Choosing between Multidimensional and Tabular Models in SSAS

COMPARING THE FUNDAMENTAL DATA MODELING EXPERIENCES

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Overview

Viewing milestones of SSAS

Understanding high-level design concepts

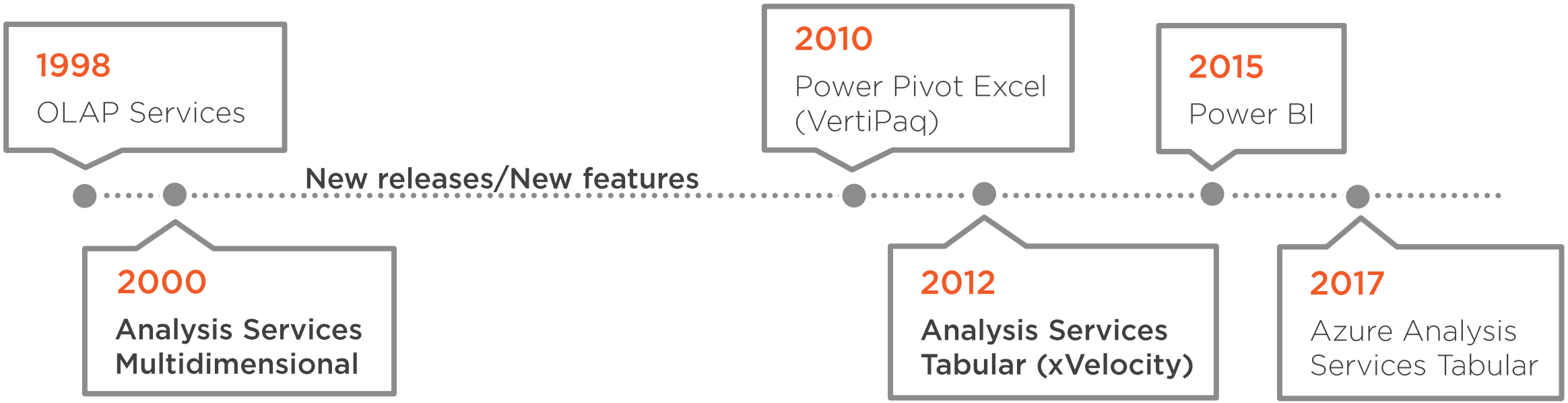
- Semantic data modeling (BISM)
- Relational data modeling

Analyzing query languages MDX and DAX

Considering implementation time and learning curve

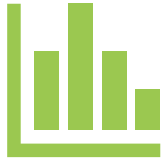
Timeline of SQL Server Analysis Services

Milestones of SSAS

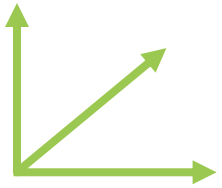


Semantic Data Modeling Objects

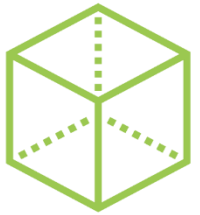
Multidimensional



Measure



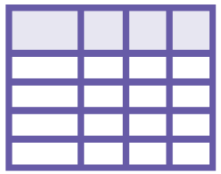
Dimension



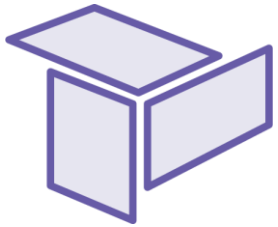
Cube

Tabular

Column

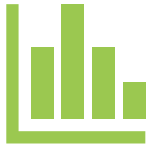


Table



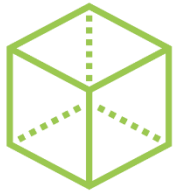
Model

Semantic Data Modeling: Multidimensional



Measures are derived from columns holding a numerical value

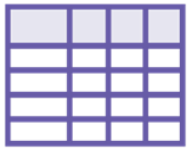
Dimensions are derived from tables consisting of at least one column



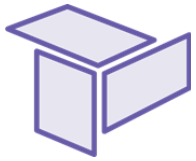
Cubes compose dimensions and measures

Semantic Data Modeling: Tabular

Columns are sets of data values of a particular data type

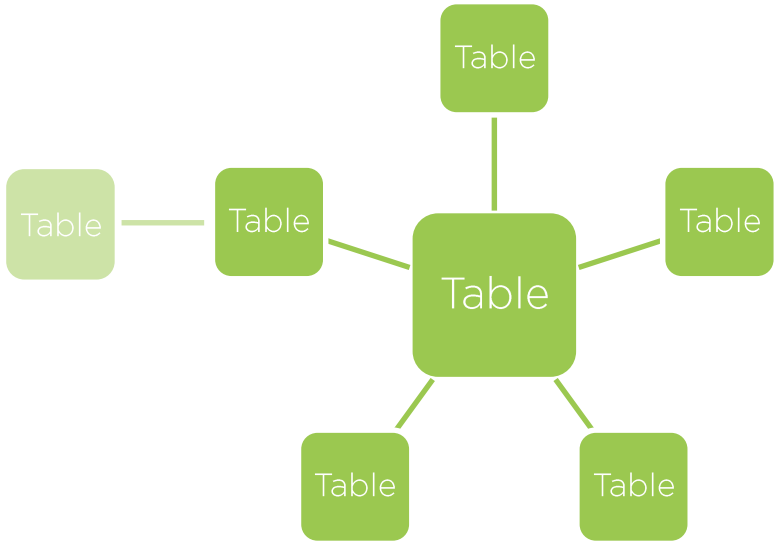


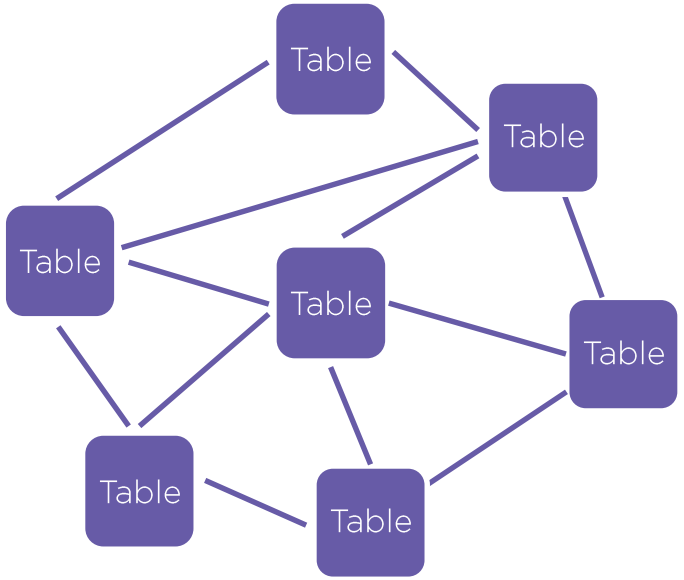
Tables are collections of data consisting of columns and rows



Models include the tables and define relationships

Relational Data Modeling





Multidimensional

- Builds upon a dimensional data model
- Differs between dimensions and measures
- Relates dimensions via measures

Tabular

- Is not bound to a specific data model
- Treats dimension and measure columns equally
- Follows an entity based design

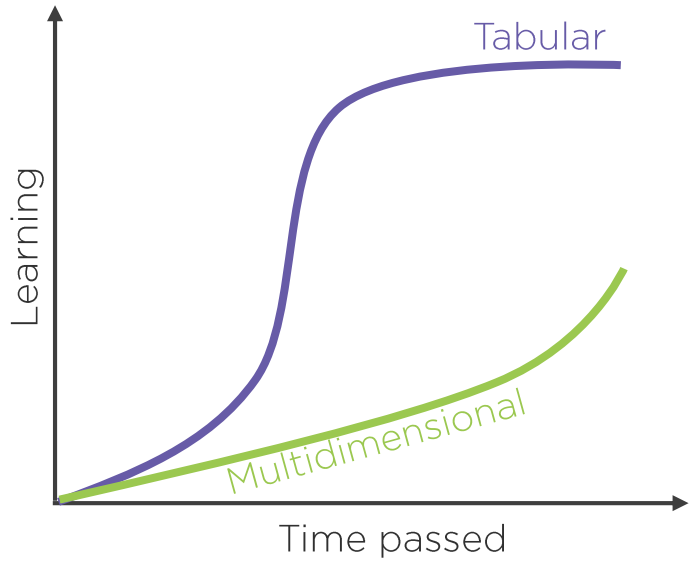
Coexisting Query Languages: MDX vs. DAX

Coexisting Query Languages: MDX vs. DAX

Multidimensional Expression (MDX)	Data Analysis Expression (DAX)
Syntax similar to SQL	Syntax similar to Excel functions
Returns columns as text, string or variant	Returns typed columns
Extendable by custom .NET code	Not extendable
SELECT approach	FILTER approach
([Measures].[Sales Amount], [Date].[Day Name].[Saturday])	CALCULATE(SUM('Measures' [Sales Amount]), 'Date' [Day Name]="Saturday")

Learning Curve and Implementation Time

Learning curve



Implementation time

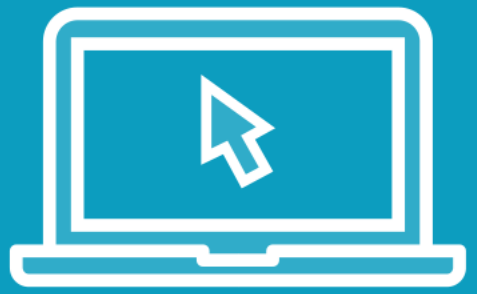
Tabular

- The design approach is easier to follow and faster to implement
- Can handle any data model
- The native query language DAX is recognizable by Excel like functions

Multidimensional

- Provides more sophisticated capabilities
- The underlying data model requires prior ETL processes
- Requires a dimensional data model

Demo



Getting familiar with Visual Studio Data Tools

Contrasting development approaches and features

Comprehending basic design differences based on their interfaces

Summary

- Discovering the history of both model types
- Exploring their semantic data modeling objects
- Contrasting their default query languages
- Implementing and learning either model type