

DATA ARCHITECTURE FOR APPLICATIONS

SUPPORT FOR HIERARCHICAL MODELS
SUCH AS JSON, MONGODB AND GOOGLE
BIGQUERY

INTRODUCTION

Data is the bedrock of the information technology (IT) organization and the lifeblood of the business. Every year we amass more of it and the regulations and risks around it grow. Data governance and data management are goals that grow more important. Our data architecture team has traditionally worked hard to design and document static data assets (that is, databases) against standardized information models using logical data models. But IT staff dealt separately with data in transit and data in use.

PROBLEM

The issue here is that one often serializes data in transit or data in use, employing structures like JavaScript object notation (JSON) that are hierarchical. Denormalization is common. These structures differ from the relational, normalized structures employed in databases.

SOLUTION

ER/Studio now employs unique and novel techniques to bring together these worlds.

The enterprise logical data model can stay as the de facto understanding of information. We often couple this with the business glossary to make sure that we capture policies and rules around this data and that they are auditable.

Now ER/Studio can generate, from these logical data models, hierarchical structures with denormalization built in to repeatedly create hierarchical structures in products like JSON, MongoDB, and Google BigQuery. Our acclaimed compare and merge tool can then smoothly propagate changes from the relational logical model to the hierarchical model.

Likewise, documenting hierarchical structures becomes easy. Reverse engineer a hierarchical structure to see the technical metadata faithful to the data asset. ER/Studio then automatically creates a relational model of this data structure and can even automatically expand standard abbreviations to business-friendly language using naming standards templates.

Using these techniques, you can use your enterprise logical data model to form canonical models for your messaging infrastructures and application code. ER/Studio will generate instance and schema files for JSON.

- Reduce the time taken to design hierarchical structures by reusing standard definitions.
- Standardize hierarchical structures using enterprise logical data models.
- Document and design your hierarchical structures using the same language used for other data assets.
- Make sure that you understand data policies and rules by connecting to the data governance project.
- Publish models to data governance tools such as Collibra.
- Build a common data architecture for data at rest, data in transit, and data in use.
- Support for polyglot persistence.

As with all data platforms, model designs for MongoDB and JSON are driven by a technology-agnostic logical data model. This model has new additions to control nesting in target physical platforms:

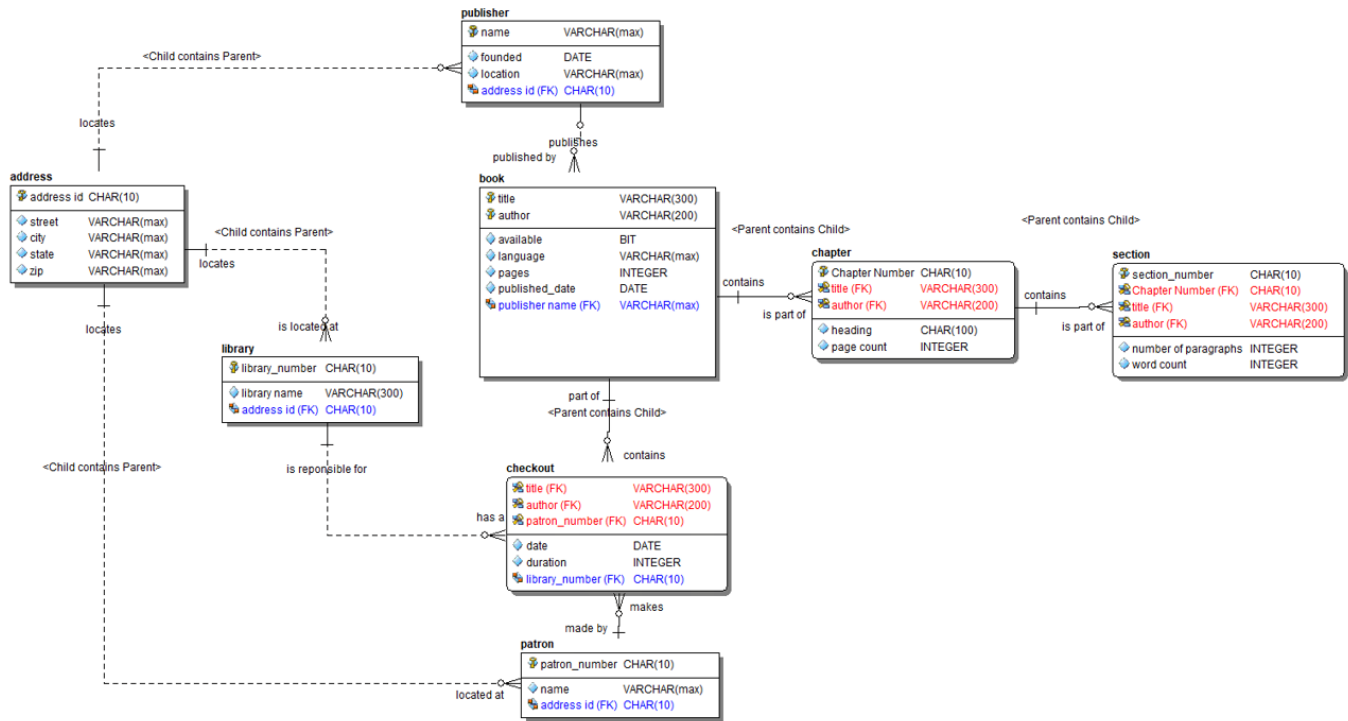


Figure 1: Logical data model.

Physical data models tied to the output technology with nested substructures make visualizing hierarchical models easy and intuitive.

For MongoDB:

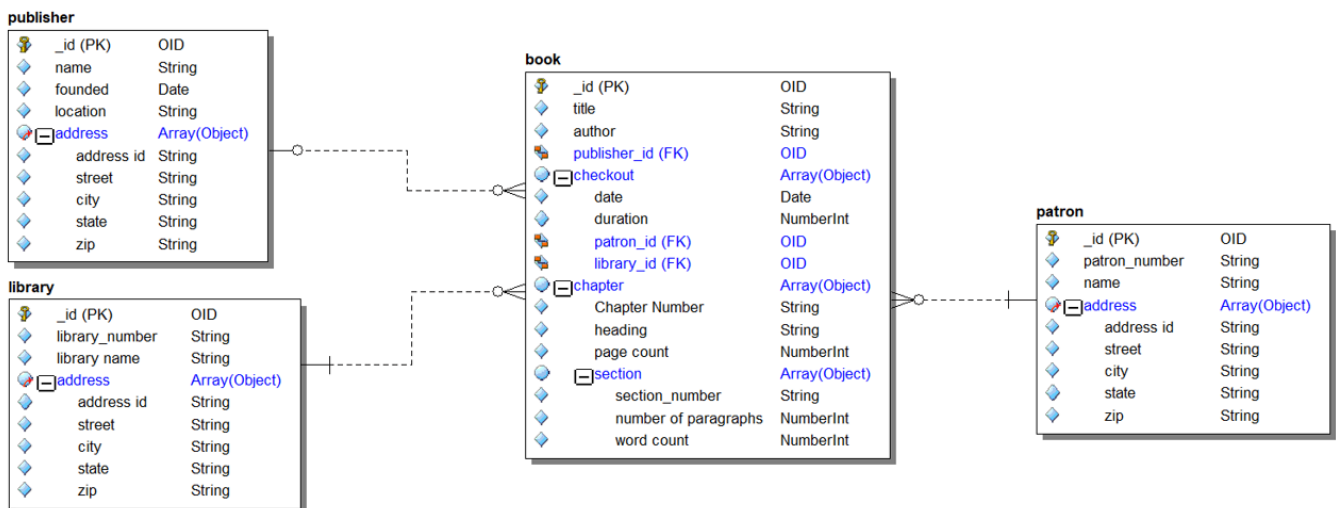


Figure 2: Physical model for MongoDB.

For JSON:

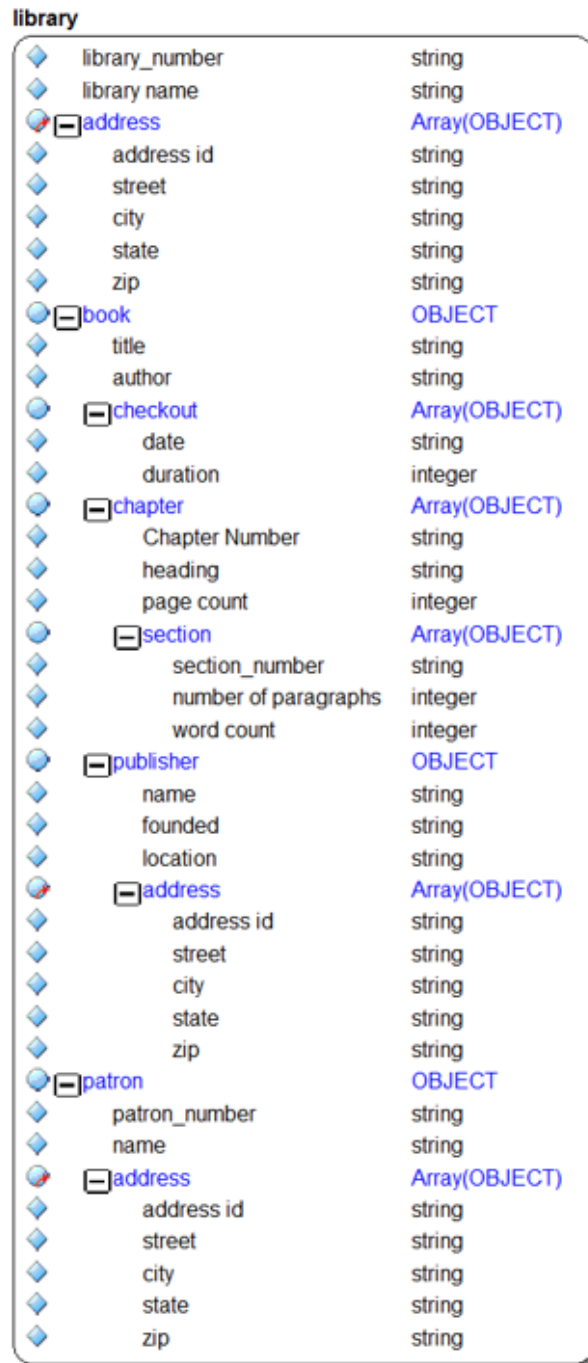


Figure 3: Physical model for JSON.

Generate from the model or reverse engineer your instance and schema files for JSON:

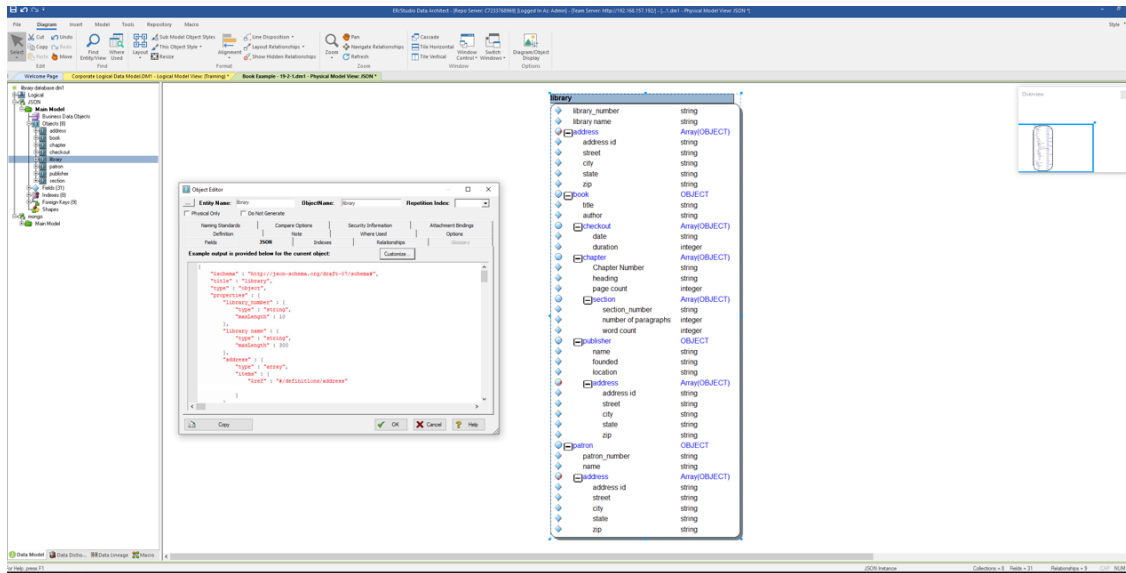


Figure 4: Modeling for JSON.

Publish your models to a business-friendly data catalog:

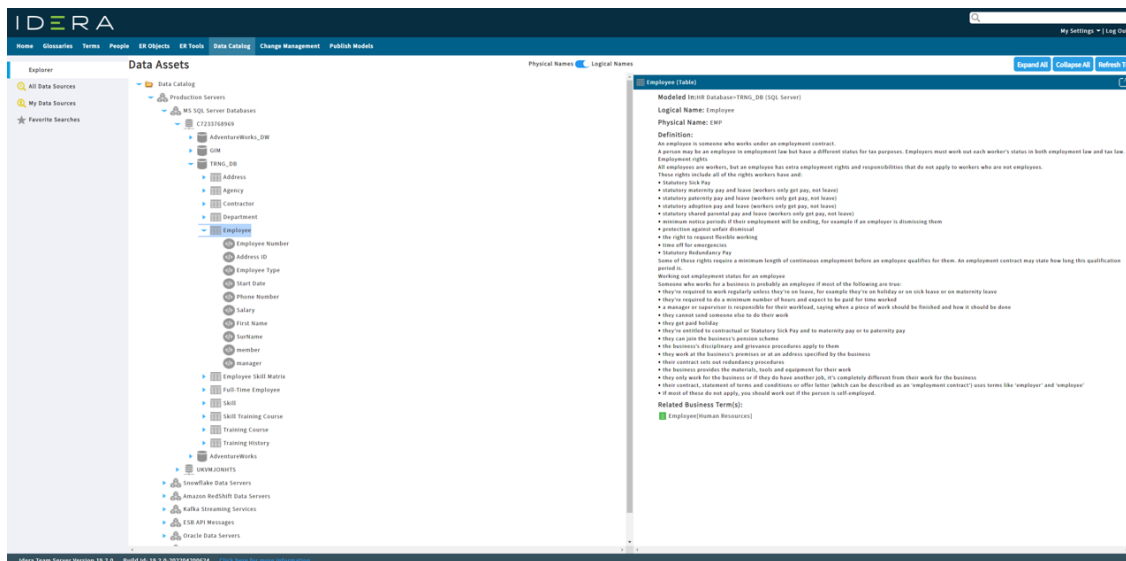
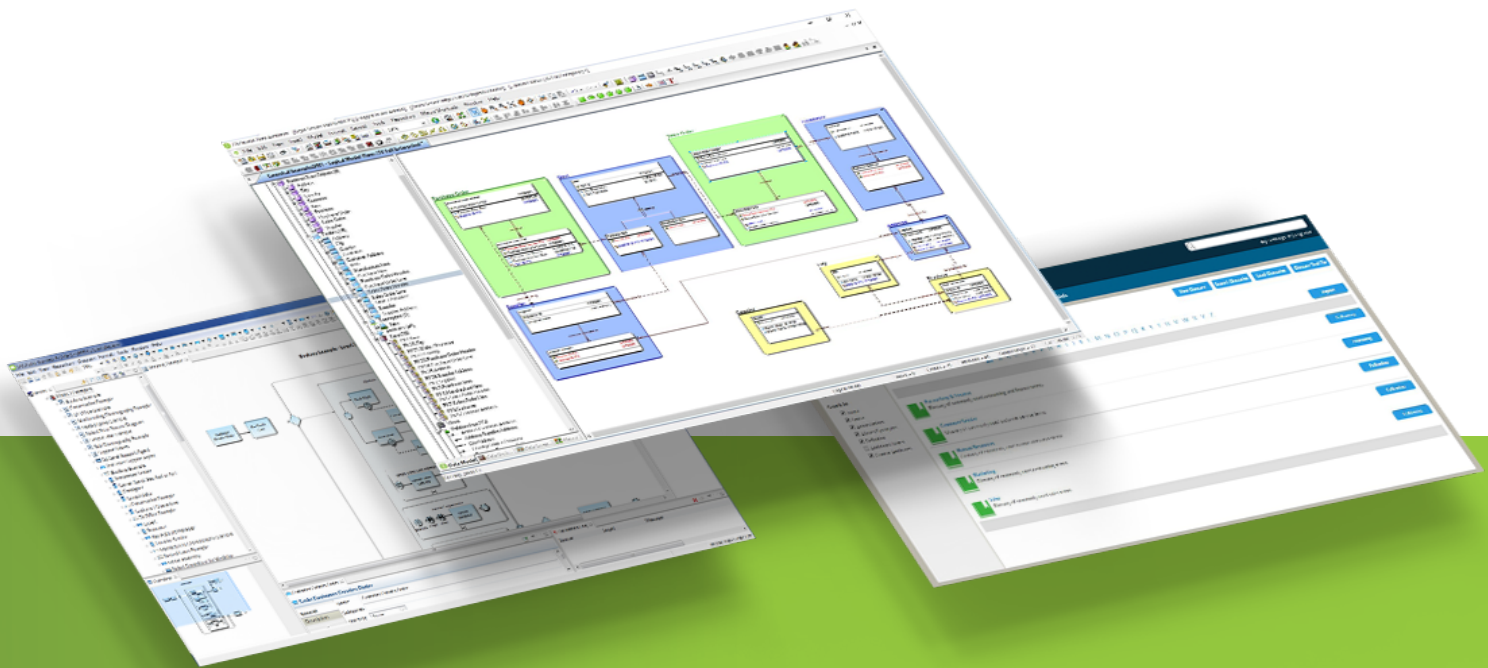


Figure 5: Data catalog.

ER/Studio Data Architect

ER/Studio Data Architect helps data modelers and architects to create and manage data models for multiple data platforms. Unlike its competition, it provides the broadest range of data platform support, industry-leading enterprise-level capabilities, and visual data lineage and flow modeling. It also features full dimensional modeling for data warehousing and business intelligence, and business data objects to bridge the gap between developers and data architects.



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