Tabular Models: Easier & Faster Than Cubes; Really?

the good, the bad, the ugly & the beautiful

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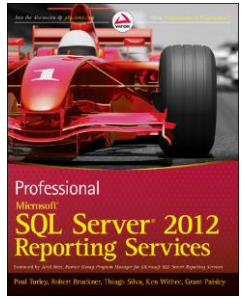


Tabular Models: Easier & Faster Than Cubes; Really?

The future of data analysis is the new, in-memory xVelocity Tabular analytic engine but is this new product ready for enterprise solutions? Is it easier to build Tabular models than multidimensional cubes in SQL Server 2012? Maybe… Depends on what you need to do. Is it faster? Heck, yea. Taking off the Microsoft BI marketing hat, let's take a tabular journey together and learn some lessons from the first generation of real, enterprise-scale solutions: The Good, the Bad, the Ugly and the Beautiful.

real-world
practice

semantic modeling options

scale

PowerPivot - Desktop

- Simple, fast development
- May be promoted to SharePoint or BSM Tabular

x 1 million rows

PowerPivot - SharePoint

- Collaborative
- Server scale

x 10 million rows

BISM Tabular Model

- Partitions for scale
- Admin: processing options, security control

x 100 million rows
x 10 billion rows

BISM Multidimensional (SSAS OLAP)

- Optimized for dimensional structures & sum-able aggregates
- Mature features & scripting flexibility

millions, billions

terminology

- VertiPaq
- VertiScan
- xVelocity
- Column Store
- Tabular Model
- PowerPivot
- DAX

the Good, Bad, the Ugly

… and the Beautiful

the good

VertiPaq engine is stable & reliable

performs very well in most scenarios

in many ways is much less complex than multidimensional SSAS

can be easier & faster to implement

basic DAX is easy to learn

the bad

PowerPivot is a v.2 product

tabular SSAS is a v.1 product

design patterns & best practices are still emerging

one model.bim file = one developer working at a time

support community is thriving but still small

the DAX editor in PowerPivot & SSDT is quirky

the ugly

the v.1 SSDT designer can be cumbersome

all design work is performed while connected to the workspace database

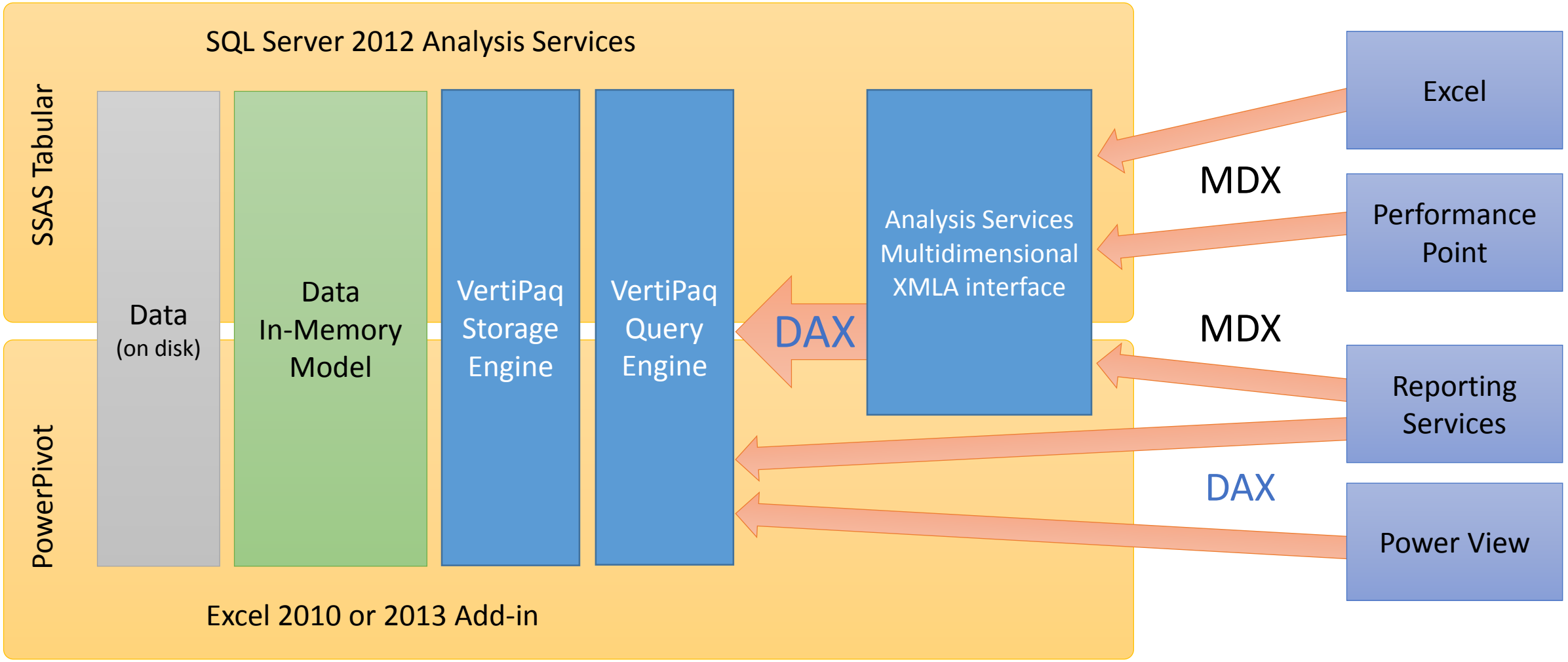
all changes are written & updated, one property at a time

not all SSAS features are currently supported

the beautiful

- in-memory, tabular model technology is the promise of the future
- many useful & valuable features are supported today
- PowerPivot models upgrade seamlessly to tabular model
- tabular is SSAS!
- features not implemented now will be available in future builds
- clients that support SSAS multidimensional support tabular
- tabular understands MDX & DAX queries

ssas tabular architecture



tabular data sources

- all standard sources: all relational databases, text files, Excel, SSAS
- data feeds: OData, ATOM Feed, SSRS reports
- clipboard
- anything that looks like a table
- Excel linked tables not supported in SSAS tabular model
- Azure Marketplace & Suggest Related

tabular models are
not a replacement
for data quality
governance & ETL

challenges & gotchas

- workspace database updates can be time-consuming
  - renaming objects
  - setting properties
- workspace database can be too big for development machine
- workspace database stability issues
- diagram view usability issues with large models
- DAX editor auto-completion creates syntax errors
- SSAS may expose two copies of a table

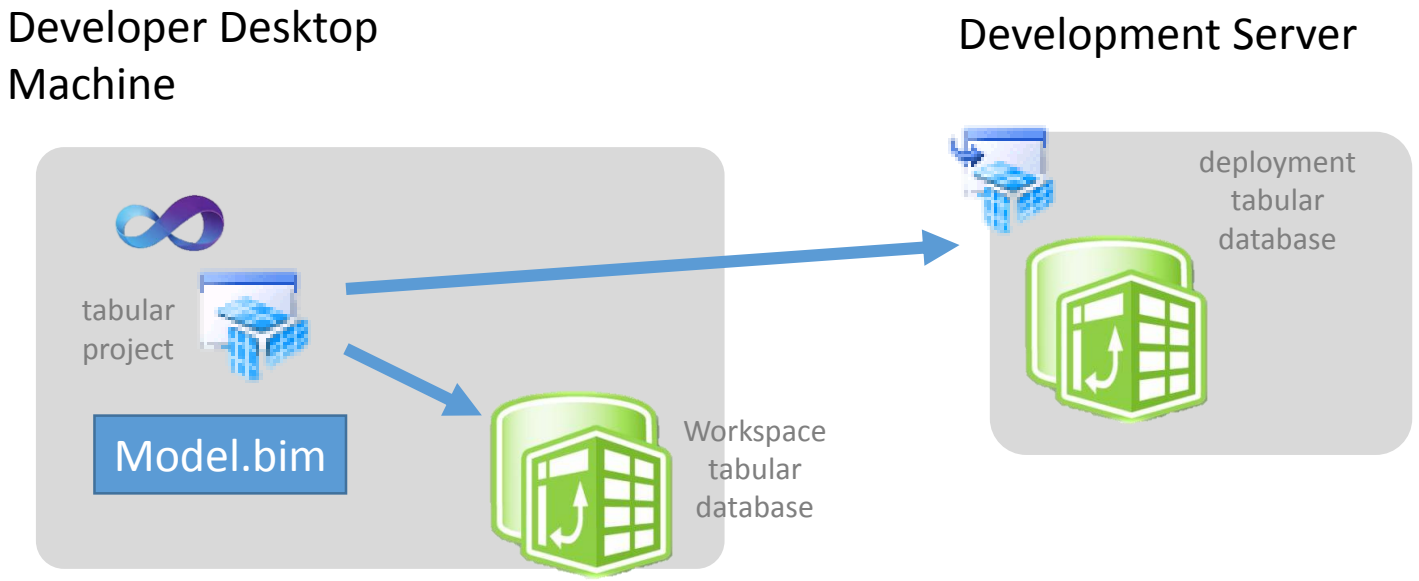
defining model metadata

- important to be thorough
- easy to miss steps
- iteration is common
  - rename objects
  - hide from client tools
  - change data types
  - set formatting
  - set the sort by column
  - date table
  - column categories

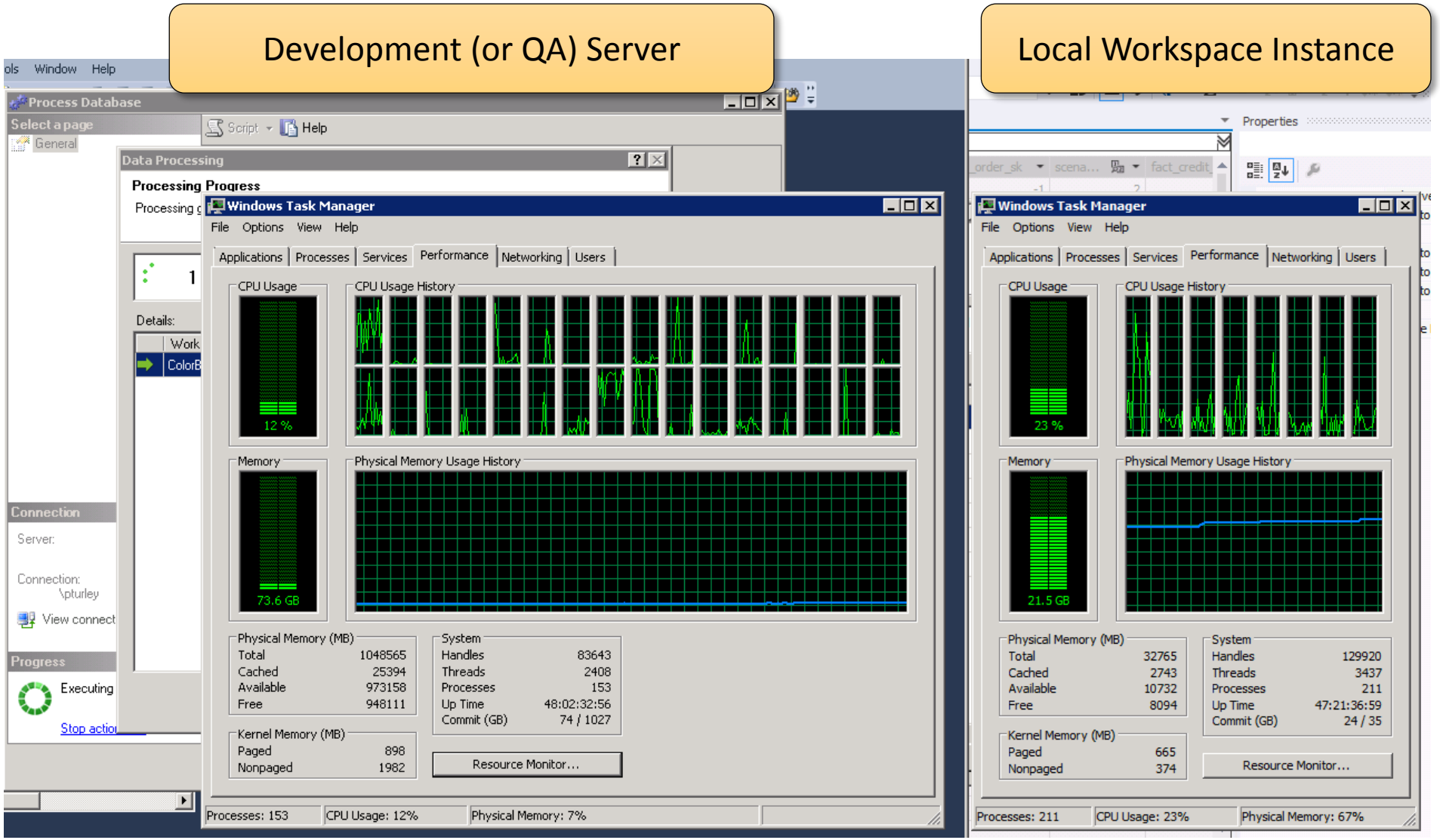
Checklist from Melissa Coates "SQL Chick" blog:
http://www.sqlchick.com/entries/2013/2/10/checklist-for-knowing-your-powerpivot-model-is-complete.html

model & deployment management

- use partitions to manage development working set
- workspace database should be a local instance
- process one or a few partitions to populate workspace database
- deploy to de



target and workspace databases

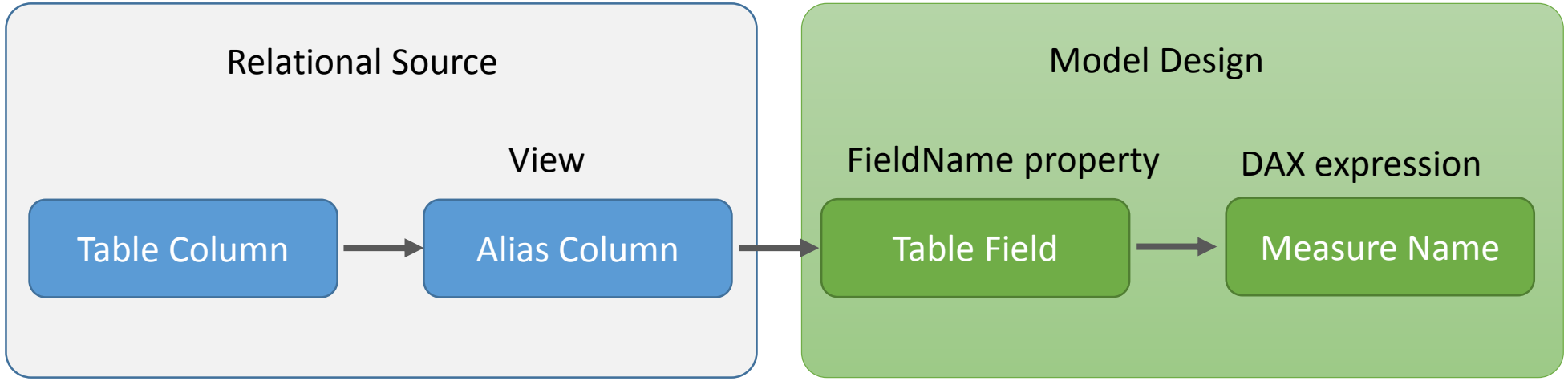


naming conventions & friendly names

a semantic model is the buffer zone between enterprise data and a self-service user interface

convert database object names to user-familiar names & structures

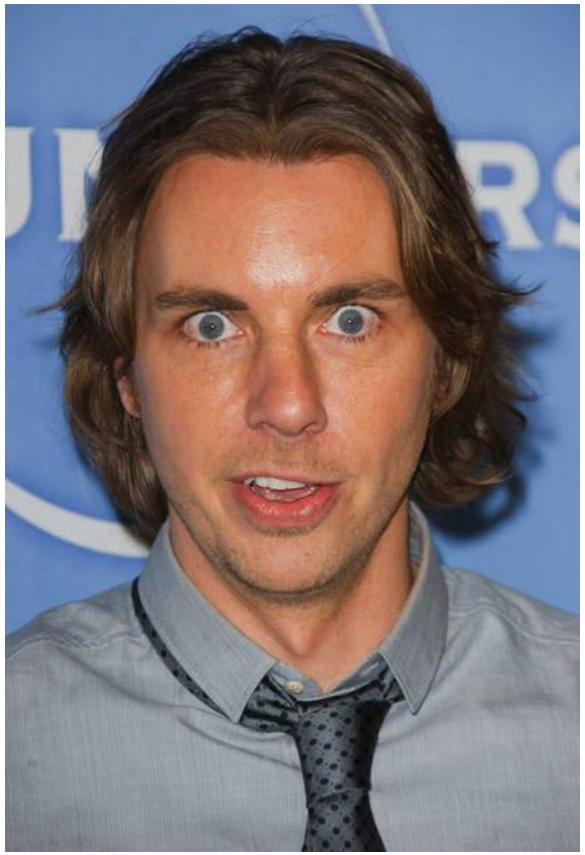
column & field names:



In large models, use a view to map data source columns to friendly names

what is DAX?

Google:



Bing:

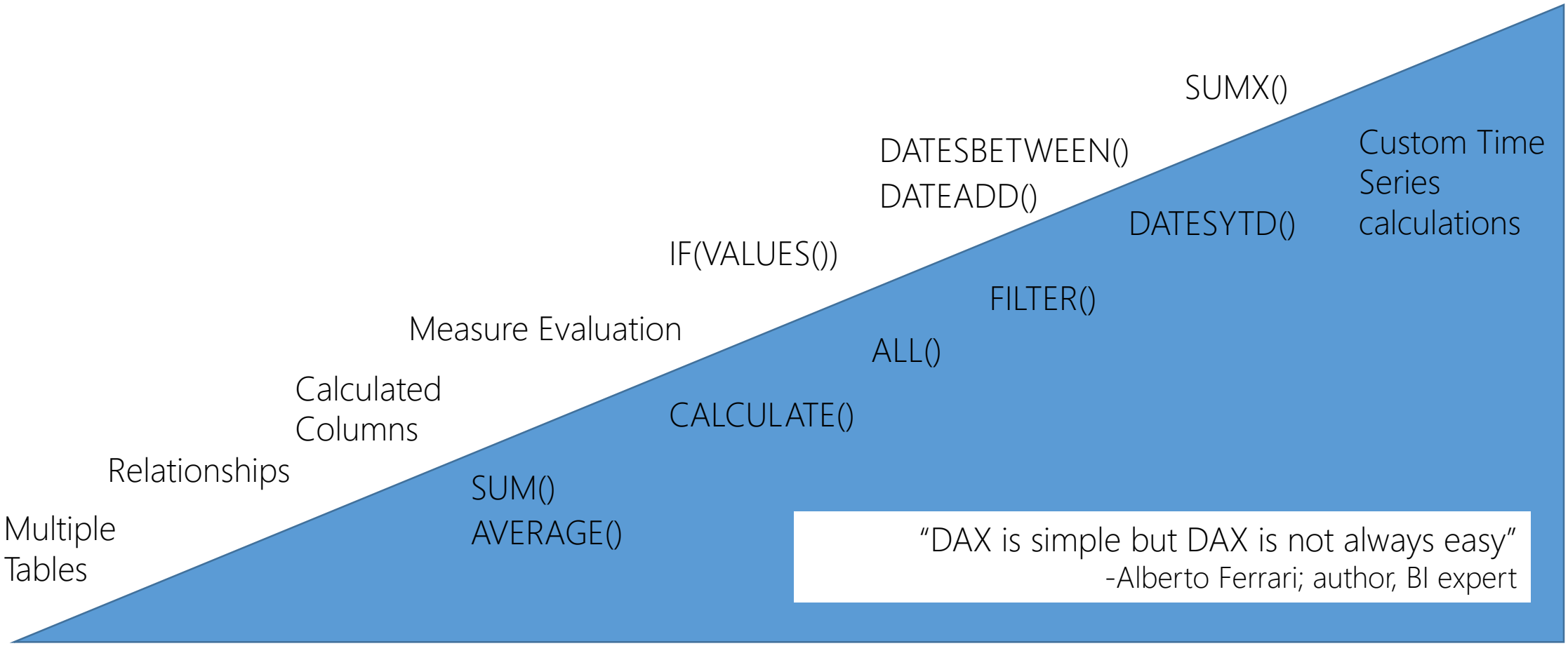
Wikipedia:

"Wikipedia does not have an article with this exact name."
(as of 28 Nov 2012)

...so I posted an article:

"Data Analysis Expressions, or DAX, is the native formula and query language for Microsoft PowerPivot and SQL Server Analysis Services Tabular models. DAX includes some of the functions that are used in Excel formulas, and additional functions that are designed to work with relational data and perform dynamic aggregation."

learning DAX



Complete DAX documentation:
select * from $system.mdschema_functions where origin = 3 or origin = 4

review: best practices & learnings

- install a local instance of SSAS tabular on development machine & use for workspace database
- map column names in views
- name measure base columns differently than measures
- create measures & hide measure base columns
- hide everything you don't want to expose to users – keys, utility columns & measure base columns
- copy DAX expression before making changes
- use partitions to minimize model data size

resources

- my blog: SqlServerBiBlog.com
- TechNet Wiki (SQL Server / Analysis Services)
- Training: SolidQ.com/training
- Books: