

DATA MODELING

WORKLOAD GUIDES

- Snowflake Workloads Overview
- Data Applications
- Data Engineering
- Data Lake
- Data Marketplace
- Data Science
- Data Warehousing
- Marketing Analytics
- Unistore
- Cybersecurity

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- [← More Data Engineering Topics](#)
- [← More Data Lake Topics](#)

Data modeling is the process of organizing and mapping data using simplified diagrams, symbols, and text to represent data associations and flow. Engineers use these models to develop new software and to update legacy software. Data modeling also ensures the consistency and quality of data. Data modeling differs from [database schemas](#). A schema is a database blueprint while a data model is an overarching design that determines what can exist in the schema.

BENEFITS

- Improved accuracy, standardization, consistency, and predictability of data
- Expanded access to actionable insights
- Smoother integration of data systems with less development time
- Faster, less expensive maintenance and updates of software
- Quicker identification of errors and omissions
- Reduced risk
- Better collaboration between teams, including non-developers
- Expedited training and onboarding for anyone accessing data



TYPES OF APPROACHES

There are four primary approaches to data modeling.

1. Hierarchical

A hierarchical database model organizes data into tree-like structures with data stored as interconnected records with one-to-many arrangements. Hierarchical database models are standard in XML and GIS.

2. Relational

A relational data model, AKA a relational model, manages data by providing methodology for specifying data and queries. Most relational data models use SQL for data definition and query language.

3. Entity-relationship

Entity-relationship models use diagrams to portray data and their relationships. Integrated with relational data models, entity-relationship models graphically depict data elements to understand underlying models.

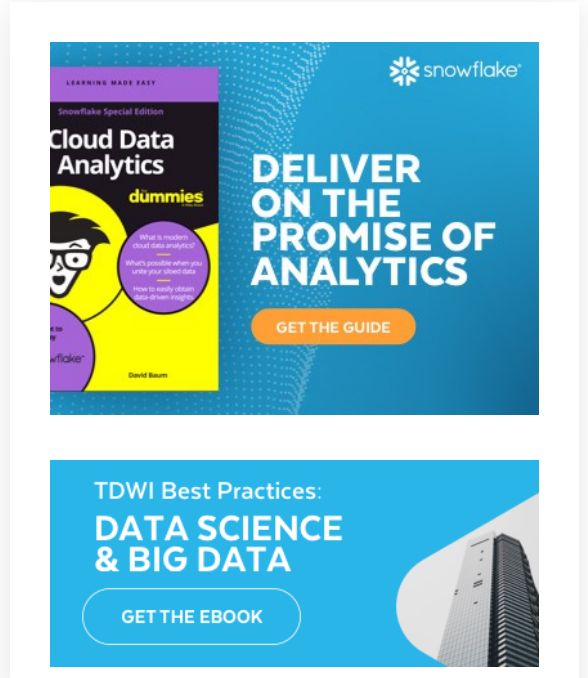
4. Graph

Graph data models are visualizations of complex relationships within data sets that are limited by a chosen domain.

TYPES OF DATA MODELS

There are three primary types of data models.

- 1. Conceptual**, defining what data system contains, used to organize, scope, and define business concepts and rules.
- 2. Logical**, defining how a data system should be implemented, used to develop a technical map of rules and data structures.
- 3. Physical**, defining how the data system will be implemented according to the specific use case.



ROLE OF A MODELER

A [data modeler](#) maps complex software system designs into easy-to-understand diagrams, using symbols and text to represent proper data flows. Data modelers often build multiple models for the same data to ensure all data flows and processes have been properly mapped. Data modelers work closely with data architects.

DATA MODELING VERSUS DATABASE ARCHITECTURE

[Data architecture](#) defines a blueprint for managing data assets by aligning with organizational needs to establish data requirements and designs to meet these requirements.

Database architecture and data modeling align when new systems are integrated into an existing system, as part of the overall architecture. With data modeling, it's possible to compare data from two systems and integrate smoothly.

SNOWFLAKE AND DATA MODELING

[Snowflake's platform](#) is ANSI SQL-compliant, allowing customers to leverage a wide selection of SQL modeling tools. Snowflake also has introduced a VARIANT data type for semi-structured data storage (AVRO, JSON, XML, Parquet, and others). Also, with the [Oracle SQL Developer Modeler \(SDDM\)](#), developers can now more easily re-engineer or reconstruct Snowflake databases.



What Is A Data Modeler?
from the Snowflake Data Warehousing Glossary.

Data Modeling In The Age Of JSON And Schema-On-Read
Effective data modeling is critical to making massive new data streams and formats usable.

Relational Database Definition
from the Snowflake Data Warehousing Glossary.



Why Snowflake	The Data Cloud	Solutions	Resources	Company
OVERVIEW	OVERVIEW	FOR INDUSTRIES	LEARN	OVERVIEW
Why Snowflake	Platform	Advertising, Media, and Entertainment	Resource Library	About Snowflake
Customer Stories	Snowflake Marketplace	Financial Services	Developers	Investor Relations
Partners	Powered by Snowflake Healthcare & Life Sciences		Documentation	Leadership & Board
Services	Live Demo	Manufacturing	Hands-on Labs	Careers
	WORKLOADS	Public Sector	Training	Speakers Bureau
	Collaboration	Retail / CPG	Guides	Newsroom
	Data Science & ML	Technology	Glossary	
	Cybersecurity	FOR DEPARTMENTS	CONNECT	
	Applications	Marketing Analytics	Community	
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	Data Engineering		Blog	
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	PRICING		Trending	
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