

EW Solutions Data Warehouse / Business Intelligence Data Models

*Technical Overview - Model Development and
Usage*

EW Solutions has developed a collection of data warehouse and business intelligence data models for a variety of industries. Complete models, database platform - neutral, suitable for any size organization to implement a data warehouse and business intelligence initiative successfully.

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Table of Contents

- Introduction 2
- Benefits of Using EWSolutions' Data Warehouse Data Models 3
- EWSolutions' Data Model Development Approach..... 3
- Examples of Models Contained in EWSolutions' Data Warehouse Data Models..... 4
 - Notable Points for the Subject Area Model..... 4
 - Notable Points for the Industry Subject Area Model..... 5
 - Notable Points for the Atomic Data Warehouse 6
 - Notable Points for the Dependent Data Marts..... 7
 - Key Performance Indicators in Each Model..... 8
- Best Practices Used in EWSolutions' Data Warehouse Data Models 8
- Conclusion..... 8

Introduction

Many organizations struggle with the development and implementation of a data warehouse and business intelligence (DW/BI) environment, in part due to a lack of validated requirements for decision support and analytics. By their nature, data warehouses can be a challenge for data management and development professionals to discern the correct business requirements (concepts, entities, attributes, relationships) among the amount of data available in any organization.

Since its inception in 1997, EWSolutions has created and maintained data warehouses and business intelligence / analytics environments in almost every industry, for organizations of every size. All of these efforts began with the development of a series of data models that represent the business / activity, and detail the data needs for an effective analytical capability.

Based on the efforts of numerous senior consultants in data warehousing, data architecture and data modeling, and with the support of many client partners, EWSolutions offers a collection of data warehouse / business intelligence models to the public, at a price far below any competition.

The industries modeled include:

- Law Enforcement
- Healthcare - Clinical
- Financial Accounting
- Funds Investment

Each model set contains the following components:

- Industry Subject Area Model
- Industry Conceptual Data Model
- Atomic Level Data Warehouse Logical Data Model (3rd normal form)
- Dependent Data Mart Logical Data Models (dimensional form)

Additionally, all models include:

- Industry and Common Vocabulary document - Business Glossary and Data Dictionary
- Modeling Standards document

These models can form the basis for a robust, scalable data warehouse for the chosen industry, saving the organization many hours in discovery, design, and implementation. All the models are extensible, and the organization can customize the model to suit its needs.

Benefits of Using EWSolutions' Data Warehouse Data Models

There are numerous benefits to implementing an EWSolutions' data warehouse data model, including:

- EWSolutions uses industry standards (ISO 11179 and others) for naming standards and definitions in all models
- Each model leverages many hours experience from complex client situations along with superior practitioner skills in data architecture, data modeling, data warehousing and business intelligence
- Model's use improves opportunities for proper reuse of data objects and analysis
- Model provides a framework for industry knowledge, to allow organizations to compare their data and practices against standards and proven practices in their industry
- Model's use allows for development of robust entities with appropriate attributes, defined according to a combination of industry standards and company practices
- Model serves as basis for improving model development within the organization, demonstrating best practices and iterative model development
- Models are flexible, scalable, and extensible - allowing for extensions and customizations while retaining best practices

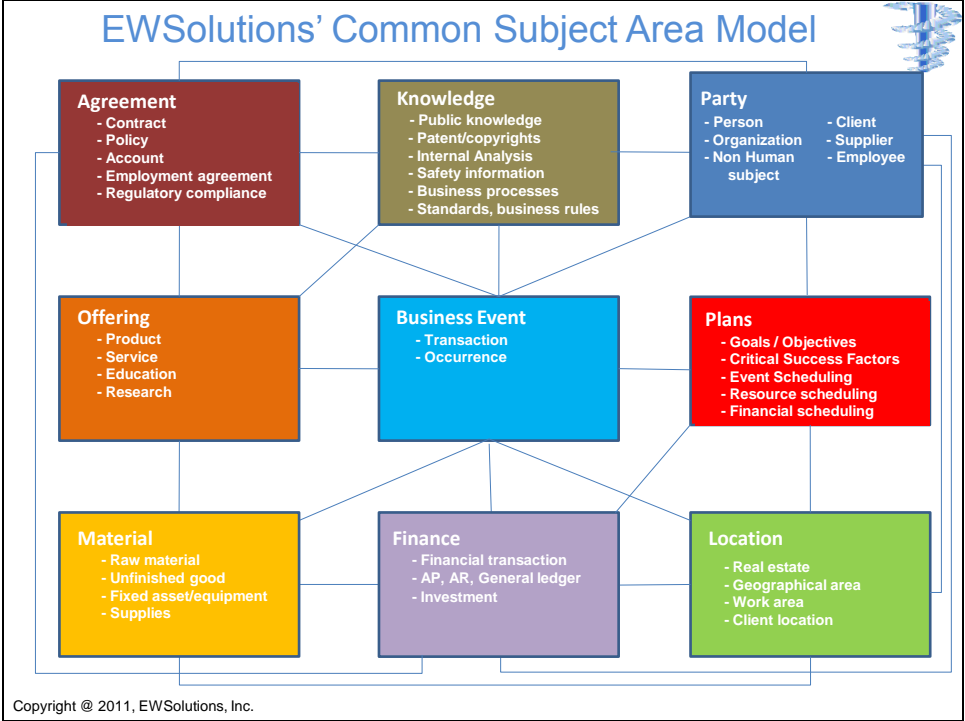
EWSolutions' Data Model Development Approach

EWSolutions recognizes that data modeling is an iterative process, so the company follows a proven modeling paradigm of developing multiple levels of data models to **align the data warehouse with business requirements.**

This paradigm enables more rapid adaptation for client requirements because of the business emphasis of the models. Finally, the business is modeled before the solution (data warehouse & data marts), which is the most effective way to discover and document all business requirements.

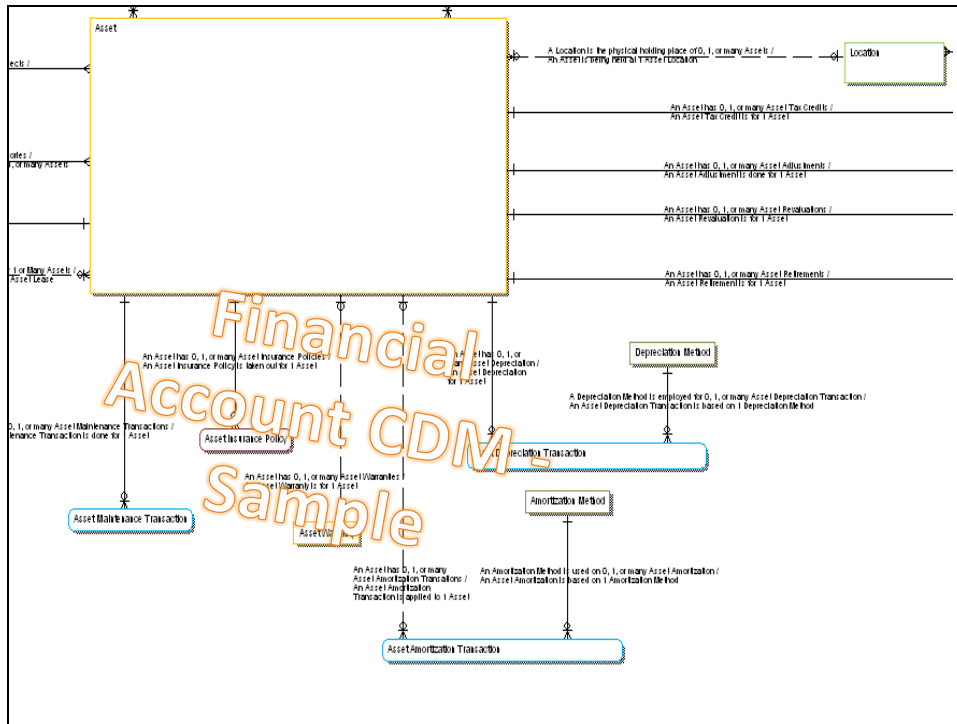
All data models are database-platform independent, so an organization can elect to implement the models through its chosen database management system. Complete DDL (data definition language) and diagrams are provided for each model.

Examples of Models Contained in EWSolutions' Data Warehouse Data Models



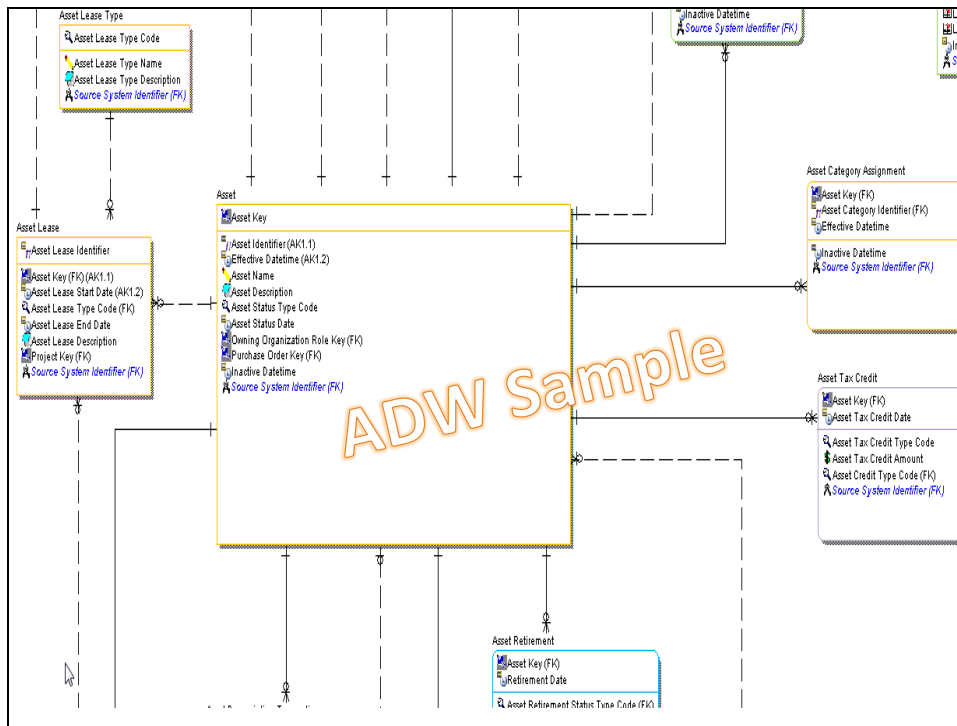
Notable Points for the Subject Area Model

- Common Subject Area Model applicable to almost every industry
- Industry-based Subject Area Model created from this common model, allows for organization and industry specific requirements
- Decomposes the enterprise by key subject areas for modeling organization, modeling prioritization and for data governance
- Subject orientation, versus process orientation, is a critical component of best practice data modeling, allowing for normalization and reuse, improved data quality and metadata management



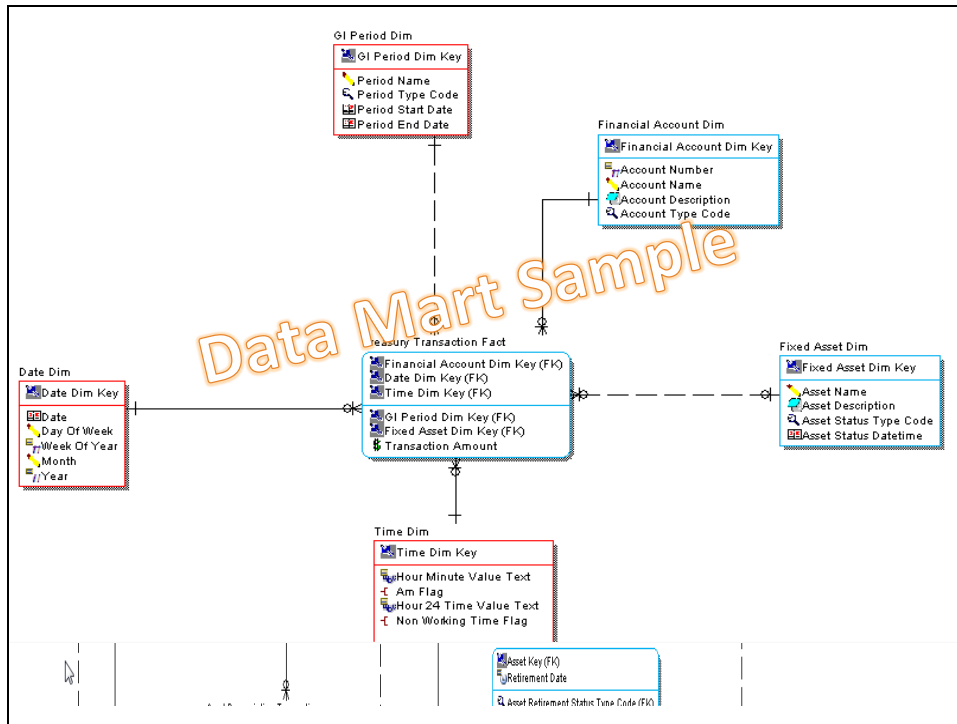
Notable Points for the Industry Subject Area Model

- Industry-based Subject Area Model created from the common subject area model, allows for organization and industry specific requirements
- Decomposes the enterprise by key subject areas for modeling organization, modeling prioritization and for data governance
- Assists the enterprise to develop industry specific views of data and relationships based on the common subject area model, informed by the organization's business requirements



Notable Points for the Atomic Data Warehouse

- The Atomic Data Warehouse is the central hub in which cleansed, standardized, and integrated data is stored in a mostly 3NF format (non-decomposable, non-redundant)
- Sole source for dependent, dimensional Data Marts
- Logical and physical representations of all objects
- Nearly every table has record versioning in place (except for very small, static tables) – to facilitate the most thorough historical analysis possible
- Surrogate keys are used heavily for simplicity, ease of use, and performance
- Whenever a surrogate key is used –alternate key(s) (AK) are used to identify the natural key(s) – to retain business meaning



Notable Points for the Dependent Data Marts

- Dimensional model suited to high performance analytics and reporting on high volumes of data
- Utilizes conformed dimensions to enable drill-across from one analysis area to another
- Designed to support KPI's that many organizations are interested in measuring
 - KPIs based on the industry
- Highly de-normalized for query performance and ease of use
- Includes mapping to the ADW to facilitate rapid deployment

KPI	Description	KPI	Description
Cumulative Annual Growth Rate (CAGR)	What is the Cumulative Annual Growth Rate of the company for a certain number of years?	What is the difference between baselined budgeted costs and actual costs?	Deviation of planned budget
Operating margin	What is the Operating Margin of the company for a particular period?	Cycle time for expense reimbursements	What is the average cycle time in number of days that it takes to approve and schedule reimbursement?
Sales, General & Administrative Costs (SG&A)	What are the SG&A costs for the company for a particular period?	Expenses claims processed per FTE AP clerk	How many expense claims are processed per full-time employed AP clerk?
Accounts Days Payable	What is the company's current average payable period?	Purchase price variance	What is the difference between the actual purchase price and the standard price for an item?
Discounts Lost	How much does the company lose by not paying invoices in time to take advantage of payment terms' discount periods?	Expenses claims processed per FTE	How many expense claims are processed per full-time employed AP clerk?
Accounts Receivable Days	What is the average length of customer payment collection period?	Return on Equity (ROE)	What is the Return on Equity (ROE) for the company for a particular period?
Monetary value of invoices outstanding	What is the total amount of outstanding supplier invoices, i.e., whose payments have not been made?	Degree of Asset Depreciation	What is the degree of depreciation of asset, on a scale of 0 to 1, for the company at a particular point in time?
Number of Invoices Outstanding	What is the number of supplier invoices outstanding for a particular period?	What is the difference between baselined budgeted costs and actual costs?	Deviation of planned budget

Key Performance Indicators in Each Model

- Each EWSolutions' Data Mart enables rapid generation of Key Performance Indicators (KPI)
- A large selection of KPIs can be generated from the Data Mart without any modification to the data mart model
- Model can also support many other types of KPIs, and analyses with organization-based extensions / customizations

Best Practices Used in EWSolutions' Data Warehouse Data Models

- Data rationalization
- Normalization
- Consistent de-normalization
- International and industry standards (ISO 11179), HL7, NEIM, GJXDM, etc..
- Appropriate meta-tags (traceability, load/update, confidence, etc..)
- Platform-adoptable Data Definition Language (DDL)

Conclusion

Acquiring and implementing an EWSolutions' data warehouse data model can save an organization numerous hours in discovery and data model development for a data warehouse or other business intelligence / analytics initiative. Using these models can improve the performance of the development team, the data governance team and data stewards, metadata management professionals. Through the

use of a complete, documented model set, any organization can improve its data architecture and data warehousing capabilities.

Contact EWSolutions at info@ewsolutions.com for more information and to purchase one of these models.