

Workshop



- Microsoft AdventureWorks Family of Database Samples

Rick Sherman
Athena IT Solutions
rick.sherman@athena-solutions.com



Sample Databases

AdventureWorks (from Microsoft)

- AdventureWorks2019
- AdventureWorksDW2019
- AdventureWorksLT2019

AdventureWorks: Background



- AdventureWorks sells bikes & related products (parts & accessories) through two sales channels:
 - direct to customers via internet
 - resellers (or stores or bike shops) – they resell bikes so customer in this case is the reseller not the person who eventually buys the bike
- Business transactions tracked are sales, purchases & inventory
- These transactions may have some of the following dimensions:
 - Customers (Individuals buying over the internet)
 - Resellers (or Store or Bike Shops)
 - Products: either sold or purchased and may go into inventory
 - Product Hierarchy: Products, Product Subcategories & Product Categories
 - Dates: Ship, Order, Due, Purchase & other Dates
 - Date Hierarchy - Year, Quarter, Month, Day
 - Employees: including salespeople
 - Vendors: product and part suppliers
 - Sales promotions
 - Address for customer, employees, stores & others
 - Geography Hierarchy: Country, State, City

AdventureWorks Databases

- AdventureWorks2019
 - OLTP (on-line transactional processing) database
 - **System of record (SOR)** for AdventureWorks company
 - Normalized ER Model
- AdventureWorksDW2019
 - **Data Warehouse (DW)**
 - Data source is AdventureWorks2019 (sort of...)
 - Dimensional data model
- AdventureWorksLT2019
 - Subset of AdventureWorks2019 both in terms of tables and data
- AdventureWorks2019
 - Sales
 - Inventory
 - Purchasing Sales
- AdventureWorksDW2019
 - Internet Sales
 - Reseller Sales
 - Inventory


AdventureWorks: Data samples & documentation

- Data samples
 - [AdventureWorks - GitHub](#)
- Microsoft's documentation has not been kept up-to-date (as is most IT's BI & DW documentation BTW) but useful when understanding overall model & business rules:
 - [Schemas in AdventureWorks](#)
 - [AdventureWorks Data Dictionary](#)
 - [Adventure Works Cycles Business Scenarios](#)
- Additional documentation
 - [AdventureWorks – Data Model & Data Dictionary](#) by Datedo (sells data dictionary software & ERD)
 - [AdventureWorks \(printer friendly\).pdf](#) - pdf of above
 - [AdventureWorksDW – Data Model & Data Dictionary](#)
- Note: AdventureWorks has been loaded to MySQL and PostgreSQL

AdventureWorks – Data Model & Data Dictionary by Datedo

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AdventureWorks – Data Model & Data Dictionary by Datedo


AdventureWorks

▼ **AdventureWorks**

▼ **Modules**

- Business Entities
- People
- Human Resources
- Products
- Manufacturing
- Purchasing
- Inventory
- Sales
- Admin

▼ **Tables**

▼ **Views**

▼ **Procedures**

▼ **Functions**

Repository > AdventureWorks

AdventureWorks – Data Dictionary

Host	host
Database	AdventureWorks
DBMS	SQL Server

AdventureWorks is a sample database for Microsoft SQL Server 2008 to 2014. This is a documentation of this database created with **Dataedo**.

AdventureWorks database supports standard online transaction processing scenarios for a fictitious bicycle manufacturer .

· **Adventure Works Cycles**. Scenarios include Manufacturing, Sales, Purchasing, Product Management, Contact Management, and Human Resources.

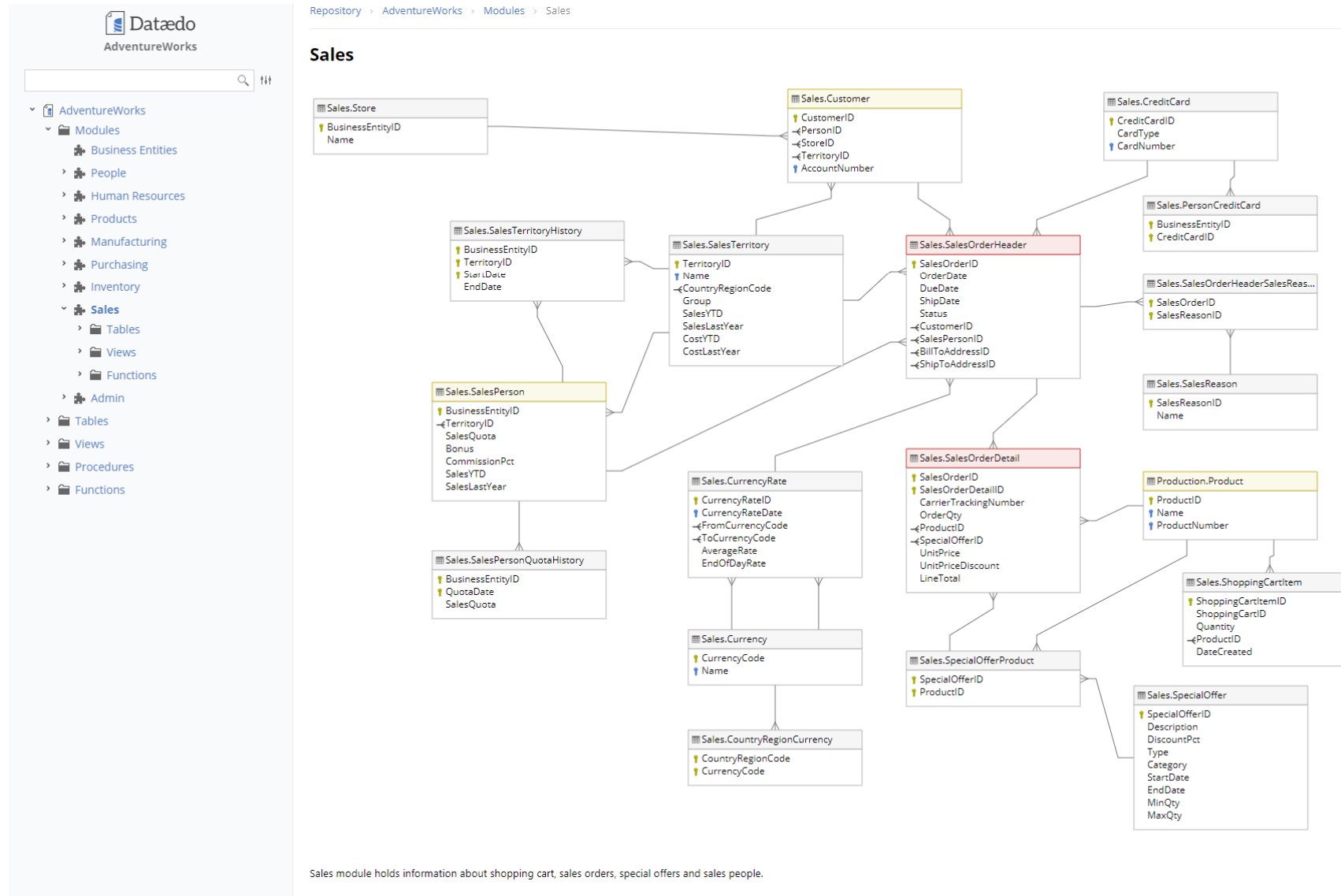
Modules

- Business Entities
- People
- Human Resources
- Products
- Manufacturing
- Purchasing
- Inventory
- Sales
- Admin


Database objects

- Tables (71)
- Views (20)
- Procedures (10)
- Functions (11)

AdventureWorks – Data Model & Data Dictionary by Datedo



AdventureWorksDW – Data Model & Data Dictionary by Datedo

 **Datedo**
Sample Data Warehouse Documentation

- AdventureWorksDW
 - Modules
 - Dimensions
 - Finance
 - Call Center
 - Inventory
 - Internet Sales
 - Sales Quotas
 - Surveys
 - Currency Rates
 - Reseller Sales
 - Product Descriptions
 - Tables

Repository > AdventureWorksDW

AdventureWorksDW – Data Dictionary

Host 192.168.0.37

Database AdventureWorksDW

DBMS SQL Server

Sample data warehouse documentation created with **Datedo**.

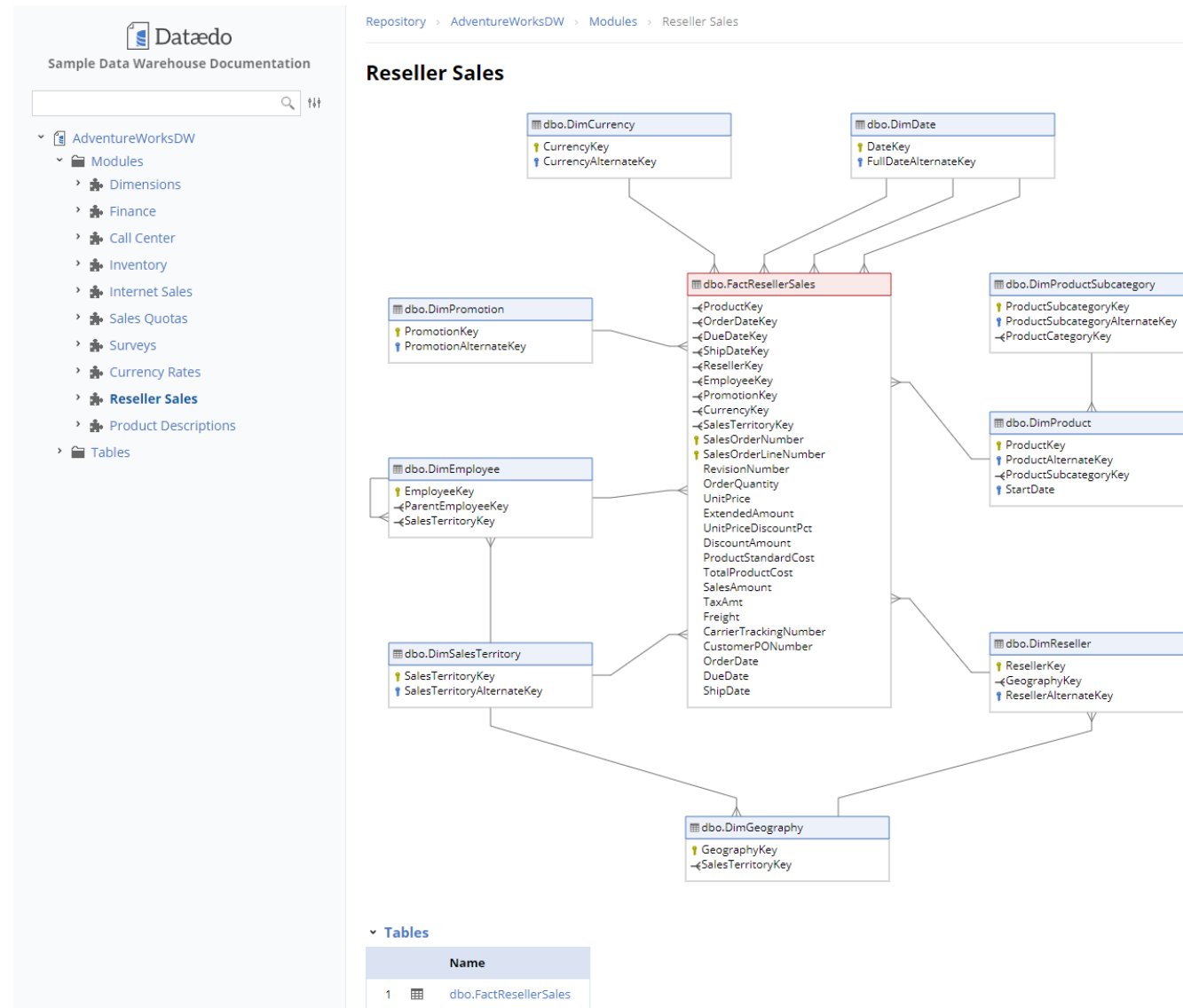
Modules

- Dimensions
- Finance
- Call Center
- Inventory
- Internet Sales
- Sales Quotas
- Surveys
- Currency Rates
- Reseller Sales
- Product Descriptions

Database objects

- Tables (26)

AdventureWorksDW – Data Model & Data Dictionary by Datedo



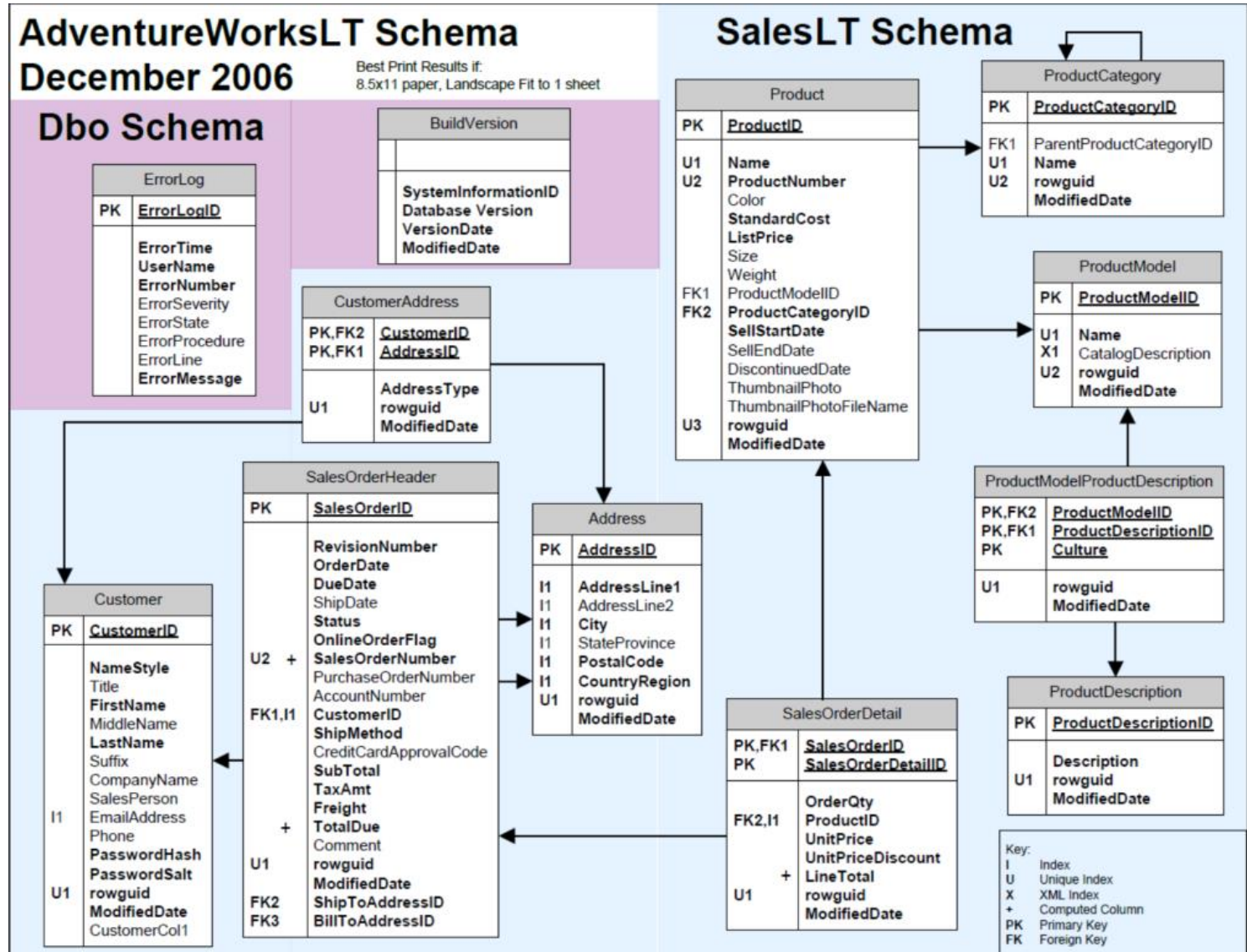
Sample Databases

AdventureWorksLT

Sample Databases

- AdventureWorksLT is a sample database created by Microsoft and available for SQL Server and Azure SQL
 - Is the sample that will be loaded if requested when creating a database
- AdventureWorksLT is a subset of the AdventureWorks database sample with is an OLTP (on-line transaction processing) database in 3NF
- AdventureWorksLT data is not consistent

AdventureWorksLT Data Model



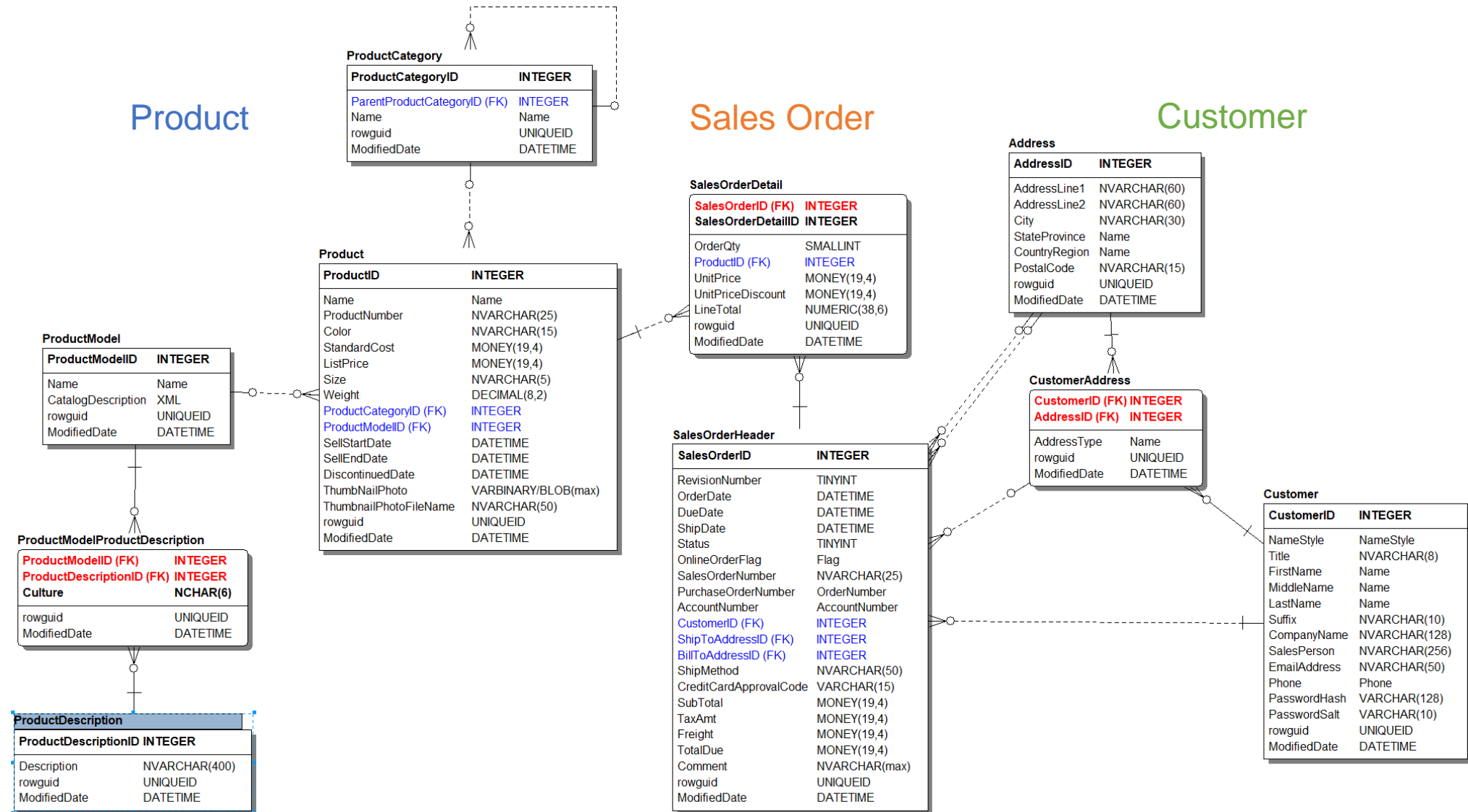
Three business entities involved:

- Sales Order (sales transaction)
- Product (what was sold)
- Customer (who purchased products)

Entity-Relationship (ER) Model

- Transactions
 - SalesOrderHeader
 - SalesOrderDetail
- What is sold:
 - Products
- Product Hierarchy:
 - Product
 - Product Category
- Who sold to:
 - Customer (People or Company)
- Where:
 - Address (Address Line, City, CountryRegion)

AdventureWorksLT Data Model (ER/Studio)

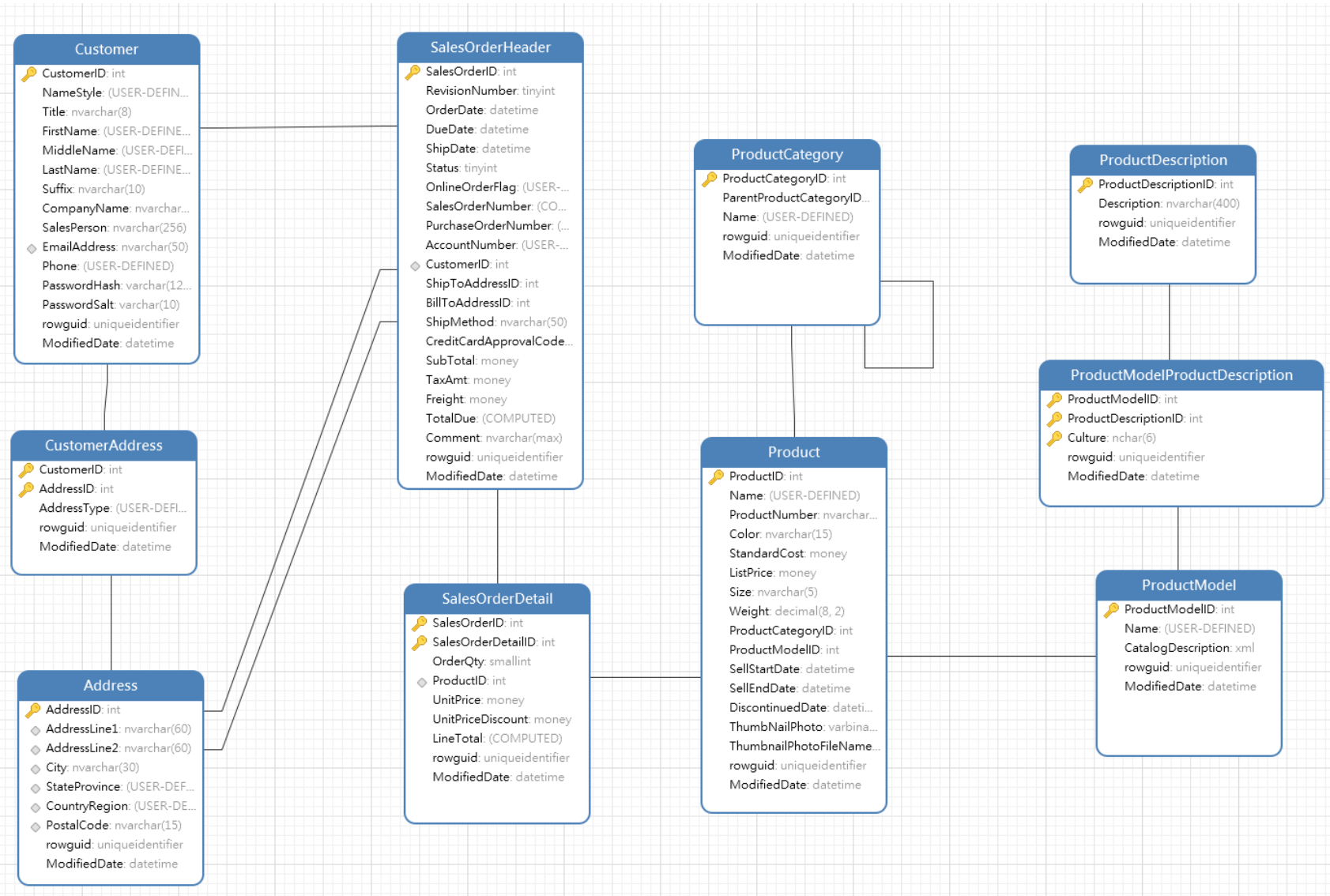


AdventureWorksLT Data Model (Navicat)

Customer

Sales Order

Product



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- Sales Order (sales transaction)
- Product (what was sold)
- Customer (who purchased products)

Entity-Relationship (ER) Model

- Transactions
 - SalesOrderHeader
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 - Product Category
- Who sold to:
 - Customer (People or Company)
- Where:
 - Address (Address Line, City, StateProvince, CountryRegion)

AdventureWorksLT Data Model (Dataedo)

Customer

SalesLT.Customer
CustomerID
NameStyle
Title
FirstName
MiddleName
LastName
Suffix
CompanyName
SalesPerson
EmailAddress
Phone
PasswordHash
PasswordSalt
rowguid
ModifiedDate

SalesLT.CustomerAddress
CustomerID
AddressID
AddressType
rowguid
ModifiedDate

SalesLT.Address
AddressID
AddressLine1
AddressLine2
City
StateProvince
CountryRegion
PostalCode
rowguid
ModifiedDate

Sales Order

SalesLT.SalesOrderHeader
SalesOrderID
RevisionNumber
OrderDate
DueDate
ShipDate
Status
OnlineOrderFlag
SalesOrderNumber
PurchaseOrderNumber
AccountNumber
CustomerID
ShipToAddressID
BillToAddressID
ShipMethod
CreditCardApprovalCode
SubTotal
TaxAmt
Freight
TotalDue
Comment
rowguid
ModifiedDate

SalesLT.SalesOrderDetail
SalesOrderID
SalesOrderDetailID
OrderQty
ProductID
UnitPrice
UnitPriceDiscount
LineTotal
rowguid
ModifiedDate

Product

SalesLT.ProductCategory
ProductCategoryID
ParentProductCategoryID
Name
rowguid
ModifiedDate

SalesLT.Product
ProductID
Name
ProductNumber
Color
StandardCost
ListPrice
Size
Weight
ProductCategoryID
ProductModelID
SellStartDate
SellEndDate
DiscontinuedDate
ThumbnailPhoto
ThumbnailPhotoFileName
rowguid
ModifiedDate

SalesLT.ProductDescription
ProductDescriptionID
Description
rowguid
ModifiedDate

SalesLT.ProductModelProductDescription
ProductModelID
ProductDescriptionID
Culture
rowguid
ModifiedDate

SalesLT.ProductModel
ProductModelID
Name
CatalogDescription
rowguid
ModifiedDate

AdventureWorksLT: Tables and Row Counts

table name	row count
Address	450
Customer	847
CustomerAddress	417
Product	295
ProductCategory	41
ProductDescription	762
ProductModel	128
ProductModelProductDescription	762
SalesOrderDetail	542
SalesOrderHeader	32

Microsoft PowerBI

Examples of data visualizations to answer questions AdventureWorksLT2019

AdventureWorksLT: Business Questions

- a) Total sales (Header & Detail \$ should match but not in this sample)
 - Using SalesOrderHeader (ties to customer)
 - Using SalesOrderDetail (ties to product)
- b) Total sales by country – ranked/sorted (highest to lowest)
- c) Total sales by city & country – ranked/sorted (highest to lowest)
- d) Total sales by customer (person) – ranked/sorted (highest to lowest)
- e) Total sales by customer (company) – ranked/sorted (highest to lowest)
- f) Sales by product name – ranked/sorted (highest to lowest)
- g) Sales by Product with Company filter
- h) Sales by product category – ranked/sorted (highest to lowest)
- i) Comparison querying with SalesOrderHeader vs SalesOrderDetail

Build Reports: Basic Data Visualizations

- Tables
- Matrix
- Bar and column charts
- Cards: Single number and Multi-row
- Pie Charts
- Donut charts
- Gauge charts
- Line Charts
- Area charts: Basic (Layered) and Stacked
- Maps: Basic maps
- Treemaps
- Waterfall charts
- Q&A visual