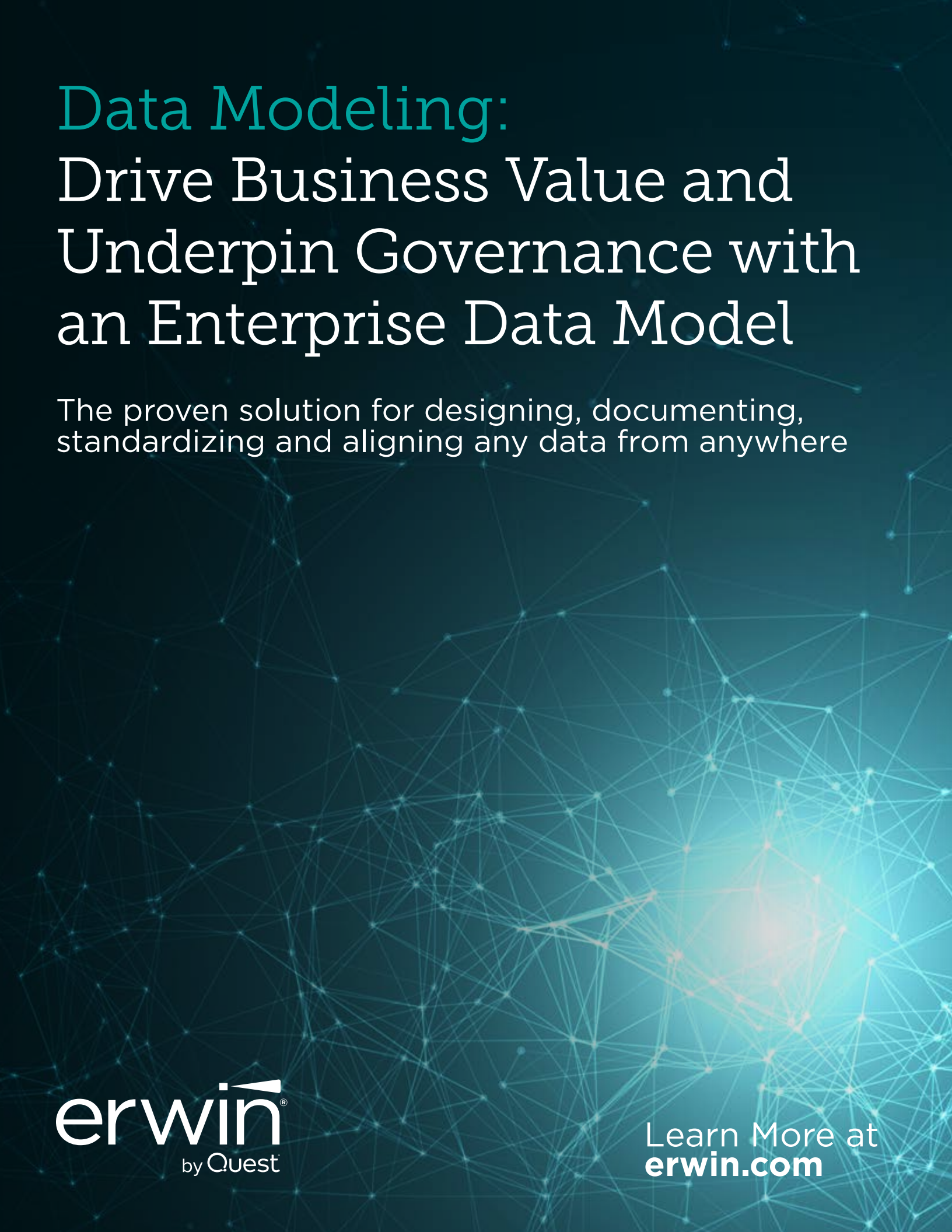
Data Modeling:
Drive Business Value and Underpin Governance with an Enterprise Data Model

The proven solution for designing, documenting, standardizing and aligning any data from anywhere



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Introduction

Enterprises are in the midst of data chaos.

They might have 300 applications, with 50 different databases and a different schema for each one. There's increasing regulatory pressure because of global data regulations, such as the European Union's General Data Protection Regulation (GDPR) and the California Consumer Privacy Act (CCPA) set to go into effect January 1, 2020. And then there's unstructured data with no contextual framework to govern data flows across the enterprise not to mention time-consuming manual data preparation and limited views of data lineage.

For decades, data modeling has been the optimal way to design and deploy new relational databases with high quality data sources and support application development. It facilitates communication between the business and system developers so stakeholders can understand the structure and meaning of enterprise data within a given context. Today, it provides even greater value because critical data exists in both structured and unstructured formats and lives both on premise and in the cloud.

This additional value includes providing less costly and more efficient multi-source data discovery and analysis—through the reverse engineering and documenting of databases—to underpin and quickly enable large-scale integration, master data management and other initiatives. The ability that data modeling offers to synthesize, standardize and store data sources, deriving a single design that collects historical data from many disparate designs, also now contributes to business intelligence and analytics consistency and clarity, as well as to reusing analytics artifacts across projects.

Introduction

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Most organizations also have more than one database platform, and data often is stored in nonrelational formats. Big Data needs to be incorporated into the data modeling landscape. That's possible when non-relational data sources can be natively designed, deployed, depicted and documented and also integrated with the larger world of relational data. Applied at this level, data modeling accommodates the critical need to support real-time analytics applications at scale as well as consistency for the purpose of data source analysis.

One of the most compelling use cases for a strong data modeling approach lies in its connection to the increasingly important and evolving realm of data governance. Today's enterprise embraces data governance to drive data opportunities, including growing revenue, and limit data risks, including regulatory and compliance gaffes. Data modeling solutions that incorporate a controlled central repository of data definitions and provide visibility into where and how properly defined data is to be used are the foundation of solid data governance.

DATA MODELING HELPS YOU:

- Effectively manage and govern massive volumes of data
- Consolidate and build applications with hybrid architectures, including traditional, Big Data, cloud and on premise
- Support expanding regulatory requirements, such as GDPR and CCPA
- Simplify collaboration across key roles and improve information alignment
- Improve business processes for operational efficiency and compliance
- Empower employees with self-service access for enterprise data capability, fluency and accountability

Ever heard the expression, "measure twice, cut once?" Data modeling is the upfront "measuring tool" that helps organizations reduce time and avoid guesswork in a low-cost environment.

DATA MODELING DEFINED

Data modeling and design is the process of discovering, analyzing, representing and communicating data requirements in a precise form called the data model.

Source: DAMA International Data Management Book of Knowledge V2

The Role of Data Modeling

Data modeling is vital for optimizing data management and data governance.

It delivers lower costs, increased agility, improved quality and reduced risk. However, one of the most significant roles data modeling has is giving organizations the opportunity to collaborate, analyze and articulate system design before they invest in developers typing code and building applications on servers.

The more code written, the more expensive it is to back out if there's a mistake. Data modeling tools have proved that if you take the time and make the investment upfront, you avoid the pain of costly mistakes further along in the development process. So the data model is a low-risk, low-cost capability that supports many use cases.

Let's look at some other common use cases:

Data integration. Organizations taking a data-centric business approach must ensure their enterprise data assets are managed in an agile, effective and efficient fashion. Data integration initiatives, such as master data management, API development, data virtualization or building a business intelligence and reporting hub, all have similar challenges. First, organizations must discover and document their existing data sources for analysis, which can consume more than 60 percent of the resources and timeline for large data initiatives. Second, they need to synthesize the results of this analysis into a comprehensive design for the proposed solution. Finally, they need a facility that allows them to capture analysis artifacts for reuse when new requirements surface.

Analytics/business intelligence (BI) adoption. In the data-driven world, analytics and BI are the key to deriving maximum value from data assets. Masses of data are useless without the ability to gain actionable insights to drive business success. Organizations often struggle to use these insights due to a lack of confidence in their data, so they need visibility into the data's availability, business purpose, lineage, accuracy and inter-relationships to enable data trust and drive new analytics use cases.

The Role of Data Modeling

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Database modernization. As part of ongoing data management efforts, organizations constantly assess the suitability of database management systems (DBMS). With emerging NoSQL and cloud-based offerings, migration to new platforms has become more attractive and because of licensing costs, administration costs and uses cases that exceed the capabilities and performance of existing platforms. The challenge with migration is efficiently and effectively capturing the existing schema and DBMS applications and transforming them for use in the new platform.

Database, data warehouse, data lake design and deployment with schema maintenance. Organizations are building new applications to power digital business models. A major challenge to these efforts is that the data driving these new applications resides in a myriad of DBMSs, making data access complex and time-consuming. This challenge is amplified by the fact that most developers are not database experts. Organizations need to understand and manipulate their database schema, as well as deploy new schema, without having to bring in expert resources for each platform involved.

Big Data adoption. Successful data-driven enterprises are fueled by using Big-Data capabilities to their full potential. In addition to getting the technology right, these companies must align Big-Data initiatives with business strategies, understand where Big Data fits into complex business operations and processes, and prioritize Big-Data initiatives with governance over data sources and analytics. Organizations need a documentation tool that enables stakeholders to see data in the same format no matter where it resides and relate to it from a business perspective. Big Data must be built into the overall data architecture so it can be managed and governed with the same rigor as other enterprise data to ensure confidence and trust.

How to Do Data Modeling

erwin Data Modeler has always been at the forefront of helping enterprises realize new data modeling advantages.

It brought to the PC easy and lightweight database design capabilities, once limited to heavyweight, mainframe-based CASE tools. It has been the most trusted brand in the data modeling market for more than 30 years and continues to play a critical role as companies transform themselves into agile, data-driven organizations where data is foundational to doing business. Its capabilities will enable you to:

Visualize business and technical database structures through an integrated, graphical model. erwin Data Modeler has built-in interfaces for more than three dozen database platforms, and support for these systems' extended capabilities increases regularly. It can read the technical formats of each of these platforms and translate them into highly graphical models rich in metadata. Schema can be deployed from models in an automated fashion and iteratively updated so that new development can take place via model-driven design.

Empower end-user BI/analytics by data source discovery, analysis and integration. erwin data models give business users confidence in the information they use to make decisions. It provides a common, contextual, easily accessible source of data element definitions to ensure they are able to draw upon the correct data; understand what it represents, including where it comes from; and know how it's connected to other entities. They also can rely on basic orchestration to pull in data sources via self-service BI and analytics dashboards to get the answers they're looking for. In the background, the solution has the ability to integrate its models into whatever format is required for downstream consumption.

Store business definitions and data-centric business rules in the model along with technical database schemas, procedures and other information. With business definitions and rules on board, technical implementations can be better aligned with the needs of the organization. Using an advanced design layer architecture, model "layers" can be created with one or more models focused on the business requirements that then can be linked to one or more database implementations. Design-layer metadata can be connected from conceptual through logical to physical data models.

How to Do Data Modeling

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Standardize and reuse core definitions and data structures across projects with the data model and associated metadata stored in a central repository. Not only can this help reduce redundancy and "reinvention of the wheel," saving time and money, but it also can help increase quality, as all projects use this common erwin Data Modeler foundation for data definition and metadata analysis. By storing models in a central repository in the erwin Data Modeler Workgroup Edition, conflict resolution, versioning, security, standardization and model organization and hierarchies all will be addressed, and modeling teams can collaborate to create common objects that can be reused to help create data quality and consistency. erwin Data Modeler Web Portal provides a simple way for both non-technical and technical roles to view the information stored in the central model repository, providing tools such as web-based internet search and drill-down, model diagram visualization, and "where used" report generation so users can see how objects interrelate.

Rationalize platform inconsistencies and deliver a single source of truth for all enterprise business data. Our "any data from anywhere" (Any^2) approach includes modeling for non-relational databases that offer speed, horizontal scalability and other real-time application advantages. With erwin Data Modeler, integrated models for Couchbase, Cassandra and MongoDB NoSQL structures can be created and maintained within the same solution that models data across the enterprise. Existing Couchbase, Cassandra and MongoDB data sources can be discovered, understood and documented easily through modeling and visualization. Existing entity-relationship diagrams and SQL databases can be migrated to Couchbase, Cassandra and MongoDB too. Relational schema also will be transformed to query-optimized NoSQL constructs. These models can be managed and maintained in our collaborative modeling repository to ensure alignment with enterprise design, semantic standards and governance throughout the modeling, design and deployment process.

Extract data from ERP, CRM and other enterprise applications. erwin Safyr Option makes it possible to pull out real and highly defined data models from packaged applications' data dictionaries and break down data management silos. Companies can use its metadata extraction capabilities to discover and browse complex

How to Do Data Modeling

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data structures inherent in ERP applications using business-friendly terms, as well as load sets of metadata into erwin Data Modeler or export logical model information to the platform. erwin Data Modeler licenses and infrastructure can be hosted on the erwin Cloud to reduce overhead, streamline management tasks, and assure availability.

Compare models and databases. The Complete Compare facility automates bidirectional synchronization of models, scripts and databases; compares one item with the other; displays any differences, and permits selective updates, generating ALTER scripts when necessary.

Increase enterprise collaboration. Data models can be viewed easily in a secure, read-only environment, providing a simple, graphical display to visualize complex database structures and business definitions to a wide range of roles across the organization.

Perform impact analysis. Users can view and test the impact of changes to data models in a secure, read-only environment before changes are rolled out in production.

Enable business and IT infrastructure interoperability. Integration with erwin's data cataloging, data literacy and other enterprise modeling software creates a data governance platform that facilitates strategic IT and business collaboration in driving actionable insights, agile innovation, risk management and business transformation.

VALUE OF DATA MODELING

- Break down complexity and promote understanding
- Capture different perspectives and communicate in context
- Drive consistency and efficiency through reuse
- Support agile development

erwin Data Modeler in Action

erwin Data Modeler is the leading data modeling solution.

It is built on the vision and experience of data modelers worldwide and is the de-facto standard in data model integration. Following are a few examples of how erwin Data Modeler has helped customers in numerous industries drive strategic data use and business value.

Making Critical Decisions

Banco de México is the central bank of Mexico. Information availability is critical for making decisions, the outcomes of which could impact the country's economic and monetary activities. One of the bank's main challenges was making information immediately available to facilitate these critical decisions.

erwin Data Modeler helped Banco de México unite and simplify complex tasks like analysis, design and deployment of databases and storage applications. erwin structured this information clearly, enabling quick collection to support decision-making. Cost reductions, time savings and a centralized database structure are some of the achieved benefits thanks to erwin Data Modeler. Multiple departments now have information available when required for decision-making.

"Using erwin is as simple as modeling with the aid of a pen, but with much more power and functionality to better register and keep the databases up-to-date and in sync. erwin has been a very useful tool for us," says Raúl Mena Gaytán, System Development Sub-manager for Information Analysis of Banco de México. "We cannot develop systems for decision-making without appropriate database modeling. It is the core of these systems."

erwin Data Modeler in Action

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Understanding Data for Faster Innovation

CenturyLink is a large U.S. telecommunications company that maintains a competitive advantage by continually developing new products and services to satisfy customer needs. "We're continuously evolving our systems so we can expand our offerings and fulfill customers' expectations," explain Stefan Neikes, Senior Lead Architect. "To ensure rapid time to market for development, we need to understand our business data. Without a data model, a lot of critical information is stored in people's heads."

CenturyLink used erwin Data Modeler to define and model 1,000+ entities including financial, customer, sales and network infrastructure information. More than 90 employees use the shared data repository, helping ensure consistency across all of CenturyLink's databases.

Before erwin Data Modeler, source-to-target mapping information was saved in project-specific spreadsheets. "Employees used to add information and data properties to their project models and this created inconsistencies," explains Neikes." By using templates, everything is consistent — from colors, fonts and dates to number formats and row-level metadata. We now have a head start on planning system changes, and we can communicate better with business stakeholders, developers and project teams as we're all using the same language," says Neikes.

erwin Data Modeler in Action

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Simplifying Back-Office Management

Established in Turin in 1828, Reale Mutua di Assicurazioni is the largest Italian mutual insurance company. Due to continuous data growth, the company undertook a simplification initiative to make information easily shareable across all business lines. "The growing demand for data integration and for a common, company-wide data processing method highlighted the inadequacy of our pre-existing solution, which was based on a data warehouse environment but built in a siloed fashion," explains Alexis Mendoza from the company's IT Architecture Office.

Reale Mutua Assicurazioni decided to reorganize its back-office data management through a new first- and second-level enterprise data warehouse. The ultimate goal was to develop a unified and shared business intelligence system for the directors of all business lines.

The company created a conceptual data model representing the information assets managed by front-office systems. The model used standardized nomenclature to define each attribute, entity and relationship according to users' specifications. erwin Data Modeler was used for data modeling, data documentation and physical implementation of the database. It also was used to validate the conceptual data model and for publishing in formats more familiar to business users, such as Excel and HTML. "Using erwin Data Modeler to analyze metadata and create reports means we can share the model with business stakeholders during validation meetings. It also helped us establish a common, company-wide language," says Mendoza.

There's a direct correlation between enterprise data fluency and the ability to maximize the return on opportunity that data represents. With the right data modeling tool, an organization has the visibility to effectively align any and all strategic data assets with the business they serve.

- Raising the level of trust in available data increases the impact that data has on optimizing business strategy and operations.
- **Start a free trial of erwin Data Modeler.**

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About erwin by Quest

erwin is a leader in enterprise modeling and data intelligence software. The erwin EDGE platform creates an enterprise data governance experience for IT and business collaboration, driving meaningful insights, agile innovation, risk management and business transformation. Integrated data modeling, data governance, enterprise architecture and business process modeling capabilities help guide smart decisions. With erwin, organizations of all types across the globe can maximize the security, quality and value of their assets to control data chaos and prepare for the next IT challenge.

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