



# Microsoft

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Deploys ER/Studio to establish an enterprise data model

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# Overview

With 100,000 employees and \$86 billion of net revenue as of June 2014, Microsoft is a worldwide leader in software, services, and solutions. Founded in 1975, Microsoft is widely known for the Windows operating system and Office suite, but Microsoft's business is also diversified across cloud computing, video gaming consoles (Xbox), phones, search (Bing), and other technologies.

With a vast range of data needs, Microsoft's Principal IT Data Architect, Aaron Hanks, has faced numerous challenges to support this extensive data environment. Different data architecture solutions had been implemented over time, but it became increasingly clear that a cohesive data management strategy was needed. As a 16-year veteran in business applications for Microsoft, Hanks joined an Enterprise Data Architecture team dedicated to building an enterprise data model to fully support the ever-expanding data and information architecture needs of this multi-national technology company. With executives increasingly focused on flexibility plus the need to speed delivery and response time for data changes, the time to create an enterprise data model had finally arrived.



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## APPLICATIONS

- Data modeling
- Standardization
- Data reuse

## TOOLS USED

- ER/Studio Data Architect
- Model Repository

# Challenge

The lack of clear enterprise data standards at Microsoft fostered extensive variation in how data was modeled across business groups. Additionally, business units at Microsoft had a lot of autonomy and often functioned like small companies of their own. Individual groups created models and definitions according to their own needs, and this created data and model incompatibilities, which impeded collaboration between teams.

Furthermore, management had become concerned about end-to-end tracking of customer and partner data. The disparity in naming conventions, data definitions, and other compatibility issues made relating such data difficult or unachievable. With the speed of business ever-increasing, Microsoft leaders knew the critical importance of being able to quickly pull accurate data to inform their decisions. Microsoft could see the necessity and urgency to develop an enterprise data model.

However, creating an enterprise data model is a huge undertaking for a technology giant with thousands of databases and over 10,000 database servers to support. The requirements from a company like Microsoft are naturally extensive. For instance, groups doing SQL Server development need a tool that allows them to easily optimize and deploy their physical data models while keeping a logical view of the data model that is easier to use for business communications.

“We were looking for a formal tool that was made for data modeling that can handle all of our metadata capture requirements and also assist our development process by facilitating forward-engineering activities associated with implementing our data models,” said Hanks.

Whenever possible, Microsoft IT prioritizes the use of Microsoft products to solve internal business needs. Microsoft does have Visual Studio, which is an excellent tool for developing applications. However, the need for handling metadata, custom properties, attachments, and many other complex functions in support of documenting Microsoft’s data requirements were better suited to a tool specifically designed to build data models and capture metadata.

Because of these extensive requirements, it was clear that Microsoft needed a full-featured enterprise data modeling tool. Thus, Microsoft’s IT department began exploring external options to find a solution robust enough to handle the company’s data demands.

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## CHALLENGES

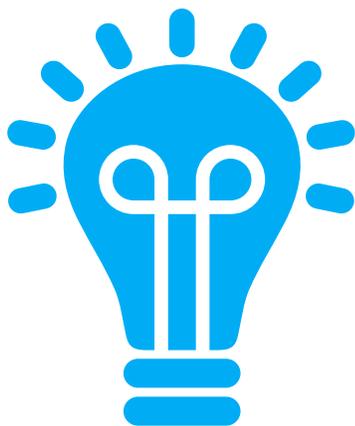
- Difficulty interpreting data for business decisions because of dissimilar data models
  - A growing need for an enterprise data model to keep up with the increasing speed of business
  - Impeded interdepartmental collaboration from lack of standardization
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# Solution

With over a dozen Microsoft information architects participating in the software review effort, Microsoft reached out to multiple vendors as well as to internal teams already using various data modeling tools. Microsoft had previously purchased another vendor's data modeling tool but had not updated the version of the tool for some time. So it was decided that the best approach was to do a thorough review of data modeling tool capabilities prior to making a long-term decision. As a result of this review, Microsoft's IT department chose ER/Studio because it could offer:

- Flexible partitioning of Microsoft's extensive data model
- Extensive compare and merge capabilities
- Solid and responsive support interaction
- Standardization functionalities such as naming conventions and metadata
- The ability to consistently define entities for data models across the whole organization
- A flexible and comprehensive macro capability

At first, internal adoption was sporadic with only individuals and small groups adopting ER/Studio. The Enterprise Data Architecture team wanted to realize a much larger benefit for Microsoft, so they took the next step to formally standardize on ER/Studio by converting individual licenses to shared licenses, purchasing additional licenses, and removing departmental chargebacks. ER/Studio licenses are now centrally managed and maintained, and this has spurred a broader adoption of ER/Studio, facilitating a unified company approach to data architecture.



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**Aaron Hanks,  
Principal IT Data  
Architect**

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# Results

What started out as a Microsoft IT initiative has now expanded to many groups within Microsoft. Today, over 400 members of the Microsoft workforce have signed up to use ER/Studio.

For Microsoft's Enterprise Data Architecture team, ER/Studio will be a vital part of a multi-year initiative to build an enterprise data model. To appreciate the scope of the project, the team will likely put over 4,000 entities into the enterprise data model. ER/Studio now gives the team the means to apply a rigorous approach to data modeling as well as the ability to support requirements for a data model this large.

"The goal is to work on standardizing data and to be able to define and repurpose data across all of Microsoft," said Hanks.

In the meantime, ER/Studio is already delivering numerous business benefits that include:

- Greater ease in making the logical data models required for all new data application development
- A standardized approach and documentation for all groups
- Enhanced cross-team collaboration via reusing data designs and portions of models from other groups, which was mostly impossible before
- Easier data mapping

Specifically for data mapping, ER/Studio helps to visualize and explain data. At Microsoft, there are logical models that represent how the business looks at the data, and these are often more normalized than the physical schemas. With ER/Studio, Microsoft can map logical attributes to physical attributes when translating business requirements changes to the physical implementation. One area in particular where this functionality helps is in order processing.

The internal data model for SAP can be difficult to read and understand because of attribute names that come from German acronyms. By using ER/Studio, data architects can map the English names in the logical data model to the physical attributes in SAP. This makes it much easier to visualize and explain how changes in business requirements impact SAP implementation.

The seamless workflow is another benefit. "Going from a logical model, doing the data design upfront, creating the physical model, and forward-engineering into SQL Server is a great productivity aid," said Hanks.

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## RESULTS

- Able to deploy enterprise-wide initiatives that can leverage end-to-end customer and partner data
  - Enhanced cross-team collaboration
  - Increased efficiency from having a central repository for data models
  - Will avoid gaps in features and capabilities because of standardized approach
  - Easier consolidation and reuse of data
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This data standardization allows for improved data quality and cost-savings as other data architects won't be starting from scratch to create new models. ER/Studio also allows for review of data structures to see if they are aligned with the correct approaches.

Finally, having a standard data approach avoids creating incompatibilities and gaps in features between systems. The IT department can also offer better and more consistent support. Both now and in the future, using ER/Studio will allow for consolidation and enhanced data reuse, and this can reveal new business opportunities that might have otherwise been missed as well as save both time and money.

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**Aaron Hanks,  
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