



SENTURUS

Data Modeling Comparison: Tableau, Power BI & Cognos

The Trifecta Chronicles

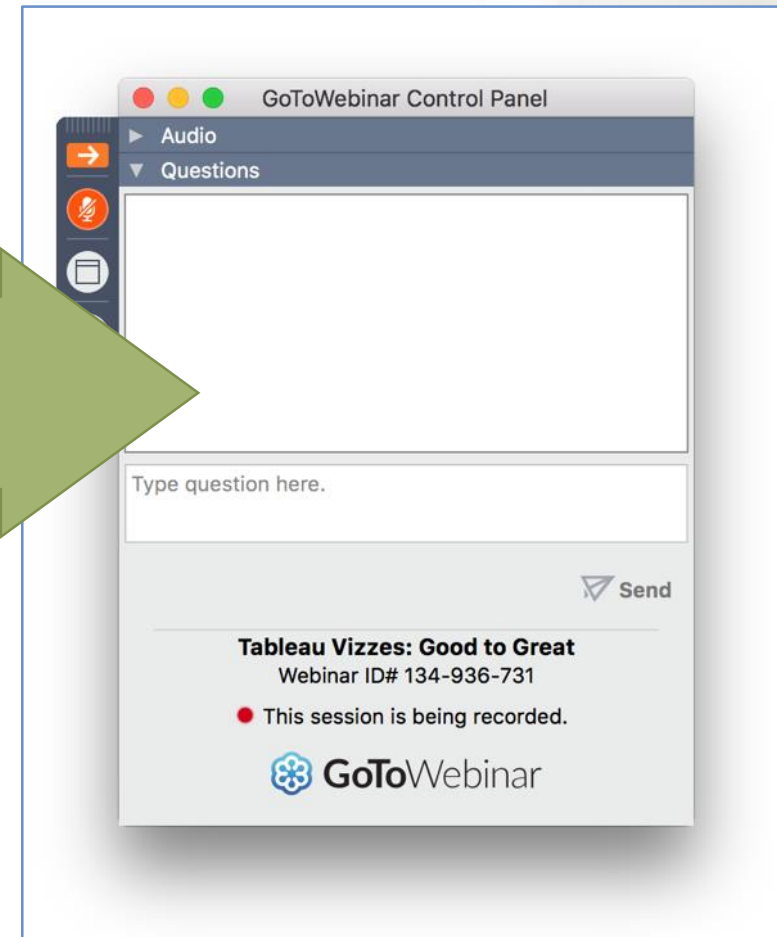


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SHEDDING LIGHT ON CLOUD BI OPTIONS
Amazon. IBM Cognos Cloud. Microsoft Power BI Service. Tableau Online.
Azure.



BUSINESS
STRATEGY



IBM COGNOS REPORTING TOOLS: FEATURE SET COMPARISON
Visual Reference Guide



FEATURES



A COMPARISON OF POWER BI, TABLEAU & COGNOS
Differentiators Demo'd



FEATURES



Agenda

Introduction

What is Modeling & Transformation

Comparison demos

Comparison summary and review

Senturus overview

Additional resources

Q&A



Introduction



Michael Weinbauer

Director of Training and Content
Senturus, Inc.

Poll

Which BI platforms do you currently use? (select all that apply)

- Tableau
- Power BI
- Cognos
- Other

BI design stages

Source

Model &
transform

Visualize
& analyze

Share &
collaborate

Govern

Secure

Administer

Modeling & transformation defined

Creating analysis-friendly data sets (“virtual stars”)

Joining, cleaning and otherwise “shaping” data

Data warehouse + myriad other sources

Tools have capabilities to prepare and model data

Roles are shifting towards self-service



Demonstrations

Source - Cognos Framework Manager client

Relational

Multidimensional

ODBC

JDBC

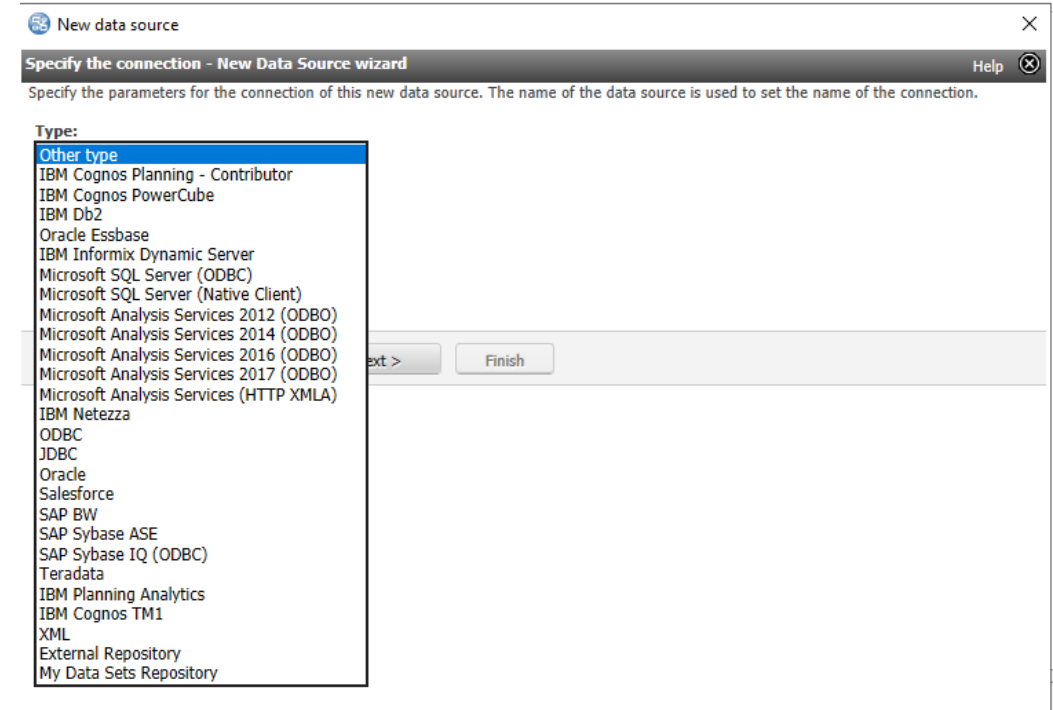
SAP

XML

Salesforce

Data sets

Other metadata sources



Source - Cognos Framework Manager

Relational

Multidimensional

Cloud

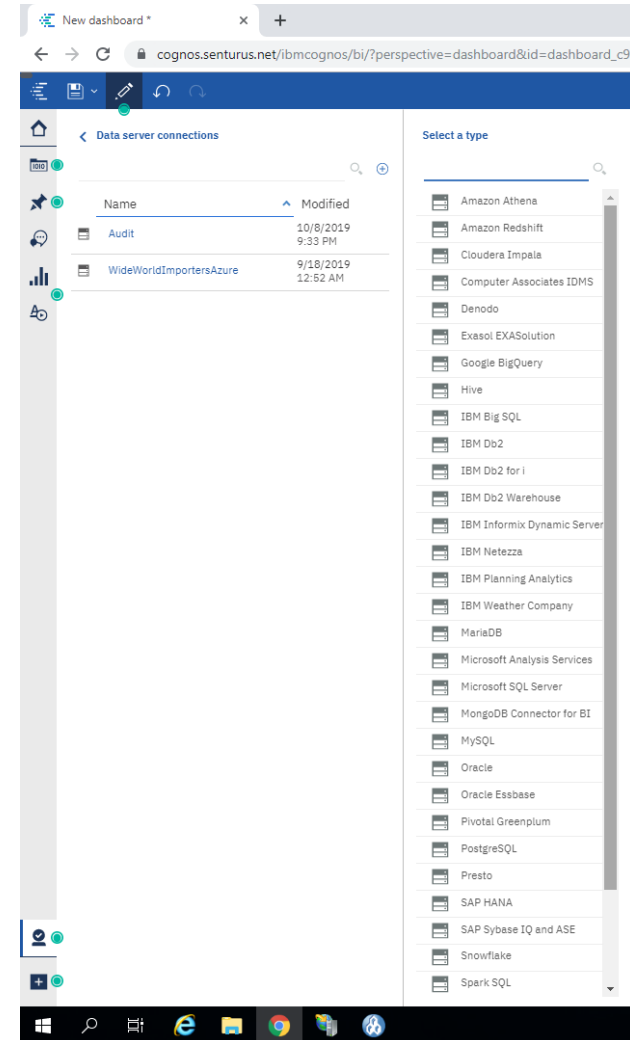
SAP

Teradata

Salesforce

Data sets

Flat files



Source - Cognos data modules

Existing data modules

Pre-configured database connections

Files (Excel, CSV)

Data sets

Packages

 Data modules

 Data servers

 Uploaded files

 Data sets

 Packages

Source – Cognos options diagram



Source – Tableau

Relational

Spatial

Multidimensional

JSON

ODBC

Python (TabPy)

JDBC

PDF

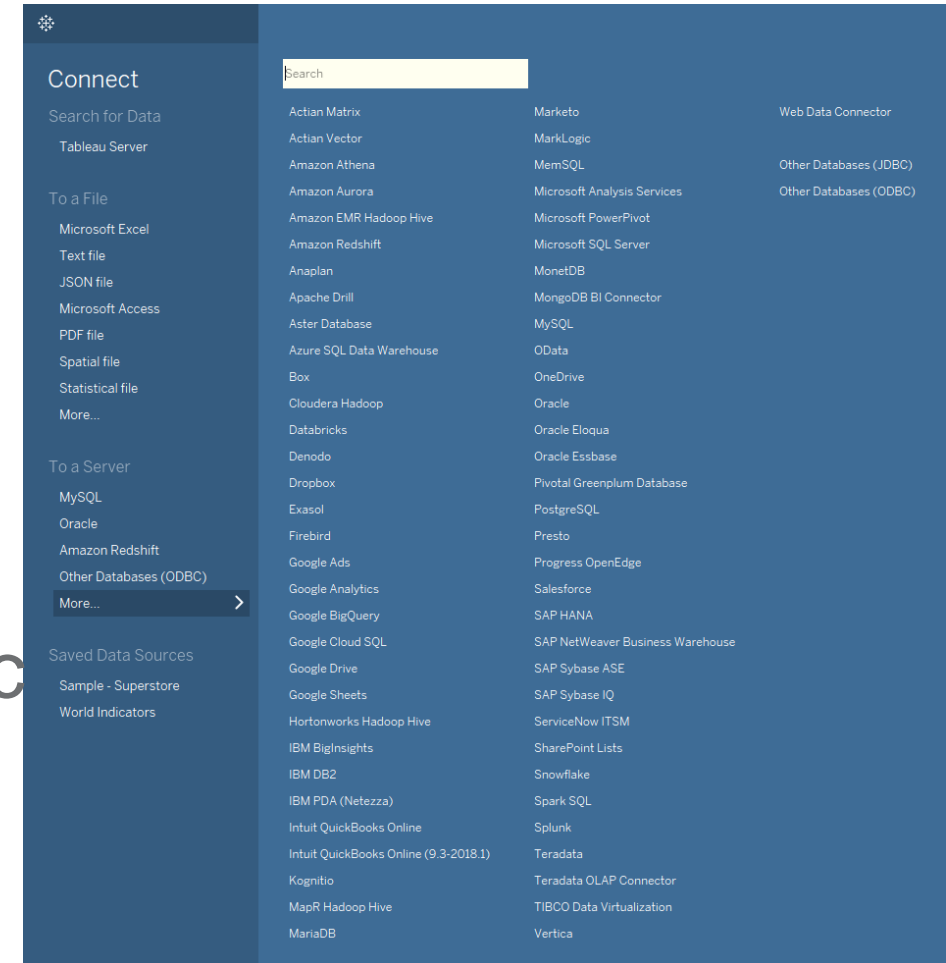
SAP

Application specific

Flat files

Live or extract

Statistical



Source – Tableau Prep

Relational

Multidimensional

ODBC

JDBC

SAP

Flat files

Statistical

PDF

Application specific



Source – Power BI

Relational

Statistical

Multidimensional

JSON

ODBC

PDF

JDBC

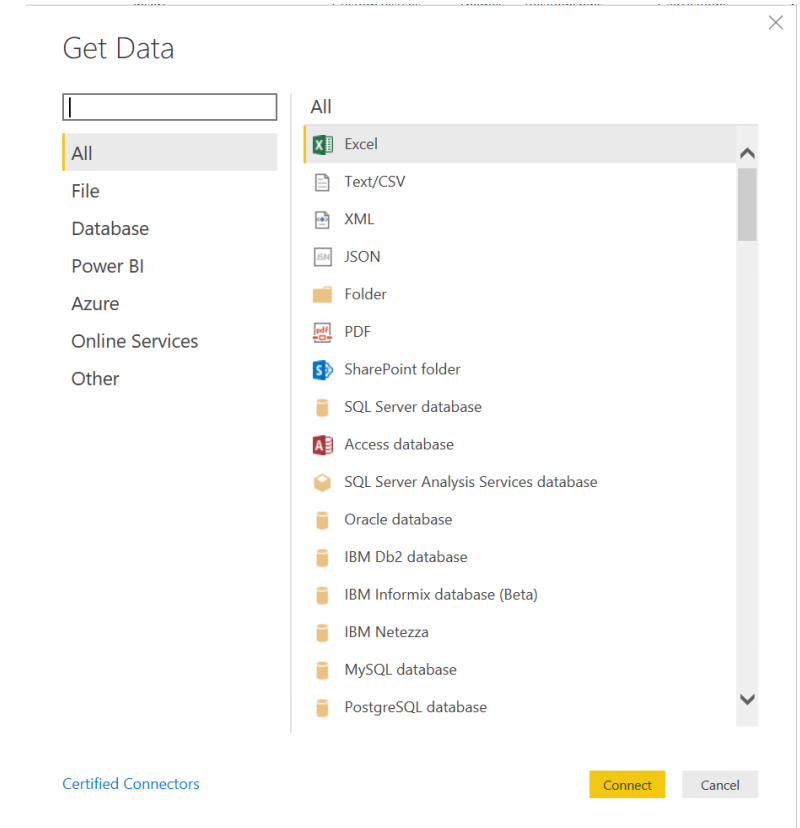
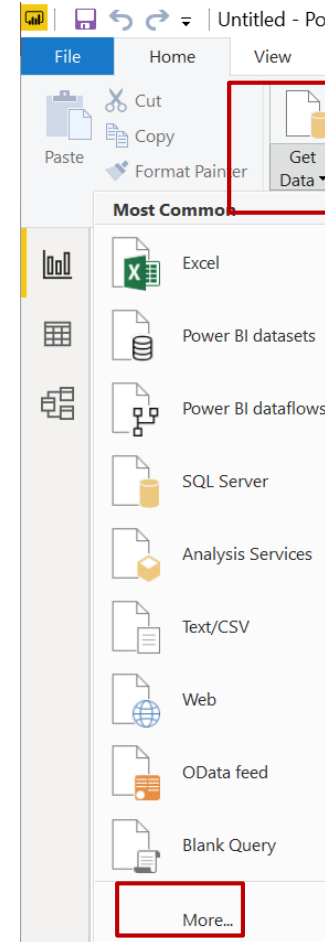
Python

SAP

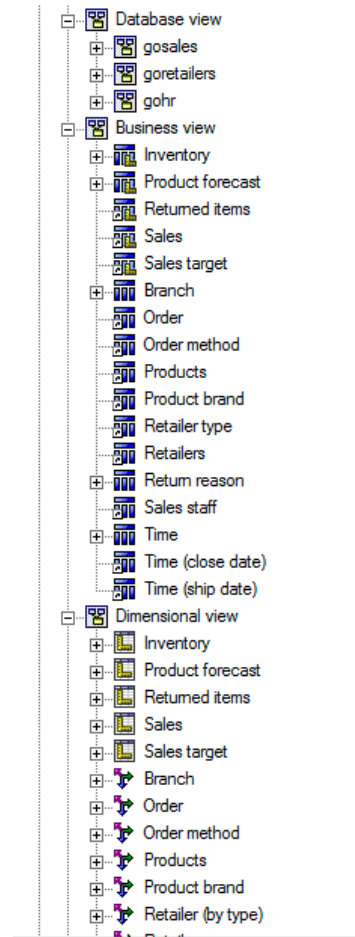
Web URL

Flat files

SaaS
applications



Model & transform – Cognos Framework Manager



Multi-tier design

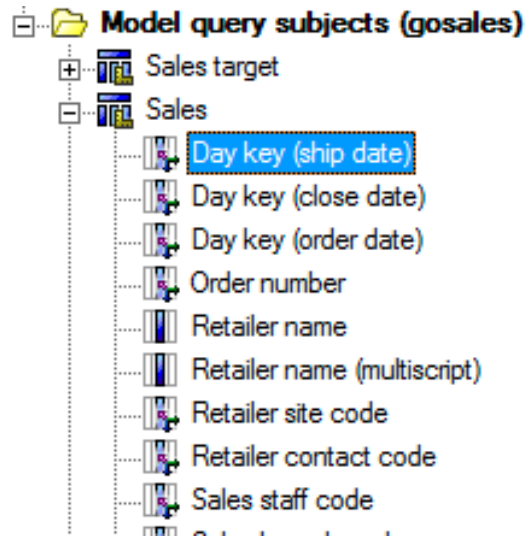
Namespaces and folders used to organize “query subjects”

Allows for multiple layers of abstraction and organization

Model dimensionally

Model & transform – Cognos Framework Manager

Set format, aggregations, data types, etc.



Properties	
Properties	Language
Name	Day key (ship date)
Description	
Last Changed	2007-11-08T15:59:45
Last Changed By	Anonymous
Model Comments	
Screen Tip	
Expression	<Click to edit.>
Is Hidden	True
Usage	Identifier
Format	<Click to edit.>
Currency	
Data Type	Int32
Precision	0
Scale	0
Size	4
Is Nullable	True
Display Type	Value
MIME Type	
⊕ Prompt Info	
Regular Aggregate	Count
Semi-Aggregate	Unsupported
Is Unsortable	False

Model & transform – Cognos Framework Manager

Resolve potentially complex design issues

- Join ambiguity and “loops”

- Recursive joins

- Multiple logical hierarchies

- Fact-to-fact (many-to-many) joins

- Blind spot queries

- Role-playing dimensions

Model & transform – Cognos Framework Manager

Apply package and object-level security

Set governors

Set query timeouts

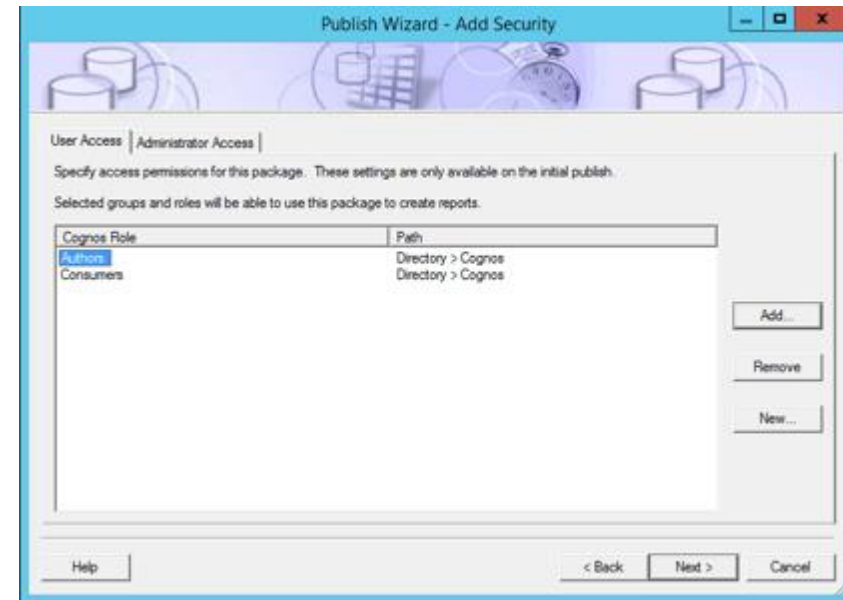
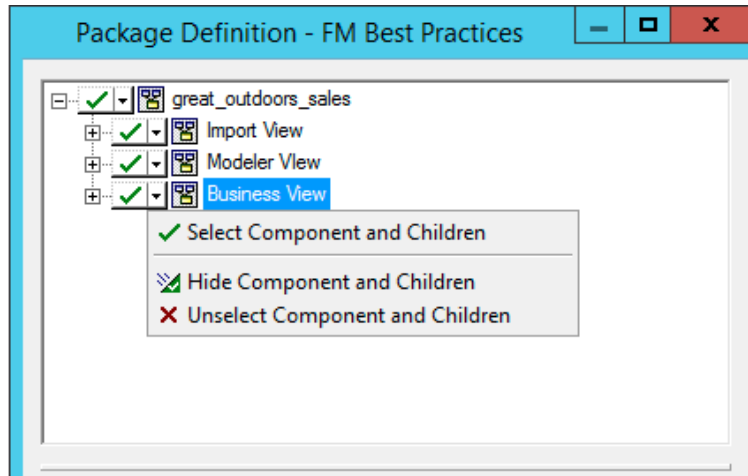
Allow/disallow cross-product joins

Allow/disallow outer joins

Set large text item limits

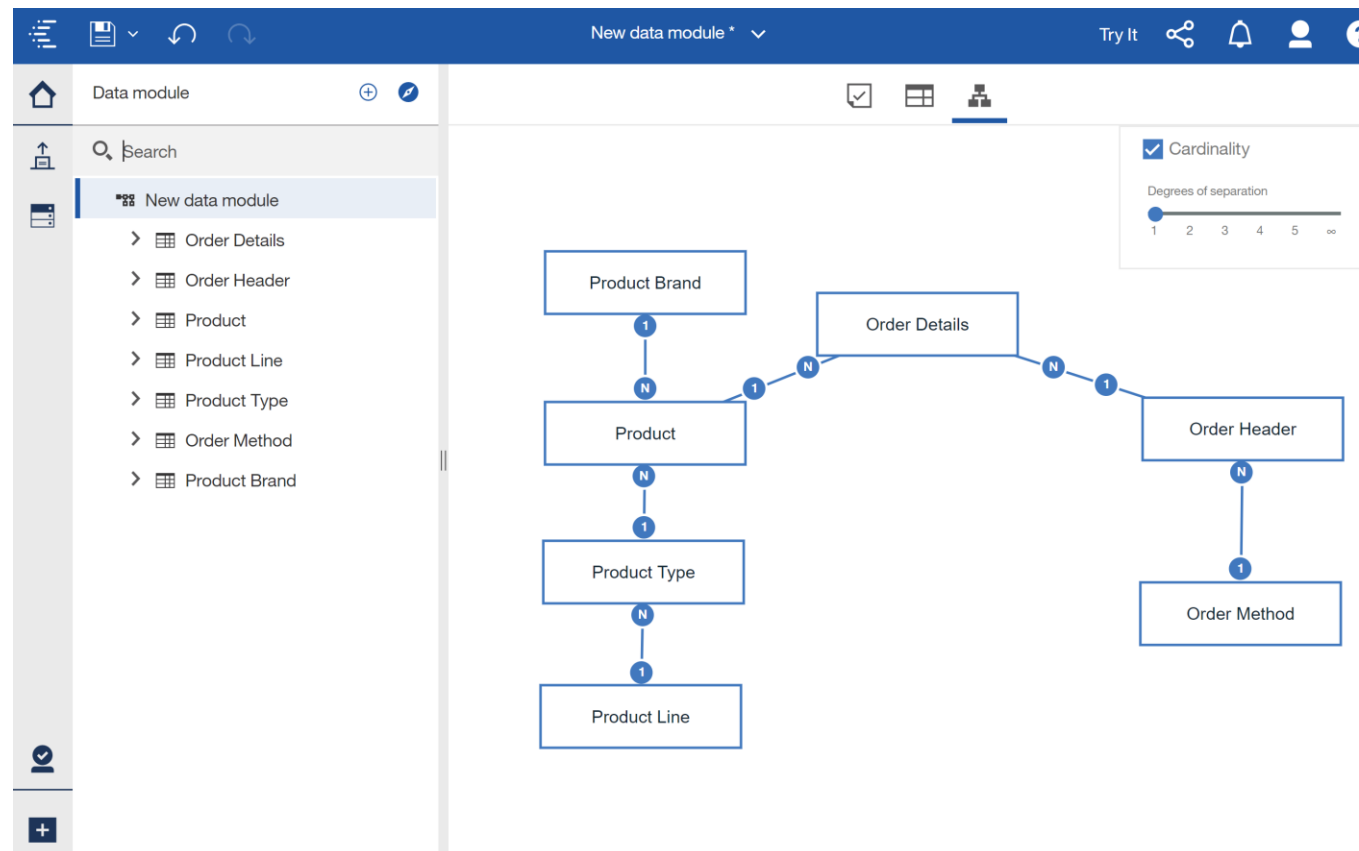
Model & transform – Cognos Framework Manager

Publish packages for use by authors

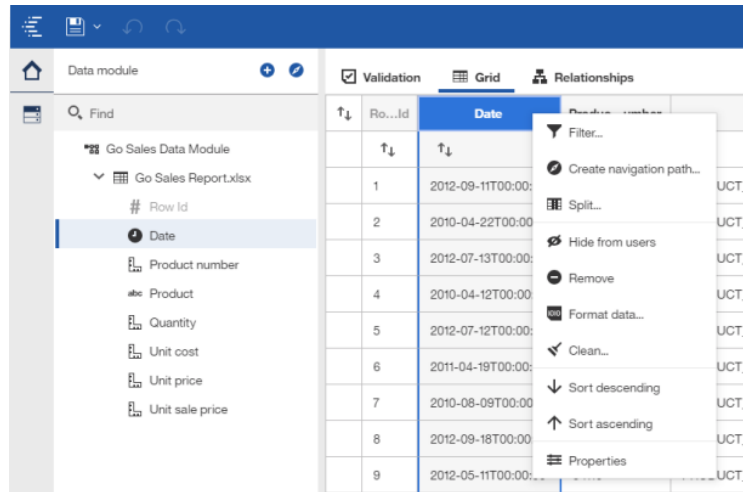


Model & transform – Cognos data modules

Self-service web-based modeling



Model & transform – Cognos data modules



Create a join relationship

Connect **Product** to **Order Details** by selecting matching columns from each side



Cardinality

☐ Each **Product** has one **Order Details** (1 to 1)

☒ Each **Product** has one or more **Order Details** (1 to many)

☐ One or more **Product** are associated with each **Order Details** (many to 1)

Join type

☒ Include matching rows only

Filter join

Join without filtering one side by the other

Create relationships

Filter data

Format

Split

Clean

Change data type

Create hierarchies

Define security*

Combine sources

Organize

“Intent” – AI/keyword search model suggestions

Model & transform – Tableau

Single pane (per data source)
View properties by selecting “describe”

The screenshot displays the Tableau interface for a data source named 'Orders+ (Sample - Superstore)'. On the left, the 'Connections' pane shows 'Sample - Superstore' as the data source. Below it, the 'Sheets' pane lists 'Orders', 'People', 'Returns', and 'New Union'. The main workspace shows a data model with 'Orders' and 'Returns' tables joined on 'Order ID'. A 'Join' dialog box is open, showing the 'Left' join type selected. The 'Data Source' table has columns 'Order ID' and 'Returns', and the 'Returns' table has columns 'Order ID (Returns)' and 'Returns'. A 'Go to Worksheet' button is highlighted in the bottom left. The main data table shows columns for 'Row ID', 'Alt Orders Order ID', 'Alt Orders Order Date', 'Alt Orders Ship Date', 'Alt Orders Ship Mode', 'Alt Orders Customer ID', 'Alt Orders Country', 'Alt Orders City', 'Alt Orders State', 'Alt Orders Postal Code', 'Alt Orders Region', and 'Alt Orders Product ID'. A context menu is open over the 'Alt Orders Customer ID' column, showing options: 'Rename', 'Copy Values', 'Hide', 'Aliases...', 'Create Calculated Field...', 'Create Group...', 'Split', 'Custom Split...', 'Pivot (select multiple fields)', and 'Describe...'. The 'Describe...' option is highlighted.

#	Alt Orders Order ID	Alt Orders Order Date	Alt Orders Ship Date	Alt Orders Ship Mode	Alt Orders Customer ID	Alt Orders Country	Alt Orders City	Alt Orders State	Alt Orders Postal Code	Alt Orders Region	Alt Orders Product ID
7981	CA-2011-1038...	1/3/13	1/7/13	Standard Class	DP-13000	United States	Houston	Texas	77095	Central	OFF-PA-10000174
740	CA-2011-1123...	1/4/13	1/8/13	Standard Class	PO-19195	United States	Naperville	Illinois	60540	Central	OFF-LA-10003223
741	CA-2011-1123...	1/4/13	1/8/13	Standard Class	PO-19195	United States	Naperville	Illinois	60540	Central	OFF-ST-10002743
742	CA-2011-1123...	1/4/13	1/8/13	Standard Class	PO-19195	United States	Naperville	Illinois	60540	Central	OFF-BI-10004094
1760	CA-2011-1418...	1/5/13	1/12/13	Standard Class	MB-18085	United States	Philadelphia	Pennsylvania	19143	East	OFF-AR-10003478
5328	CA-2011-1308...	1/6/13	1/8/13	Second Class	LS-17230	United States	Los Angeles	California	90049	West	OFF-PA-10002005
7181	CA-2011-1060...	1/6/13	1/7/13	First Class	JO-15145	United States	Athens	Georgia	30605	South	OFF-AR-10002395
7475	CA-2011-1671...	1/6/13	1/10/13	Standard Class	ME-17320	United States	Henderson	Kentucky	42420	South	FUR-CH-10004065
7476	CA-2011-1671...	1/6/13	1/10/13	Standard Class	ME-17320	United States	Henderson	Kentucky	42420	South	OFF-BI-10004632
7477	CA-2011-1671...	1/6/13	1/10/13	Standard Class	ME-17320	United States	Henderson	Kentucky	42420	South	OFF-AR-10001662
7478	CA-2011-1671...	1/6/13	1/10/13	Standard Class	ME-17320	United States	Henderson	Kentucky	42420	South	TEC-PH-10004977
7479	CA-2011-1671...	1/6/13	1/10/13	Standard Class	ME-17320	United States	Henderson	Kentucky	42420	South	TEC-PH-10004539
7480	CA-2011-1671...	1/6/13	1/10/13	Standard Class	ME-17320	United States	Henderson	Kentucky	42420	South	OFF-FA-10001883
7481	CA-2011-1671...	1/6/13	1/10/13	Standard Class	ME-17320	United States	Henderson	Kentucky	42420	South	OFF-PA-10000955
7661	CA-2011-1054...	1/7/13	1/12/13	Standard Class	VS-21820	United States	Huntsville	Texas	77340	Central	FUR-FU-10004864

Model & transform – Tableau

Splitting

String fields can be split into multiple fields for easier analysis

Automatic or custom split options

Split based on a common separator

Aliasing

Roles – i.e., time (ship date/order date)

Binning (high/low sales)

Renaming

Data typing

Geographic roles

Calculations

Pivoting

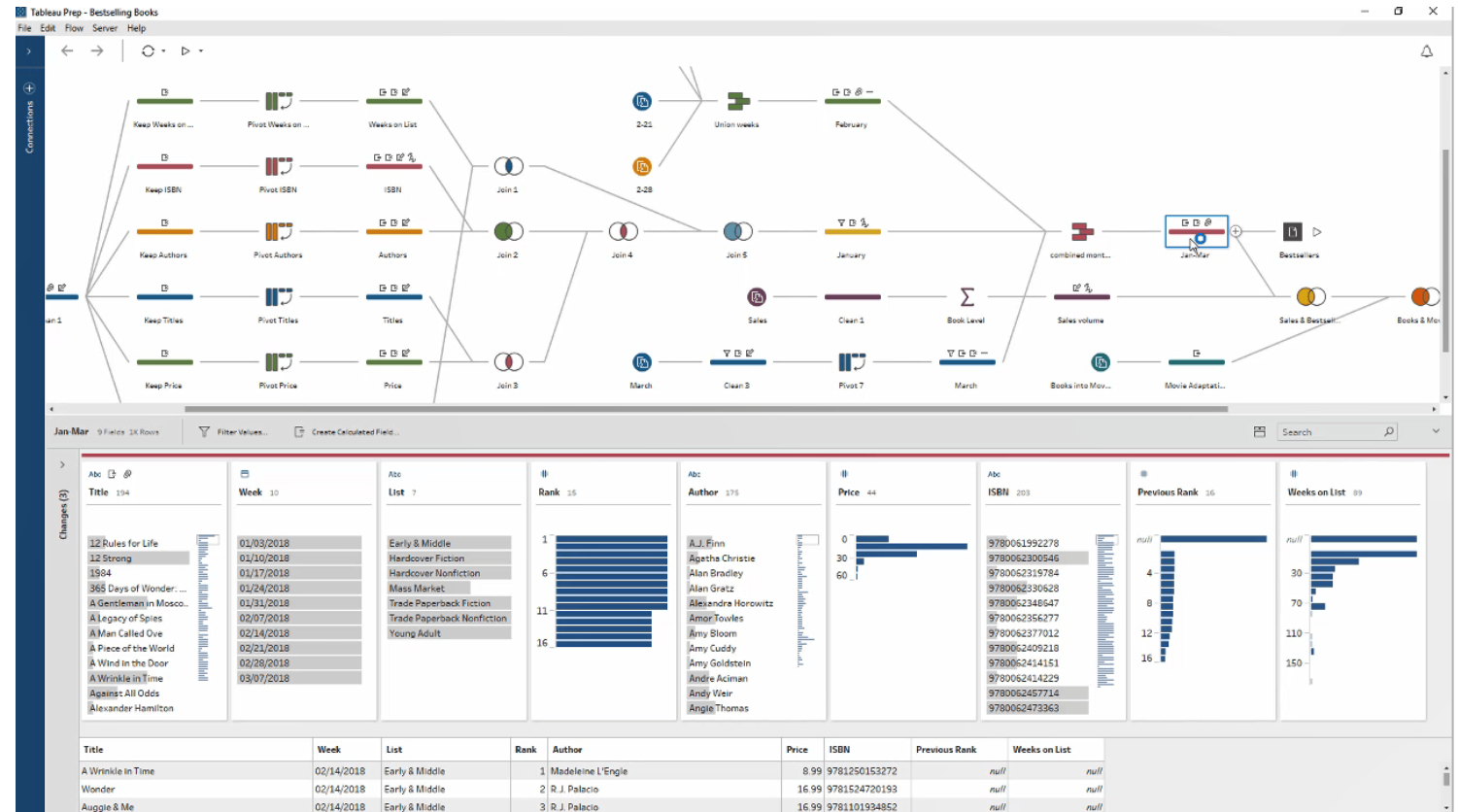
Data interpreter

Hierarchies – basic

Time intelligence

Model & transform – Tableau Prep

Visual data
preparation tool
AI/fuzzy logic driven
Tableau-centric –
currently outputs
only to flat file or
extract



Model & transform – Power BI query editor layout

- 1 Ribbon (Home, Transform, etc.)
- 2 Queries pane

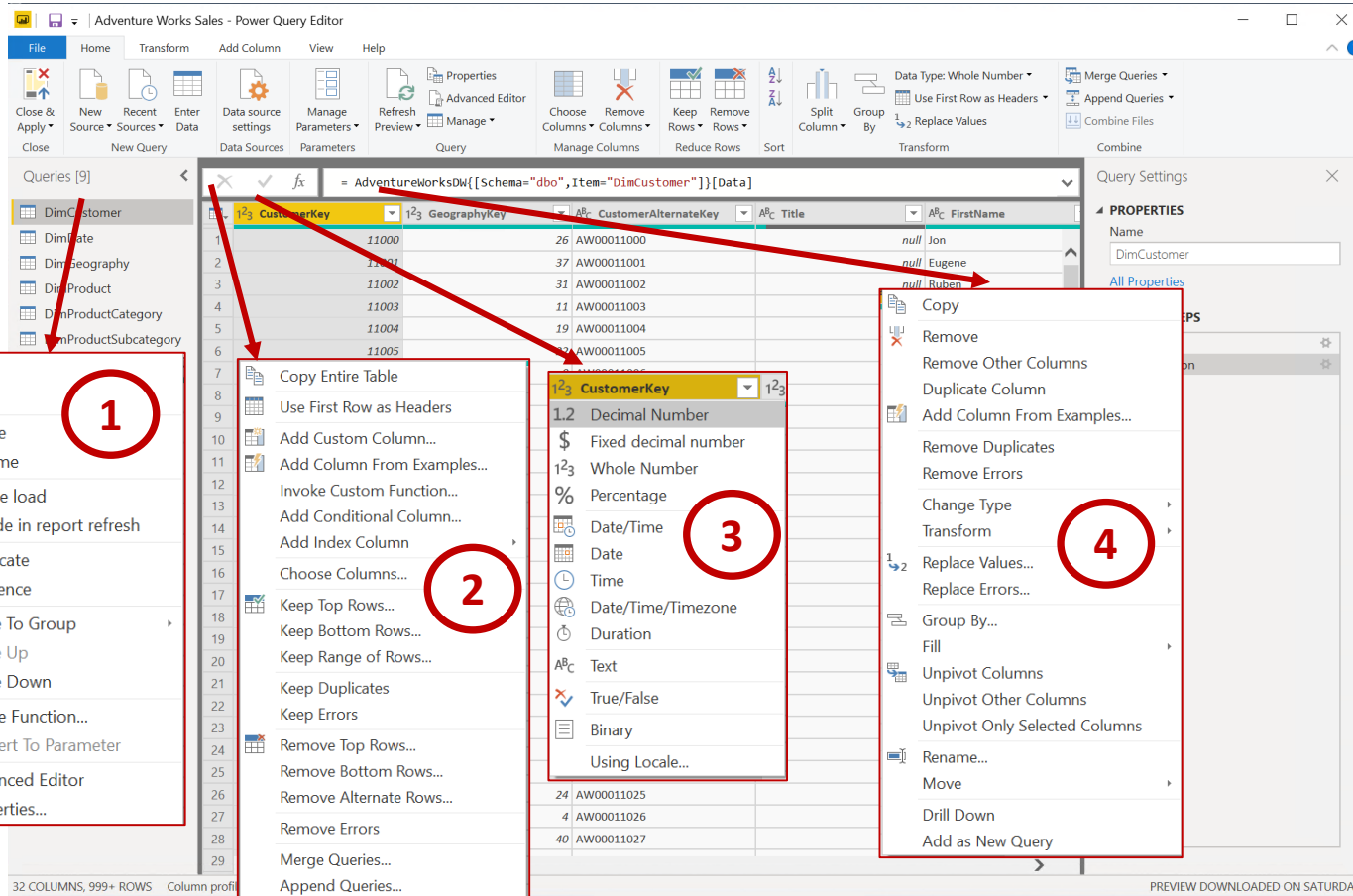
The screenshot displays the Power BI Query Editor interface for a query named 'DimCustomer'. The interface is divided into several sections:

- Ribbon (1):** Located at the top, it contains tabs for File, Home, Transform, Add Column, View, and Help. The Transform tab is active, showing various data transformation options like Merge Queries, Append Queries, and Combine Files.
- Queries pane (2):** Located on the left side, it lists the available queries: DimCustomer, DimDate, DimGeography, DimProduct, DimProductCategory, DimProductSubcategory, DimResellerSales, FactInternetSales, and FactResellerSales. DimCustomer is selected.
- Data preview table (4):** The central area shows a preview of the data for the selected query. The table has columns: CustomerKey, GeographyKey, CustomerAlternateKey, Title, and FirstName. The data is displayed in a grid format with 28 rows and 5 columns.
- Query settings pane (3):** Located on the right side, it contains the Properties and Applied Steps sections. The Properties section shows the query name 'DimCustomer' and a link to 'All Properties'. The Applied Steps section shows the source of the query.

At the bottom of the interface, there is a status bar indicating '32 COLUMNS, 999+ ROWS' and 'Column profiling based on top 1000 rows'. A footer note states 'PREVIEW DOWNLOADED ON SATURDAY'.

- 3 Query settings pane
- 4 Data preview of table

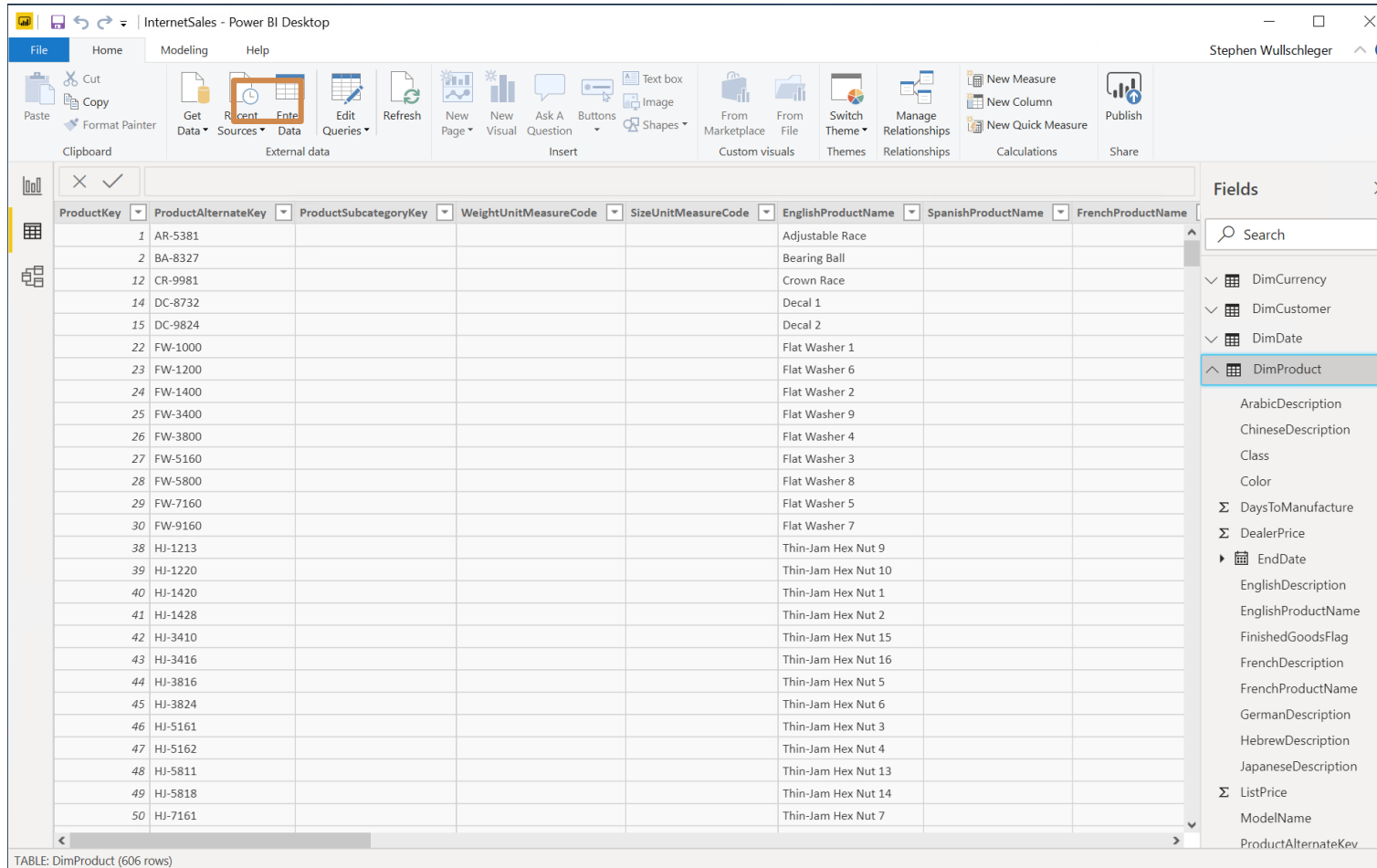
Model & transform – Power BI query editor layout



- 1 Query context menu
- 2 Table context menu
- 3 Column data type context menu
- 4 Column context menu

Model & transform – Power BI data view

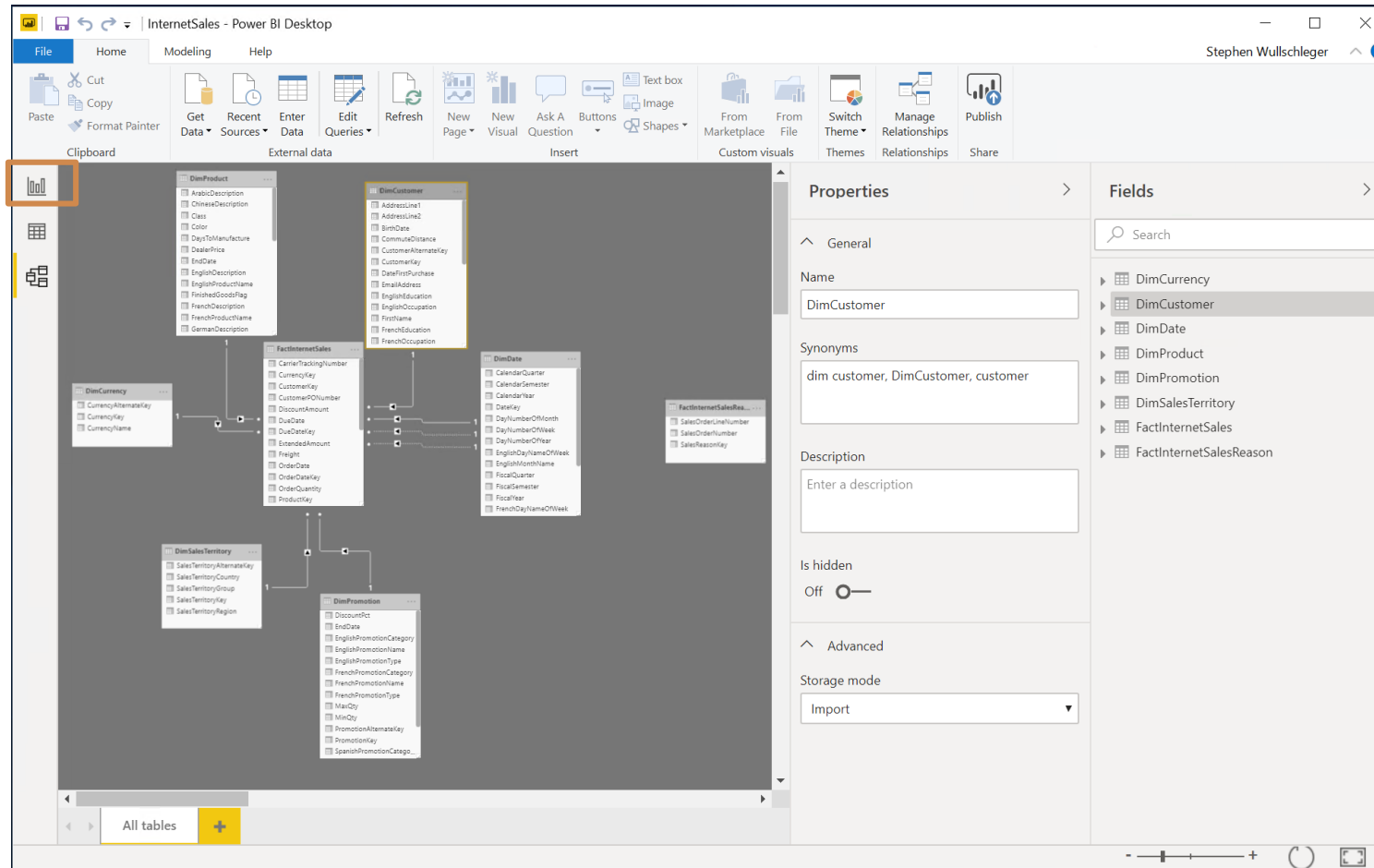
Inspection
Exploration
Understanding



ProductKey	ProductAlternateKey	ProductSubcategoryKey	WeightUnitMeasureCode	SizeUnitMeasureCode	EnglishProductName	SpanishProductName	FrenchProductName
1	AR-5381				Adjustable Race		
2	BA-8327				Bearing Ball		
12	CR-9981				Crown Race		
14	DC-8732				Decal 1		
15	DC-9824				Decal 2		
22	FW-1000				Flat Washer 1		
23	FW-1200				Flat Washer 6		
24	FW-1400				Flat Washer 2		
25	FW-3400				Flat Washer 9		
26	FW-3800				Flat Washer 4		
27	FW-5160				Flat Washer 3		
28	FW-5800				Flat Washer 8		
29	FW-7160				Flat Washer 5		
30	FW-9160				Flat Washer 7		
38	HJ-1213				Thin-Jam Hex Nut 9		
39	HJ-1220				Thin-Jam Hex Nut 10		
40	HJ-1420				Thin-Jam Hex Nut 1		
41	HJ-1428				Thin-Jam Hex Nut 2		
42	HJ-3410				Thin-Jam Hex Nut 15		
43	HJ-3416				Thin-Jam Hex Nut 16		
44	HJ-3816				Thin-Jam Hex Nut 5		
45	HJ-3824				Thin-Jam Hex Nut 6		
46	HJ-5161				Thin-Jam Hex Nut 3		
47	HJ-5162				Thin-Jam Hex Nut 4		
48	HJ-5811				Thin-Jam Hex Nut 13		
49	HJ-5818				Thin-Jam Hex Nut 14		
50	HJ-7161				Thin-Jam Hex Nut 7		

TABLE: DimProduct (606 rows)

Model & transform – Power BI model view



Break out complex models into separate diagrams

View and modify properties

Set display folders to simplify navigation

Comparison of basic modeling & transformation capabilities

	Tableau Desktop	Tableau Prep	Power BI Desktop	Power BI Data Flows	Cognos FM	Cognos DM
Join	✓	✓	✓	✓	✓	✓
Union	✓	✓	✓	✓	✓	✓
Data type	✓	✓	✓	✓	✓	✓
Split	✓	✓	✓	✓	✓*	✓
Aggregate	✓	✓	✓	✓	✓	✓
Rename	✓	✓	✓	✓	✓	✓
Calculations	✓	✓	✓	✓	✓	✓
Filter	✓	✓	✓	✓	✓	✓
Hierarchies	✓	✗	✓	✓	✓	✓
Composite/federate	✓	✓	✓	✓	✓	✓
Custom SQL	✓	✓	✓	✓	✓	✓
Stored procedures	✓	✗	✓	✗	✓	✗

* Calculation only

Comparison of advanced modeling & transformation capabilities

	Tableau Desktop	Tableau Prep	Power BI Desktop	Power BI Data Flows	Cognos FM	Cognos DM
Remove rows	✓	✓	✓	✓	X	X
Replace/clean	✓	✓	✓	✓	X	✓
Intelligent grouping	✓	✓	✓	✓	X	✓
Auto-binning	✓	✓	✓	✓	X	✓
Fill	X	X	✓	✓	X	X
Pivot/unpivot	X	✓	✓	✓	X	X
Security	✓	X	✓	✓	✓	✓**
Aggregate aware	X	X	✓	✓	X	X
Script (R/Python)	✓	✓	✓	✓	X	✓

Product Strength

** Database sources only

Comparison of other modeling & transformation capabilities

	Tableau Desktop	Tableau Prep	Power BI Desktop	Power BI Data Flows	Cognos FM	Cognos DM
Query/storage options	Live/Extract	Extract	Direct/import/hybrid	Direct/import/hybrid	Live	Live/Data Set
Lineage	Catalog	Catalog	✗	✗	✓	✓
AI/ML/Fuzzy Logic M&T	✗	✓	✗	✗	✗	Intent
Version control	✓	✗	✗	✗	✓	✗

Summary

Lots of ways to get from point A to point B

You can probably get there with any of the tools

Question of, among other things:

- Analytics culture (self-service vs. centralized)

- Skillsets

- Tool choice

- Use cases/business requirements

- Data source(s)



Next steps

Related resources

[Enterprise security: Tableau vs. Power BI](#)

[Dashboarding Comparison: Power BI, Tableau & Cognos](#)

Training

[Tableau, Power BI & Cognos](#)

Ad hoc support

[On-demand support/bucket of hours](#)

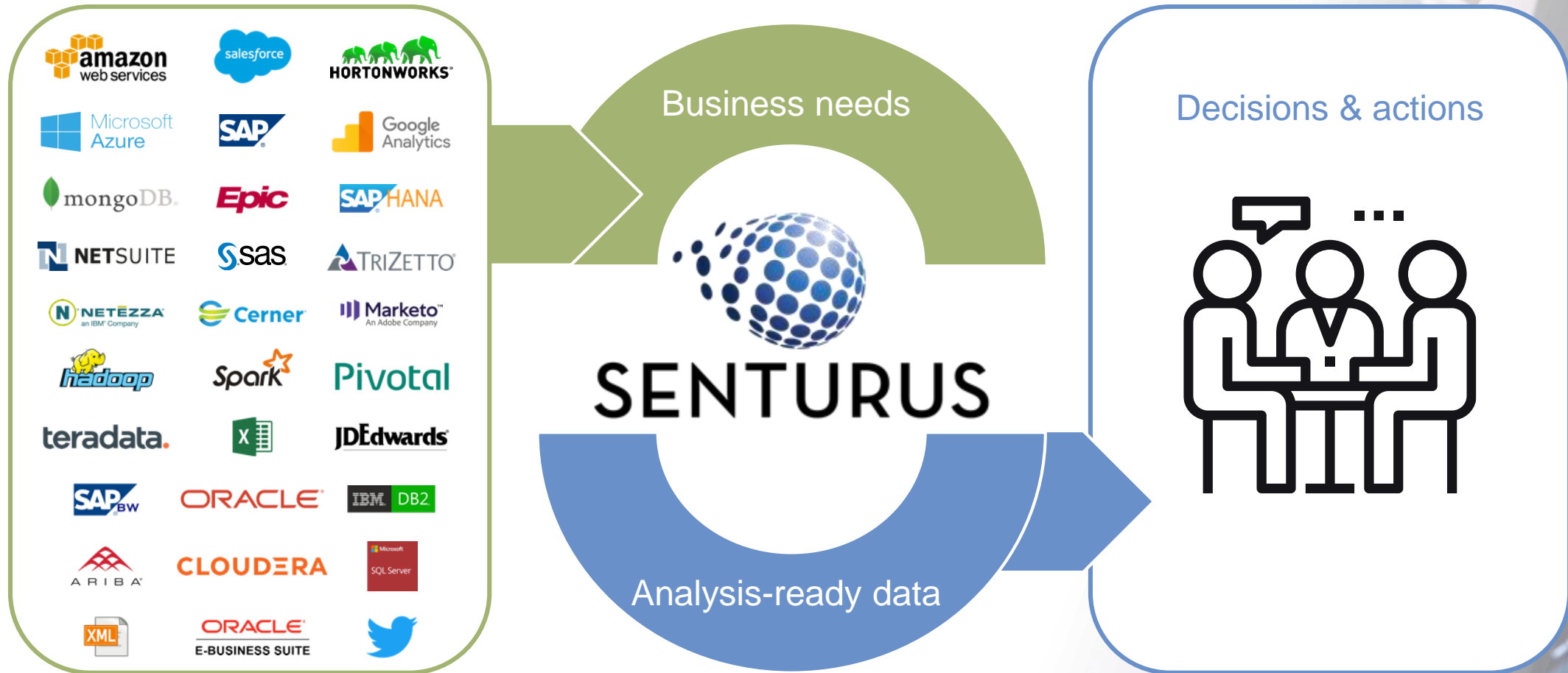


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Bridging the data & decisioning gap



Full spectrum of BI services

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- Data preparation and modern data warehousing
- Hybrid BI environments (migrations, security, etc.)
- Software to enable bimodal BI and platform migrations
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- Training and mentoring

A long, strong history of success

- 19+ years
- 1300+ clients
- 2500+ projects



Expand your knowledge

Find more resources
on the Senturus website:
senturus.com/senturus-resources



Upcoming events

Using New Cognos KPI Capability & Relative Time Structures

Live demo and how-to of the best new features in Cognos

Thursday, Jan. 23, 2020, 11am PT/2pm ET

How to Share Power BI Datasets: Dataflows and Certified Datasets

Demo and discussion of how to extend enterprise sharing in Power BI Desktop

Thursday, Feb. 6, 2020, 11am PT/2pm ET

Complete BI training offerings



Power BI



Tailored group sessions



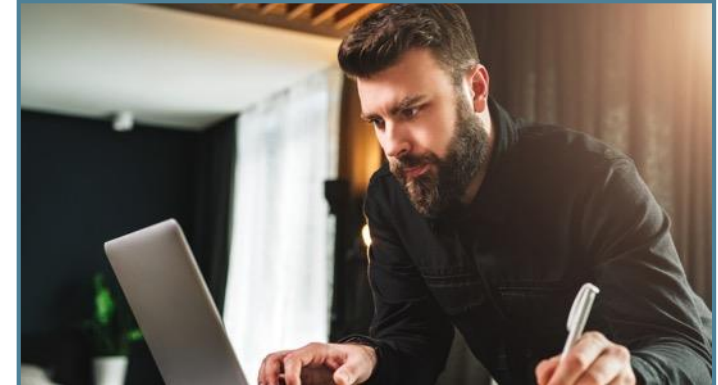
Mentoring



Instructor-led online courses



Self-paced learning



Additional resources from Senturus

Unbiased product reviews



Technical tips



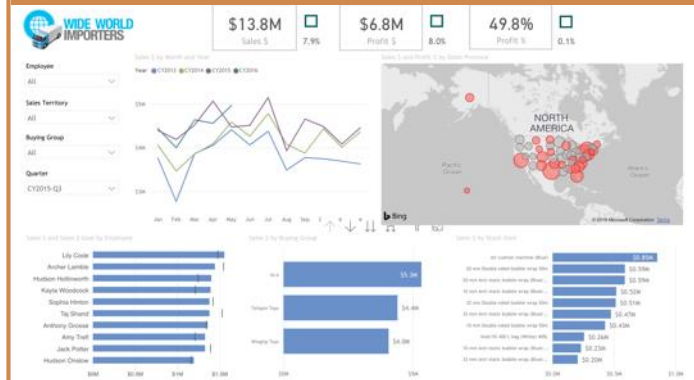
Insider viewpoints



More on this subject



Product demos



Upcoming events

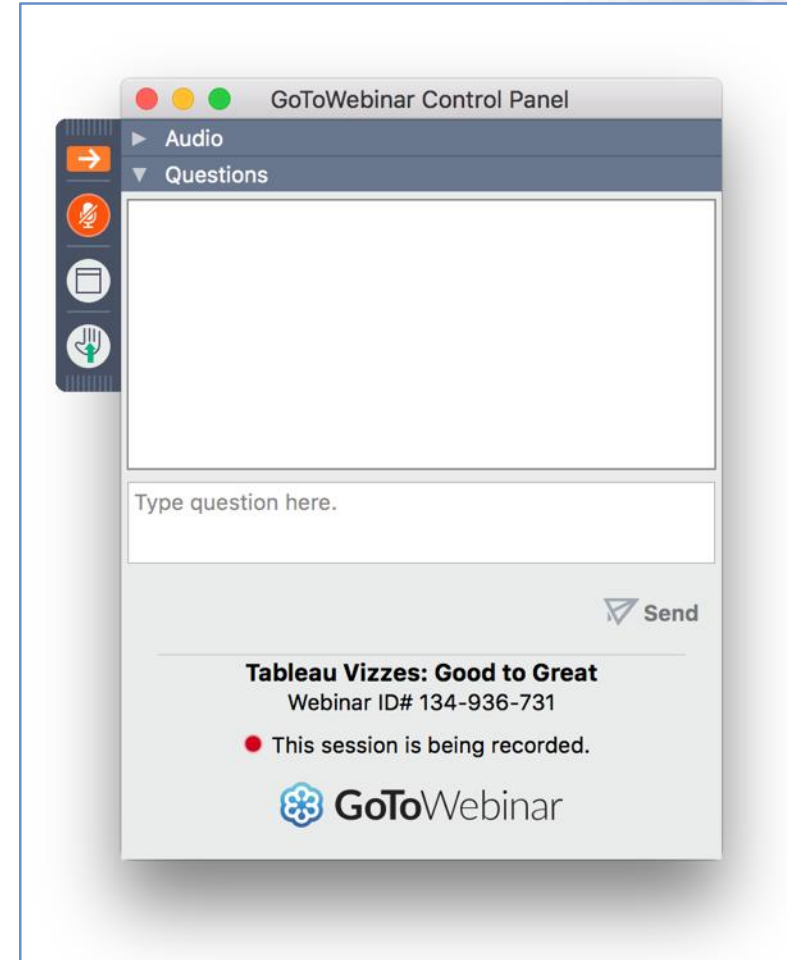


Q & A

If your question or issue is broader than what we are able to answer today, contact us at

info@senturus.com

and we will set up a free consultation.



Thank You



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