliance and troubleshooting.

## Attributes with Expressions

Attributes in MicroStrategy can have complex expressions that reference other attributes. For instance, an attribute might be defined with an expression like ApplySimple ("cast(#0 as float) / cast(#1 as float)", Total To Current, Payment Amount), indicating that it is built on two other attributes. Including such expressions in lineage tracking provides an accurate picture of how data is derived, ensuring that the transformations applied to the data are well-documented and understood.

## Data Source Connections

MicroStrategy typically uses ODBC connections, where each table is prefixed with a schema and a PRIMARY_DB. Understanding these connections is crucial for mapping attributes or facts to physical columns facilitating integration with other ELT tools or databases. This understanding ensures that data source connections are accurately represented in the lineage, supporting better integration and data management.

## Analysis of Raw Metadata

Analyzing raw metadata and loading it into a GraphDB enables column-level lineage queries. This process involves parsing the metrics formulas to understand the relationships between different data assets, such as columns, attributes, and metrics. This detailed analysis is critical for maintaining accurate lineage tracking and ensuring that all data transformations are well-understood and documented.

## SQL Generation for Reports and Intelligent Cubes

Extracting and parsing the generated SQL queries for reports and Intelligent Cubes is vital in identifying the relevant tables and columns involved. Filtering out redundant tables that are not part of the metadata ensures a more streamlined and accurate lineage tracking process. This step is crucial for maintaining the integrity of BI outputs and ensuring that all data assets are accurately represented.

# From Strategic Insights to Technical Mastery: Leveraging Octopai for MicroStrategy Optimization

However, the journey from strategy to execution is not without its challenges. To truly unlock the potential of MicroStrategy, organizations must go beyond understanding its strategic value—they must delve into the technical intricacies that ensure this value is realized in practice. This is where Octopai plays a pivotal role.

Octopai's advanced capabilities provide the technical foundation to translate strategic objectives into actionable outcomes. By automating complex tasks such as data extraction, lineage tracking, and metadata governance, Octopai empowers organizations to bridge the gap between high-level strategy and meticulous execution.

In the following sections, we will transition from the strategic use cases to the technical methodologies that underpin them. You will discover how Octopai leverages the MicroStrategy API to automatically extract and visualize assets effectively, providing a clear lineage and ensuring that your data-driven strategies are implemented with precision, efficiency, and compliance. This technical deep dive is essential for organizations looking to harness the full power of MicroStrategy, backed by the unparalleled capabilities of Octopai.

# The Octopai Extraction Process
## Examples of MicroStrategy Metadata in the Octopai Platform

**Example 1:**

The "Daily NPW" report is constructed based on an Intelligent Cube known as the "Period Summary Cube." This Cube is derived from six underlying physical tables. A detailed examination is necessary to gain a deeper understanding of the report's internal structure and data flow, particularly how the Cube supports it.

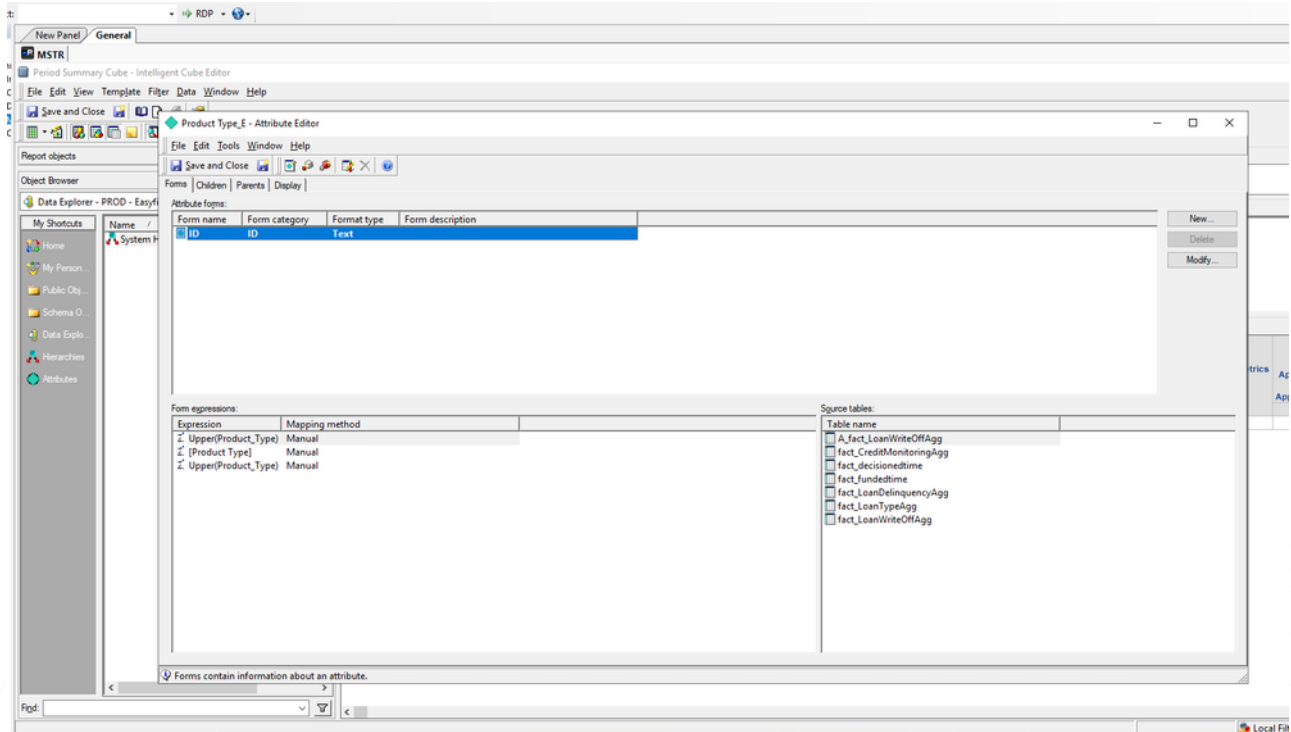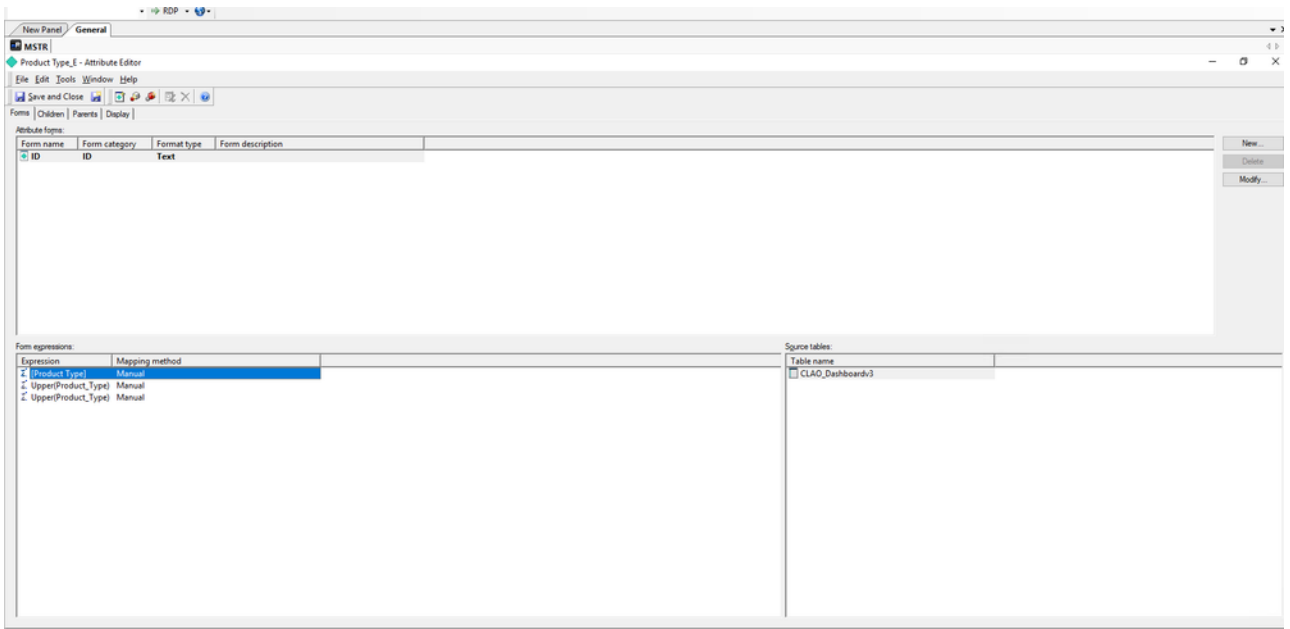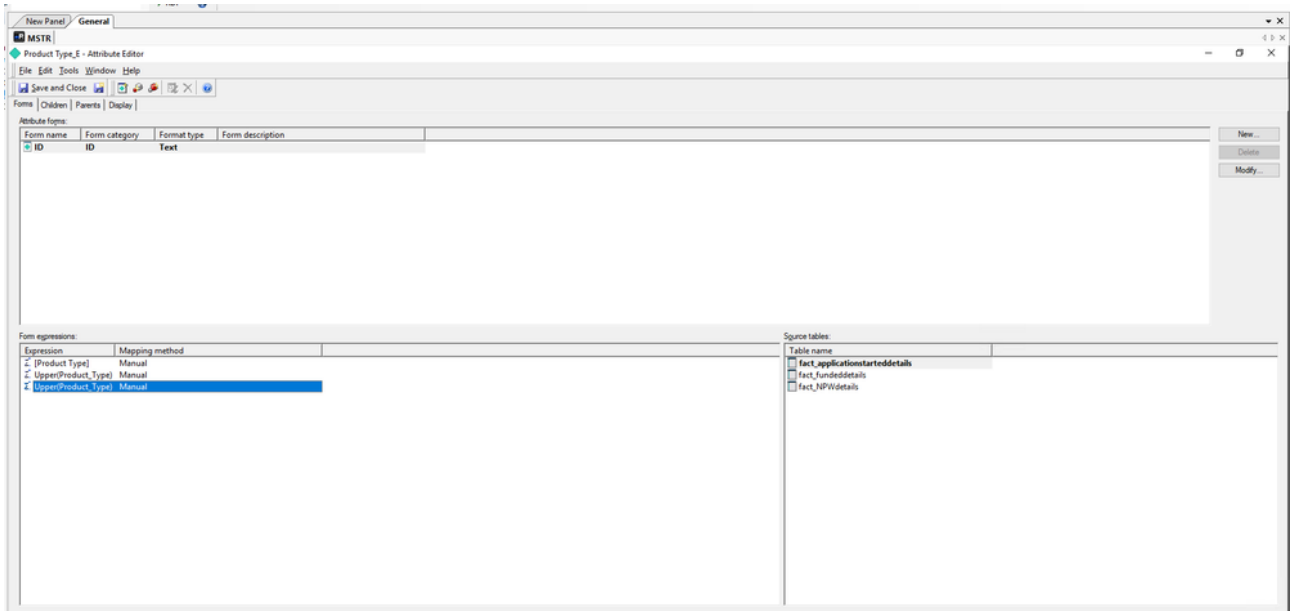### MicroStrategy Developer Intelligent Cube
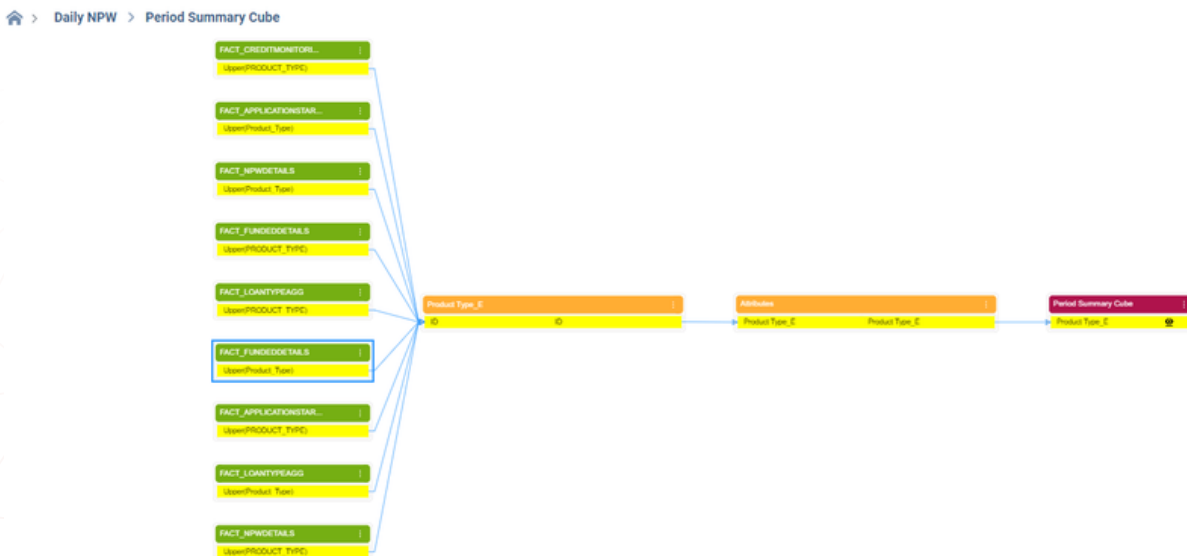


### Cross System Lineage

## Inner System Lineage
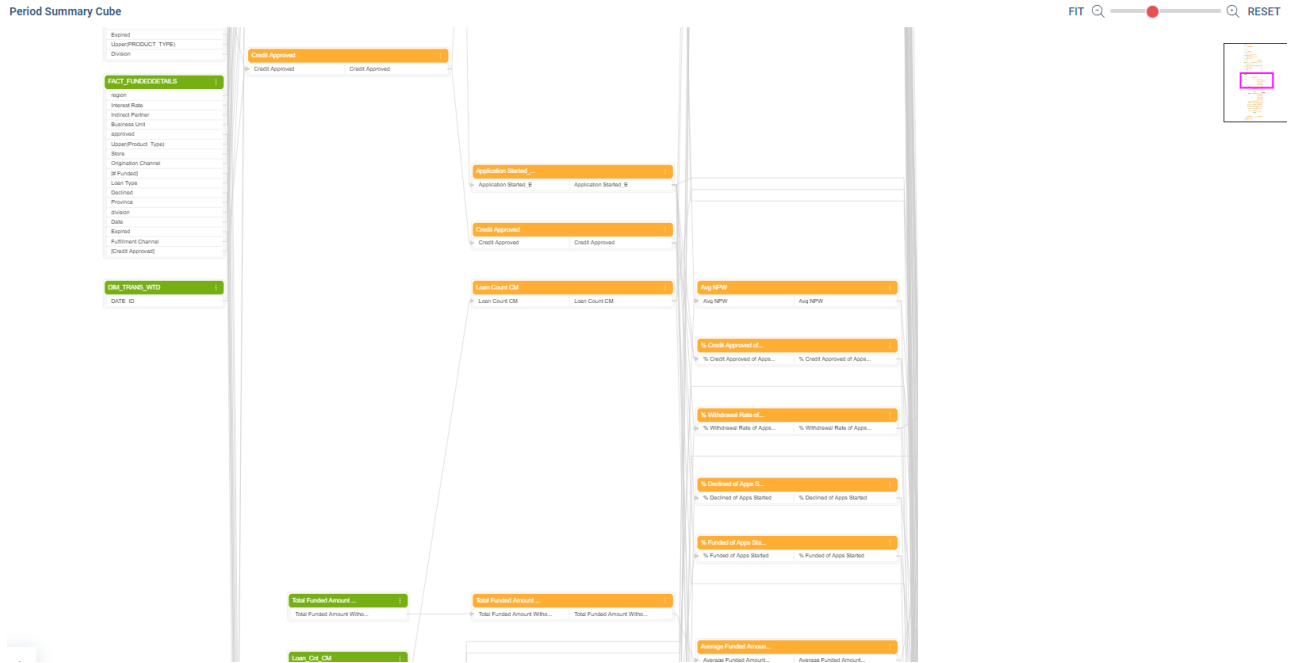


If we drill into the Cube we see "Product_Type_E' is an attribute that is shared from 9 physical tables:

## Microstrategy Attribute

## Inner System Lineage of Intelligent Cube in Octopai:

## Example 2:

The process involves filtering columns based on the SQL generated by the Cube, ultimately narrowing down to nine tables.

As an example of metric lineage, the highlighted arrow reveals a formula that establishes the lineage between "Easyhome Payments Liability Monthly Amount" and "Dropoff Easyhome Payments Liability Monthly Amount Question."

The specific formula used is: `Sum({Dropoff Easyhome Payments Liability Monthly Amount Question}).`

**Metric Easyhome Payments Liability Monthly Amount Inner System Lineage:**
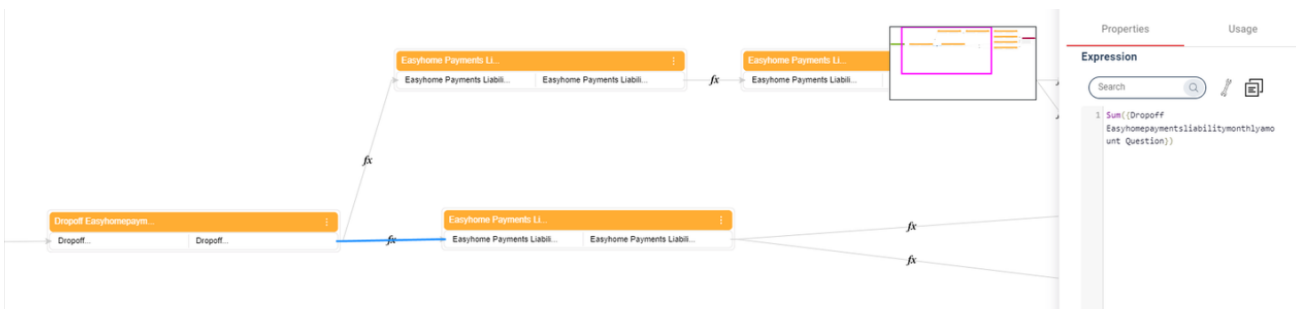


**Metric Easyhome Payments Liability Monthly Amount End-to-End Lineage:**
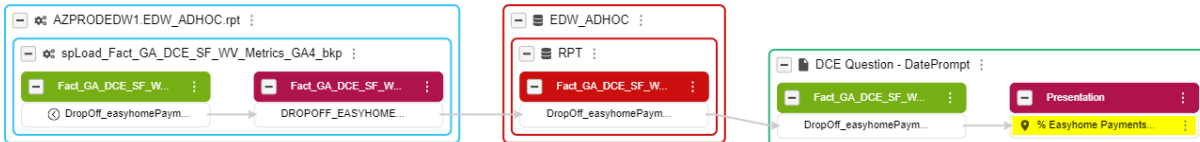


**The Metric in MicroStrategy:**

# Summary

MicroStrategy is a powerful business intelligence platform that enables organizations to transform raw data into actionable insights through reports, dashboards, and visualizations. However, managing and extracting MicroStrategy's diverse data assets is crucial for ensuring data accuracy, maintaining compliance, and enabling data-driven decision-making.

This whitepaper highlighted the critical challenges of managing MicroStrategy assets, including understanding data lineage, tracking asset ownership and descriptions, and enforcing metadata governance. It has also provided real-world scenarios and case studies illustrating the importance of addressing these challenges across various industries.

To unlock the full potential of MicroStrategy, organizations must leverage advanced tools and methodologies that automate complex tasks such as data extraction, lineage tracking, and metadata governance. Octopai provides a technical foundation and intuitive user interface to translate strategic objectives into actionable outcomes.

By leveraging Octopai's capabilities, organizations can bridge the gap between high-level strategy and meticulous execution, ensuring that their data-driven strategies are implemented with precision, efficiency, and compliance. Octopai's advanced features, such as automated asset extraction, visual lineage mapping, and metadata governance, empower organizations to navigate the complexities of MicroStrategy implementations confidently.

In conclusion, organizations seeking to maximize the value of their MicroStrategy investments should prioritize effective data asset management and leverage tools like Octopai to streamline processes, ensure data accuracy, and drive informed decision-making across all levels of the organization.

**To see how Octopai can help you analyze and extract all your data source assets, book a live demo below.**

**Book a Demo**

# Appendix A

| Asset | Property | In Knowledge Hub |
|---|---|---|
| **IntelligentCube** | Description | Yes |
| | Long Description | Yes |
| | Created_at | Yes |
| | Modified_at | Yes |
| | Owner | Yes |
| | Path | Yes |
| **Project** | Description | No |
| | Long Description | No |
| | Created_at | No |
| | Modified_at | No |
| | Owner | No |
| **Attribute** | Description | Yes |
| | Long Description | Yes |
| | Created_at | Yes |
| | Modified_at | Yes |
| | Owner | Yes |
| | Expression | As Lineage |
| | Source_table | As Lineage |
| | Name | As Lineage |
| | Category | As Lineage |
| | Lookuptable | As Lineage |
| | Datatype | Yes |
| | Path | Yes |
| **Document/ Dossier/ Report** | Description | Yes |
| | Long Description | Yes |
| | Created_at | Yes |
| | Modified_at | Yes |
| | Owner | Yes |
| | Path | Yes |
| **Fact** | Description | Yes |
| | Long Description | Yes |
| | Created_at | Yes |
| | Modified_at | Yes |
| | Owner | Yes |
| | Expression | Yes |
| | Sourcetable | As Lineage |
| | Path | Yes |

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| Asset | Property | In Knowledge Hub |
|---|---|---|
| **Metric** | Description | Yes |
| | Long Description | Yes |
| | Created_at | Yes |
| | Modified_at | Yes |
| | Owner | Yes |
| | Path | Yes |
| | Formula | Yes |
| **IntelligentCube** | Description | Yes |
| | Long Description | Yes |
| | Created_at | Yes |
| | Modified_at | Yes |
| | Owner | Yes |
| | Path | Yes |
| **Logical Table/ Physical Table** | Description | Yes |
| | Long Description | Yes |
| | Created_at | Yes |
| | Modified_at | Yes |
| | Owner | Yes |
| | Path | Yes |
| **Column** | Name | Yes |
| | Precision | Yes |
| | Scale | Yes |
| | Datatype | Yes |