

Here are **examples** of each type of metadata (**technical**, **process**, and **business**) to help clarify their differences:

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## 1. Technical Metadata

Technical metadata describes the structure and technical details of data. Examples include:

- **Table names** in a database (e.g., Customers, Orders).
- **Column names** and data types (e.g., CustomerID as an integer, CustomerName as a string).
- **Database schemas** (e.g., the structure of tables and relationships between them).
- **Indexes** and keys (e.g., primary keys, foreign keys).
- **File formats** (e.g., CSV, JSON, Parquet).
- **Data storage locations** (e.g., file paths, database names).
- **Data lineage** (e.g., where data originated and how it was transformed).

**Example:** In a database, technical metadata might include:

- Table: Employees
  - Columns: EmployeeID (int), FirstName (varchar), LastName (varchar), HireDate (date).

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## 2. Process Metadata

Process metadata tracks the operations and workflows related to data processing. Examples include:

- **Job execution times** (e.g., when a data pipeline started and ended).
- **Data movement logs** (e.g., data copied from a source system to a data warehouse).
- **Error logs** (e.g., failed data loads or transformations).
- **System performance metrics** (e.g., CPU usage, disk space, query execution times).
- **User activity logs** (e.g., who accessed the data and when).

**Example:** In a data pipeline, process metadata might include:

- ETL Job: Load\_Customer\_Data
  - Start Time: 2023-10-01 10:00:00
  - End Time: 2023-10-01 10:15:00
  - Rows Processed: 10,000
  - Status: Success.

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### 3. Business Metadata

Business metadata provides context and meaning to data for business users. Examples include:

- **Data definitions** (e.g., what a column represents, such as Revenue meaning "total sales in USD").

- **Data ownership** (e.g., which department owns the data, such as Sales or Finance).
- **Business rules** (e.g., how data should be interpreted, such as CustomerType being either Retail or Wholesale).
- **Data source descriptions** (e.g., where the data comes from, such as CRM System or ERP System).
- **Data usage guidelines** (e.g., who can access the data and for what purpose).

**Example:** For a business user analyzing sales data, business metadata might include:

- Column: TotalSales
  - Definition: "Total revenue generated from sales transactions."
  - Source: Sales Database.
  - Business Rule: "Excludes returns and discounts."
  - Owner: Sales Department.

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### **Summary of Examples:**

- **Technical Metadata:** Database schemas, column types, file formats.
- **Process Metadata:** ETL job logs, system performance metrics, error logs.
- **Business Metadata:** Data definitions, business rules, data ownership.

These examples illustrate how metadata serves different purposes, from technical details to business context, enabling effective data management and usage.