Retail Data Warehouse (RDW)

General Information Manual

IBM

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Retail Data Warehouse - Executive Summary

The Retail Data Warehouse

The IBM Information FrameWork (IFW) and IBM Retail Data Warehouse (RDW) accelerate development and mitigate risks associated with enterprise data management, data warehousing and Business Intelligence application development.

RDW is a data management toolkit with detailed industry content covering the full spectrum of the retail sector. The data warehouse enables retailers to exploit the potential of detailed information previously locked in legacy systems or summarized in distributed data marts and hence inaccessible to the business user.

The RDW encourages retailers to adopt a business-focused approach to transforming into an On-demand business when building Business Intelligence and data management solutions and incorporates IBM's implementation experiences gained at hundreds of such engagements. RDW is currently in use by several retailers, large and small around the world.

The Retail Market

The enormous challenges facing retailers in today's economic climate is so complex, that only those enterprises who have business agility gained by confident and focused decision support can effectively compete. Today's retailer needs analytical visibility in many critical areas of their enterprise, like:

- Customer Segmentation and Management
- Product and Service Management
- Merchandising
- Store Operations
- Multi-Channel Replenishment
- Supply Chain Analytics
- Staff Productivity
- Budgeting and Forecasting

Overall, the retail industry is turning to a more customer-centric strategy that focuses on how to transform their businesses and differentiate them so as to attract customers, and instill loyalty to their brand. It is a known fact that it costs 5 times as much to acquire new customers as it does to retain existing customers.

To do so, they need to better leverage the data that they collect about their customers and transform their supply chains in order to put the right products in the right place at the right time is critical — so that consumers get those products when, and where, they want. Retailers must empower their home office and store employee teams by giving them the tools they need to do their jobs more effectively. And they must optimize their existing infrastructures to deploy innovation quickly, cost-effectively and securely. To meet these challenges, retailers need to fully analyze the data generated by their businesses and external data made available by government, industry experts, the media, and surveys.

Unfortunately, all this data is diverse, complex, and is not available in a form which clearly indicates trends, patterns, or other forms of analysis which support the decisions which are required to drive the business, confidently. In short it lacks business intelligence. Implementing the RDW can alleviate these problems.

Uses of the RDW

- **Common Customer View.** Integrating customer identifiers, organizational structures and account hierarchies across lines of business and functions

- **Product Lifecycle Management.** Integrating product management and performance measurement across lines of business and functions in merchandising planning and category management.
- **Campaign Performance Management.** Improving program planning and tracking of sales and marketing activities and performance metrics across channels and touch points
- **Analytical Customer Relationship Management.** Integrating Customer Segmentation, Data Mining, Online Analytical Processing (OLAP) and Campaign Management in Closed-loop CRM
- **Data Warehouse and Data Mart Consolidation.** Re-engineering legacy data warehouse and BI infrastructure consolidating data repositories and analytical reporting requirements
- **Other Data Management Solutions.** Establishing data architectures for Enterprise Application Integration (EAI), Service Oriented Architectures (SOA) and other near real-time data analysis (e.g., operational data stores for fraud management).
- **Channel Effectiveness.** Defining the metrics associated to the means by which a product is merchandised to a customer in the most successful and cost effective manner.

Data Integration and BI Self Service

The RDW is designed with data integration and change management at their core. Retailers who implement data models biased towards their existing source systems and BI requirements typically fail to integrate the data and make query development much more difficult for IT as well as business end users.

RDW enables retailers to create BI self-service models that clearly separate the responsibility for data integration from the responsibility for business analytics. RDW enables IT departments to take the lead in maintaining the integration of volatile source data with the RDWM. This enables the Lines of Business to focus on defining analytical requirements, priorities and designs.

Re-engineering

RDW also offers an iterative, project-by-project approach for re-engineering an existing data warehouse or other core applications based on cost/benefit analysis that assures a phased procession of low-risk, high-return projects well aligned with business priorities.

Business Advantages of the RDW

A data warehouse designed with RDW will enable retailers to not only respond positively to the pressures they face but actually translate these pressures into business advantage. There are several areas of business advantage that can be leveraged by the construction of an RDW-based data warehouse:

- **Customer Segmentation** - who shops in my store and how do I bring more of my best customers into my store?
- **Store Segmentation** - what store profile sells what merchandise, impacting LOMO assortment
- **Market Basket Analysis** - What do they buy, affinity item impact, and how can I increase my transaction size?
- **Promotion Targeting** - targeting promotions to customers based on behavior. Who responds to offers, and how can I increase closure rate?
- **Replenishment** - What is my optimum inventory productivity, how can I reduce my out of stocks and prevent costly inventory overages?
- **Store Formatting** - What sells with what, how can I up-sell my customer?

Data Warehousing with RDW

Building a Data Warehouse

If the benefits of business transformation through improved data management are to be achieved, a comprehensive specification of the organization's data and analytical requirements is required. In fact, the data and solutions models should be independent of the volatile core data architecture and current analytical reporting requirements. Designing and implementing such data and solution models can be a complex process and many organizations may not have the appropriate skills available in-house. The best practice solution is to leverage the data and solution model templates from 3rd parties reducing project risk, cost and time-to-implementation.

The RDW enables retailers to build data warehouse solutions to suit their specific needs. RDW includes all of the key components required for a data warehousing solution.

RDW comprises a flexible and scalable data warehouse infrastructure, enabling retailers to build both comprehensive enterprise data warehouses as well as departmental data marts through rapid, phased development. RDW unleashes data management solutions with high business value by enabling retailers to initially focus on business areas offering the greatest returns and technical feasibility. This approach assures that parallel (or subsequent) projects will be aligned with a single, proven data architecture.

RDW Solution Architecture

Data warehousing and Business Intelligence solutions have two basic assumptions: 1) that line of business and functional users have a set of analytical reporting requirements to fulfill and 2) that a set of data is available to draw the information from.

These two assumptions represent two divergent approaches to define project scope. The first is a "top-down" business-oriented approach, while the second is a "bottom-up" data driven approach. Best Practice is to employ a combined approach and a gap analysis to determine the final project scope as well as 1) instances where there is no data to satisfy specific business requirements and 2) instances where there are no identified business use cases for certain data sets in the source systems.
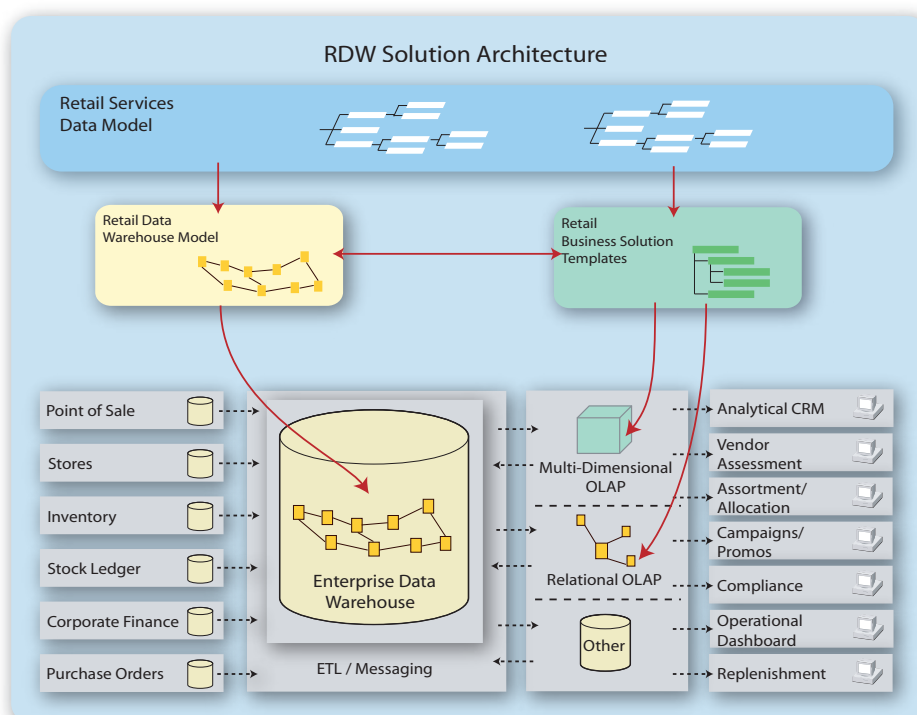
RDW Components

The RDW is composed of 3 components which assist with analytical BI: The Retail Data Warehouse Model (RDWM), the Retail Services Data Model (RSDM) and the RDW Business Solution Templates (RBSTs).

Retail Services Data Model

The RSDM is an enterprise Information Framework. It is a customizable hierarchy of business terms and definitions that provides a direct link between analytical requirements, data concepts and a retailer's core environment. The content and usage of the RSDM are described in detail in the Retail Services Data Model section.

Retail Data Warehouse Model

The RDWM provides a highly normalized and generic, enterprise entity relationship diagram (i.e., ERD) for a variety of retail data management solutions. Comprising over 670 entities and 3200 attributes it forms the blueprint for implementing a data warehouse. The RDWM supports rapid, phased implementation of data management solutions with a well defined, proven data model. The content and customization of the RDWM are described in detail in the Retail Data Warehouse Model section.

Retail Business Solution Templates

The RBSTs consist of 40 best practice business scorecards grouped by reporting area. RBSTs provide immediate benefits to a Business Intelligence initiative in two ways. First, they provide a proven means for gathering business requirements through customizing a range of predefined OLAP models. Second, once customized, the modified RBSTs then provide design templates for the physical generation of MOLAP cubes and ROLAP reports. RBSTs enable business users to more efficiently manage the scope and design of a data warehousing development or re-engineering project. The content and usage of RBSTs are described in detail in the Retail Business Solution Templates section.

RDW Customization

- Use the RBSTs to interview the lines of business and gather business requirements. This provides a "top-down" project scope based on overlapping business requirements. (i.e., many requirements refer to the same set of measures and dimensions).
- Use the RSDM to profile candidate source systems in order to define the data scope.
- Perform a gap analysis between the data scope and business scope to determine overall feasibility and the reduced project scope. Then instead of data modeling, we customize the RDWM System of Record and summary tables based on the reduced project scope. This is the initial guide for ETL design.
- Use the customized RBSTs to design MOLAP cubes and dependent ROLAP reports.
- The ETL programmers will continue to refine the RDWM System of Record model during ETL design and testing by adding additional subtypes and attributes. The highly normalized nature of the RDWM allows for this type of parallel ETL development without breaking other ETL processes and BI applications under development.

The Retail Business Solution Templates

RDW Solution Architecture
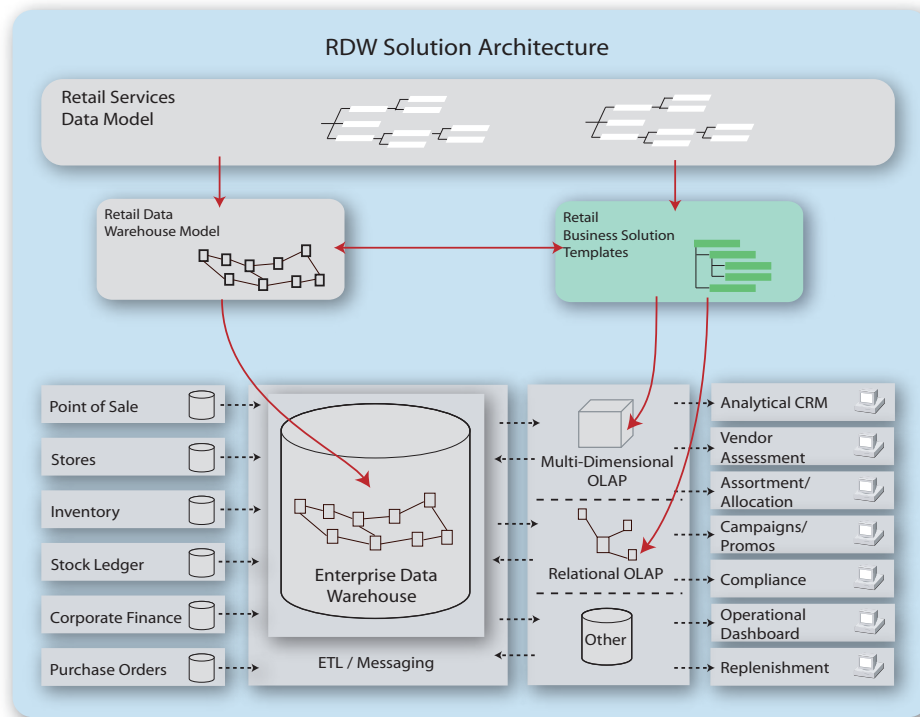
What are the Retail Business Solution Templates?

The IBM Retail Data Warehouse incorporates a set of pre-design Business Intelligence solutions called Retail Business Solution Templates (TBST's) that enables business managers to quickly and easily specify analytical reporting requirements. Each RBST consists of a series of measures and dimensions. A measure is an item that business users wish to track, for example: Number of Customers or Profitability. A dimension is something by which users want to sub-divide or sub-categorize measures (e.g., Number of Customers by Customer Segment).

The RBST's provide the framework to rapidly define and deliver high value Business Intelligence applications. Business users can easily work with RBST's to specify their own analytical reporting requirements. Prototype OLAP applications can then be generated automatically based on the customized RBSTs.

Because the RBST's are mapped to the Retail Data Warehouse Model, the scoping performed by business users will also be reflected in the RDWM, enabling rapid scoping of the data warehouse based on business user requirements.

The following diagram shows an example of the "Store Optimization Analysis" RBST.
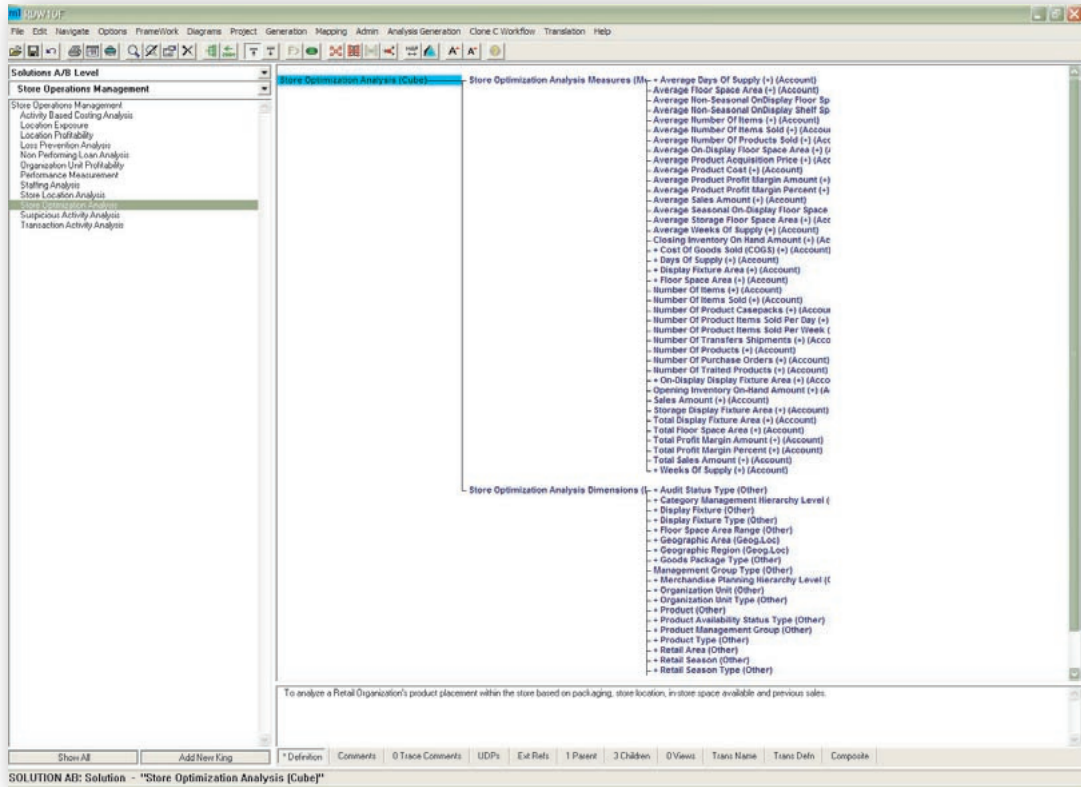
Using RBST's it is possible to easily generate prototype platform-specific physical MOLAP data mart designs. Once these marts have been populated from the data warehouse it is then possible to create a range of ROLAP reports. Here are some examples of the type of reports possible:

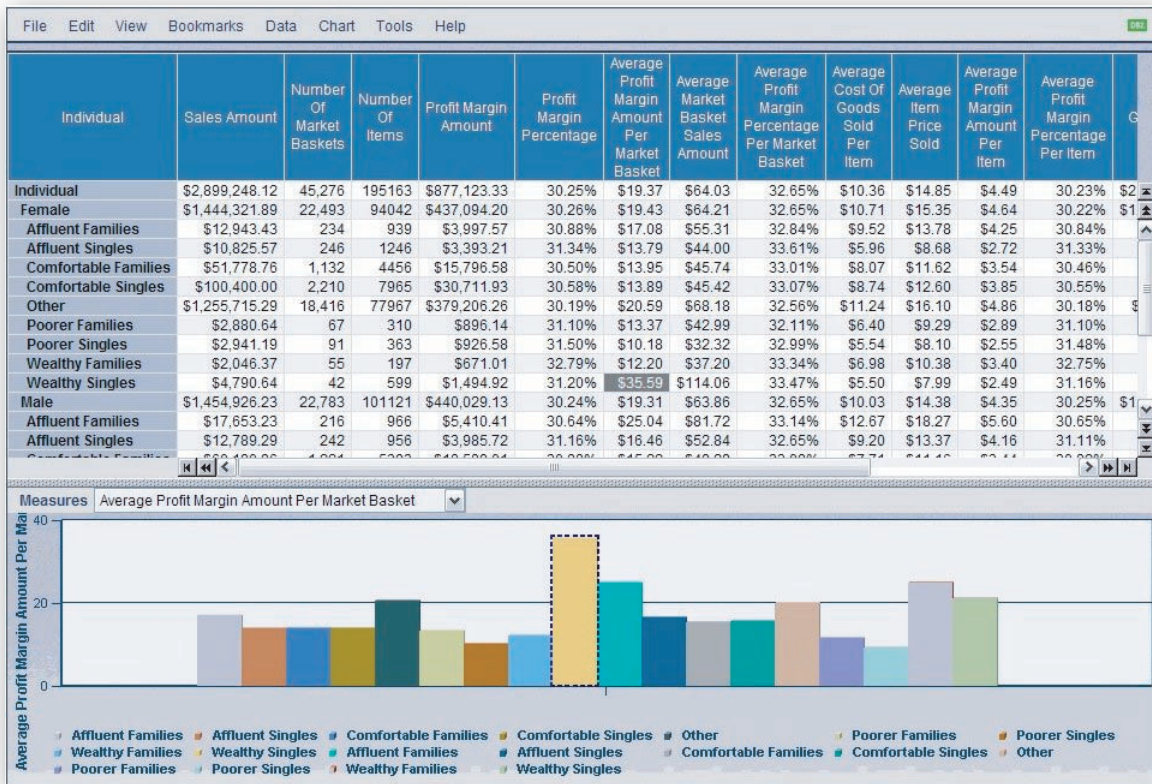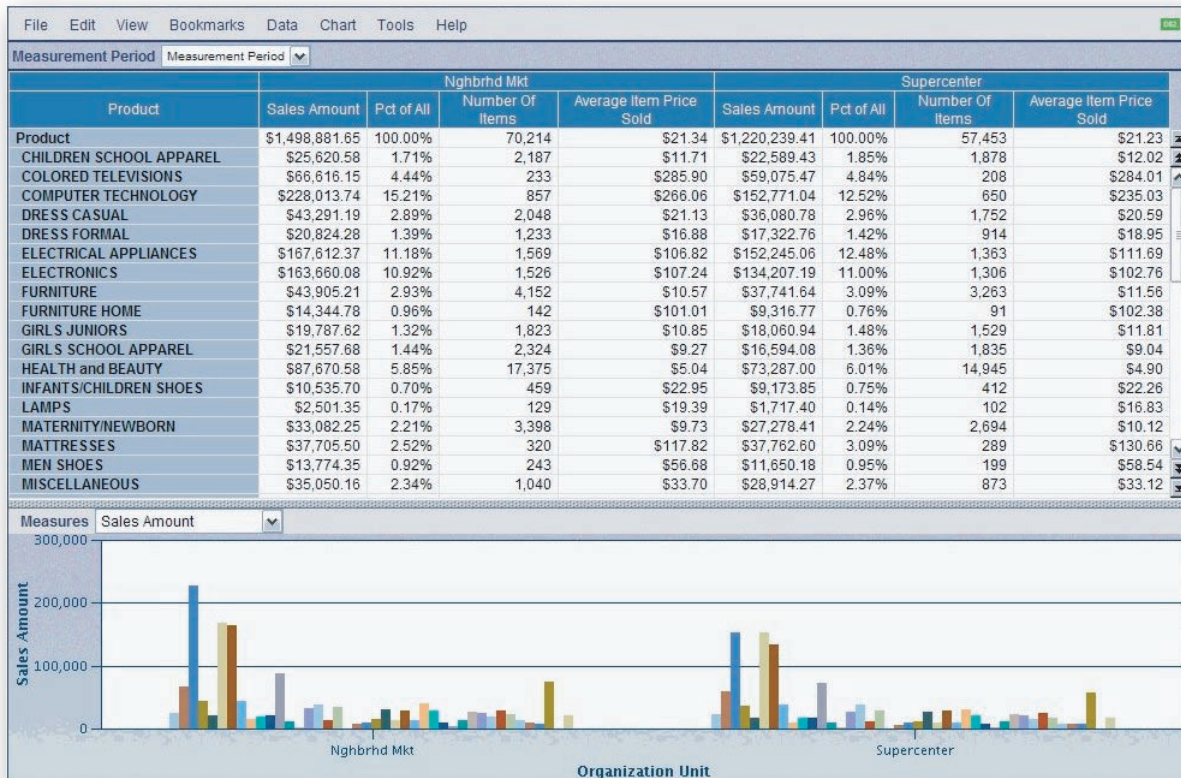| Product	Measurement Period	Total Sales				Marketbaskets				
		Number Of Items	Sales Amount	Profit Margin Amount	Average Item Price Sold	Average Number Of Items Per Market Basket	Average Item Price Sold Per Market Basket	High Item Price Sold	Low Item Price Sold	Average Profit Margin Amount Per Market Basket
Product	2004	70,006	$1,060,009.03	$320,999.74	$15.14	4.2	$15.15	$2,618.46	$0.16	$19.27
	2003	64,213	$911,930.92	$276,414.17	$14.20	4.3	$14.22	$2,313.38	$0.16	$18.54
	Difference	+5,793.00	+148,078.11	+44,585.57	+0.94	-0.10	+0.93	+305.08	+0.00	+0.73
CHILDREN SCHOOL APPAREL	2004	1,444	$16,750.59	$5,207.35	$11.60	3.72	$11.60	$107.43	$1.49	$13.42
	2003	1,379	$16,306.69	$5,057.68	$11.82	3.7	$11.85	$92.17	$0.89	$13.59
	Difference	+65.00	+443.90	+149.67	-0.22	+0.02	-0.24	+15.26	+0.60	-0.17
COLORED TELEVISIONS	2004	178	$51,137.22	$13,369.30	$287.28	1	$288.91	$925.23	$17.10	$75.53
	2003	131	$36,847.07	$9,622.02	$281.27	1.06	$282.60	$907.43	$17.10	$78.22
	Difference	+47.00	+14,290.15	+3,747.28	+6.01	-0.06	+6.31	+17.80	+0.00	-2.69
COMPUTER TECHNOLOGY	2004	529	$141,420.16	$44,135.22	$267.33	3	$267.84	$2,618.46	$1.36	$250.76
	2003	458	$102,758.56	$31,762.39	$224.36	3.03	$224.59	$2,313.38	$2.31	$210.34
	Difference	+71.00	+38,661.60	+12,372.83	+42.97	-0.03	+43.25	+305.08	-0.95	+40.42
DRESS CASUAL	2004	1,362	$26,600.87	$8,258.69	$19.53	1.94	$19.59	$215.23	$0.87	$11.79
	2003	1,281	$26,664.93	$8,270.42	$20.81	1.95	$20.87	$485.67	$0.86	$12.62
	Difference	+81.00	-64.06	-11.73	-1.28	-0.01	-1.28	-270.44	+0.01	-0.83
DRESS FORMAL	2004	753	$14,378.57	$5,030.39	$19.09	1.92	$19.15	$159.98	$0.50	$12.86
	2003	598	$10,249.72	$3,582.66	$17.14	1.81	$17.21	$180.99	$1.72	$10.88
	Difference	+155.00	+4,128.85	+1,447.73	+1.95	+0.11	+1.94	-21.01	-1.22	+1.98
ELECTRICAL APPLIANCES	2004	1,080	$120,276.75	$31,218.10	$111.36	1.26	$111.38	$754.23	$1.72	$36.42
	2003	974	$96,639.20	$25,184.54	$99.21	1.28	$99.73	$747.27	$2.59	$33.26
	Difference	+106.00	+23,637.55	+6,033.56	+12.15	-0.02	+11.65	+6.96	-0.87	+3.16
ELECTRONICS	2004	1,022	$104,050.05	$27,093.12	$101.81	1.19	$102.26	$1,067.60	$0.63	$31.68
	2003	937	$96,865.85	$25,219.82	$103.37	1.26	$103.47	$1,690.50	$1.54	$33.94
	Difference	+85.00	+7,184.20	+1,873.30	-1.56	-0.07	-1.21	-622.90	-0.91	-2.26
FURNITURE	2004	2,841	$31,944.45	$9,885.90	$11.24	3.93	$11.26	$1,177.32	$0.85	$13.69
	2003	2,385	$25,965.04	$8,062.16	$10.88	3.66	$10.90	$608.52	$0.85	$12.38
	Difference	+456.00	+5,979.41	+1,823.74	+0.36	+0.27	+0.36	+568.80	+0.00	+1.31
FURNITURE HOME	2004	104	$10,739.10	$3,295.37	$103.26	2.97	$103.31	$697.94	$52.19	$94.15
	2003	49	$5,058.83	$1,585.58	$103.24	1.88	$103.49	$538.61	$9.95	$60.98
	Difference	+55.00	+5,680.27	+1,709.79	+0.02	+1.09	-0.18	+159.33	+42.24	+33.17
GIRLS JUNIORS	2004	1,124	$13,487.57	$4,200.21	$11.99	2.41	$12.03	$983.30	$0.89	$9.03

Company Performance Report Summary

Demographic Profile to Marketbasket

Individual	Sales Amount	Number Of Market Baskets	Number Of Items	Profit Margin Amount	Profit Margin Percentage	Average Profit Margin Amount Per Market Basket	Average Market Basket Sales Amount	Average Profit Margin Percentage Per Market Basket	Average Cost Of Goods Sold Per Item	Average Item Price Sold	Average Profit Margin Amount Per Item	Average Profit Margin Percentage Per Item	G
Individual	$2,899,248.12	45,276	195163	$877,123.33	30.25%	$19.37	$64.03	32.65%	$10.36	$14.85	$4.49	30.23%	$2
Female	$1,444,321.89	22,493	94042	$437,094.20	30.26%	$19.43	$64.21	32.65%	$10.71	$15.35	$4.64	30.22%	$1
Affluent Families	$12,943.43	234	939	$3,997.57	30.88%	$17.08	$55.31	32.84%	$9.52	$13.78	$4.25	30.84%	
Affluent Singles	$10,825.57	246	1246	$3,393.21	31.34%	$13.79	$44.00	33.61%	$5.96	$8.68	$2.72	31.33%	
Comfortable Families	$51,778.76	1,132	4456	$15,796.58	30.50%	$13.95	$45.74	33.01%	$8.07	$11.62	$3.54	30.46%	
Comfortable Singles	$100,400.00	2,210	7965	$30,711.93	30.58%	$13.89	$45.42	33.07%	$8.74	$12.60	$3.85	30.55%	
Other	$1,255,715.29	18,416	77967	$379,206.26	30.19%	$20.59	$68.18	32.56%	$11.24	$16.10	$4.86	30.18%	$
Poorer Families	$2,880.64	67	310	$896.14	31.10%	$13.37	$42.99	32.11%	$6.40	$9.29	$2.89	31.10%	
Poorer Singles	$2,941.19	91	363	$926.58	31.50%	$10.18	$32.32	32.99%	$5.54	$8.10	$2.55	31.48%	
Wealthy Families	$2,046.37	55	197	$671.01	32.79%	$12.20	$37.20	33.34%	$6.98	$10.38	$3.40	32.75%	
Wealthy Singles	$4,790.64	42	599	$1,494.92	31.20%	$35.59	$114.06	33.47%	$5.50	$7.99	$2.49	31.16%	
Male	$1,454,926.23	22,783	101121	$440,029.13	30.24%	$19.31	$63.86	32.65%	$10.03	$14.38	$4.35	30.25%	$1
Affluent Families	$17,653.23	216	966	$5,410.41	30.64%	$25.04	$81.72	33.14%	$12.67	$18.27	$5.60	30.65%	
Affluent Singles	$12,789.29	242	956	$3,985.72	31.16%	$16.46	$52.84	32.65%	$9.20	$13.37	$4.16	31.11%	

Measures: Average Profit Margin Amount Per Market Basket

Legend: Affluent Families, Affluent Singles, Comfortable Families, Comfortable Singles, Other, Poorer Families, Poorer Singles, Wealthy Families, Wealthy Singles, Affluent Families, Affluent Singles, Comfortable Families, Comfortable Singles, Other, Poorer Families, Poorer Singles, Wealthy Families, Wealthy Singles

Demographic Profile to Marketbasket

Measurement Period

Product	Nghbrhd Mkt				Supercenter			
	Sales Amount	Pct of All	Number Of Items	Average Item Price Sold	Sales Amount	Pct of All	Number Of Items	Average Item Price Sold
Product	$1,498,881.65	100.00%	70,214	$21.34	$1,220,239.41	100.00%	57,453	$21.23
CHILDREN SCHOOL APPAREL	$25,620.58	1.71%	2,187	$11.71	$22,589.43	1.85%	1,878	$12.02
COLORED TELEVISIONS	$66,616.15	4.44%	233	$285.90	$59,075.47	4.84%	208	$284.01
COMPUTER TECHNOLOGY	$228,013.74	15.21%	857	$266.06	$152,771.04	12.52%	650	$235.03
DRESS CASUAL	$43,291.19	2.89%	2,048	$21.13	$36,080.78	2.96%	1,752	$20.59
DRESS FORMAL	$20,824.28	1.39%	1,233	$16.88	$17,322.76	1.42%	914	$18.95
ELECTRICAL APPLIANCES	$167,612.37	11.18%	1,569	$106.82	$152,245.06	12.48%	1,363	$111.69
ELECTRONICS	$163,660.08	10.92%	1,526	$107.24	$134,207.19	11.00%	1,306	$102.76
FURNITURE	$43,905.21	2.93%	4,152	$10.57	$37,741.64	3.09%	3,263	$11.56
FURNITURE HOME	$14,344.78	0.96%	142	$101.01	$9,316.77	0.76%	91	$102.38
GIRLS JUNIORS	$19,787.62	1.32%	1,823	$10.85	$18,060.94	1.48%	1,529	$11.81
GIRLS SCHOOL APPAREL	$21,557.68	1.44%	2,324	$9.27	$16,594.08	1.36%	1,835	$9.04
HEALTH and BEAUTY	$87,670.58	5.85%	17,375	$5.04	$73,287.00	6.01%	14,945	$4.90
INFANTS/CHILDREN SHOES	$10,535.70	0.70%	459	$22.95	$9,173.85	0.75%	412	$22.26
LAMPS	$2,501.35	0.17%	129	$19.39	$1,717.40	0.14%	102	$16.83
MATERNITY/NEWBORN	$33,082.25	2.21%	3,398	$9.73	$27,278.41	2.24%	2,694	$10.12
MATTRESSES	$37,705.50	2.52%	320	$117.82	$37,762.60	3.09%	289	$130.66
MEN SHOES	$13,774.35	0.92%	243	$56.68	$11,650.18	0.95%	199	$58.54
MISCELLANEOUS	$35,050.16	2.34%	1,040	$33.70	$28,914.27	2.37%	873	$33.12

Measures: Sales Amount

Organization Unit

Product Sales by Store Type

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Product	2004						2003					
	Number Of Items	Sales Amount	Profit Margin Amount	Pct of All Items Units	Pct of All Sold	Profit Margin vs Total	Number Of Items	Sales Amount	Profit Margin Amount	Pct of All Items Units	Pct of All Sold	Profit Margin vs Total
HEALTH and BEAUTY	11,748	$56,911	$21,662	100.00%	100.00%	100.00%	10,433	$52,194	$19,889	100.00%	100.00%	100.00%
BATH AND SHOWER	30	$334	$126	0.26%	0.59%	0.58%	28	$351	$133	0.27%	0.67%	0.67%
CONCEALERS AND FOUNDATION	1,106	$8,153	$3,099	9.41%	14.33%	14.31%	982	$8,198	$3,120	9.41%	15.71%	15.68%
CREAMS LOTIONS (MASSIVE)	50	$430	$162	0.43%	0.76%	0.75%	62	$551	$209	0.59%	1.06%	1.05%
FACIAL AND BODY MOISTURIZERS	522	$9,966	$3,781	4.44%	17.51%	17.46%	448	$9,066	$3,447	4.29%	17.37%	17.33%
HAIR CARE	2,997	$8,644	$3,298	25.51%	15.19%	15.23%	2,672	$7,763	$2,962	25.61%	14.87%	14.89%
MAKEUP	329	$2,028	$774	2.80%	3.56%	3.57%	321	$2,040	$778	3.08%	3.91%	3.91%
MENS FRAGRANCE	21	$89	$34	0.18%	0.16%	0.16%	19	$59	$23	0.18%	0.11%	0.11%
MISCELLANEOUS	766	$2,919	$1,109	6.52%	5.13%	5.12%	670	$2,991	$1,138	6.42%	5.73%	5.72%
PERSONAL HYGIENE CARE	5,366	$9,000	$3,439	45.68%	15.81%	15.87%	4,736	$8,029	$3,068	45.39%	15.38%	15.43%
RETURN MERCHANDISE	263	$2,062	$784	2.24%	3.62%	3.62%	223	$1,704	$650	2.14%	3.26%	3.27%
SKIN REPAIR COSMETICS	3	$48	$18	0.03%	0.08%	0.09%	3	$49	$19	0.03%	0.09%	0.09%

Measurement Period [2004 ▼]   Measures [Number Of Items ▼]

Product Department Report

File   Edit   View   Bookmarks   Data   Chart   Tools   Help

Product	Customer Segment	Number Of Market Baskets	Average Number Of Items Per Market Basket	Number Of Items	Average Profit Margin Amount Per Market Basket	Average Profit Margin Percentage Per Market Basket	Sales Amount	Profit Margin Amount
ACCESSORIES WINTER	Customer Segment	340	2.1	715	$3	31.12%	$3,235	$1,004
	Female	168	2.16	363	$3	31.06%	$1,612	$500
	Male	172	2.04	352	$3	31.18%	$1,623	$504
ACCESSORIES YEAR	Customer Segment	898	2	1,799	$4	31.05%	$12,149	$3,769
	Female	456	2.04	934	$4	31.02%	$6,459	$2,001
	Male	442	1.95	865	$4	31.09%	$5,689	$1,768
PAJAMAS ALL SEASONS	Customer Segment	49	1.22	60	$7	31.02%	$1,087	$337
	Female	29	1.2	35	$7	31.18%	$680	$212
	Male	20	1.25	25	$6	30.79%	$407	$125
PAJAMAS SUMMER	Customer Segment	36	1.11	40	$6	31.02%	$680	$210
	Female	15	1.13	17	$7	31.11%	$325	$100
	Male	21	1.09	23	$5	30.95%	$355	$110

Measures [Number Of Market Baskets ▼]

■ Female   ■ Male

Product Department by Customer Segment

Product	22	Week of 2004-02-29 Gross Sales	Week of 2004-03-07 Gross Sales	Week of 2004-03-14 Gross Sales	Week of 2004-03-21 Gross Sales	Week of 2004-03-28 Gross Sales	Qtr to Date Gross Sales
HEALTH and BEAUTY	18	$904.15	$1,247.68	$655.40	$690.36	$916.70	$316,648.76
BATH AND SHOWER	08	$0.00	$0.00	$0.00	$0.00	$0.00	$890.88
CONCEALERS AND FOUNDATION	42	$220.08	$266.20	$93.90	$124.56	$113.58	$45,281.18
CREAMS LOTIONS (MASSIVE)	00	$0.00	$0.00	$0.00	$40.16	$0.00	$527.90
FACIAL AND BODY MOISTURIZERS	04	$77.24	$81.64	$22.16	$168.36	$271.60	$47,429.63
HAIR CARE	63	$140.63	$149.24	$122.84	$73.50	$99.33	$49,433.28
MAKEUP	48	$48.32	$28.68	$47.70	$67.90	$73.44	$9,914.40
MENS FRAGRANCE	00	$0.00	$0.00	$0.00	$0.00	$0.00	$80.55
MISCELLANEOUS	40	$26.96	$38.70	$38.90	$39.65	$45.78	$15,716.69
PERSONAL HYGIENE CARE	88	$141.40	$190.24	$116.90	$94.08	$120.96	$54,285.28
RETURN MERCHANDISE	02	$11.03	$0.00	$0.00	$0.00	$0.00	$15,932.61
SKIN REPAIR COSMETICS	00	$0.00	$16.59	$0.00	$0.00	$0.00	$96.99
TOWELS AND COTTONS	00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
WOMENS FRAGRANCE	44	$237.90	$476.21	$212.76	$81.76	$191.85	$59,158.73

Weekly Sales Value by Product

Uses of the RBSTs

Data mart and Data Warehouse Scoping and Design

The information analysis and management reporting aspects of a particular topic are scoped within the dimensions and measures that make up the RBTSs. The scoped RBSTs can then be used to automatically generate an appropriate physical data mart structure. The scope can also be projected onto the RDWM to identify those areas of the central warehouse that must be implemented in order that the data marts can be provided with necessary information from the central warehouse.

Benefits of the RBSTs

- Business users can rapidly and effectively control the definition and scoping of a data mart solution
- Provides a consistent structure and reporting for each data mart produced
- Reduce the time and effort required in the analysis phase of a data warehouse implementation
- Reduce the risk by using proven pre-defined templates

Business Coverage of the RBSTs

Corporate Finance Management

To analyze the Retail Organization's corporate wide financial accounting.

Capital Allocation Risk
Credit Risk
Financial Management Accounting
Income

Customer Management

Customer Management focuses on the interactions of the customer with the retailer in the manner, casual contact, information searches, transactions, complaints/problems, and response to marketing messages.

Campaign & Promotion
Cross Purchase Behavior
Cross Sell
Customer Attrition
Customer Complaints
Customer Credit Risk
Customer Delinquency
Customer Interaction
Customer Lifetime Value
Customer Loyalty
Customer Movement Dynamics
Customer Profile
Customer Profitability
Involved Party Exposure
Lead Analysis
Market Analysis
Market Basket Analysis
Product Purchasing RFQ Analysis
Purchase Profile Analysis
Target Product Analysis

Merchandising Management

Merchandising is the process of managing the product lifecycle from evaluating product, deciding on what is to be carried and where, ordering from manufacturers, defining product presentation by channel of trade, establishing and monitoring pricing and promotions, and ending product life in a profitable manner.

Assortment & Allocation
Inventory Analysis
Physical Merchandising & Space Management
Pricing Analysis
Promotion Analysis

Products and Services Management

Product and Service Management is the definition and analysis of a retailers business.

Business Performance

| Planning & Forecasting |
| Product Analysis |
| Product Profitability |
| Service Delivery Analysis |
| Transaction Profitability |
| Vendor Performance |

Store Operations Management

Store Operations Management analyzes the principal sales and costs for the Retail Organization arising from staffing, in-store production management, loss, location and characteristics of the store.

| Activity Based Costing |
| Location Exposure |
| Location Profitability |
| Loss Prevention Analysis |
| Non Performing Loan Analysis |
| Organization Unit Profitability |
| Performance Measurement |
| Staffing Analysis |
| Store Location Analysis |
| Store Optimization |
| Suspicious Activity Analysis |
| Transaction Activity Analysis |

Business Coverage in Detail

This section describes a subset of the RBSTs in detail.

Customer Management

Purchase Profile Analysis

Customers are defined into groups by the information that is available on them. A prime source of data for retailers is purchases. The mix of purchases either in one shopping trip or over time reveals shopper profiles. Often this customer information is compiled by a syndicated data provider who has access to much large pools of data and sophisticated analytical tools. They return to the user a variety of segmentations that can be used to start reporting on products purchased by these groups. This information can also be augmented or substituted with internal data.

Customer Profile

Customer profiles are the attributes and general characteristics of customer that are combined to generate profiles for use throughout the company. These profiles can be stated simply to a single attribute such as age, marital status, and address or by complex combinations defined to a single geo-demographic term. The templates contained have been set to show these breakdowns by age range, although any customer attributes contained in the RDW may be used.

RFQ – Recency, Frequency, and Quantity.

The key metrics for defining customer loyalty (or propensity to repeatedly shop a retailer) is Recency (how recent a purchase was), Frequency (how often they shop) and Quantity (overall revenue or product number purchased)

most often against a baseline. This group of reports looks at customer behavior in different variants against those key metrics.

Campaign Reporting

Campaigns are the organization of marketing efforts to change customer behavior in relation to the retailer, Promotions and Cells are instances of those campaigns. These reports and analysis are intended to connect planned campaign/promotions with results in the form of changes in transactions, revenue, customer visits, and/or interactions. Campaign Analysis is concerned with the analysis of identified customers who have been included in a campaign, or to identify customers and segments to target for future marketing programs. Cells are grouping of customers who belong to a particular campaign cell. Advanced analytics and data mining are used to develop and build the underlying algorithms that identify customers segments, buying patterns and other indicators of customer behavior. Campaign reporting is directed to the business user and statistical methods and techniques are beyond the scope of this report module.

Cross Purchaser Profiles

A customer that shops more that one department or product grouping in a retailer is generally more profitable for the company. There are a range of reasons for this, but most can be stated as the more items purchased from other departments, the likelihood of purchases consisting mainly of lower margin or promotion oriented items decreases. Inversely, those shoppers that are the most damaging are those that will pick only promotional items across the store (cherry pickers), which can also be identified through these reports. Cross department or category shopping patterns can be used to improve merchandising, product placement, and targeted marketing.

Targeted Product

Most customer analysis starts from the viewpoint of the individual customer or more often a qualified group of customers or a market area. These analytics define for the customer the relationships between behavior, location, purchases, and conditions that collectively are seen as CRM reports. An alternative set of analysis is started from the viewpoint of a product or product group looking outward to the relationship to customer and customer segmentations.

Customer Movement Dynamic

Customer movement refers to changes in captured customer behavior over a period of time. These reports general address the issue of acquiring, retaining, and losing customers in light of differing criteria. They can be said to show the general health of the relationship with the general customer population.

Market basket Analytics

The association and interactions of product purchases by a customer in the course of a shopping experience is a market basket. The analysis of a market basket is critical to understanding the customer dynamics as they move through the store or alternative shopping experience. From it can be derived understanding to the success of tactical moves such as assortment and allocation, usage of shelf space, positioning within the store, along with pricing and promotion. Because of the volume and complexity of these interactions, it is an area of analysis that lends itself naturally to data mining techniques. The reports that follow are designed to understand the impact on shoppers' market baskets as a result of specific business actions. The analytics are designed for use with an advanced OLAP tool.

Merchandising Management

Inventory Analysis

The majority of retailer assets are in the form of product inventory, which is problematic given the speed in which

change occurs to it over time. Product is either flowing into the possession of the retailer in the form of orders placed, shipped, or being received or flowing out as an order refused, product returned to vendor, shipped as transfer or to a consolidator, or actually sold. The state in-between can be stated as the active or saleable inventory. All of these come together as Inventory Analysis in the establishing and forecasting how much product is where in the supply chain at a given moment.

Allocation and Assortment Reporting

How stores, web-sites, catalogs and other venues for exposing product and services to the paying public is one of the drivers of retailer success. Having the right product in the right place and the right time is an old saying in the industry and still holds true today. Customers can't buy what they can't find and when that happens, the retailer doesn't make any money. So for most companies the process of selecting what goods are to be carried in a given time period (Assortment) takes place constantly. The sister process is Allocation which is deciding on what stores/channels are to carry product selected from the assortment mix. Allocation takes two forms: Assigned, in that the product is set up in various systems as being approved for sale in that store or Forced, product that is shipped directly to the store by the buyer with varying degrees of store involvement in the decision.

Product Promotion Analysis

To analyze and compare the effectiveness of the Retail Organization's product marketing and advertising drives through results from changes in transactions, revenue, customer visits, and/or interactions.

Physical Merchandising Analysis

The majority of product sold by retailers is in stores and how product is placed in a store can be referred to Physical Merchandising or Space Management. A great deal of energy and analytics is dedicated to merchandising in stores such that customers are not only enticed into making a purchase, but to make additional purchases beyond basic need so as to increase sales and to elevate margins. Reporting focuses on performance of product in physical groupings such as planograms and presentations, the interactions between those groupings and the stores they are placed in.

Price Analysis

Pricing is the assignment of a price to a product based on targeted margins, response to competition, revenue enhancement, or to introduce/markdown/discontinue such as to generate for the company the greatest possible revenue. In most channels of retail this is location and channel specific.

Products and Services Management

Core Business Performance Metrics

The basic means by which a retail company measures its ongoing performance is covered in the core business performance metrics. This covers key performance metrics of items sold, sales, revenue sold, margin, number of products on hand, average item sold all as comparisons to prior period or year. They are stated by a variety of hierarchies such as by product, location, channel, and customer grouping.

Product Analysis to Customer

Product Analysis to Customer is defining the parameters of a product by the types of customers that have purchased the product in the past. This information will normally be gathered from customer programs such as frequent shopper, credit, or surveys. Additional information is provided by third party syndicated data companies that may define customer segmentation and assign them to given markets.

Plan Analysis

Most retailers go through a planning process on either of their product groups or those that are seasonal in nature. These plans are normally generated in a dedicated tool and process. This information is shared with the enterprise for reporting purposes. These reports are directed towards performance against planned targets and dates. Product performance is used to establish current standing to these plans and the forecasts to how the targets will be met in the foreseeable future. Forecasting also can be used for defining actions that need to be taken to reconcile issue that may arise, according to the results of these reports.

Vendor Performance

The majority of product and services offered Reports that focus on the vendor performance against criteria related to funding, fulfilment, payment, and in-store performance.

Service Delivery Analysis

Services that a retail company provides are one of their key differentiators in the marketplace. These services take a variety of forms that include those that are part of normal customer management in operations and others that are directly associated with income for the company. It is those that generate or influence revenue that is the topic for the reports contained in this business solution template. The underlying assumption is that relevant information is available to the data warehouse, which with many services should not be accepted as a given.

Store Operations Management

Loss prevention

The Loss Prevention BST is dedicated to the analysis and reporting on circumstances of risk to the loss of resources, assets, inventory, brand image, customers or physical plant of the company. This analysis is heavily weighted towards the reporting of exceptions to a defined baseline of data or sets of acceptable conditions and actions by employees, vendors, and customers. Because so much of loss prevention is the discovery of patterns of data or the outliers to the same data set, it lends itself particularly well to data mining. The following reports are a starter set intended for OLAP application use, but can be adopted for use with a data mining engine.

Staff Analysis

Staff analysis refers to reporting that centres on employees within the company primarily the store but not limited to it in regards the data warehouse. Employees are said to have a relationship to the company that involves legal obligations on the part of the company, notably in pay and benefits. Most of the analysis in question focuses on performance metrics, state of skills and related learning, along with exception reporting on data on record. This definition could be extended to third parties that work within the store footprint, such as sales associates at cosmetics counters or workers in an on-site restaurant, but only if the information that is collected of regular employees is collected in term from their performance.

Location Analysis

The Location of a Store is one of the prime factors of defining and qualifying store performance. The analysis can include various forms of measures concerning geo-demographics, store dimensions, marketing package, and relationship to travel routes and seasonal changes. Users of this analysis would include Real Estate, Merchandising, Procurement, Loss Prevention, Marketing, and Store Operations.

Store Optimization

The majority of sales in retail are still through physical stores and how goods are placed inside of those stores is quite important. The strategy of good store merchandising is to tempt the shopper to spend more time voluntarily in the store and in turn to spend more money with the company. The interior of a store can be arranged in a number of ways to accomplish this task; Store Optimization examines the best way of organizing and merchandising a

store given the criteria of customer behavior and response as captured through purchases. The reports offered are samples of some of that analysis as would be stated in a table format. Ideally this is a form of evaluation and testing that is best started with a data mining tools, explored further with an OLAP, then tried out and evaluated further.

The Retail Services Data Model
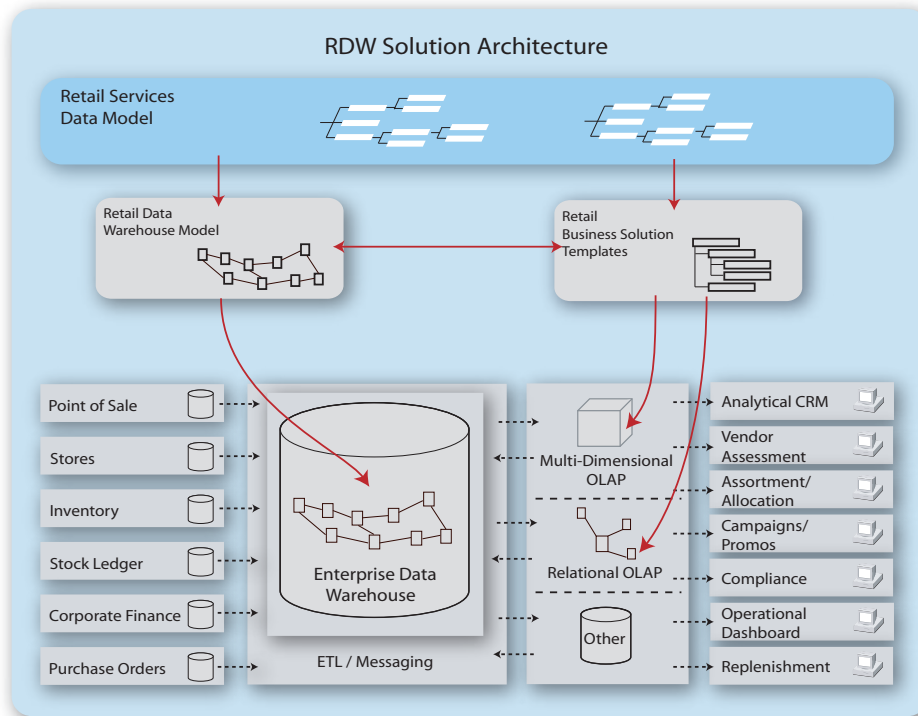
What is the Retail Services Data Model?

The Retail Services Data Model (RSDM) is a classification model designed specifically for the retail industry, containing thousands of carefully constructed business definitions reflecting many person-years of analysis. It provides an enterprise-wide view of generic information concepts in retail.

The RSDM has been developed to provide a retailer with a "jump start" in its model development process and assist in maximizing the value of information. The RSDM is a generic model, defining data that common between retailers. The information reflected in the model is independent of organizational structure and has been validated by multiple retailers

The RSDM is a business model that:
- Provides a vehicle for merging requirements of existing models
- Is designed for stability, flexibility and reusability
- Is designed to incorporate classification, inheritance, object state behavior and other concepts of object-oriented design.

Using this model, the information management team can be pro-active in supporting a retailer's response to the dramatic changes that are driving the retail industry.

The RSDM represents at least 80% of the information captured by the core applications that support a retailer's core business. The RSDM is not simply a bland listing of data types and definitions. The structure of the model is designed to address some of the key issues facing retailers in the current environment of strong competition and accelerating technological change.

The RSDM is structured in a hierarchical, 'top to bottom' structure with multiple layers of business content models containing industry standard business definitions. Each layer of the structure contains a model that provides more detailed view based on the previous layer.

Issues the RSDM Addresses

Improved customer care

The RSDM reflects the complex inter-relationships that exist between customers and between customers and the retailer. It distinguishes between the nature of the customers themselves and the relationship the customer has with the retailer. The RSDM is therefore a pivotal component in the retailer's response to changing market dynamics. It enables the business to refine its approach to the management of customer relationships while providing information systems staff with a blueprint for integrated customer care systems.

Rapid development of new products.

RSDM recognizes that products should be rapidly assembled from fundamental components and readily packaged together. It understands the distinction between marketable products and the resources that make up those products. Further, it recognizes the complex ways in which a product may be acquired by a customer and then be operated in the field. By clarifying the distinction between a marketed product and the technical capability required to deliver that product, the RSDM enables the Retailer to plan and manage the increasingly complex relationships between services offered and the means of providing those services.

Complex relationships with competitors.

RSDM recognizes that competitors are also customers and, on occasion, strategic partners. It allows for these changing roles and the policies, regulations and agreements that impact these roles.

Integration of business and store operations.

RSDM does not differentiate data according to lines of business or organizational structures. The model reflects a fully integrated view of data that can be used by all segments of the business. The model focuses on providing the Retailer with a means of understanding the different facets of each business challenge, and how those facets can then be combined into a solution. It cuts through the confusion of legacy systems and provides the path to co-ordination between store operations and business applications.

RSDM Benefits

The RSDM has been developed with the assistance of retail professionals. The structure, especially that of the business model, has been designed to facilitate the understanding and navigation of the model by those who may have had minimal exposure to data modeling. At the same time, the structure and rigor of the RSDM satisfies the needs of Business Analysts. Consequently, the RSDM provides a communication bridge between the data warehousing project team and core technical staff as well as Line of Business and Functional users.

In addition:
- It fully compliments the RDWM
- It provides a structured starting point to integrate data and process
- It provides a generic specification of data that helps to reduce redundancy and inconsistency across the enterprise
- It provides common definitions for increasing reuse of data elements
- It accelerates the application development life cycle reducing development costs and project schedules
- It provides a consistent data architecture for modeling new or changed requirements
- It provides a single framework that incorporates both detail data, business rules and analytical requirements
- It focuses the development effort on validating, enhancing and extending data requirements rather than labor-intensive data modeling

The RSDM Nine Data Concepts

Arrangement	The Arrangement Data Concept represents a potential or actual agreement, between two or more individuals, organizations or organizational units, that provides and affirms the rules and obligations associated with the exchange for value of goods, services and/or resources. e.g. • An installment loan arrangement • A credit card arrangement • A purchase Arrangement between the Retail Organization and an equipment vendor for the purchase of Point Of Sale Terminals • An employment arrangement
Business Direction Item	The Business Direction Item Data Concept records an expression of an Involved Party's intent with regard to the manner and environments in which it wishes to carry out its business. e.g. • A generic function and/or responsibility in a description for an employment position • The Retail Organization's mission statement reflecting its intention to provide excellent service to its customers, to operate so as to be highly profitable, and to be a good corporate citizen • A competitor's objective and plan to open seven new Stores in the Retail Organization's service area • A company Policy that requires employees to take two consecutive weeks of vacation each year • POS Terminal settlement procedure #01789 • A short term economic forecast which states the real Gross National Product will grow at an annualized rate of two percent in the third quarter • The formal mission statement of an organization unit
Condition	The Condition Data Concept describes the specific requirements that pertain to how the business is conducted and includes information such as prerequisite or qualification criteria and restrictions or limits associated with the requirements. Conditions can apply to various aspects of a Retail Organization's operations, such as the sale and servicing of products, the determination of eligibility to purchase a product, the authority to perform business transactions, the assignment of specific general ledger accounts appropriate for different business transactions, the required file retention periods for various types of information kept by a Retail Organization and the selection criteria for a market segment. e.g. • A penalty fee of 10% of shipment value will be deducted if the shipment is more than five days late. • A full time employee is entitled to three weeks of vacation annually after seven years of service • The Retail Organization's employee #54321, John Smith, is assigned authority limit six, which empowers him to approve purchases of up to twenty five thousand dollars without prior internal review • Organization position #56789 carries an authority limit ten, which empowers its incumbent to hire employees
Classification	The Classification Data Concept organizes and manages specific business information by defining structures that represent classification categories. Classification also organizes and manages groups of business concepts that apply to multiple Data Concepts. • XYZ Bank's corporate-wide general ledger structure (Accounting Structure) • Advertising expenses (Accounting Unit Category) • Display Unit depreciation (Accounting Unit Category) • Product line composed of DIY Tools (Group) • Individual (Involved Party Classification Type) • German (Language) • Foot (Unit Of Measure)

|	
Event	The Event Data Concept describes a happening about which the Retail Organization wishes to keep information as a part of carrying out its mission and conducting its business. e.g. • A cost reduction project meeting conclusion on April 15 • The property settlement associated with the purchase of a building by the Retail Organization • An account origination task performed by a Store employee on Monday at 11:15 a.m. • Operation execution which deletes an account record • The kickoff of the campaign to market Store Loyalty Cards to young adults
Involved Party	The Involved Party Data Concept represents all participants that may have contact with the Retail Organization or that are of interest to the Retail Organization and about which the Retail Organization wishes to maintain information. This includes information about the Retail Organization itself. e.g. • Mary L. Doe • John Q. Public • ABC Corporation • XYZ Salesco Human Resources Department • Senior Cashier #326
Location	The Location Data Concept describes a place where something can be found, a destination of information or a bounded area, such as a country or state, about which the Retail Organization wishes to keep information. e.g. • 123 East Main Street • Lot 5432, Section 6, Tract 78 • Section 6 • Tract 78 • Telephone number 01 301 987 6543 • Rack 25, bin 003 in Storeroom 4 • Australia • Staffordshire County • Greater New York City Metropolitan Area • Postcode area 22193 • C:\BOBS\WORK.RPT
Product	The Product Data Concept describes the goods and services that can be offered, sold, provided or purchased by the Retail Organization, its competitors and other Involved Parties during the normal course of its business. e,g, • Diesel Powered, Four Door, Sedan • Tailoring • Tin Of Beans • Credit Card Account • Beauty Treatment Hamper
Resource Item	The Resource Item Data Concept includes and describes any value item, either tangible or intangible, that is owned, managed or used by, or of specific interest to, the Retail Organization in the course of accomplishing its business. e.g. • A red truck, Vehicle Identification Number 9876543, included in the Retail Organization's transportation fleet • The Retail Organization's Product Information Kiosk which is installed on the 4th Floor of the Main Street Store • A corporate headquarters building which houses executive offices, and leasable tenant space • A vehicle title, held in the Retail Organization's files, as evidence of collateral pledged to secure an automobile Lease To Own Arrangement • The text portion of data and information such as documents and electronic messages • A Data Model, recently developed by the Retail Organization. • The name of the Retail Organization which is a Trademark.

The Retail Data Warehouse Model
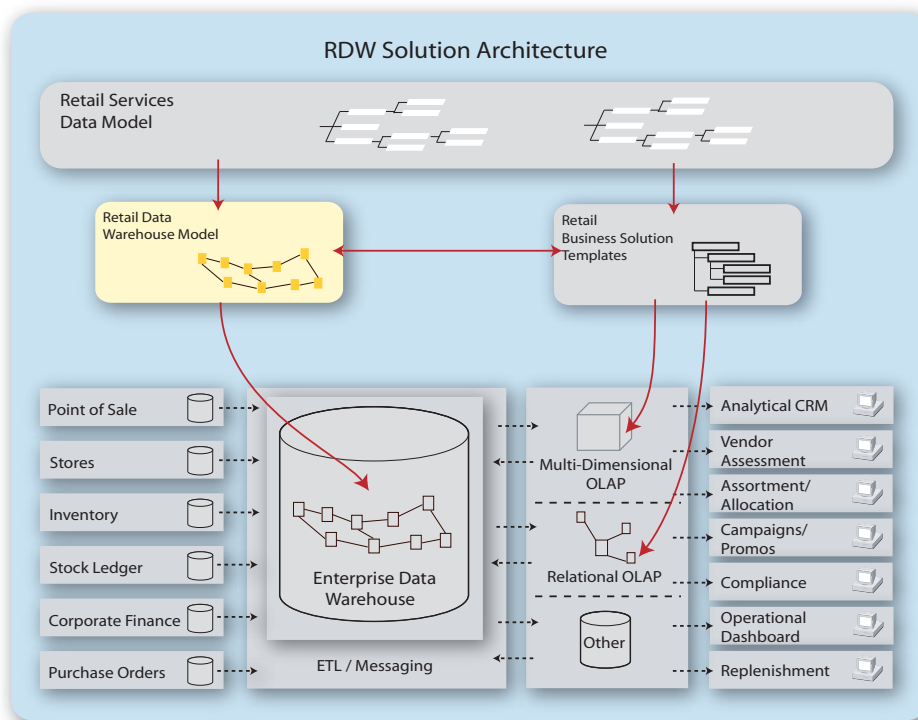
What is the Retail Data Warehouse Model?

It is a logical model consisting of more than 80% of the data structures typically needed by a retailer for a data warehouse. It was designed to provide business intelligence to a wide range of retailers, which is an opportunity for retailers moving into new channels of trade. This model can be automatically generated into a physical data warehouse database once it has been customized to meet the exact requirements of the retailer.

A logical model is a representation of a retailer's data or information requirements and is usually represented in an Entity Relationship Diagram (ERD), with business definitions. The data needs are represented without consideration for technology constraints associated with platforms, tools, and software or how the application will be finally implemented. It is generic and flexible in design and facilitates consistent understanding of the meaning of a retailer's data.

An example of an ERD from the RDWM is shown:
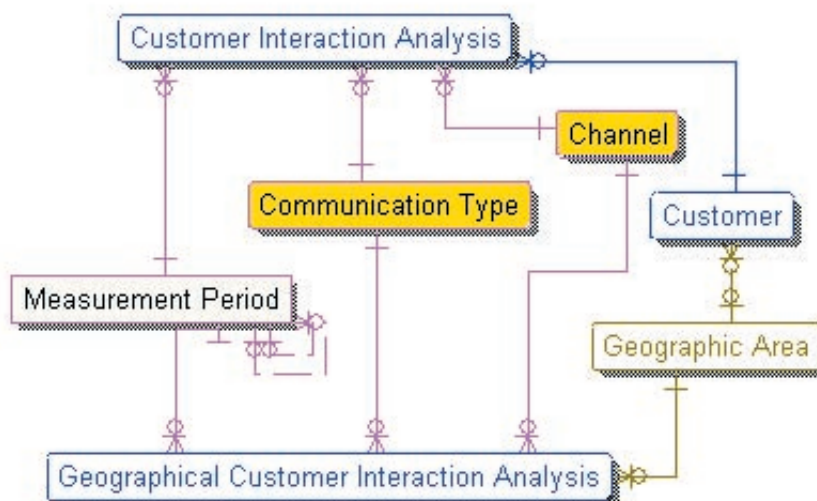
The RDWM features a flexible "System of Record" (the primary data storage area) as well as the summary tables typically needed by retailers to aggregate detail data for analytical purposes. The RDWM has been designed to be "one-step" from physical data base generation. Normally, only a portion of the RDWM is generated in the initial project phase. Over time other areas can be incrementally generated as the Service Provider tackles more source systems and/or business areas.

This comprehensive data model is derived from IBM's highly successful Retail Services Data Model (RSDM), which as described previously, and can be used as the basis for supporting a detailed analysis of the business areas of most concern to retailers today.

Uses of the RDWM

The RDWM can be used as:

- The blueprint for a design of an enterprise data warehouse. In this case the RDWM will assist in the creation of a flexible and extensible data warehouse platform-specific physical database.
- A neutral reference point for consolidating multiple legacy data warehouses across lines of business or in the case of mergers and acquisitions
- A data structure template for near real-time data management solutions for the to support specific business applications (e.g. CRM).

Benefits of the RDWM

- Enables phased implementation based on prioritized business requirements
- Easy subsequent customization and extension of the data warehouse
- Combines both third normal form and star schema data model designs

Major Groupings in the RDWM

The RDWM has major groupings based on the intended usage of items within a data warehouse environment. These groupings are the System of Record, the Summary Area and the Analysis Area that are now described:

System of Record

This is the component of the data warehouse that acts as the primary storage area for detail. Typically this System of Record is populated by Extract, Transform and Load (ETL) processes from operational data in the Change Data Capture Staging Area. Typical components, or entities, of the System of Record are:

Accounting Unit	An Accounting Unit is a repository used to monitor both monetary and non-monetary standings. An Accounting Unit may be used to support the operation of an Arrangement, or it may be used by the Retail Organization to facilitate myriad internal requirements to record and monitor quantitative change.
	Typically, for an Arrangement, an Organization Unit, a Campaign, etc. many quantities are tracked together. For example, Promotion costs, number of targets, volume of business gained, would be among the quantities tracked for a sales Campaign.

Activity Based Costing	The purpose of Activity Based Costing is to enable the assignment of costs to the activities of the Retail Organization, and to then allocate those costs out to the various agencies within the Retail Organization that can be considered to be responsible for generating them. In this way, a better image of profitability can be obtained. Costs (and Retail Organization income) can be assigned to Activities of a given Type occurring on a given Channel. In addition, any Involved Party can have a role of being an Allocation Center. Configuration tables are provided to define the percentage distribution of the costs (and incomes) of occurring Activities, according to the role the Involved Party has in relation to the Customer performing the Activity e.g. the Organization Unit that owns the Customer. A Transaction Allocated entity records the actual amounts allocated, and an Allocation Center Summary summarizes the allocations by Measurement Period.
Classification	Classification represents a common collection point for simple sets of codes that are used to classify or codify some facet of the business. For example, there are a set of codes representing Involved Party Types - these are stored in the Classification structure; there are a set of classifications representing Individual Marital Status Types - these too are stored in the Classification structure. Classifications are composed of a Classification Scheme and a Classification Value. In the latter example 'Individual Marital Status Type' is the scheme while the values are codes representing 'Single', 'Married', 'Separated', 'Divorced', etc
Communication	A Communication records an exchange of information with an Involved Party; for example, receive Customer's request for an interim statement, (USA) transmit a report on liquidity levels to the Federal Reserve.
Condition	Condition (CD) describes the specific requirements that pertain to how the business of a Retail Organization is conducted and includes information such as prerequisite or qualification criteria and restrictions or limits associated with these requirements. Conditions can apply to various aspects of a Retail Organization's operations, such as the sale and servicing of products, the determination of eligibility to purchase a product, the authority to perform business transactions, the assignment of specific general ledger accounts appropriate for different business transactions, the required file retention periods for various types of information and the selection criteria for a market segment.
Event	Event describes a happening about which the Retail Organization wishes to keep information as a part of carrying out its mission and conducting its business.
Housekeeping and Characteristics	Housekeeping entities represent information that is either static, or only changes slowly over time e.g. lists of countries, currencies, languages, etc. The data in Housekeeping entities is often obtained from official sources outside of the Retail Organization, and the content of that data is usually outside the control of the Retail Organization. Characteristic entities are purely logical constructs used to control and identify sets of common attributes which are required to appear on multiple entities throughout the warehouse. For example, the Summary Currency Characteristic ensures that for each Summary entity, an identical set of attributes representing the Original and Measurement Currencies and the Exchange Rate between them appears on each Summary. By altering the Characteristic contents, all targeted entities can be immediately updated with a new and identical set of attributes.
Insurance	Holds the various entities involved in the support of Insurance.
Involved Party	Involved Parties are persons or organized groups of persons about whom the Retail Organization wants to keep information. Involved Party includes Individuals, Organizations, Grouped Individuals, Organization Units, and Employment Positions.
Limit	Identifies restrictions on entities and restrictions on relationships between entities.
Location	Location stores the physical or logical locations used by the Retail Organization and by Customers. Examples of Addresses are: 2 Burlington Road, Dublin 4, Republic of Ireland; 555 Main Street, Boise, Idaho; www.ibm.com/solutions/financialservices/ifw.
Planograms - Physical Merchandising	Planograms define the physical layouts of Products on different types of Display Fixtures. Also known as Physical Merchandising.

Product	Product describes goods and services that can be offered, sold or purchased by the Retail Organization, its competitors and other Involved Parties during the normal course of business. Product also includes non-financial goods and services that are of interest to the Retail Organization.
Resource Item	Resource Item includes and describes any value item, either tangible or intangible, that is owned, managed, used by, or of specific interest to the Retail Organization in pursuit and accomplishment of its business.

Summary Area

This area contains summaries and aggregations that are commonly used in data warehouses developed for retailers. These summary entities may be populated by aggregating in the System of Record or they may be obtained pre-aggregated from operational systems (e.g., G/L account balances). Creating and maintaining such summaries in the data warehouse facilitates a level of reuse that improves query performance, reduces overall system load and improves consistency in analysis. Summary entities are designed to store key metrics and status indicators on a periodic basis. Typical components, or entities, of the Summary Area include:

Accounting Unit	The Accounting Unit is the basic mechanism used for holding numerical data within the Retail Data Warehouse. The Accounting Unit Summary entity enables the capturing of the Accounting Unit information on a periodic basis, for example the quarterly credit and debit balances for a particular segment of the Customer base.
Arrangement	Holds the periodic summarizations related to Arrangement.
Campaign	The Campaign Summary entities are used to track the various internal and external marketing events and grouping that the Retail Organization undertakes in order to promote its Products and other aspects of its business. The Campaign Summary entities enable the Retail Organization to monitor the effectiveness of such Campaigns, as well as the cost of each.
Group	Holds the periodic summarizations related to Groups.
Involved Party	Some of the subtypes of Involved Party would typically require periodic summaries. Typically such summaries are required for Customer and Organization Unit. The purpose of such summaries is to record key indicators for the relevant item.
Product	Holds the periodic summarizations related to Product.

Analysis Area

This is the component of the data warehouse that prepares the data initially stored in the System of Record for subsequent distribution to MOLAP cubes. The entities in the Analysis Area consist of fact and dimension tables in Snowflake designs. Typical components, or entities, of the Analysis Area are group under the following headings:

- Campaign
- Complaint
- Credit Profiling
- Cross Sell
- Customer Interaction
- Customer Lifetime Value
- Inventory
- Pricing
- Product Performance
- Promotion
- Salesperson Performance
- Store Format Performance

These are described in more detail in the Retail Business Solution Templates section.

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