ADRM Software

White Paper

The Best-practice Vertical-industry Enterprise Data Model

In the early 1990's Bill Inmon authored the first widely-published articles about data warehouses and enterprise data models while at Prism.

A sampling from those writings illustrate the importance applied to models.

> "When a corporation becomes serious about data warehouse, the corporation is first serious about the data model."
>
> "It is not unusual for a company to spend two or three years building a data model."
>
> "By acquiring a generic data model, the hurdle of not having a data model is quickly and inexpensively surpassed.

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Using the Generic Data Model by W H Inmon
Prism Tech Topic Volume 1, No. 19

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Over a decade has passed and the central role of the enterprise data model as the fundamental architectural keystone for planning and integrating data remains just as important.

The requirement for an overall data blueprint from which to begin planning, integration and analysis efforts is as critical for IT as building blueprints are to architects. They provide an overall context and means of visualizing the effort at hand.

Planning and building systems upon a comprehensive, top-down data architecture is even more important today when each IT dollar must have both an immediate and lasting impact.

It is the best-practice, vertical-industry enterprise model that fulfills the original promise implied by 'generic' or 'template' corporate or enterprise models and provides immediate advantages to the implementing organization.

Having the ability to immediately apply models that are both industry specific and focused upon best practices enables the organization to immediately take advantage of the most current thinking and trends in the industry. By drawing upon a wide-range of industries and experience it is possible to develop models that are consistent across those industries and will enable the organization to move into new areas of opportunity in the future with minimal IT implications.

ADRM Software (ADRM) has developed and marketed best-practice industry specific enterprise, data warehouse and data mart models for 15 years in over 7 industries and different 35 lines of business for clients worldwide.

This experience forms the foundation of practical knowledge upon which this white-paper is written.

The Best-Practice Enterprise Data Model

The best-practice vertical-industry enterprise data model is an industry-specific, comprehensive enterprise model incorporating current industry 'best-practices' with proven data model technology.

ADRM employs 13 key design characteristics in the construction of enterprise data models.

(1) Industry Focus
(2) Extensible Across Related Industries
(3) Integrated Business Area Models
(4) Reflects Practical, Realworld Operations
(5) Reflects Current and Future Concepts
(6) Fully-Attributed
(7) Detailed Definitions
(8) Integrates Industry-Standard Data
(9) Large-Format Graphic Representation
(10) Supports A Wide Audience
(11) Artificial Concepts Eliminated
(12) Semantically Clear
(13) Logically Correct But Not Rigid

These 13 characteristics define ADRM enterprise models and serve to differentiate them from 'template' or 'generic' data models and competitive offerings.

Industry Focus

The focus of each best-practice enterprise data model is a specific industry.

It is only within the context of a specific industry that an enterprise data model can be developed that truly addresses the unique requirements of a business operating in that industry.

Companies within the same industry almost without exception utilize the same fundamental data and types of information. That which differentiates each company is the architecture of existing applications and the data management practices of that company.

We also know that each industry shares much data in common with other industries.   Data that is common to multiple industries should be defined consistently to support an organization's entry into new industries with minimal disruption.   Geography, Customer, Marketing, Advertising, Inventory and Financial Reporting are a few examples with common underpinnings.

A good example is the common application of data is the implementation of 'customer' across different industries.

There are almost universally two types of customers that purchase products or services from a business:

- Individual Customers ('humans')
- Legal Entities Customers ('corporations, partnerships, governments…')

An individual on the same day may purchase razor blades, open a checking account, purchase a stock and order a new cellular phone.   These represent transactions in different industry segments by the same customer, whose attributes change little during that time if at all.   A common definition of Customer with unique attributes for a specific industry are applicable.

The corresponding definition and supporting entities for an individual customer in the Retail, Retail Banking, Brokerage and Wireless industries should be fundamentally the same.

The same analogy applies to legal entity customers.

There will always be unique aspects related to the definition of customer within a specific industry, but the fundamental definition should be consistent and mirror the real-world.

The consistent definition and application of entities so that they reflect the real-world is a key characteristic of the best-practice enterprise model.

(1) It supports development of practical applications, not constrained by artificial definitions or business rules.

(2) It facilitates the planning and purchase of packaged applications that will be consistent with how the business plans to operate.

(3) It encourages development of an integrated data platform upon common and accepted business definitions.

A great deal of effort and research is required to learn and model an industry. That knowledge must be integrated into a cohesive data model that is both conceptually accurate, practical and immediately applicable.

A successful enterprise data model can be immediately applied, modified, extended and utilized by the organization without significant modification.   The value of a third-party enterprise model to an organization should be immediately apparent and applicable.

This is both the challenge and value proposition of a best-practice enterprise data model.

## Extensible Across Related Industries

An industry that operates independently of other industries is rare.

The best-practice vertical-industry enterprise model can be directly integrated with the enterprise data models of related industry models upon common data.

This reflects an in-depth understanding of the industries and enables an organization to either implement their overall IT business strategy incrementally or move into new related industries with minimal effort or disruption to existing strategies and applications.

A good example is the evolving financial services industry.   A bank may move into brokerage or selling life insurance products via mergers, acquisitions or new product strategies.

The ADRM Retail Banking Enterprise Model integrates seamlessly with the ADRM Brokerage Enterprise Model and ADRM Life Insurance Enterprise Model.
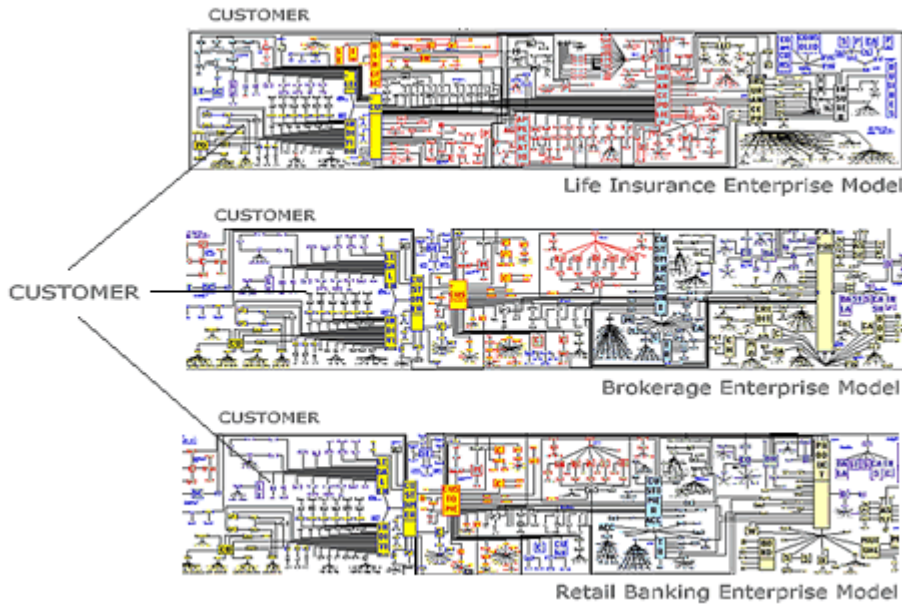
The ADRM 3G Wireless Enterprise Model integrates easily with the both the LEC/Long Distance and Internet/Data Services enterprise models.

This synergism between industries supports how companies must operate in the real-world to respond to competitive pressures and new opportunities.   The advantage of focusing upon a single industry confident that the effort can be leveraged in related industries is significant.

The respective enterprise models reflect the close functional relationships of each industry and the understanding of common underlying data resulting from detailed analysis and model building.

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Using enterprise data models for the merger or acquisition of two businesses is a natural application. When two major banks merged, ADRM banking models were used as the target for integrating their operations as well as data warehouse development.

An example of a merger of a bank and a brokerage firm would have the resulting capability to combine or share customers, which they should naturally be able to do. They could also share marketing and financial statement data structures as well as a variety of similar business data.

The brokerage transaction and financial product is different from the retail banking transaction and supporting products. The banking supporting applications such as checking and saving are different from the brokerage applications for equity purchases etc. To merge these two types of transactions would result in a single transaction that is unfocused, unwieldy and doesn't appear in any single application.   We can still share the data that we should share such as customer while separating the data such as industry transactions that would in practice be handled by separate application systems.

It is possible to merge industries upon common data and still keep them separate so the business can focus upon the differences at the level of detail required to drive each business.

Best-practice enterprise models built upon common data building blocks reflective of the real-world. That is how we do business and what our systems should reflect and incorporate.

Integrated Business Area Models
A typical ADRM enterprise model consists of 300 entities and 2,500 attributes plotted as a single 36"x 225" data model.

Each entity and attribute are fully-defined.

Each relationship is named so that the model 'tells the story' as you read the relationships between the entities.

From a graphic and content perspective, this represents a model that is simple in presentation but also represents a great deal of data and thought.

Yet it is only the starting point.

Each major 'subject area' in the enterprise model has additional information and detail that cannot be addressed completely in the enterprise data model due to lack of space and an inappropriate level of detail for the general audience.

That additional information is contained in one or more related business area models that are fully developed models of that business area such as INVENTORY, MARKETING, BBB, CUSTOMER.

Enterprise Model

Individual Customer

Legal Entity Customer

Order
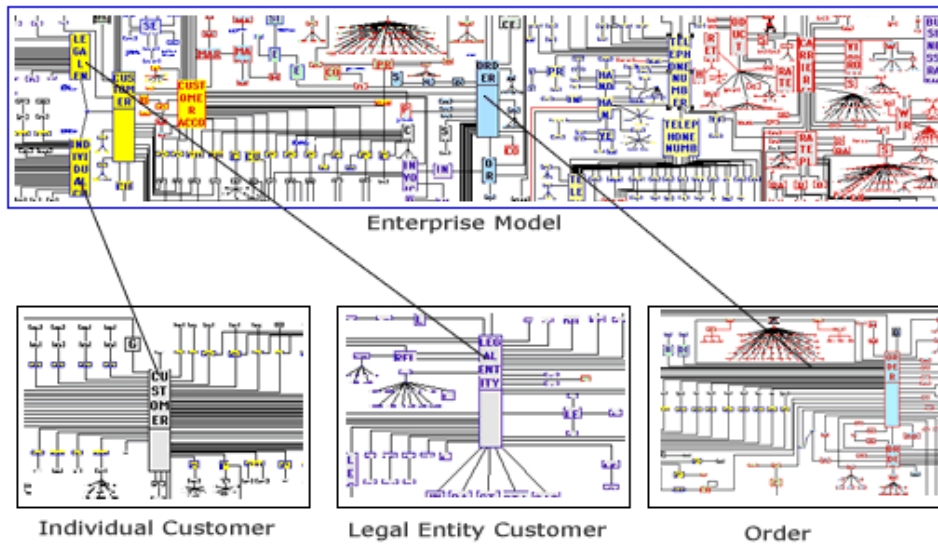
For example, the 'customer' entities in the enterprise model are the foundation for an expanded and more detailed analysis provided by two related business area models:

- Individual Customer
- Legal Entity Customer

At the higher level is the enterprise data model with a higher level of detail and in the lower-level business area model is the additional knowledge and content in terms of additional entities, attributes and supporting detail.

The business area models are also related to each other upon common

Customer Service

PRODUCT

Purchasing

Inventory

Marketing

Order
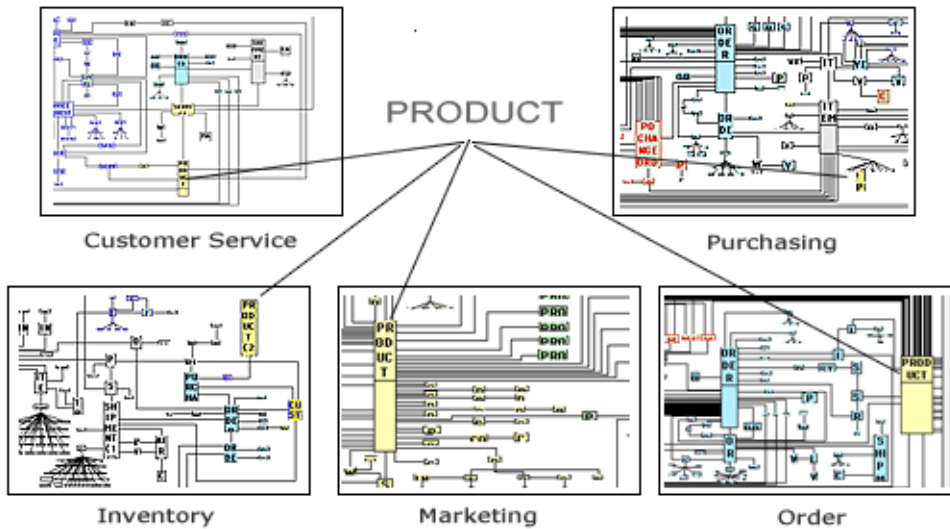
A 'customer' entity in one business area model should closely align with a 'customer' entity in a related business area.   You can conceive of them as being 'duplicates' except in practice there are minor attribute variations due to the specific focus of each respective business area.

A typical ADRM industry model solution suite ('Data Environment') consists of 20-25 integrated business area models in addition to the associated enterprise model.   Data Warehouse and Data Mart models are available and may be seamlessly integrated into the architecture.

Reflects Practical, Realworld Operations

Those that have participated in a number of enterprise data modeling projects will understand why it is of such importance to accurately reflect exactly what happens in an industry without applying artificially created entities.

It is very easy to sidestep difficult analytic issues, issues with which we have no experience or issues that are politically sensitive. This is an area where the enterprise data model can be become fatally flawed.

Data modelers, who are infrequently experienced industry experts are assigned the task to 'look everywhere in the company and throughout the industry for best practices' and to synthesis these into an enterprise model that reflects 'where the business is now as well as where it needs to be in the future'.   This usually must also be done in a finite timeframe while supporting a variety of tactical projects.

The analogy of driving full-speed into the future while looking into the rearview mirror for reference applies.   What is currently being done in-house is too frequently the only realistic reference point and the resulting effort too often is only a small iterative step forward.

The most efficient way to accomplish this objective to start with a best-practice industry enterprise data model with 15-20 business area models for additional industry knowledge, content and detail.   Now the effort can begin at an advanced stage with proven baseline content with which each team member is asked to contribute what they do best:

- Executives make decisions
- Data modelers edit, extend and build models
- Analysts and consultants provide research
- Development staff plan, prototype, design and develop

This is exactly how the best-practice enterprise model is intended to be used.   It immediately provides industry content and knowledge enabling users to be data model 'editors and users' and not data model 'developers'.

Everyone is placed in the position that is best-suited for their skills with a framework from which to work immediately and in parallel.

Reflects Current And Future Concepts

The best-practice vertical-industry enterprise model must reflect the best current industry concepts as well as look into the future and consider that industry and how it will look in 5-10 years.

Looking into the future is a challenge to anyone, but even more so when it involves millions of dollars, business organizations and the critical information of a business.

The telecommunications industry provides such a challenge.   When ADRM developed the 2G ('2nd Generation') Wireless enterprise model it also considered the pace of change and future directions for that industry.   ADRM also considered closely-related industries such as long distance, Internet and data services.

Consequently when those 'future' products and services became reality they were incorporated into the 2G Wireless Enterprise Model, which became the foundation for the subsequent 3G Wireless Enterprise Model.   Each subsequent model was able to incorporate data from its predecessor and from related industries as needed.   ADRM customers were able to apply related concepts and data directly into their existing 2G data architecture without significant modifications.

Keeping an eye on all the three telco industries that ADRM supports (LEC and Long Distance, Internet/Data Services and Wireless) enabled ADRM to proactively design models that could handle new services and product offerings. The resulting enterprise model provided real value to clients as they struggled to plan for both the current and future data environments in a industry where the 'future' is only a few years distant.

The management mandate is to build the future generation of systems for the business.   Those systems cannot ignore the existing data infrastructure nor can they fail to take into account industry developments and directions.

Fully-Attributed

The best-practice enterprise model must be fully-attributed to a degree that it provides a complete understanding of the model by a broad audience.   It must also provide a data platform for extending the data model by individual users with specific interests.

The best-practice enterprise model must provide a baseline data architecture upon which important activities can occur immediately and in parallel.

- Strategy
- Project planning
- Technical planning
- Analysis
- Additional model development
- Application design
- Development

Time to market and the ability to integrate the efforts of multiple parties with diverse needs is the foundation upon which the ROI of the best-practice enterprise model is initially measured.

With a fully-attributed enterprise model the stage is set for the business to take advantage of that best-practices foundation and edit or extend the model to meet specific requirements with a complete understanding of its contents.

Vague conceptual entities that are representations to be defined later will require additional work, resources and credibility problems.

Without sufficient attributes the amount of work required is simply too much for most organizations to complete. The result will be a model that does not deliver on the original promises.

Detailed Definitions

Detailed definitions are critical to the success of an enterprise data model.

An enterprise data model without definitions is of greatly reduced value. Ambiguity and lack of precision will result in a model that is not widely used or delayed while the definitions are defined.

Definitions are critical to convey the concepts and details inherent in an enterprise data model across an audience ranging from senior executives, technical staff to any member of the business wishing to understand its overall composition.

Detailed definitions are of even greater importance in industries where broad-knowledge is not readily available such as Life Insurance.

Example: Split Dollar Life Insurance

"A life insurance policy in which premiums, ownership rights and death benefits are split between an employer and the employee, or between a child and parent.

The employer pays the part of each years premium that at least *equals the increase in the cash value. The employee may pay the remainder of the premium or the employer may pay the entire premium. When the increase in cash value equals or exceeds the yearly premium, the employer pays the entire premium.*

If the employee dies while in the service of the employer, a beneficiary chosen by the employee then receives the difference between the face value and the amount paid to the employer, whichever is greater.

During employment, the employee share of the death benefit decreases. If the employee leaves the employer, the employer has the option of surrendering the policy to the employee in exchange for premiums paid or selling the policy to the employee for the amount of its cash value.

There are two types of Split Dollar Life Insurance Policies:

(1) Split Dollar Endowment - in which the employer owns all policy privileges. The employees only rights are to choose beneficiaries and to select the manner in which the death benefit is paid.

(2) Split Dollar Collateral - in which the employee owns the policy.

The employee pays premium contributions, which are viewed as a series of interest-free loans, equal to the yearly increase in the cash value of the policy.

The employee assigns the policy to the employer as collateral for these loans. When the employee dies, then the loans are paid from the face value of the policy. The beneficiary receives and remaining proceeds."

An enterprise data model with true industry content requires detailed, accurate definitions otherwise the model is inherently trivial. Without a definition for each entity and attribute, you have only been given a part of the solution.

Definitions are key because we are planning and establishing a corporate metadata reference point that will be used to:

- Plan new systems and applications
- Migrate legacy applications
- Cleanse and load disparate data to common applications (ETL)
- Provide a common language between business and technical users

Definitions should be maintained within a CASE tool or repository from which they can be easily modified, shared and printed as reports.

Integrates Industry-Standard Data

The enterprise data model should be a balance of conceptual entities and functional entities based upon real, readily-available industry-standard data.

Conceptual entities are internally-defined entities that will take on the data values defined by the business. We usually know what they mean but have perhaps not worked out the exact values to represent the rows of the table in any application.

Examples of conceptual entities:

Marital Status

Product Status

Customer Type

Functional entities are entities for which there is already well-defined, industry-standard data to populate the tables and refer to.

Examples of functional entities:

FICO Score

SIC Category

D&B Paydex Rating

D&B Composite Credit Rating

Functional entities anchor the enterprise data model with industry-standard data and ground it firmly in reality. This is data that can be applied immediately and can often be purchased with additional services.

Entities that cannot be populated easily are of questionable real value.

The enterprise model is not an end in itself.   The purpose of an enterprise model is ultimately to provide an architectural foundation upon which to build applications.   Real industry-standard data is one of the most solid data pillars upon which to build.


Large-Format Graphic Representation

Humans are visual learners.   Experience has taught us that users understand a data model most easily when it is presented in a large, easy-to-view format

A typical ADRM industry enterprise data model is delivered as a single-page plotted, color model 36"x225" in length.

This initially seems like an overwhelming amount of information to understand.   However, when you traverse the model from left to right it becomes immediately apparent that this large model is nothing more than many small things linked together in a logical manner.

It also becomes apparent that each component of data is important to the enterprise in some way and removing it from the enterprise model would result in a lack of important information required by the business.
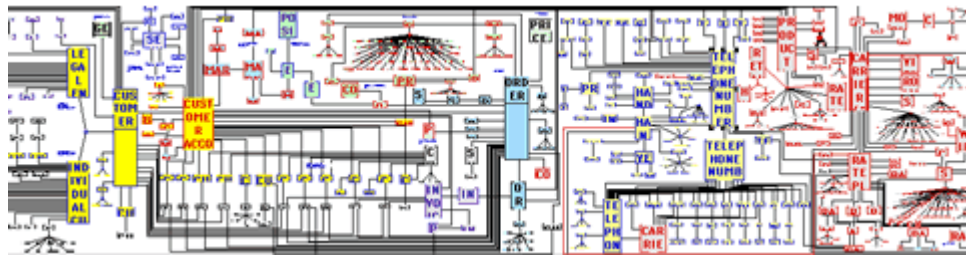
Wireless Enterprise Model ("36x250")

The physical size of the enterprise data model emphasizes several key points:

       (1) There is a lot of data that must be considered

       (2) Most of that data is needed and the model suffers without it

       (3) The single-page model format is the easiest to understand

       (4) Sub-schemas can easily be created and used

       (5) Related entities are located as closely together as possible

Graphic positioning of related entities is very important.   Users expect related data to be physically located nearby.   A well-conceived enterprise model reflects this level of design.

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The audience of the enterprise data model will use it to a degree corresponding to its easy of use and the value of information provided by the model.   The graphic presentation and level of detail reveals the quality of thought inherent in the data model.   A poor enterprise data model is soon revealed.

Color entities make it easier to grasp 'subjects' when viewing the enterprise model. Colors may changed and used for other purposes such as depicting project responsibilities, current vs. future data, packaged application vs. custom application responsibilities.

The named relationships between the entities tell the story of the business:

> 'CUSTOMER places ORDER'
> 'ORDER is placed by CUSTOMER'
> 'ORDER is delivered via CHANNEL'

Users can 'read' the enterprise model between related entities and see how data is related.   It provides both a visual and verbal means for non-technical team members to analyze and critique the data model for accuracy and applicability.

A best-practice enterprise model leaves little place to hide.   By its definition the best-practice enterprise model is intended to be immediately applicable and provide immediate value.

Supports A Wide Audience

The best-practice enterprise should bring value to the widest audience possible - executives, technical staff, HR, analysts as well as anyone interested in learning about the business.

With a suitable explanation, the enterprise model modified for the specific organization should have value in the boardroom ("The blue products are supplied by our Taiwan subsidiary'"), in the HR department ("This is how our business is structured") and in application groups ("We will define our customers consistently across the organization based upon the CUSTOMER business area model").

Everyone in a corporation should be able to understand what the business does as reflected in the enterprise data model, which is simply a 'data picture' of that business. The newest clerk as well as the most senior board member should be able to understand the business from a functional or data perspective.

If we do not have agreement on the basics of how the business functions such as customers and products, then we have serious problems.

The basic three-legs that support most businesses are ORDER/TRANSACTION + CUSTOMER + PRODUCT.

If these three areas are well-defined we can integrate all the supporting detail such as channels, marketing campaigns, marketing events, inventory etc.   If these three areas are not well-defined then addressing the supporting data will not solve the underlying problems of the business.

Every business started simply.   It sold things or provided services to customers. Those things were delivered to the customer and the money was recorded and then use by the business. Over time the business may have become more complex but the business is still essentially a simple entity that has grown in complexity. This is due to various applications that were not planned or integrated, differing views by people involved in the business, government regulations and inconsistent or poorly-conceived data.

From an IT perspective it is most often the multiple systems that were purchased or implemented that each had a slightly different view of underlying functional data that contribute to the internal Tower of Babel that causes internal gridlock and inconsistent data.

The resulting costs to bend, blend, integrate and report data is the underlying source of major costs for every IT organization.

We know how this happens but we also know how to solve it.

It is solved by having a clear road-map of how things should look from here forward, insisting that those standards be implemented and adhered to, by migrating legacy applications in the same direction over time and by using ETL tools to bend and straighten data as it moves between applications in the meantime.

It is solved with actively engaged management that understands the value of a data architecture to build within and the importance of maintaining, documenting and working within that architecture.

By extending the audience of the enterprise model throughout the business, we empower the organization at all levels to improve things and work together.

<u>Easily Modified and Extendible</u>
The best-practice enterprise data model must be capable of being easily edited, modified and extended to incorporate new requirements.

It must be easily understood, unambiguous and comprehensive so that additional development can proceed quickly and efficiently without drastically reworking the model.

The format that it is developed in and the style of data modeling must be such that it is easy to understand, work with and modify.

The enterprise model and related business area models, data warehouse model and data mart models must adopt a common design or 'look and feel' that can be easily replicated.

An enterprise model that has a single artificial entity such as 'BUSINESS PARTNER', whose definition references "customer, supplier, channel and subsidiary and any related party…" does not provide the focus and clarity of a model that specifically defines each of these entities and relates them to relevant entities to support their functions.   Conceptual entities eventually result in confusion and additional work to address specific requirements.

One may be conceptually correct at a high level but the other provides value to a wide audience of practical interests.   One is conceptually interesting and the other brings specific value to planners, developers and DBA's.

The best-practice enterprise model relates to all levels of users in a practical way.

The acid test for an enterprise model or any other model must be the working DBA's and application developers.   If the DBA's and application groups review the enterprise model and see 'tables and columns' that bring them value in their application building, analysis and data administration you have succeeded with the most demanding audience.

This is the audience responsible for doing the real work in the organization and the audience that will disregard the enterprise data model if it does provide real value.

Artificial Concepts Eliminated

This should be obvious.   However, in practice it is a common problem.

Performing analysis on a business involves industry research, internal interviews and the synthesis of data into a cohesive, consistent model.   Too frequently the simplest way to address a difficult problem is with a conceptual approach that does not reflect the real-world.   This may work at the highest levels of discussion but fails completely when it meets its most serious interrogators: DBA's and developers.

Probably the most frequently mentioned criteria for success is 'customer' and the mandate to 'know our customers in every way possible'.   It doesn't seem too difficult on the surface since we all think we know what a customer is.   In practice, there are many questions to ask and decisions to make, which have a tendency to paralyze the process with indecision.

Obviously, we have individual customers that purchase from us.   We also have legal entities such as corporation, government organization, schools and so on that may purchase products, goods or services.   These two are pretty straight forward. Each requires a different set of attributes that can be analyzed separately and then combined into a single table.   However, the business team will soon discover a seemingly endless number of gray areas or anomalies that they will want to capture data about and report.

> - How do we handle internal sales between business units?
> - How do we handle employee direct vs. indirect purchases?
> - How do we record subsidiary purchases via an indirect channel?

The tendency may be to roll-up all of these plus more into an artificially-created entity named 'SALES PARTY', where the definition encompasses each and every anomaly presented.   This is a clever way of generalizing the specifics at a considerable cost to DBA's, developers and analysts that need to work with the data.   We know there will be no SALES PARTNER master.   It will never be created because it would be too large, unwieldy and impractically weighted with business rules that are difficult to maintain.

Artificial entities are clear indications that the enterprise data model is becoming too conceptual. Conceptual entities are problems because they must be resolved later by additional analysis work before the enterprise model can be applied to its true potential.   That analysis work may indicate fatal flaws or inconsistencies in the enterprise model that negates the work done to date.

By leaving too much work for others that should be resolved in the enterprise model, the credibility and value of the enterprise model is questioned.   If people don't believe in the model as a tool that is accurate and makes their jobs easier, it will not be used.

Semantically Clear
The best-practice enterprise data model must be semantically clear.

Each entity and attribute should be named as clearly as possible so that viewers intuitively understand their meaning and intent.

A model that is clear and industry-applicable will be used. A model that is not intuitive, does not reflect the real-world and uses terms that are alien to viewers will be disregarded as too conceptual or within the province of people that 'don't build applications'.

Semantic clarity is the first acid-test of an enterprise data model.   If it makes no initial practical sense it will have a greatly-reduced chance of being taken seriously and utilized widely.

Logically Correct But Not Rigid
The best-practice enterprise model must be logically correct but not rigid. The objective is to clearly and accurately convey industry knowledge and content to the broadest audience and provide value to each.

The ADRM enterprise models apply some basic rules-of-thumb:

- Third-Normal Form (3NF)
- Primary keys defined
- Foreign keys optionally displayed
- Fully-attributed
- Complete definitions
- Many:many relationships resolved
- Named Relationships

The enterprise model need not be rigid beyond these characteristics.

If analysis of the industry presents substantial derived data that would benefit the organization then it may be included with the caveat that it is derived and useful within that context.

ADRM sometimes implements the subtype capability of CASE tools to display the actual values intended for an entity.   This is done because experience has shown that users will grasp the meaning of that entity more easily when they see the values visually displayed beneath.   Getting the users to locate and delve into the report definitions or CASE tool for each entity and definition is usually a different matter.   For many users, you are asking them to learn both a new software tool and an unfamiliar terminology just to extract some basic meaning. It is equally unlikely to expect users to read through voluminous reports. It is a simple exercise to delete these 'subtypes' when they are no longer useful or you plan to generate DDL

For example, FAMILY LIFE CYCLEs are accepted ways of defining individual customers throughout their lifetimes.   We could present the single entity FAMILY LIFE CYCLE related to INDIVIDUAL CUSTOMER.   Instead ADRM graphically 'subtypes' FAMILY LIFE CYCLE with the nine discrete values and detailed definitions that are used to potentially define a family life cycle.

> FAMILY LIFE CYCLE
> Bachelor Stage
> Newly Married Couples
> Full Nest I
> Full Nest II
> Full Nest III
> Empty Nest I
> Empty Nest II
> Solitary Survivor In Labor Force
> Solitary Survivor Retired

This is done to bring focus and clarity to the enterprise model and convey an immediate understanding of what FAMILY LIFE CYCLE means.   It is a style that our users like and find very valuable.

ADRM models provide as much information directly and visibly on the model as possible.

The focus is transfer of knowledge and establishing a practical framework for additional understanding and model development.

Starting with a best-practice vertical-industry enterprise data model makes a lot of sense.

(1) It is available immediately.

(2) There is no need for yet another architecture project.

(3) Its applicability can be determined quickly.

(4) The cost of the enterprise model is known.

(5) The match between the model philosophy and yours is easy to determine.

(6) Any gaps in the enterprise model and their costs can be estimated.

(7) Business area models provide an accurate reflection of how much value can be derived from the entire model suite.

(8) The value of individual parts of the model(s) can be determined in regard to their application to projects.

(9) The enterprise model for a specific industry can immediately be compared relative to other industry models should the organization be considering new industry initiatives.

Limited risk, predictable costs and the end-product available for immediate review is a combination not often seen in the IT industry.

For those looking to establish a corporate architecture, build new applications, migrate existing applications or provide a roadmap for ETL activities, it is a combination too compelling not to investigate.

About Larry Heinrich

Larry Heinrich is founder and president of ADRM.   He holds various degrees in Mathematics and Computer Science.   Since 1972, he has held a variety of positions including missile systems simulation and design (Raytheon), operating system development (Honeywell), military communications systems (GTE Sylvania), radar systems (MIT Lincoln Labs), procurement and shipping (Bechtel), banking applications (Bank of America), oil field mathematical modeling (Standard Oil), semiconductor manufacturing (Intel), product development, marketing and manufacturing (Apple Computer/Claris).

About ADRM Software

ADRM Software, Inc. specializes in clearly defining the information requirements of world-class organizations in a variety of industries and architecting intellectual property based products to help organizations in those industries more effectively capitalize upon their information assets and opportunities.

More information about ADRM can be found on the web at www.adrm.com.