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Analyst Alert: Data Modeling Is a Required Skill

Flawed Data and Bad Decisions Result From Poor Data Models

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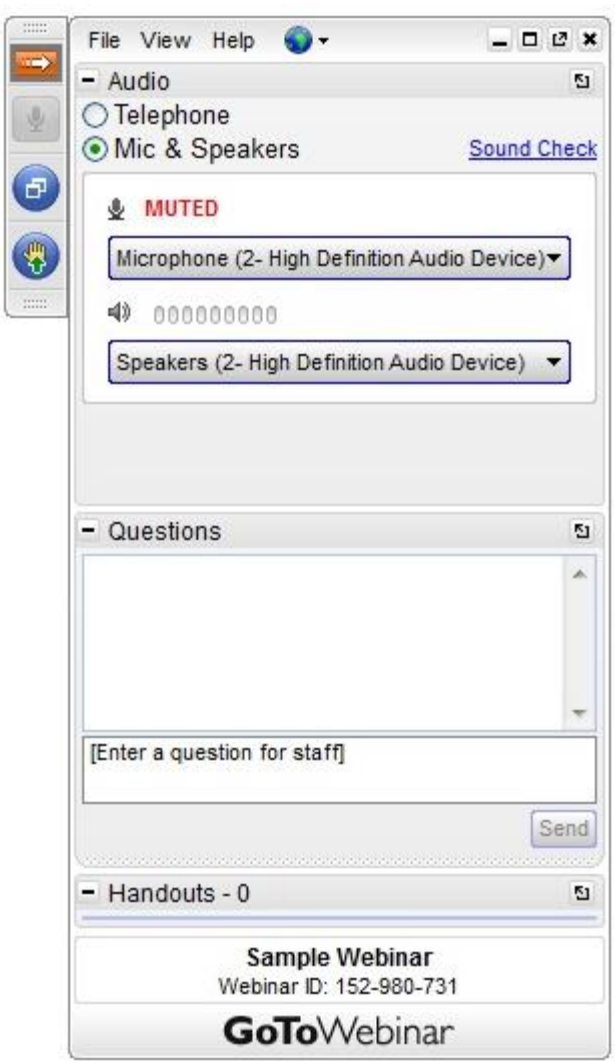

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Presentation Slide Deck

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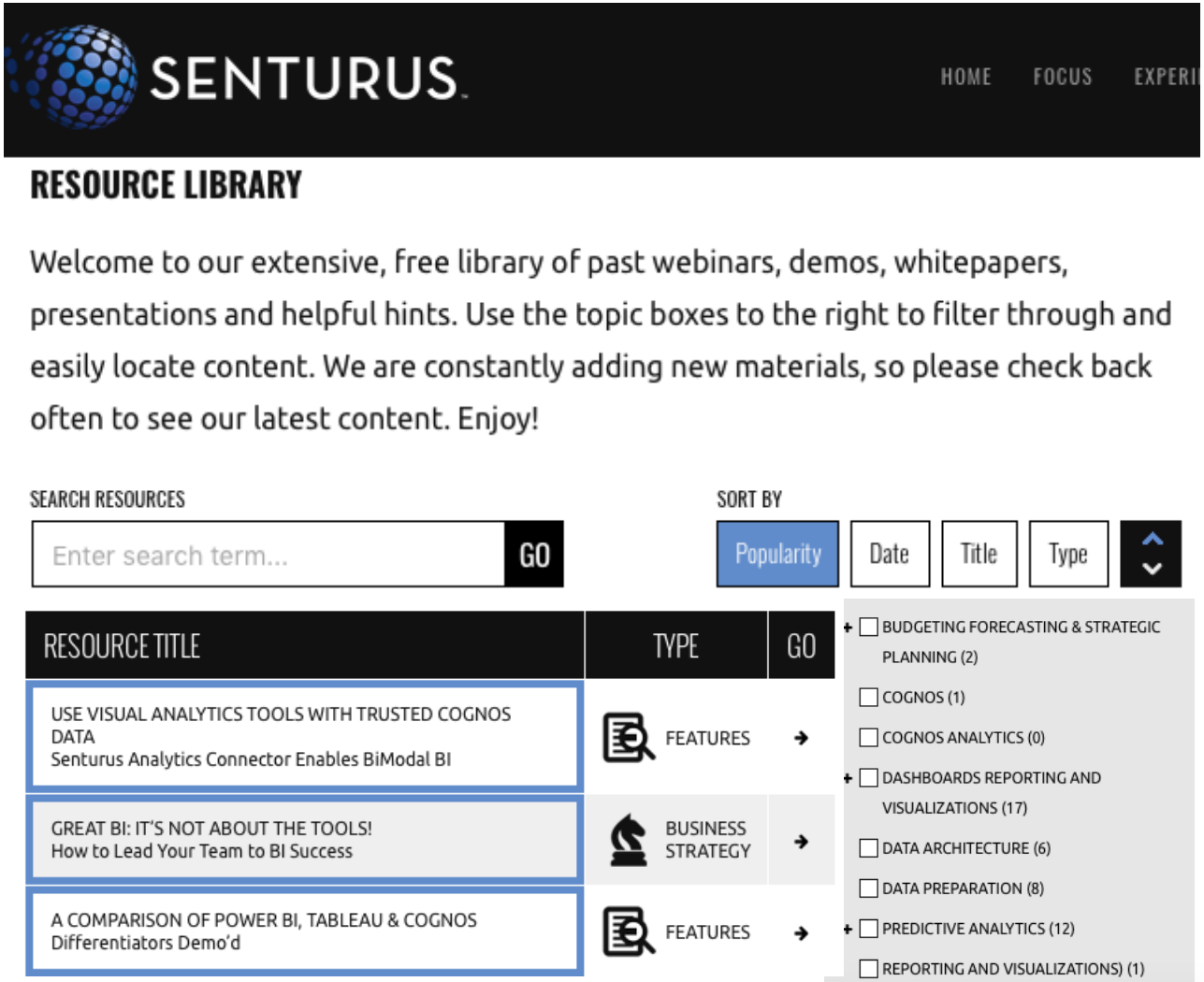


Agenda

- Introductions
- Quick poll #1
- Quick poll #2
- What do we mean by data modeling?
- Data modeling fundamentals
- How BI tools exploit data models
- Is this the same thing as data prep?
- Why is this more important now?
- Senturus overview
- Additional resources
- Q&A

Introducing…Today's Presenter

Albert Valdez, III

Vice-President of Learning Solutions

Senturus, Inc.

Poll #1: BI Tool(s) of Choice

What BI tools are currently prevalent in your organization?

- Tableau
- IBM Cognos
- Microsoft (Power BI)
- Qlik Sense/QlikView
- Other

Poll #2: Rate Your Data Modeling Skills

How would you describe your comfort/experience with data modeling?

- Data WHAAAA???
- I understand data structures (tables/columns), not so sure about the modeling part
- I know why joins are important and can model visually
- I've designed extensive data models and I can spell SQL
- I'm a data architect, what am I doing here?

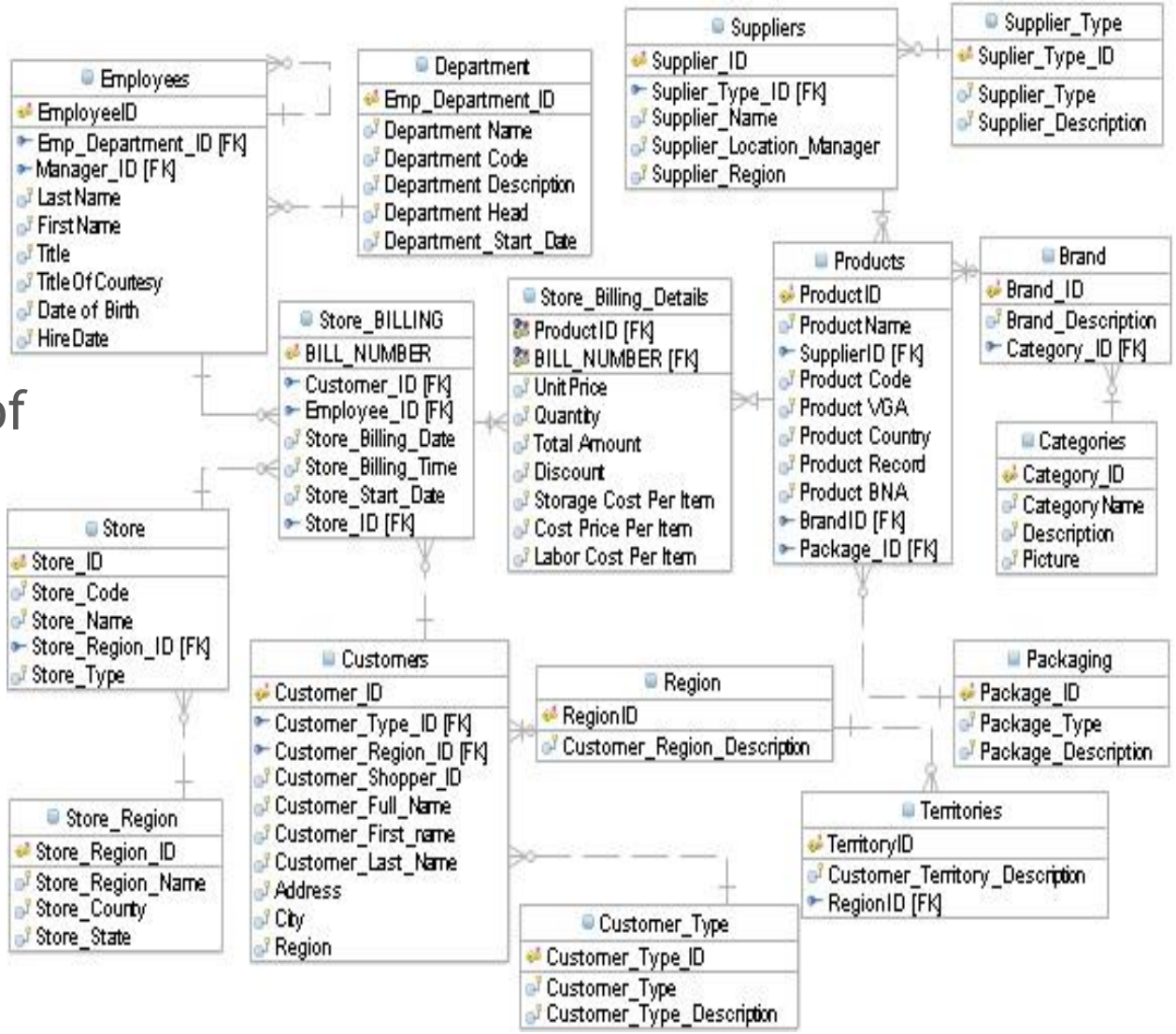
Data Modeling

The Basics

Fundamentals of Data Modeling

What is this?

- Entity Relationship Diagram (ERD)
- Describes the logical model of our data



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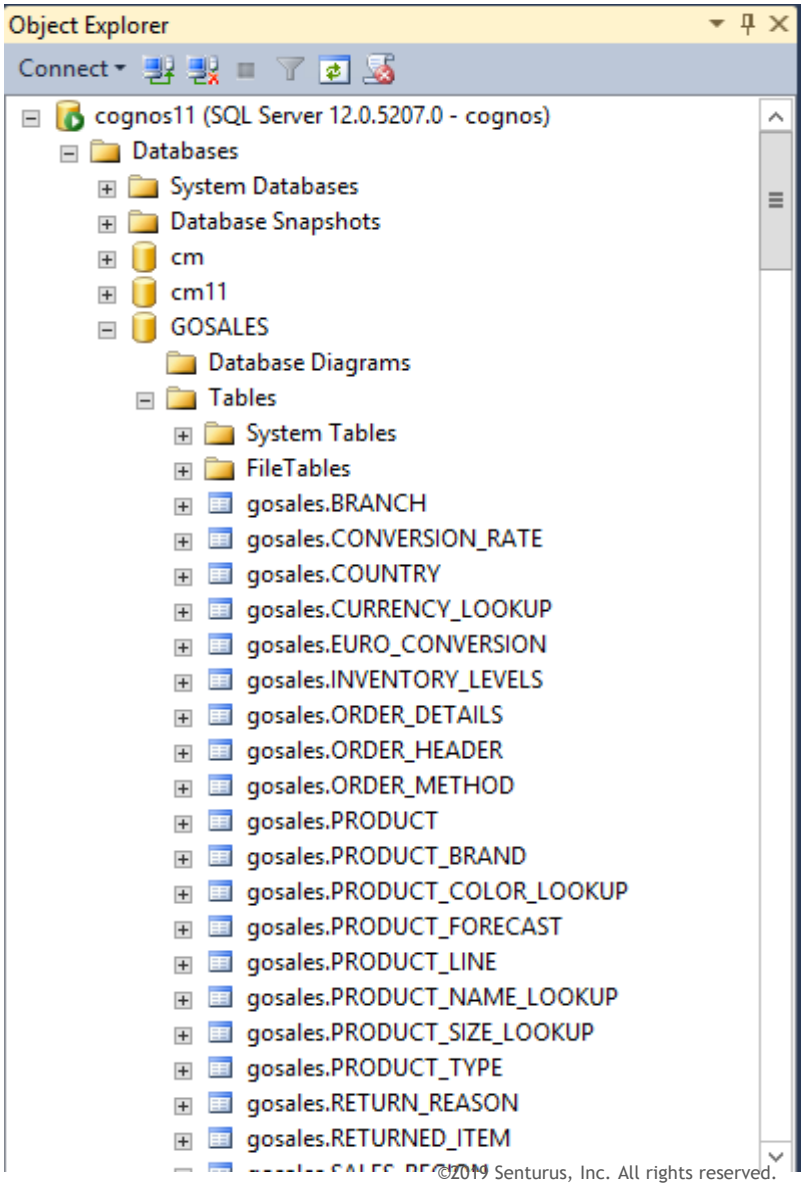
Fundamentals of Data Modeling

What's in a database?



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Fundamentals of Data Modeling

What's in a table?

COGNOS11.GOSALE...gosales.PRODUCT

Column Name	Data Type	Allow Nulls
PRODUCT_NUMBER	int	☐
BASE_PRODUCT_NUMBER	int	☑
INTRODUCTION_DATE	datetime	☑
DISCONTINUED_DATE	datetime	☑
PRODUCT_TYPE_CODE	int	☐
PRODUCT_COLOR_CODE	int	☑
PRODUCT_SIZE_CODE	int	☑
PRODUCT_BRAND_CODE	int	☑
PRODUCT_IMAGE	nvarchar(20)	☑

Results | Messages

	PRODUCT_NUMBER	BASE_PRODUCT_NUMBER	INTRODUCTION_DATE	DISCONTINUED_DATE	PRODUCT_TYPE_CODE	PRODUCT_COLOR_CODE	PRODUCT_SIZE_CODE	PRODUCT_BRAND_CODE	PRODUCT_IMAGE
1	3110	3	2001-02-15 00:00:00.000	NULL	951	924	825	701	P03CE1CG1.jpg
2	20110	20	2003-03-05 00:00:00.000	NULL	953	903	820	704	P20CE1SB3.jpg
3	92110	92	2001-02-15 00:00:00.000	NULL	966	925	803	717	P91OP4SS16.jpg
4	4110	4	2001-02-15 00:00:00.000	NULL	951	923	804	701	P04CE1CG1.jpg
5	16110	16	2003-03-05 00:00:00.000	NULL	952	923	815	702	P16CE1TN2.jpg
6	5110	5	2001-02-15 00:00:00.000	NULL	951	923	823	701	P05CE1CG1.jpg
7	6110	6	2003-03-05 00:00:00.000	NULL	951	923	824	701	P06CE1CG1.jpg
8	9110	9	2003-03-05 00:00:00.000	NULL	951	900	806	701	P09CE1CG1.jpg
9	7110	7	2001-02-15 00:00:00.000	NULL	951	923	845	701	P07CE1CG1.jpg
10	8110	8	2003-03-05 00:00:00.000	NULL	951	912	846	701	P08CE1CG1.jpg
11	131110	131	2010-05-01 00:00:00.000	NULL	962	922	811	757	P75PA3KV12.jpg
12	90110	90	2001-02-15 00:00:00.000	NULL	965	908	802	706	P86OP4IR15.jpg
13	101110	101	2009-12-15 00:00:00.000	NULL	968	923	851	719	P101GE5IR18.jpg
14	115110	115	2009-12-27 00:00:00.000	NULL	971	922	839	718	P115GE5GA21.jpg
15	91110	91	2001-02-15 00:00:00.000	NULL	966	925	804	717	P91OP4SS16.jpg
16	109110	109	2009-12-10 00:00:00.000	NULL	970	904	853	718	P109GE5PT20.jpg
17	103110	103	2009-12-10 00:00:00.000	NULL	968	923	852	719	P101GE5IR18.jpg
18	32110	32	2001-02-15 00:00:00.000	NULL	955	923	849	705	P32CE1LT5.jpg

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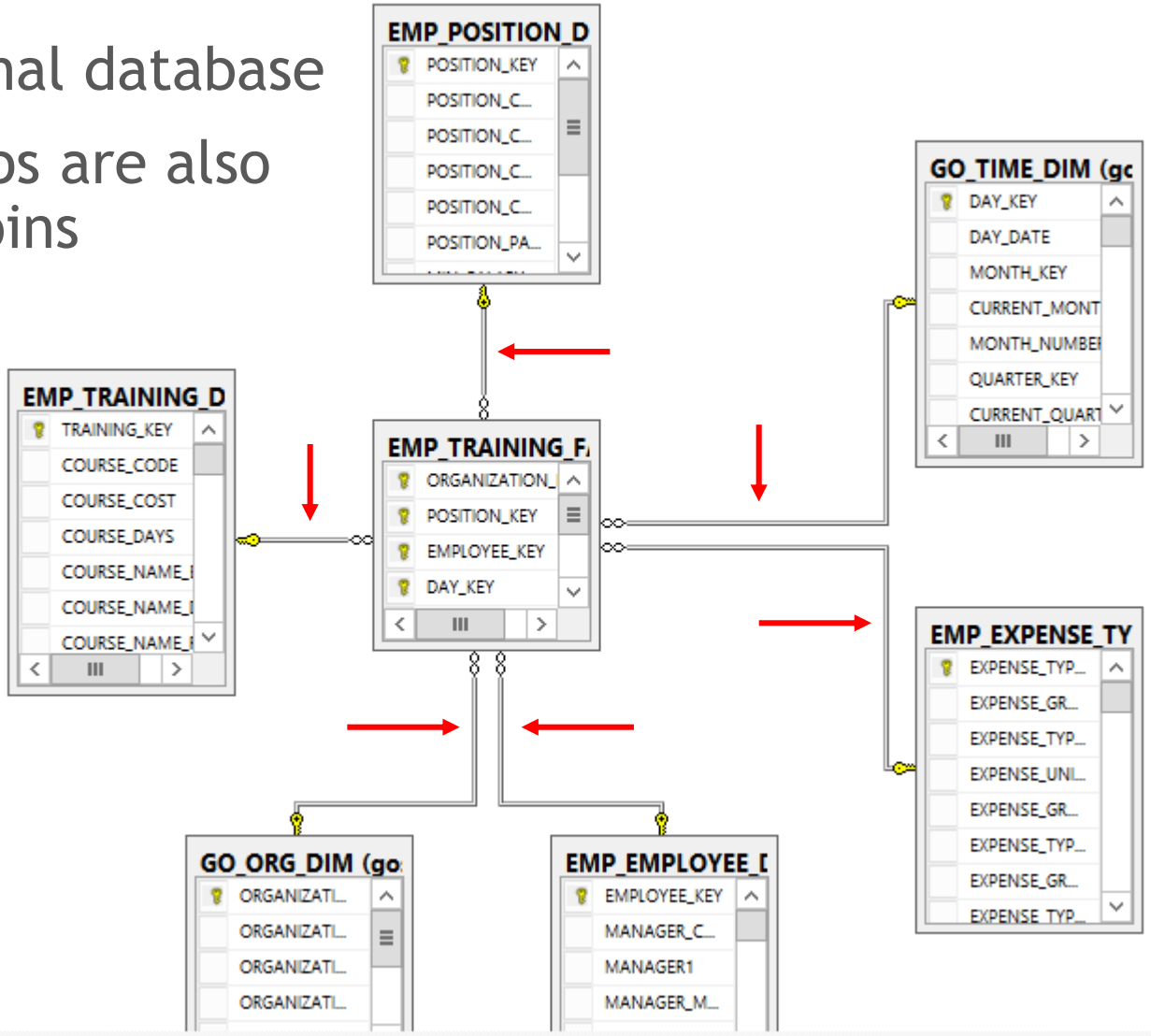
Fundamentals of Data Modeling

- The relational database
- Relationships are also known as joins



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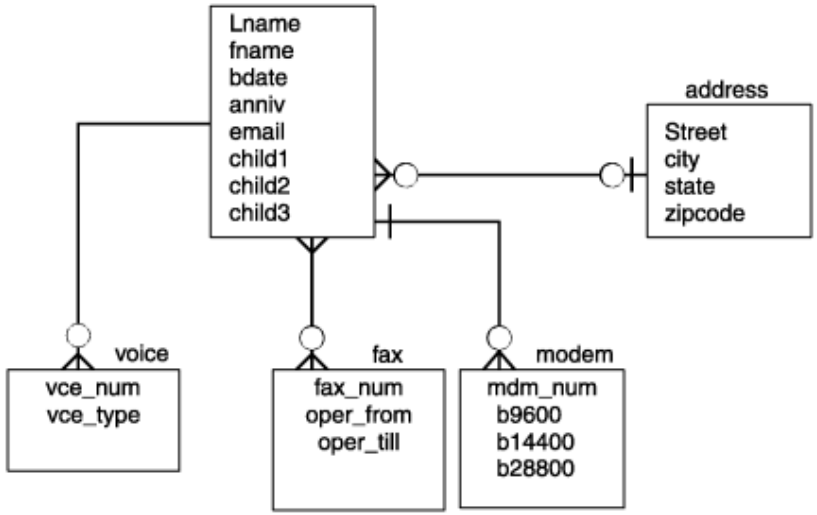
Fundamentals of Data Modeling

- Breaking complex systems of data into smaller pieces is the most efficient way to store and retrieve data (in most cases)
- Even relatively simple systems require entity relationships to be defined:



- Without the relationships, we have trouble

Fundamentals of Data Modeling

Order method type	Product number	Quantity	Unit sale price	Revenue
E-mail	1110	177,931	$5.76	$941,367.96
Fax	1110	95,580	$6.03	$547,789.65
Mail	1110	58,823	$5.30	$279,701.63
Sales visit	1110	510,230	$5.78	$2,730,543.97
Special	1110	53,550	$5.94	$295,368.95
Telephone	1110	456,263	$5.62	$2,322,804.44
Web	1110	2,956,451	$5.82	$15,939,564.86
E-mail	2110	55,724	$11.56	$624,991.27
Fax	2110	16,978	$11.81	$194,190.21
Mail	2110	14,169	$11.46	$157,088.10
Sales visit	2110	101,651	$11.81	$1,166,922.5

```
SELECT
        "ORDER_HEADER".“ORDER_METHOD" AS “Order method type",
        "ORDER_DETAILS"."PRODUCT_NUMBER" AS "Product number",
        "ORDER_DETAILS"."QUANTITY" AS "Quantity",
        "ORDER_DETAILS"."UNIT_SALE_PRICE" AS "Unit sale price",
        "ORDER_DETAILS"."QUANTITY" * "ORDER_DETAILS"."UNIT_SALE_PRICE" AS "Revenue"
    FROM
        "GOSALES"."ORDER_HEADER" "ORDER_HEADER“,
        "GOSALES"."ORDER_DETAILS" "ORDER_DETAILS"
            WHERE
  "ORDER_HEADER"."ORDER_NUMBER" = "ORDER_DETAILS"."ORDER_NUMBER"
```

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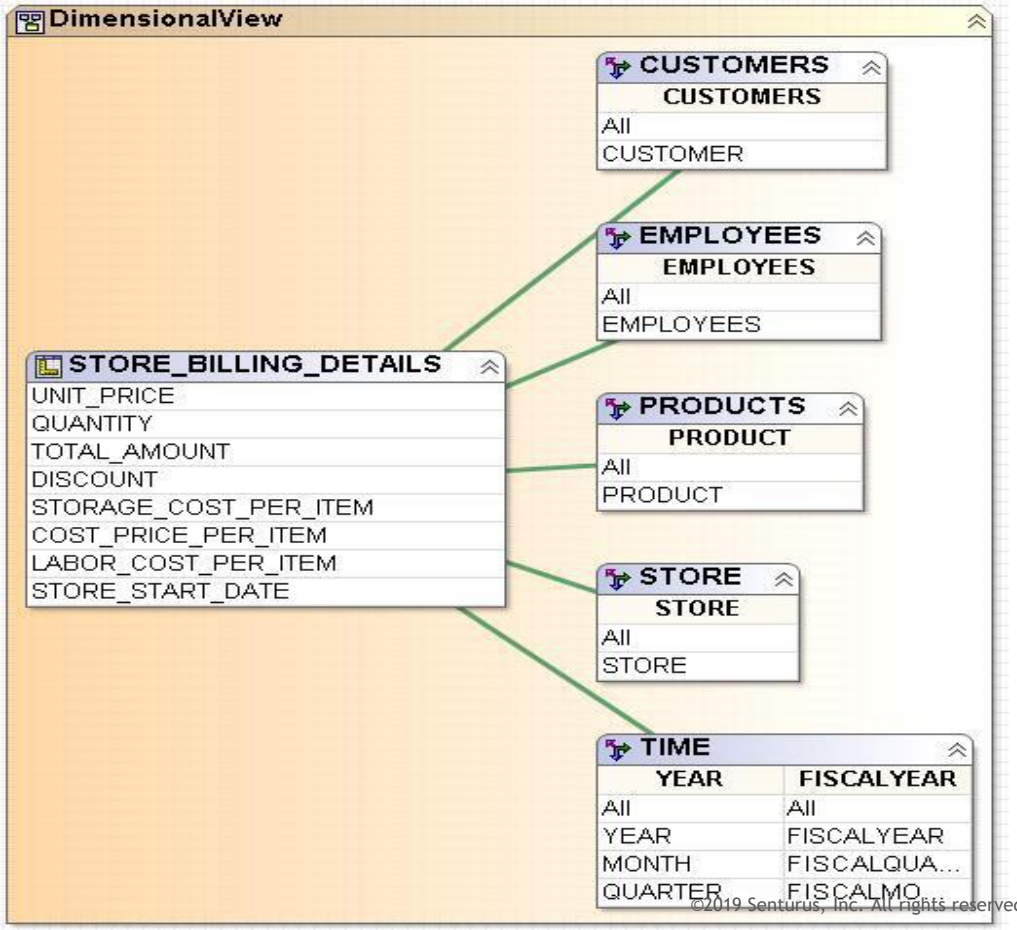
Fundamentals of Data Modeling

- Over joining objects can also have a negative impact
- One key to remember: you only need one join path between all objects



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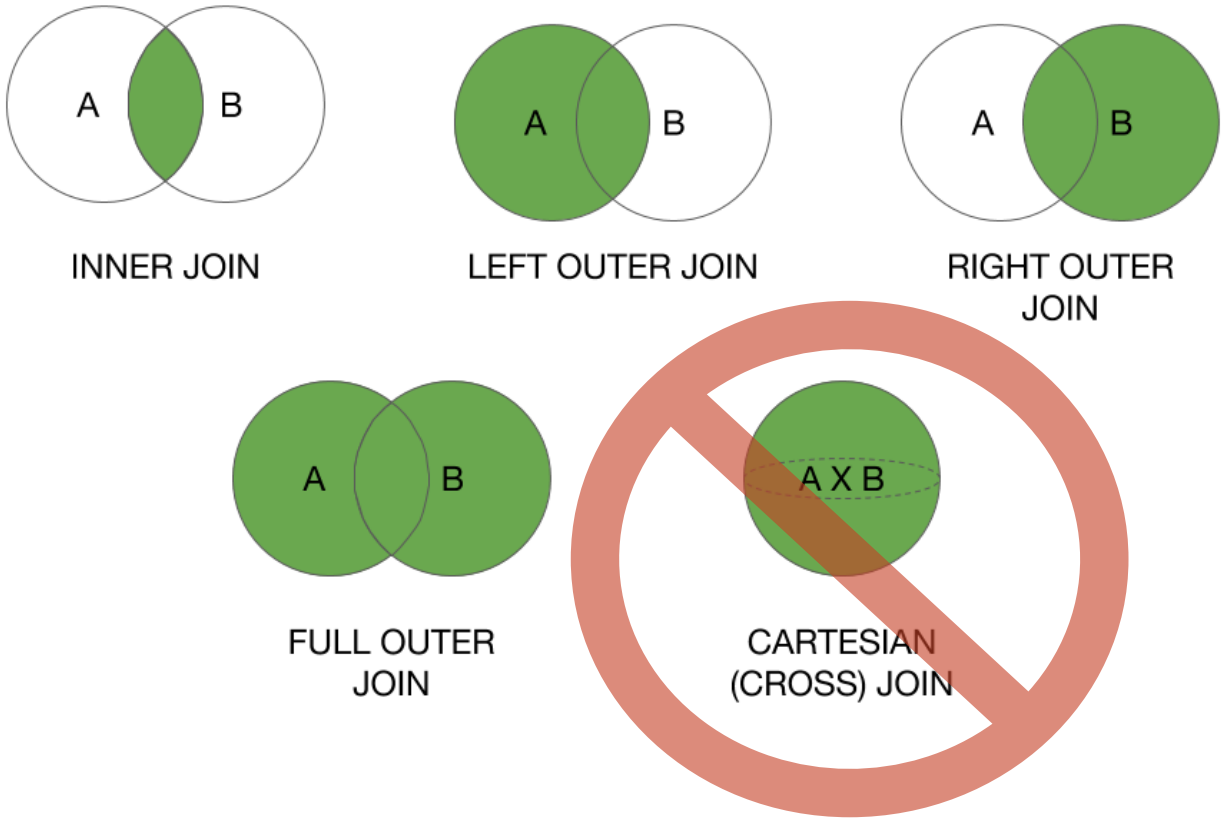
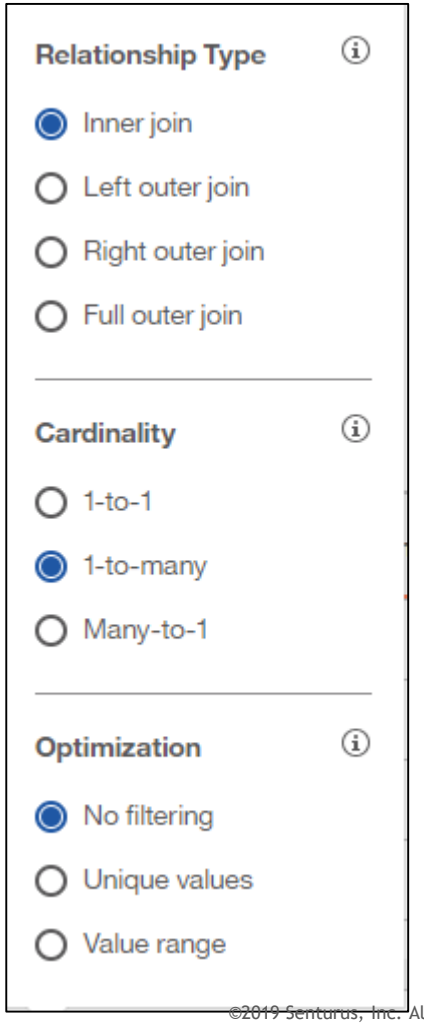
Free First Lesson on Joins

Inner vs. outer join



Joining Data Sources – Other Considerations

- Certain tools also offer control of additional join behaviors
  - From IBM Cognos data modules:



- Remember:
  - Join behavior is driven by business requirements!

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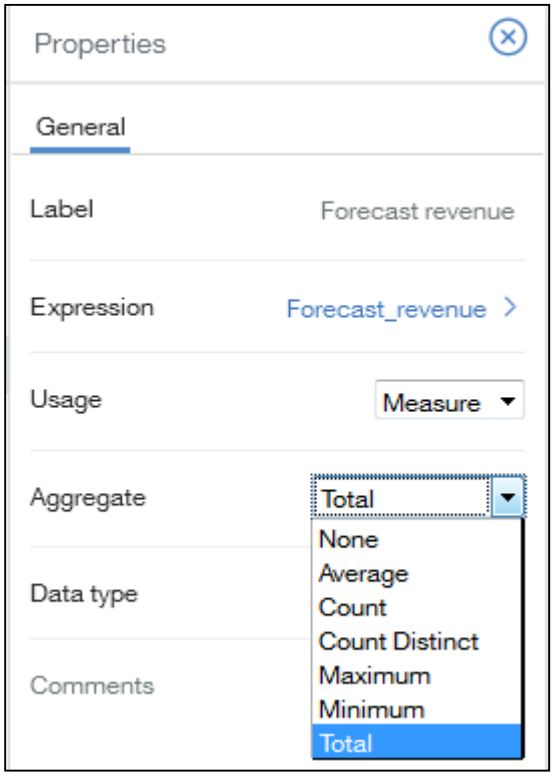
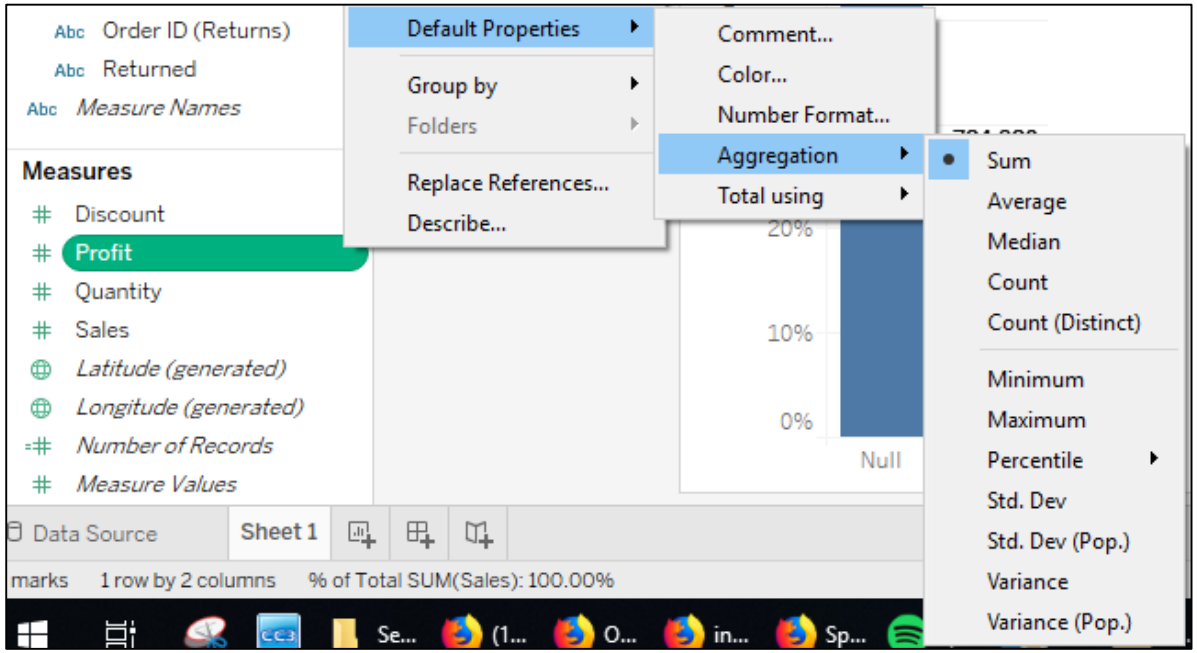
Fundamentals of Data Modeling

The second fundamental is controlling how measures, facts or numbers are treated





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Data Modeling

The Risks

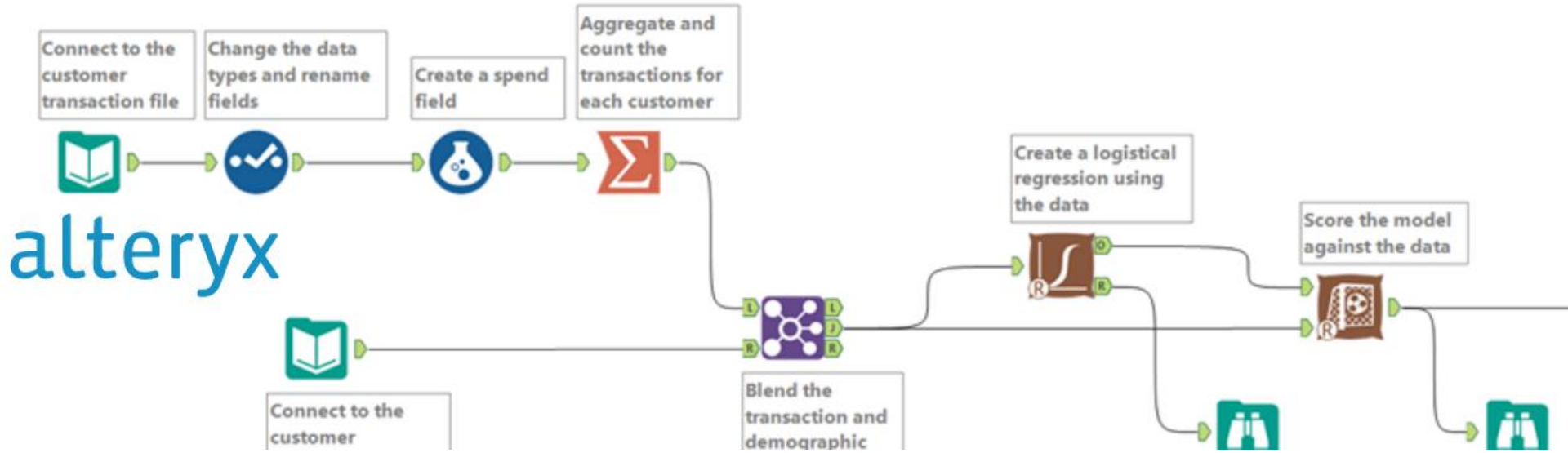
Risks of Data Modeling

- Who's in control?
- Which model is correct?
- Are we doing it right?
- What are the best practices?
- What is the impact on our business if we get it wrong?
- AAAAAAAAAAAAAAHHHHHHHHHHHHH!!!!!!!!!!!!!!!!!!!!

Data Modeling vs. Data Prep

These concepts do intersect, but data prep usually refers to the following activities:

- Data cleansing, transformations, binning/grouping, enhancement and yes:
  - Data integration



Data Modeling: Why Now?

- BI is ubiquitous
- Role of IT has changed
- More data
- More data
- More data

Data Modeling: Why Now?

Data Modeling Assistance & More

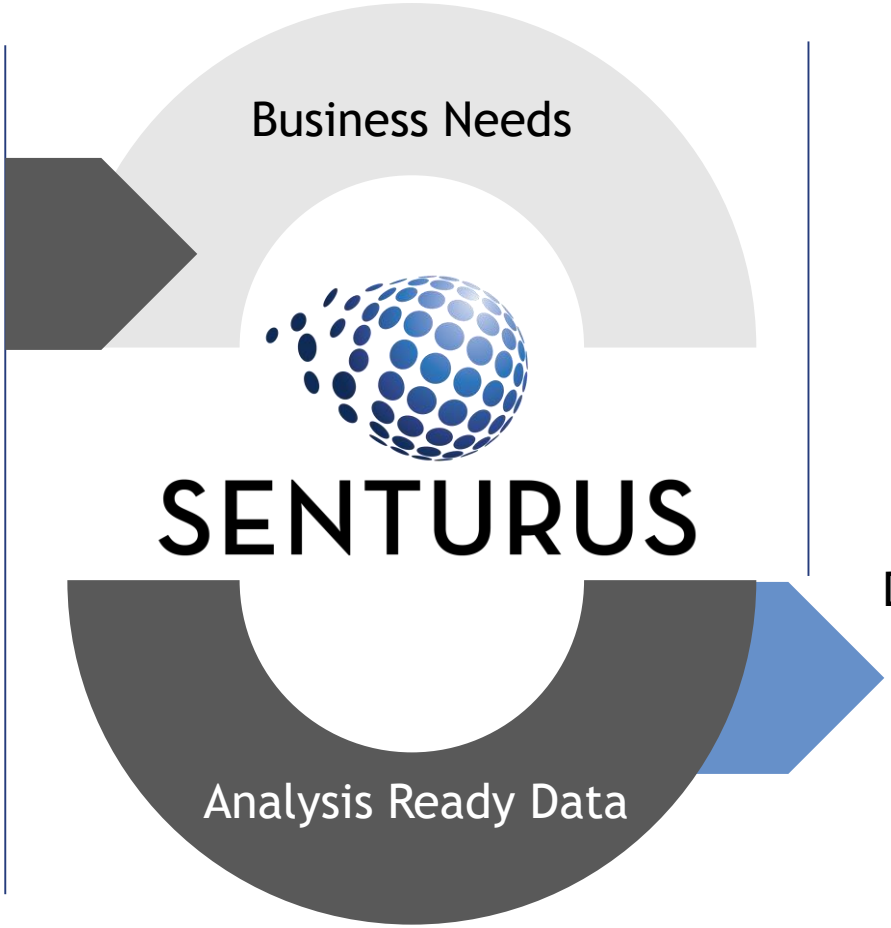
- Mentoring
  - Customized individual or small group learning on Tableau, Power BI and Cognos
  - https://senturus.com/training/custom-training/

- BI Concierge
  - Access to an entire team of BI experts to fill in a needed
  - https://senturus.com/bi-concierge-service/

Who We Are

Business Analytics Consultants

Bridging the Gap between Data & Decision Making



Decisions & Actions

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Business Analytics Architects

- Dashboards, reporting & visualizations
- Data preparation & modern data warehousing
- Self-service business analytics
- Salesforce reporting
- Proprietary software to enable bimodal BI and platform migrations

IBM Cognos Analytics

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1200+ Clients, 2000+ Projects, 18+ Years

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Additional Resources

Upcoming Events

www.senturus.com/events

MOVING BI TO THE CLOUD?

PROS, CONS & CONSIDERATIONS

Thursday, April 11 - 11am PT (2pm ET) - 60 minutes

Free Resources

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UPCOMING EVENTS

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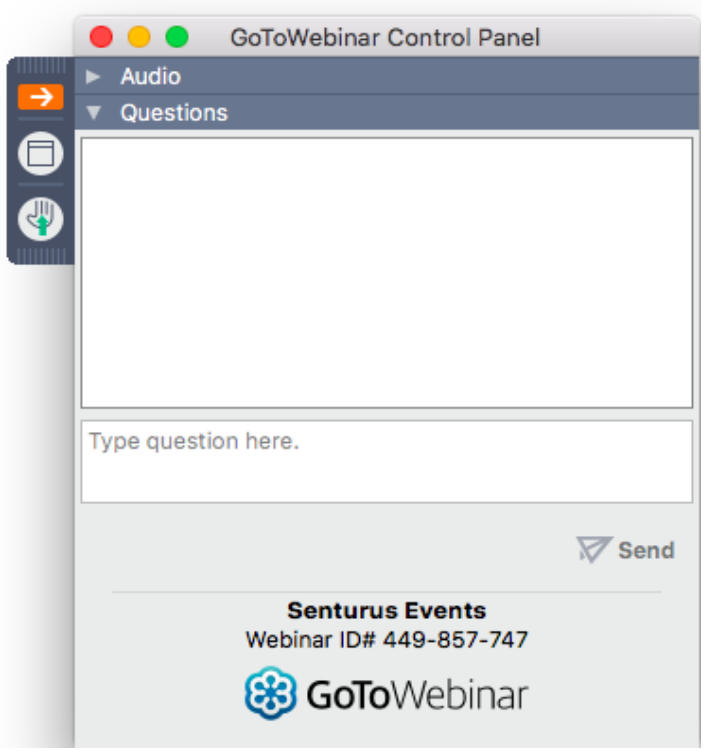
Q&A

If your question or issue is broader than what can be answered today, contact us at

info@senturus.com

and we will set up a free consultation.



Thank You!

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