WHO NEEDS SSAS WHEN YOU'VE GOT SQL?

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Colorado Springs SQL User Group

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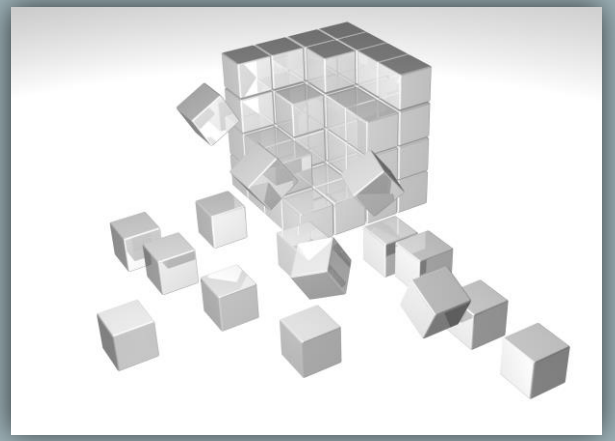

GETTING STARTED

Slides are on my blog: DataSavvy.wordpress.com/Presentations.

Feel free to share questions and comments throughout the presentation.

ABOUT ME

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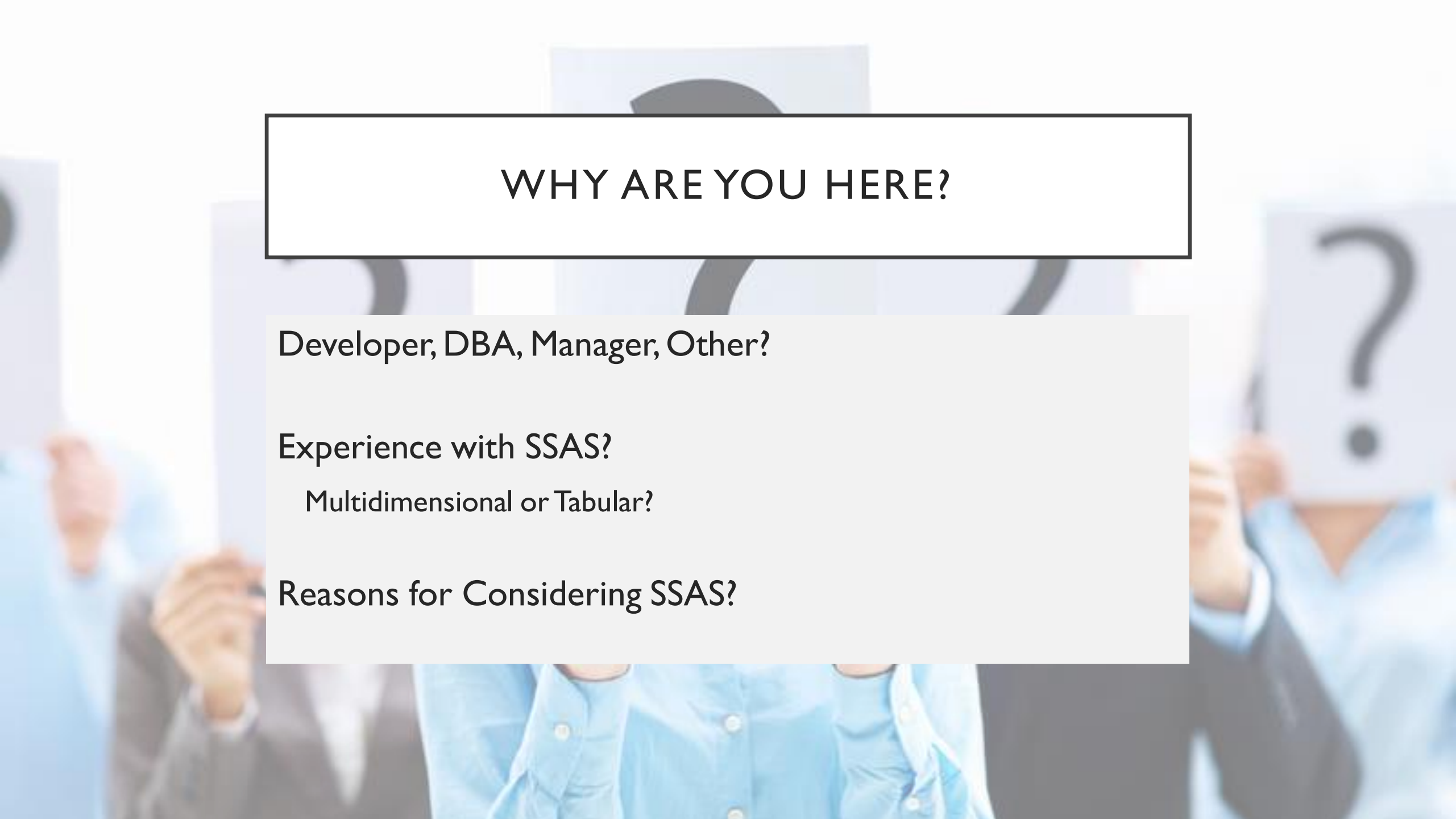


WHY ARE YOU HERE?

Developer, DBA, Manager, Other?

Experience with SSAS?

- Multidimensional or Tabular?

Reasons for Considering SSAS?

WHY SSAS?

IN THE BEGINNING

1998

- SQL Server 7 OLAP Services
- MOLAP, ROLAP, HOLAP, MDX

2000

- Analysis Services 2000
- Data mining, parent-child dimensions, dimension security, distinct count
- Only one fact table per cube

THEN CAME

2005

- SQL Server Analysis Services 2005
- Unified Dimensional Model, AMO

2008

- SQL Server Analysis Services 2008
- Attribute relationships and aggregations

THEN THINGS GOT INTERESTING

2010
- Power Pivot 1.0 released

2012
- SQL Server Analysis Services 2012
- Tabular & DAX, Multidimensional

2015
- PowerBIV2 & PowerBI.com

2016
- SQL Server Analysis Services 2016:
- Tabular Model Scripting Language, parallel processing for multiple table partitions, bi-directional cross-filtering, enhanced direct query

IN THE MEANTIME

The SQL Server Database Engine Grew Up

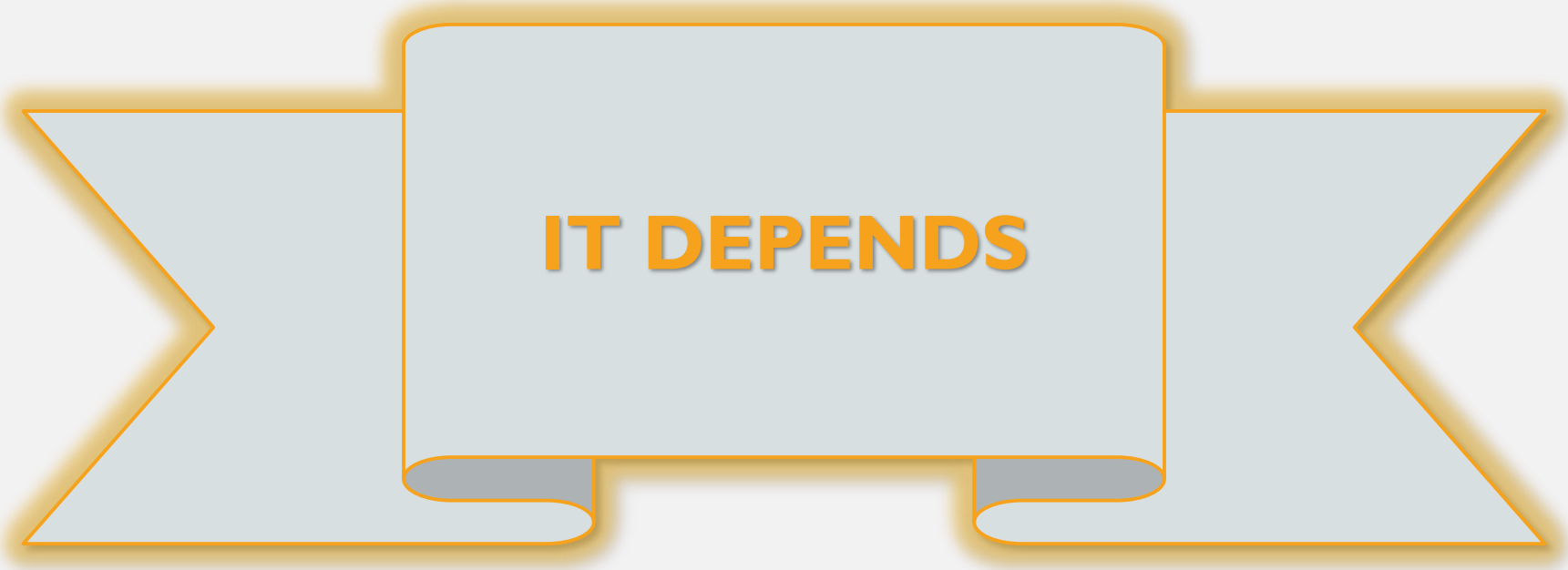
- Columnstore Indexes
- New analytic functions
- Memory-optimized tables
- Row-level security

HAVE YOU HAD THE THOUGHT

With the features available in the SQL 2014 and 2016 engine…

Is SSAS still useful?

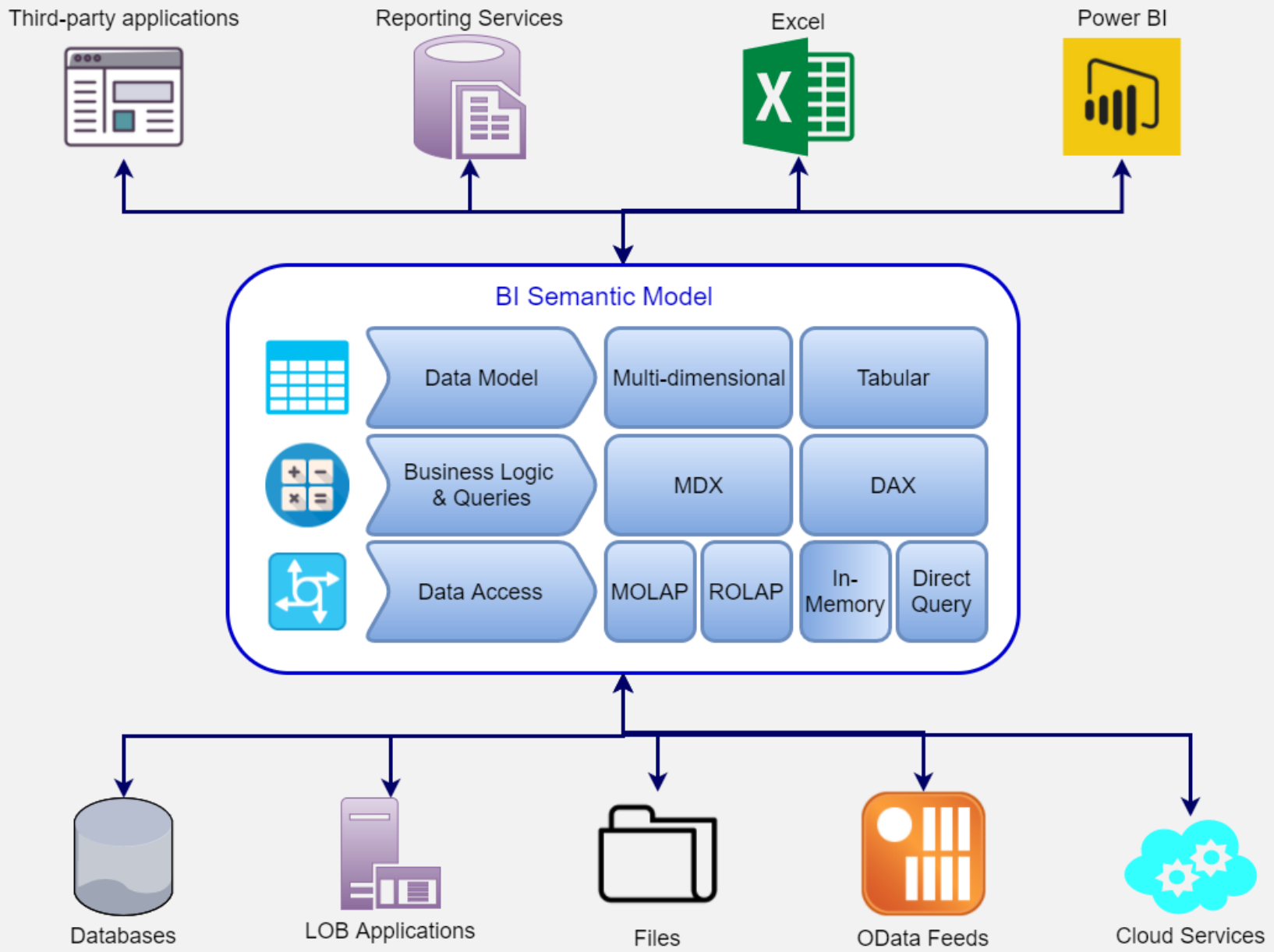
HAVE YOU HAD THE THOUGHT



WHY DO WE USE SSAS

- Speed
- Security
- Multi-dimensional analysis
- Avoid resource contention with the source system
- Consolidate from multiple sources
- Shared metadata (joins, hierarchies, KPIs, etc.)

BI SEMANTIC MODEL ARCHITECTURE



MY SUGGESTION BASED UPON SQL 2014

If all you need is increased speed while querying large amounts of data, the relational engine may provide your solution.

Shared metadata, security, and ease of ad hoc analysis may make SSAS worth consideration.

WHY DO WE USE SSAS

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- Security
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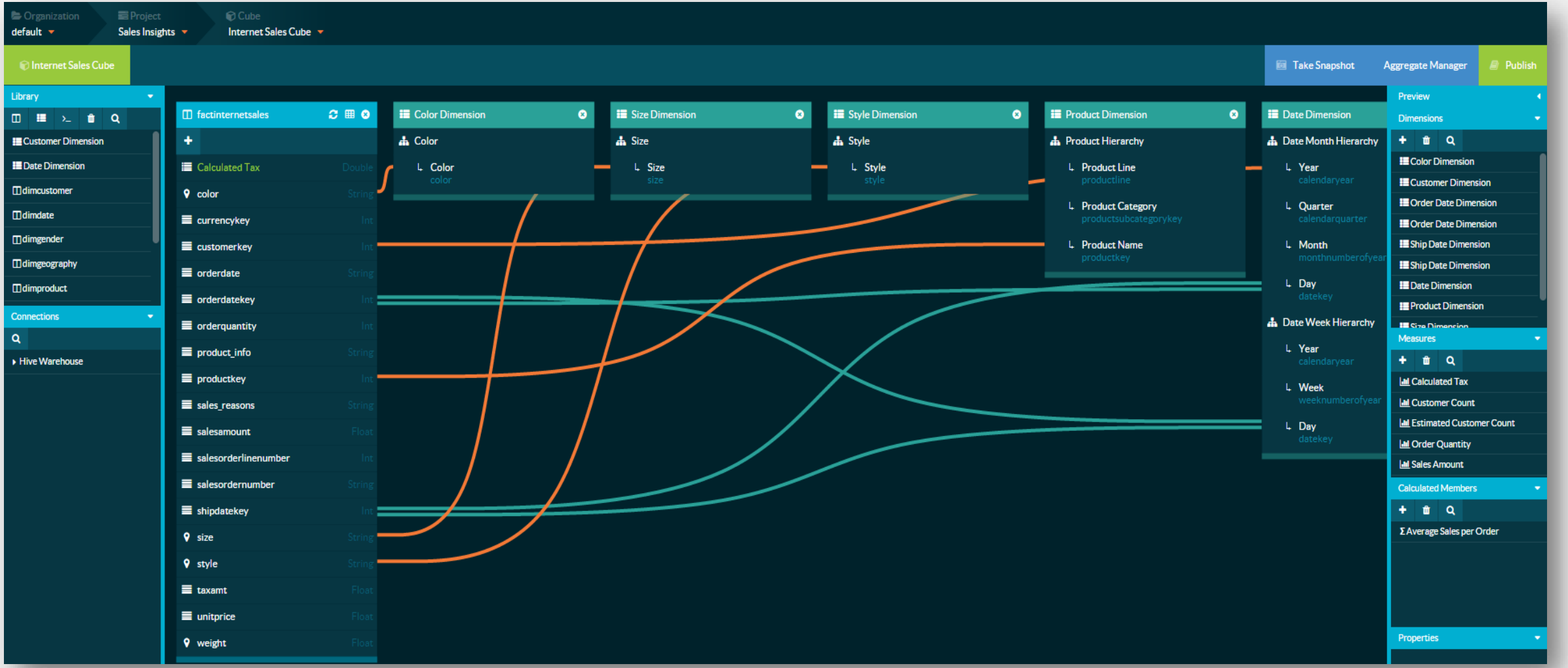
- Shared metadata (joins, hierarchies, KPIs, etc.)

MY SUGGESTION BASED UPON SQL 2016

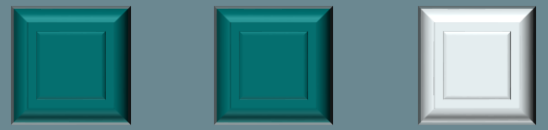
It's the metadata, stupid!*

*Note: I'm not calling you stupid. This is pop culture/history reference.

THE FUTURE IS HERE AND OLAP IS IN IT



UNDERSTAND MODES & FEATURES



CHOOSE YOUR MODE

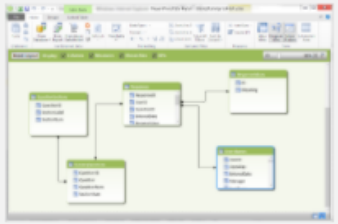
Tabular

Multidimensional

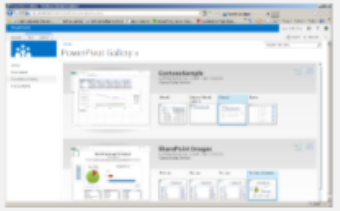
Power BI Desktop

PowerBI.com

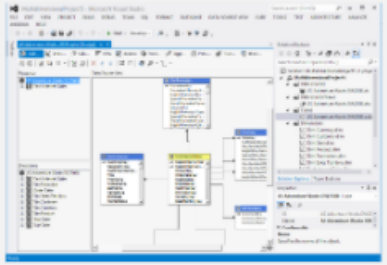
Power Pivot in Excel



Power Pivot for SharePoint



Analysis Services
Multidimensional



Personal BI

Team BI

Corporate BI

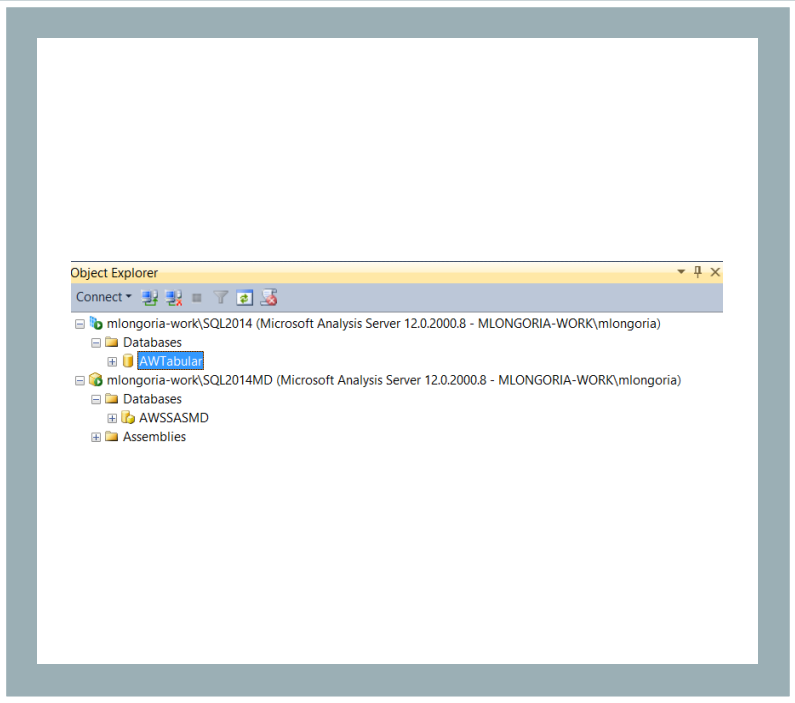
DIFFERENCES – ENGINE/DATABASE

MULTIDIMENSIONAL

- OLAP engine
- MDX
- Can be larger than server memory
- Multiple cubes per database
- Script with Biml
- ROLAP
- Process partitions in parallel
- Data mining

TABULAR

- In-memory xVelocity Engine
- DAX (can translate MDX)
- In-memory means it must fit on server
- Single model per database
- Tabular Model Scripting Language in 2016
- Direct query w/ DAX limitations until 2016
- Process partitions serially until 2016
- Better performance on distinct counts



DEMO: SSAS IN MANAGEMENT STUDIO

DIFFERENCES – FEATURES

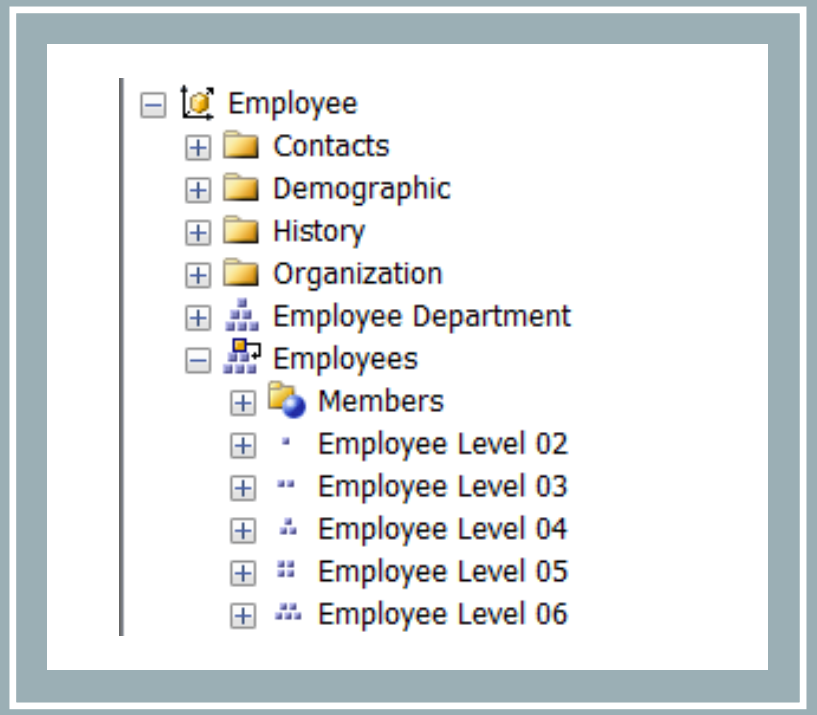
MULTIDIMENSIONAL

- Native parent-child hierarchies
- Many-to-many relationships
- Native drillthrough
- Writeback
- Named sets
- Role-playing dimensions
- Dimension attributes for optimization, discretization, default member, aggregation

TABULAR

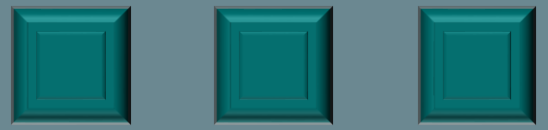
- Parent-child hierarchies through DAX
- M2M through DAX and many calculations
- Drillthrough with BIDS Helper
- Integrate different data sources
- Flexible model (no true dimension/fact)
- Role-playing dimension with calculated table in 2016
- Upgrade path from Power Pivot, workaround to upgrade from Power BI

DEMO: ATTRIBUTES, RELATIONSHIPS & ROLE PLAYING DIMENSIONS



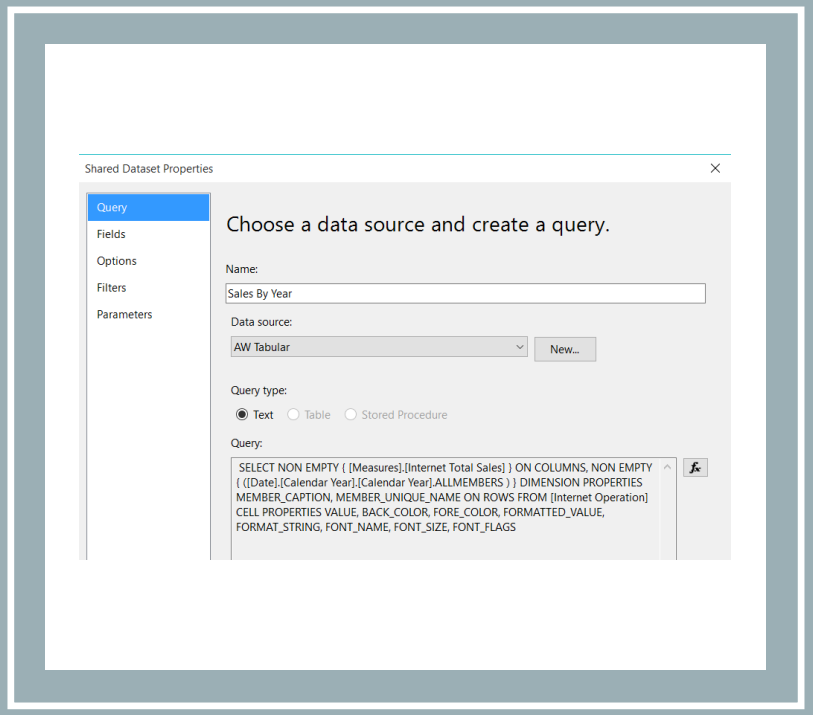
DEMO: MANY-TO-MANY RELATIONSHIPS & PARENT-CHILD HIERARCHIES

USE OF SSAS WITH CLIENT TOOLS



COMMONLY USED CLIENT TOOLS

- Excel: Pivot Tables and Cube Functions
- SSRS: Uses ADOMD client; MDX or GUI
- .NET: ADOMD or OLEDB
  - Alternative: SQL Server using OPENROWSET



CLIENT TOOLS QUERYING SSAS

THE PAYOFF: MIXED USE ENVIRONMENTS

- SSAS database provides shared semantic layer
- Canned reports through SSRS
- Ad hoc browsing through PowerBI, Excel, or Tableau
- Applications with embedded reporting using ADOMD connection

FURTHER READING: SSAS

- Why use SSAS: http://www.jamesserra.com/archive/2013/08/why-use-a-ssas-cube/
- Why Analysis Services: http://www.angelsbiblog.com/2013/01/why-analysis-services.html
- https://msdn.microsoft.com/en-us/library/hh212940.aspx
- Why do I need a cube: http://blog.datainspirations.com/2011/05/11/sqlu-ssas-week-why-do-i-need-a-cube-how-do-i-get-started/
- AtScale OLAP on Hadoop: http://talkincloud.com/iaas/atscale-partners-microsoft-big-data
- Differences between OLAP & Tabular: http://www.codemag.com/Article/1308091
- Choosing a tabular or multidimensional experience: https://msdn.microsoft.com/en-us/library/Hh994774.aspx
- What's new in SSAS 2016: https://msdn.microsoft.com/en-us/library/bb522628.aspx

FURTHER READING: SSAS

- PowerPivot vs SSAS Tabular vs SSAS MD: http://www.sqlchick.com/entries/2012/3/4/decisions-powerpivot-ssas-tabular-or-ssas-multidimensional-m.html
- Large Scale Tabular SSAS whitepaper: http://sqlblog.com/blogs/marco_russo/archive/2014/06/05/white-paper-on-analysis-services-tabular-large-scale-solution-ssas-tabular.aspx
- Optimizing M2M calculations: https://www.sqlbi.com/articles/optimize-many-to-many-calculation-in-dax-with-summarize-and-cross-table-filtering/
- SSAS MOLAP Performance Guide: https://msdn.microsoft.com/en-us/library/Dn749781.aspx
- Establishing Connections in ADOMD.NET: https://msdn.microsoft.com/en-us/library/ms123468.aspx
- Direct Query Mode (SSAS Tabular): https://msdn.microsoft.com/en-us/library/hh230898.aspx
- Calculated Tables in Power BI: http://www.radacad.com/scenarios-of-using-calculated-tables-in-power-bi

QUESTIONS/COMMENTS

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