Workshop

Microsoft

- Microsoft AdventureWorks Family of Database Samples

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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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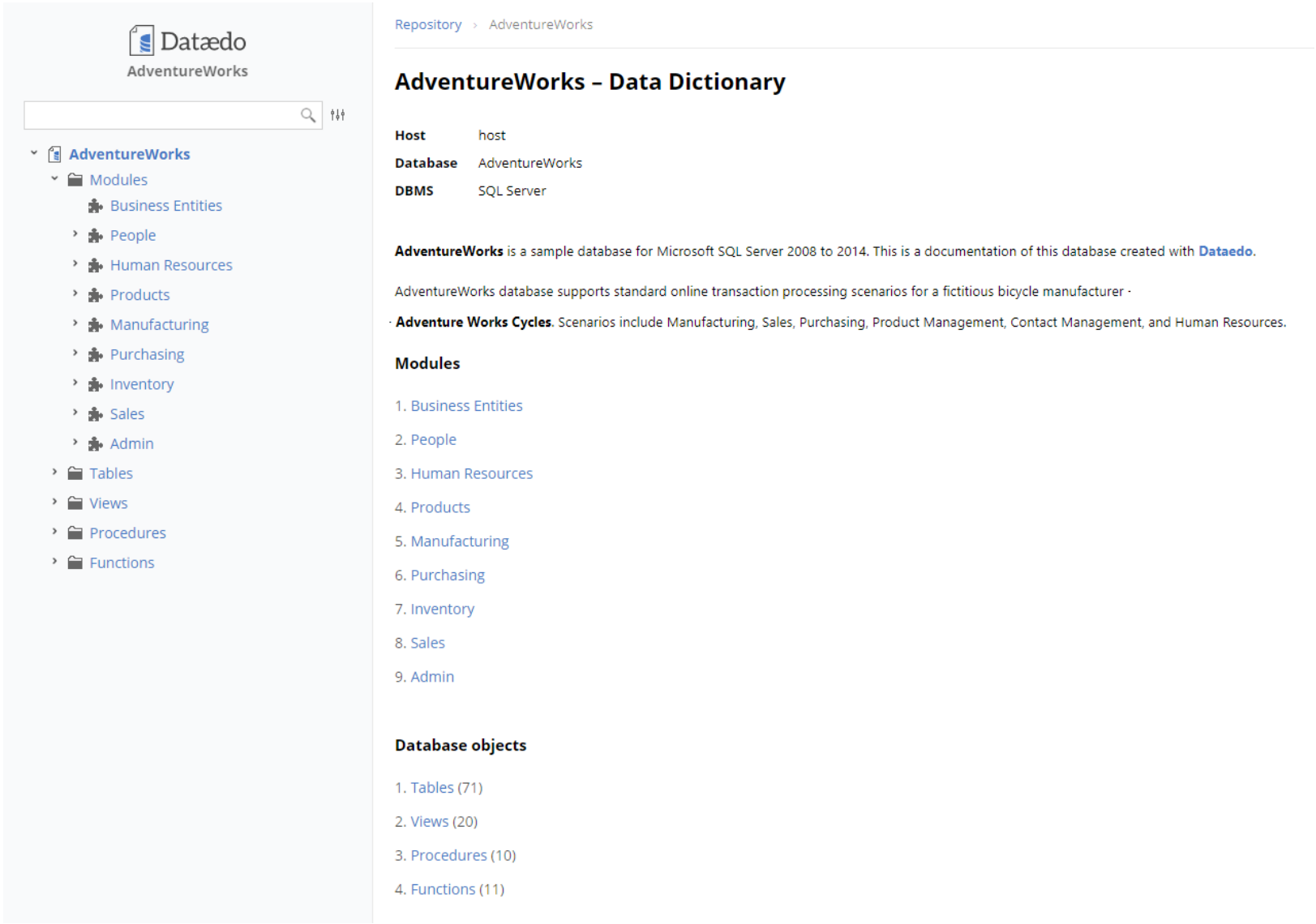
AdventureWorks – Data Model & Data Dictionary by Datedo



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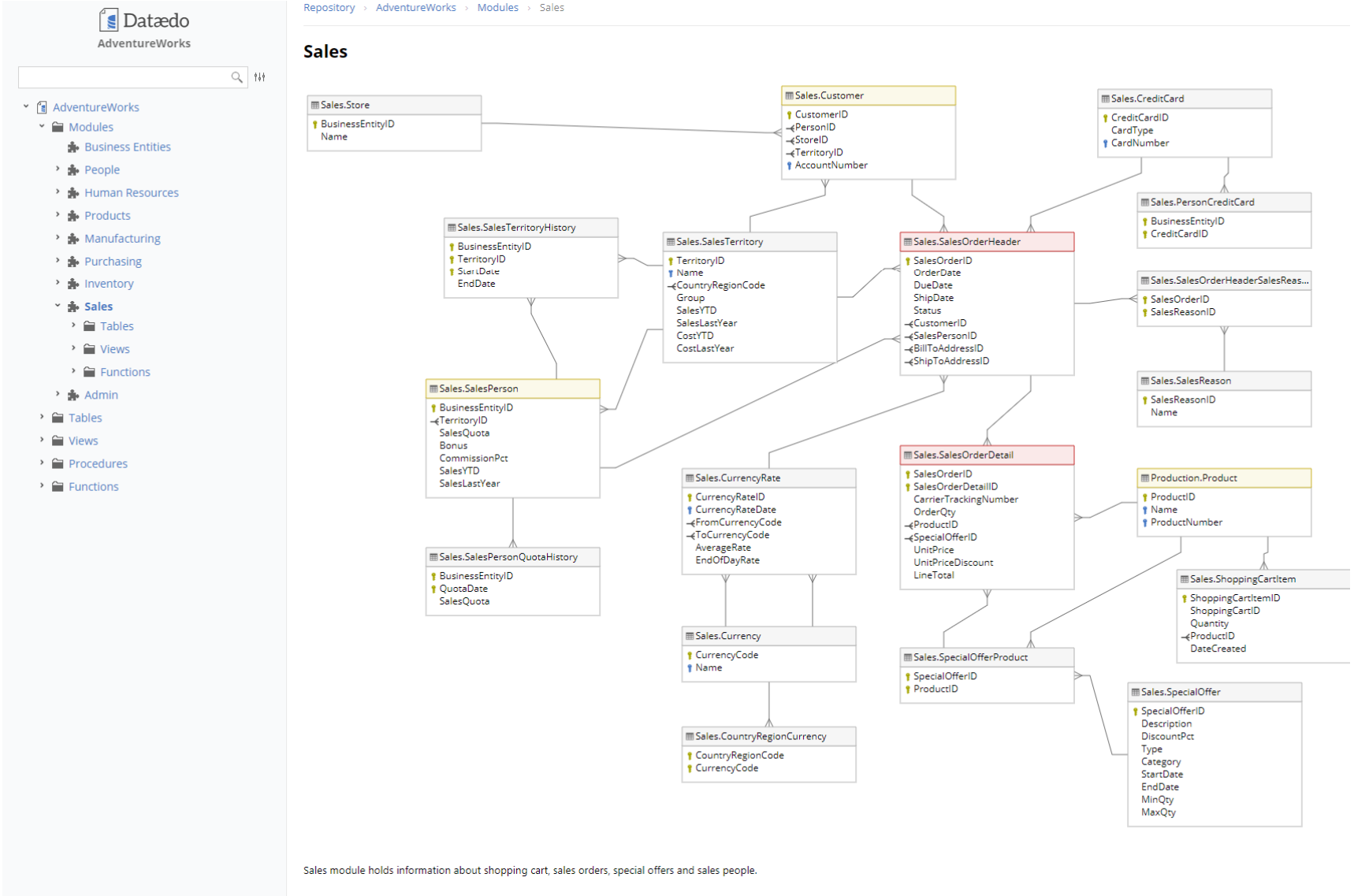
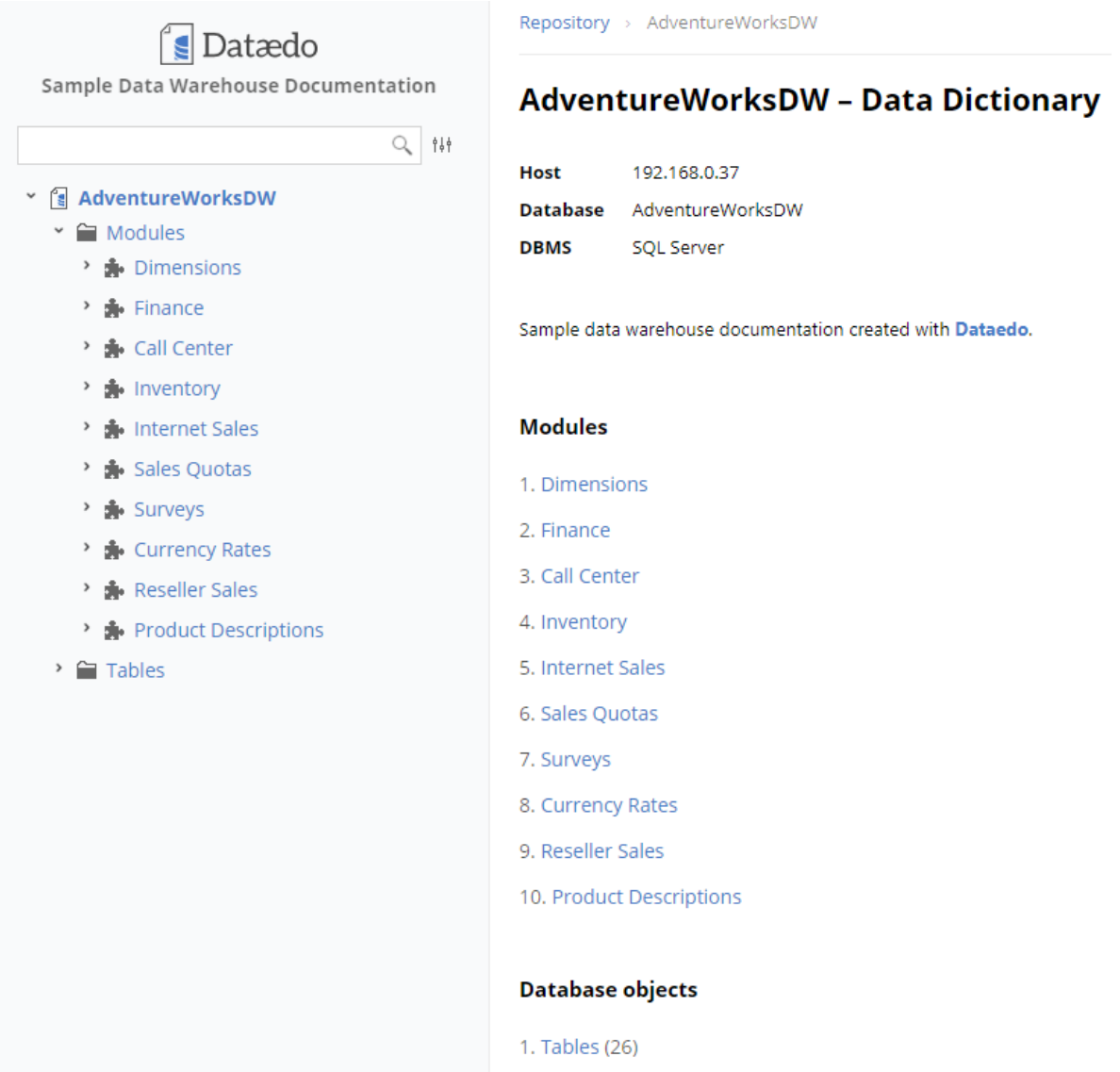


AdventureWorksDW – Data Model & Data Dictionary by Datedo



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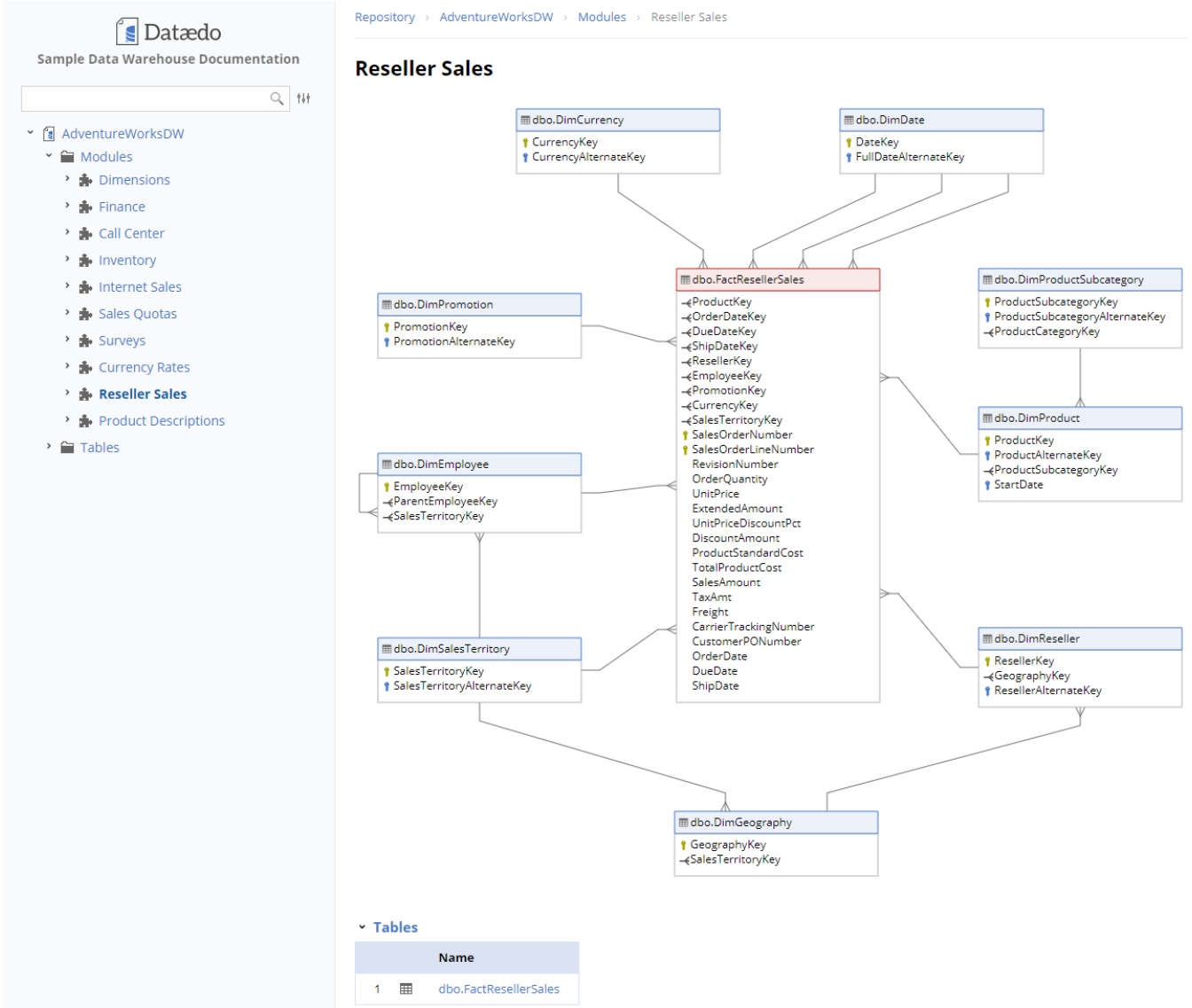


Sample Databases

AdventureWorksLT

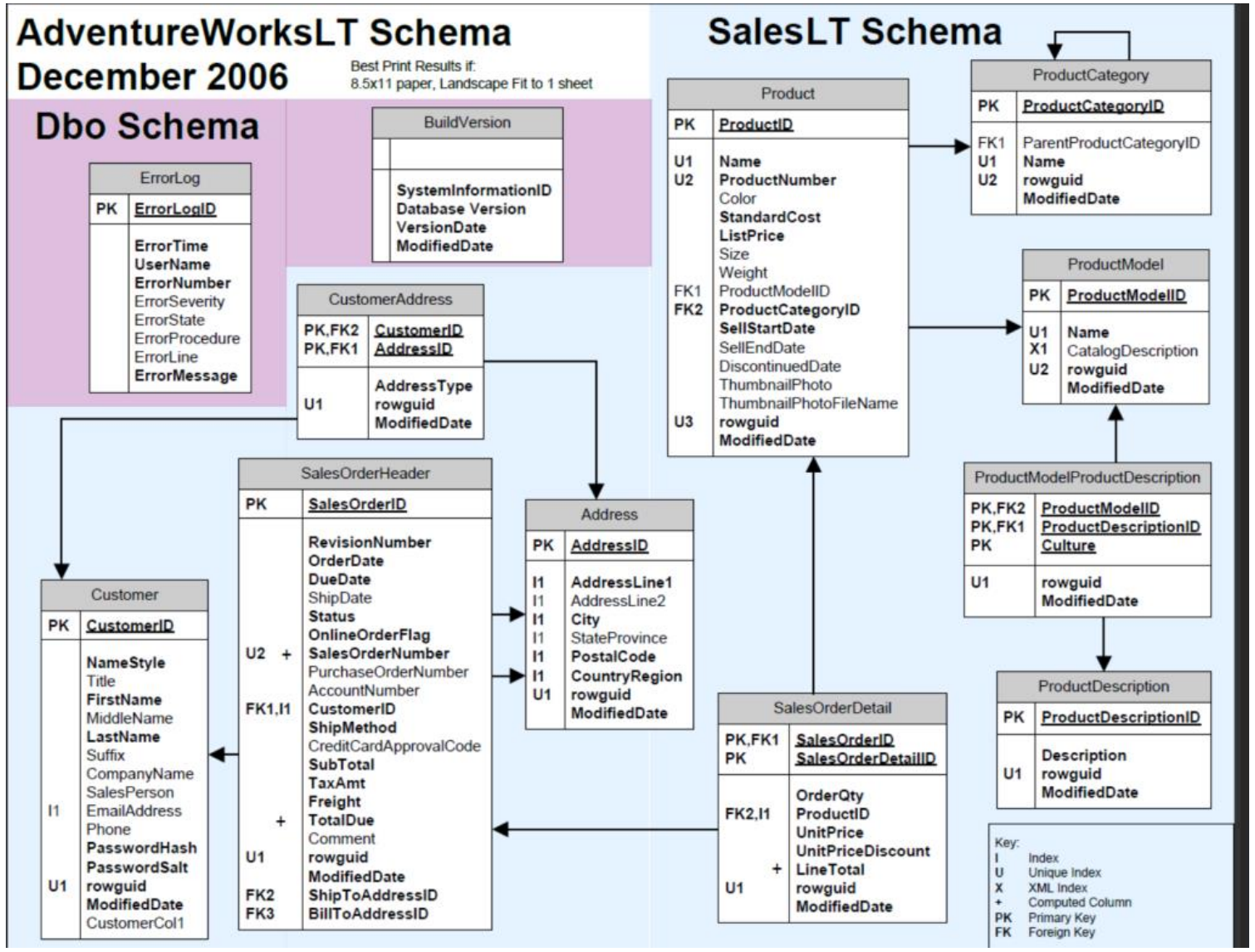
Sample Databases

- 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



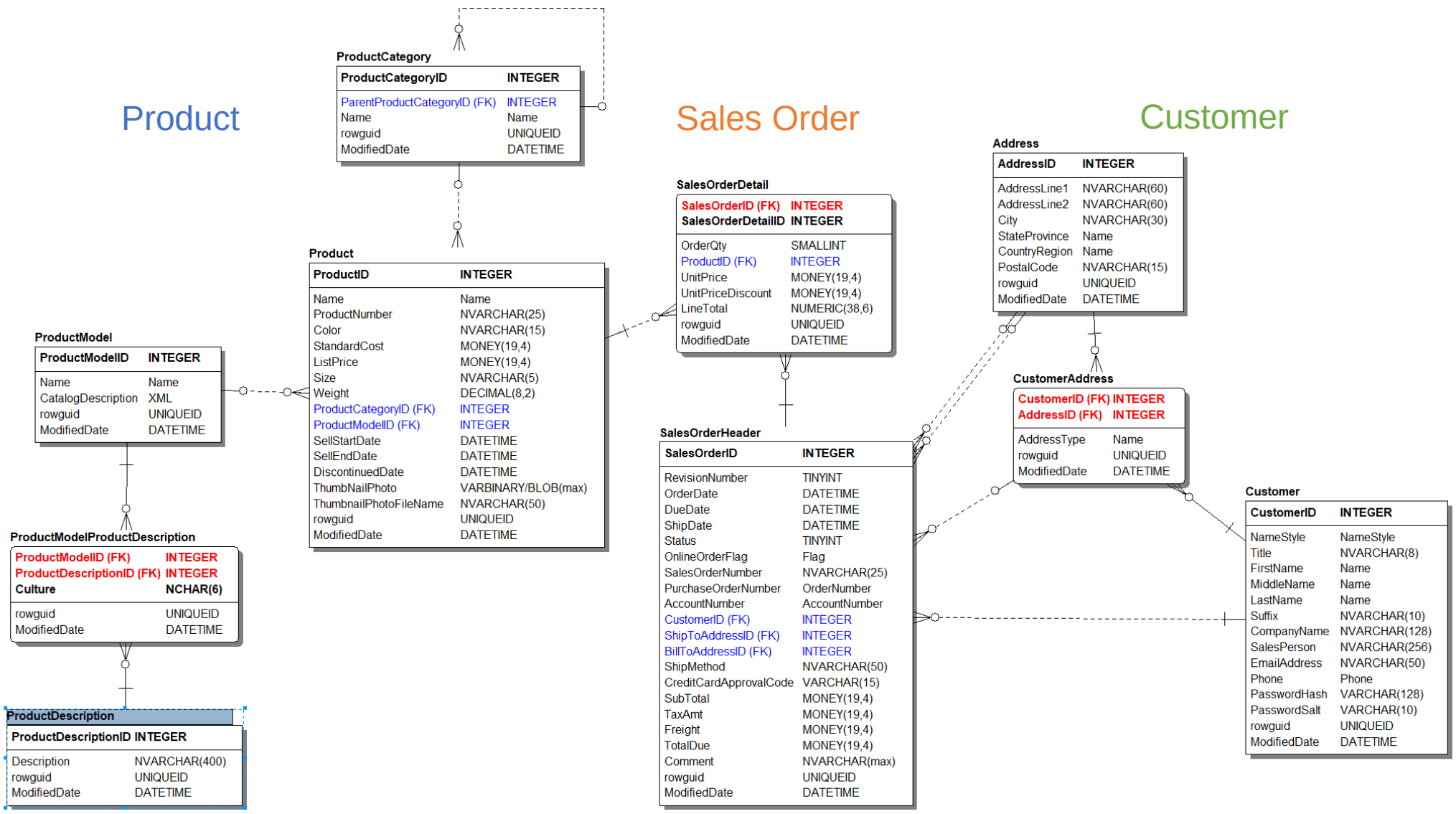
Three business entities involved:

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

Entity-Relationship (ER) Model

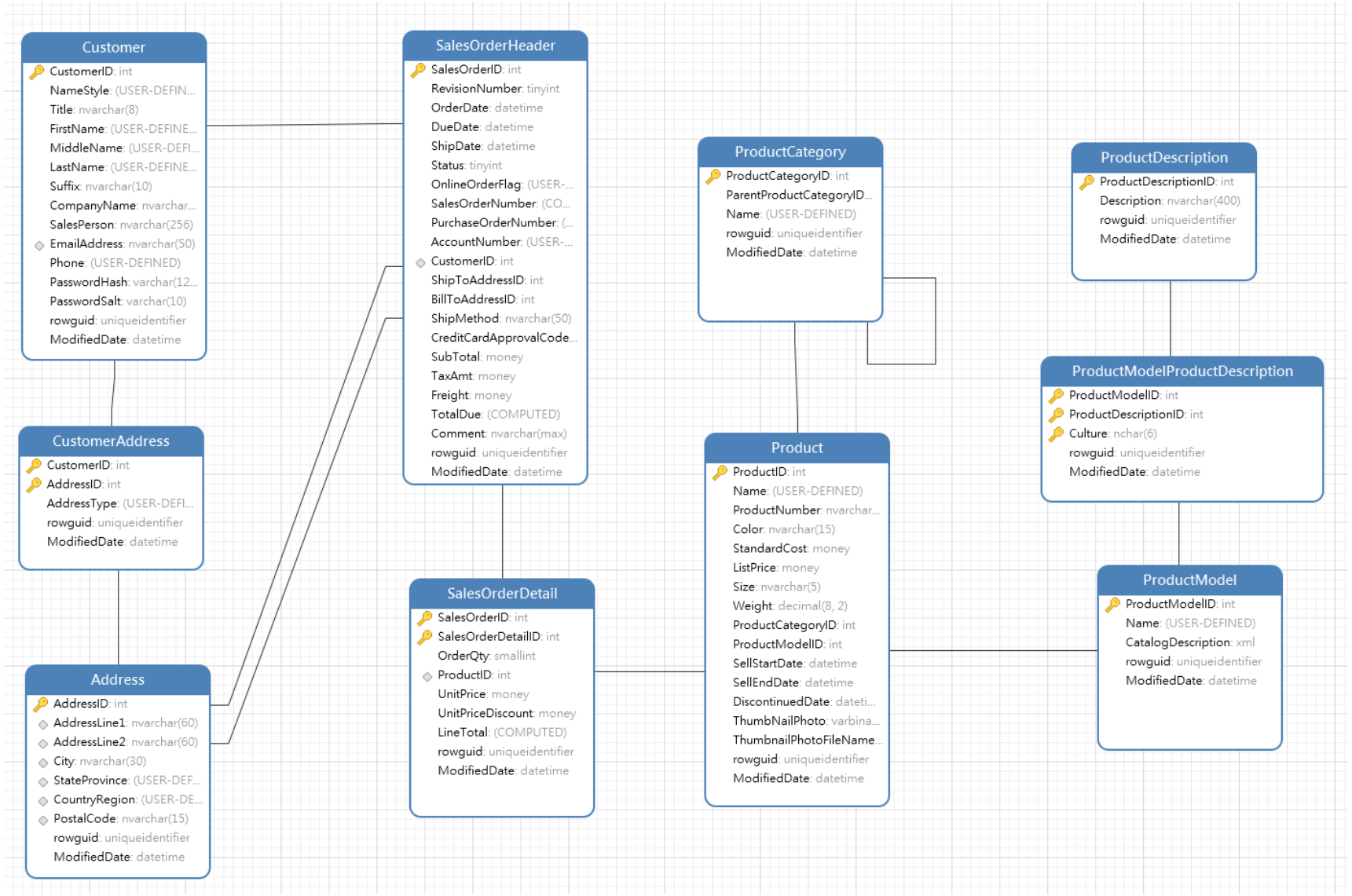
- Transactions
  - SalesOrderHeader
  - SalesOrderDetail
- What is sold:
  - Products
- Product Hierarchy:
  - Product
  - Product Category
- Who sold to:
  - Customer (People or Company)
- Where:
  - Address (Address Line, City, CountryRegion)

AdventureWorksLT Data Model (ER/Studio)



AdventureWorksLT Data Model (Navicat)

Customer Sales Order Product



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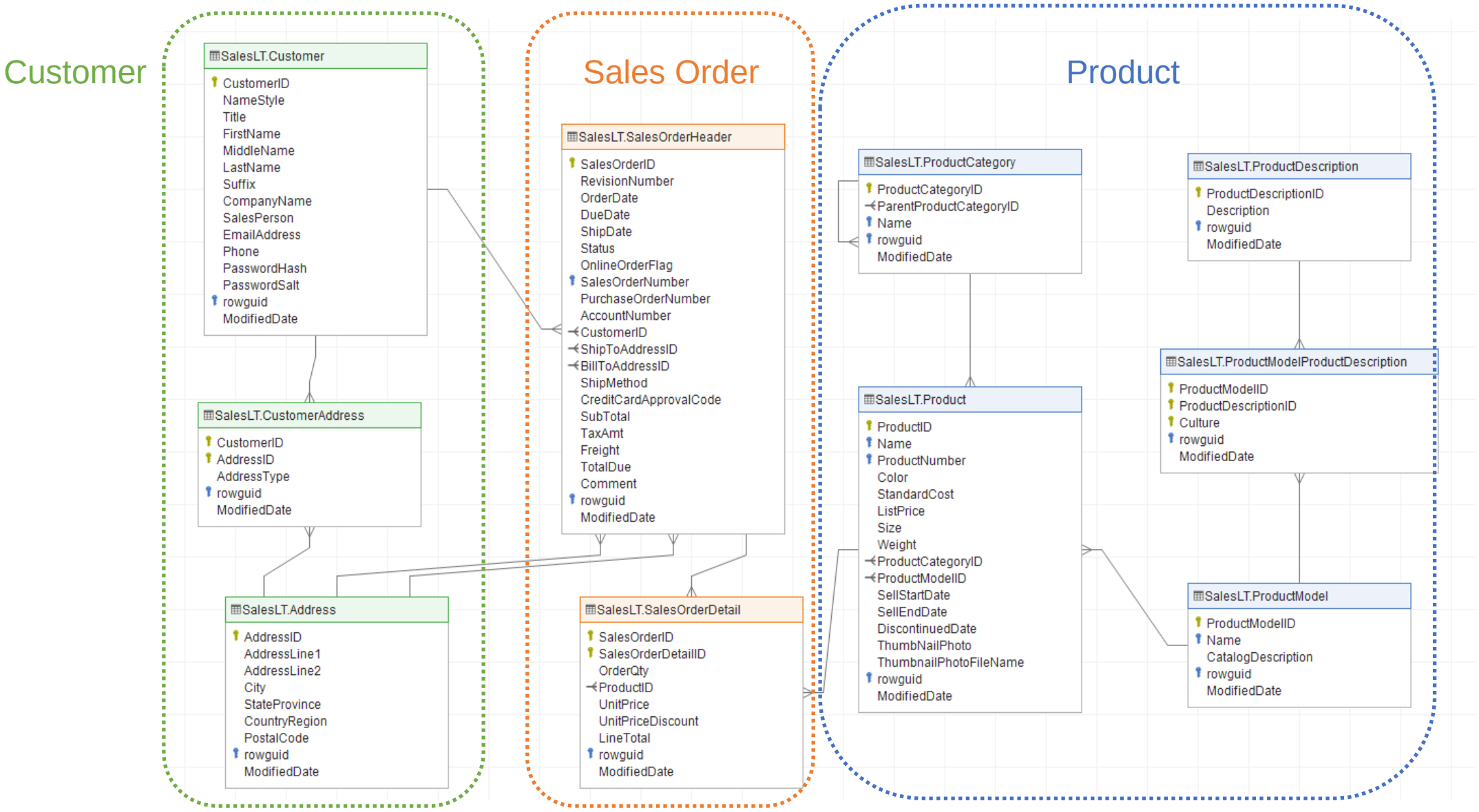
AdventureWorksLT Data Model (Dataedo)



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