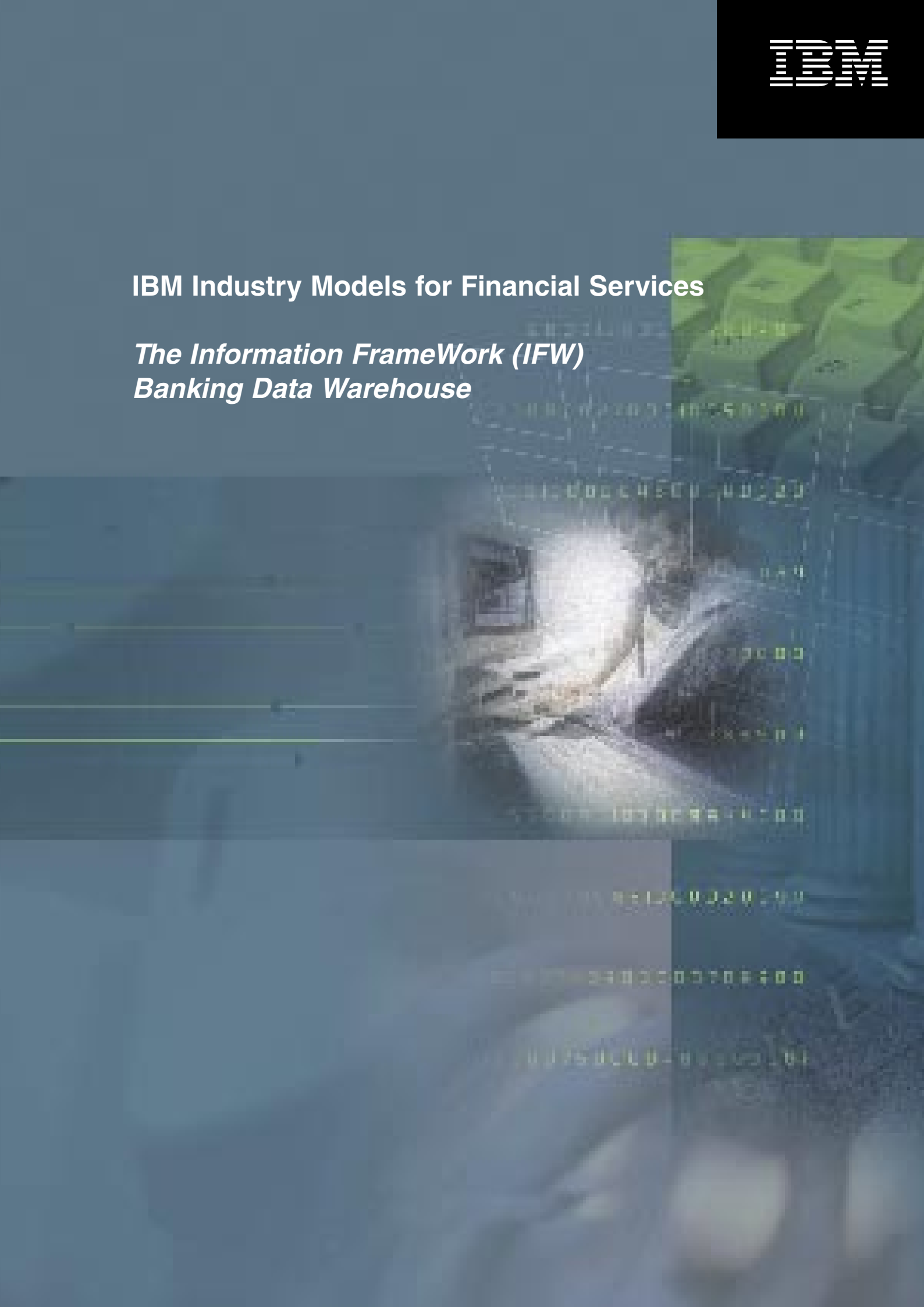


IBM Industry Models for Financial Services

The Information FrameWork (IFW) Banking Data Warehouse

Contents

Executive Summary

Issues Facing Financial Services Organizations

Making better decisions faster can make the difference between surviving and thriving in an increasingly competitive marketplace. The financial services industry needs to respond to the challenges presented by pressures such as globalization, deregulation and customer expectations. Aggressive competition, mergers and acquisitions, product and market innovation, restructuring and the need to re-engineer outmoded legacy systems apply additional pressures.

At the same time, financial services organizations need to manage risk and comply with the requirements of new directives and regulatory demands such as Basel II, International Financial Reporting Standards for International Accounting Standards, the Capital Adequacy Directive and Anti Money Laundering.

Consider the following:

- In a typical financial services organization 20 % of the customers represent 160% of the profits
- A 5% increase in retention can produce an increase in profits between 25-80%
- A customer with one relationship with a bank has a 35% chance of leaving
- A customer with > 3 relationships has an 85% change of being with the financial services organization for 3-5 years.
- A shift in the customer mix from 30%(A's) – 30%(B's) – 40%(C's) to 40-30-30 can often raise overall profits by as much as 60%

In order to successfully address these issues the financial services organization must:

- Manage all aspects of the customer relationship ...having the total picture
- Identify and retain the most profitable customers
- Identify cross sell opportunities
- Attract the right customers from the competition
- Properly measuring product and organizational profitability
- Understand new markets and the need for new products

Decisions need to be made and there is no shortage of data with which to make these decisions. The problem is not with the amount of data available but rather with consistency, accuracy, timeliness and complexity. Over the past number of years these problems have been recognized, resulting in the types of system known as decision support systems, executive information systems and management information systems. These systems typically download data from a number of sources, run specialized programs against the data to reconstruct it in a useable format, which then allows queries to be run against the data. Many of these systems have been mainframe based and have enjoyed only limited success:

- OLTP systems are not designed for data analysis
- Data is diverse and complex
- User access is complex
- User access slows business operations

Data warehousing provides data quickly and in a format that greatly enhances the decision making process. The data warehouse allows financial services organizations to exploit the potential of information previously locked in legacy systems which is currently inaccessible to the business user. The data warehouse holds data about the business which can be used as the basis for supporting a detailed analysis of the areas of most concern to bankers today:

- Enterprise-wide risk management and compliance reporting for the bank group and both corporate and retail business divisions
- Relationship management of customers
- Profitability and performance of customers, products and channels

- Maximization of wallet share
- Customer loyalty and retention
- Improvement of cross-selling ratios
- Marketing campaign management
- House-holding
- Consistent definition of customers and products across the organization
- Behavioral trend analysis
- Identification of purchasing and product usage patterns.

What is a Data Warehouse?

A data warehouse is a central repository of summarized data from disparate internal operational systems and external sources. Operational and external source data is extracted, integrated, summarized, and stored into a data warehouse which can then be accessed by users in a consistent and subject oriented format. Being organized around a business entity such as customer, product, or geographical region, is more useful for analysis, as opposed to applications, which tend to be designed to support a vertical function of the business such as order-entry, accounts receivable or general ledger.

A data warehouse has a very different structure to an operational (OLTP) system. Data may be:

- Archived and summarized as opposed to current
- Organized by subject as opposed to application
- Static until refreshed as opposed to dynamic
- Simplified for analysis as opposed to complex for computation
- Accessed and manipulated as opposed to updated
- Unstructured for analysis as opposed to structured for repetitive processing

A data warehouse provides on-line analytical processing, (OLAP), as opposed to on-line transaction processing, (OLTP). A user wishing to perform on-line analysis may access many records per transaction, while OLTP users may only access one record one at a time. Analytical users rarely update data and require response times ranging from seconds to hours, while OLTP users constantly update individual records and expect sub second response times.

An OLAP environment supports analytical queries against data representing a financial services organizations state at a specific point in time. An OLAP data structure describes the organization of the data used within multidimensional tools for accessing, storing and manipulating decision support and enterprise information systems forms of information. This type of tool also allows for the ability to ‘drill down’ into the summarized information for further detail.

The data warehouse overcomes limitations of decision-support systems:

- Complex ad-hoc queries are submitted and executed rapidly because the data is stored in a consistent format
- Queries don’t interfere with ongoing operations because the system is dedicated to serving as a data warehouse
- Data can be organized by useful categories such as customer or product because the data is consolidated from multiple sources.

In short, the data warehouse is a single source of consolidated data, which provides an enterprise-wide view of the business. The data warehouse will become the main source of information for reporting and analysis data marts, which are usually departmental, line of business or business function oriented.

Business Advantages of a Data Warehouse

The data warehouse will enable banks and other financial services organizations 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 which can be leveraged by the construction of a data warehouse:

Risk	Gained from more focused use of capital, impact of predicted trends, risk exposure containment, enterprise-wide risk management etc.
Competitive	Gained from focused marketing campaigns, product packaging, promotional pricing, cross-selling competitor alliances etc.
Customer	Gained from understanding customers' values across all product lines, response to total customer needs, predictive and pre-emptive approach, focus on building high customer base etc.
Profit	Gained from transaction / service costing, pricing / costing rules, actual charges and discounts, historical activity and price performance etc.
Organization	Gained from compartmentalization of risk, creation of profitable alliances, maintain optimum organization structure, measure / score results, reward results etc.

To illustrate how a data warehouse can facilitate business advantage consider competitive advantage. Competitive advantage can be gained from using information in the data warehouse to develop a coherent strategy, which enables the bank to respond to the pressures of increased competition, the need to move to newer technology, globalization of the business and product innovation. To gain business advantage from this situation, the data warehouse can be used as a single source of consolidated data about:

- Historical business trends
- Product gaps and opportunities
- Activity and performance
- Targets
- Cross-selling opportunities
- Market segmentation
- Delivery channel usage
- Competitor products
- Actual pricing

The organization of the information in the data warehouse in this manner enables business advantage to be gained by identifying opportunities for:

- Focused marketing campaigns
- Product packaging
- Performance tracking
- Exposure management
- Promotional pricing
- Estimation of wallet share
- Product customization
- Behavioral scores and rewards
- Cross-selling
- Delivery channel incentives
- Competitor alliances
- Fees and charges pre-notification

Cost verses Value Justification

There are two points to consider when trying to justify the cost of constructing the data warehouse. The first is that the data warehouse is not all about saving costs, although that is a distinct advantage that can be realized from using the information in the data warehouse. For example, one bank has found that in marketing, the use of the data warehouse to identify non-responding or non-profitable customers has been estimated to save 10% of the costs of direct marketing.

The second point is that the data warehouse is really about facilitating the acquisition of future revenue. The business drivers for this include the identification of new sources of revenue, to provide flexible response capabilities with a shorter time to market. New products are able to generate faster revenue streams as a result. The data warehouse will supply information about the behavior of customers with regard to their profitability, wallet share and spending patterns. Opportunities may be identified for improving customer relationships, leading to increased customer satisfaction and retention.

Building the Data Warehouse

As data warehouses are typically run as stand-alone projects, building a data warehouse gives an organization a unique opportunity. The results of implementing a data warehouse are immediate and quantifiable and the implementation need not interfere with business operations. The operational data of both internal systems and external feed sources will potentially come from many different sources. The first step must be to produce a logical model of the organizational data requirements independent of any particular implementation. Data modeling includes defining and organizing data structures and standardizing formats which may vary across databases and applications.

Data may also need to be modeled from application-oriented databases into a subject-oriented format. This can be achieved by creating an 'implicit' model of a system which re-engineers the data into a logical format. As designing and implementing this solution is a complex process many organizations may not have all the appropriate skill and resources available in-house to complete the project.

IBM provides a low risk data warehouse solution, which will form the foundation for all the organization's data warehouse development. IBM combines speed with expertise. An implementation can take as little as 6 months for the initial increment. With an IBM enterprise data warehouse model, projects are normally approached on an incremental basis delivering business value from each increment. This approach reduces risk while building to a consistant enterprise view over time.

IBM Banking Data Warehouse

Financial Services Specific Warehousing

The IBM Banking Data Warehouse (BDW) enables financial services organizations to build data warehouse solutions to suit their specific needs. BDW has the flexibility to enable the creation of a range of data warehouse solutions from departmental data marts to enterprise-wide data warehouses. BDW includes all of the key components required for the core of a data warehousing solution.

The IBM Banking Data Warehouse content models are the cornerstone components of a financial sercices organizations customized development of a data warehouse and business intelligence environment.

The BDW consists of a series of more than 80 predefined Business Solution Templates (BSTs). These BSTs support the rapid definition, scoping and development of commonly required data warehouse reporting and analysis requirements such as Customer Profitability, Wallet Share Analysis, Customer Attrition Analysis, Liquidity Analysis and more.

The BDW also comprises a proven, flexible and scalable data warehouse technical infrastructure. The BDW enables a financial services organization to build a comprehensive data warehouse solution. This solution enables the rapid delivery of business value without compromising on the need for a sound scalable technical data warehouse infrastructure.

When the financial services organization uses the BDW to address their Basel II requirements, or just wants to evolve their current risk management and reporting capability to a higher level of maturity, they are building on a proven foundation that will address these specific requirements, built using design principles founded upon the principle of an open technology architecture. For example, the BDW provides coverage in the following areas:

Risk
Economic equivalence of products
Loans and securities investments
Limit monitoring
Collateral valuation and review
Consolidated exposure
Inter-customer relationships
Subsidiaries/cross holdings
Employee and employer relationships

Compliance
Provides the foundation for all compliance requirements
Basel II, IFRS/IAS, Sarbanes Oxley, Anti-Money Laundering Regulations
Flexible architecture enables organization to concentrate specific compliance requirements in phases but all exploiting a common structure.
Reporting templates enable the design of a data warehouse to support reporting to multiple jurisdictions and to multiple regulators.
Where applicable, reporting and application data requirements for specific regulatory needs can be stored and mapped to the Banking Data Warehouse

Relationship Marketing
Consolidated view of the customer
Single view across the organization

Customer behaviour/loyalty indicators
Demographic information
Transaction analysis
Spending patterns
Spatial analysis
Segmentation
Householding
Inquiries / complaints

Profitability

Flexible Structure - enable storage of all necessary profitability components
Treat each relationship/product as a business in its own right
Complete “General Ledger” for : Involved Party, Product, etc.
With “Accounts” for Assets, Liabilities, Income, Contingencies and Expenses
Predefined Profitability Summarizations
Standard commonly used Profitability Aggregations
Encourage standardized profitability across organization
Summarizations at different levels : Account, Customer, Org Unit, Product

Asset & Liability

Mismatch in liquidity
Mismatch in interest rate structure
Optimization of funds
Pooling
Hedging
Capital adequacy
Changes in balance sheet over time
Analysis of historic trends
Projection of future events

Benefits & Advantages of IBM’s Banking Data Warehouse

- Encapsulates IBM’s extensive experience in delivering effective data warehouse solutions to some of the worlds leading financial services organizations.
- Delivers competitive advantage by providing consolidated and clean data.
- Supports rapid implementation of warehousing solutions with meaningful banking data.
- Provides a combination of sound infra-structural techniques, a proven data management product set and rich functional content.
- Facilitates the subsequent customization and extension of the data warehouse
- Enables business users to more effectively control the definition and scoping of the data warehouse solution
- Provides a solid basis for expansion into relationship management applications and for integrating other decision support and executive information applications.
- Will save on development costs
- Reduces the risk of failure by taking an incremental approach to delivering integrated management information

Sample ROI Figures

North America

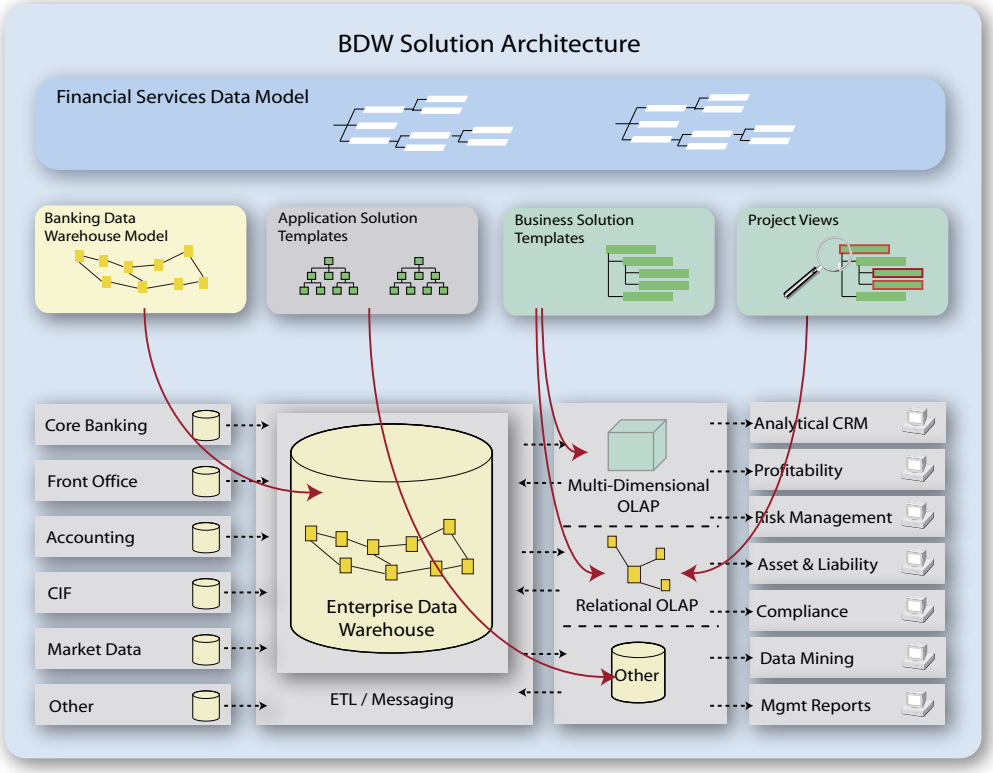
- Increased lift on direct marketing campaigns from 1% to over 8%
- Auto leasing campaign created record lease volume in a slow auto market
- Calculated net profit due to BI strategy at 1.12 MUSD over first three years of operation

Europe

- Estimate of over 1MUSD in Savings in CPU and storage costs alone
- Overall bank credit rating has improved as a result of their proven ability to disclose financial information to the market in a more timely and accurate manner
- Ability to produce new reporting and analysis data marts from the warehouse in very short (3 month) phases

South America

- Reduction from 4 hours to 1 minute to manipulate matrices
- Reduction from 2 months to 5 days to develop new credit scoring models
- 9000 person hours per year less to collect data needed for reporting
- 40% less time to prepare marketing actions.



Business Solution Templates
Data mart specifications for a number of pre-defined business solution areas (Profitability, Relationship Marketing, Risk, Asset & Liability Management, Compliance).

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Application Solution Templates
Capture non-reporting requirements in a particular domain and relate those to the entities, relationships and attributes of the BDW Model. **Project Views** which define a business issue in terms of a set of items within an BDW project.

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Banking Data Warehouse Model
A model which provides pre-defined data warehouse structures for financial services organizations.

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Financial Services Data Model
An enterprise-wide data classification model. It is the communication link from the BSTs to the BDWM and the financial services organizations core banking data.

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Banking Data Warehouse Physical Environment
The physical environment which addresses the business coverage of the BDW..

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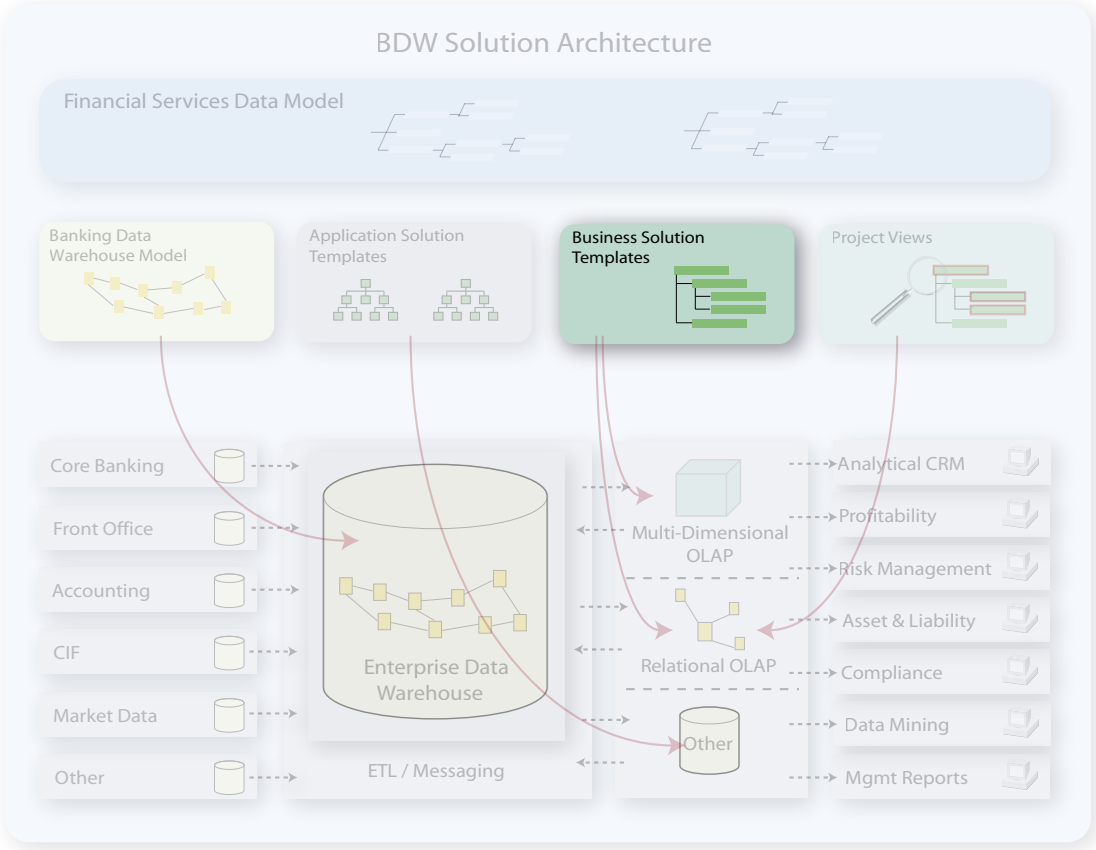
Business Solution Templates



Business Driven Analysis

The IBM Banking Data Warehouse (BDW) incorporates all the key components for a successful data warehousing solution in financial services.

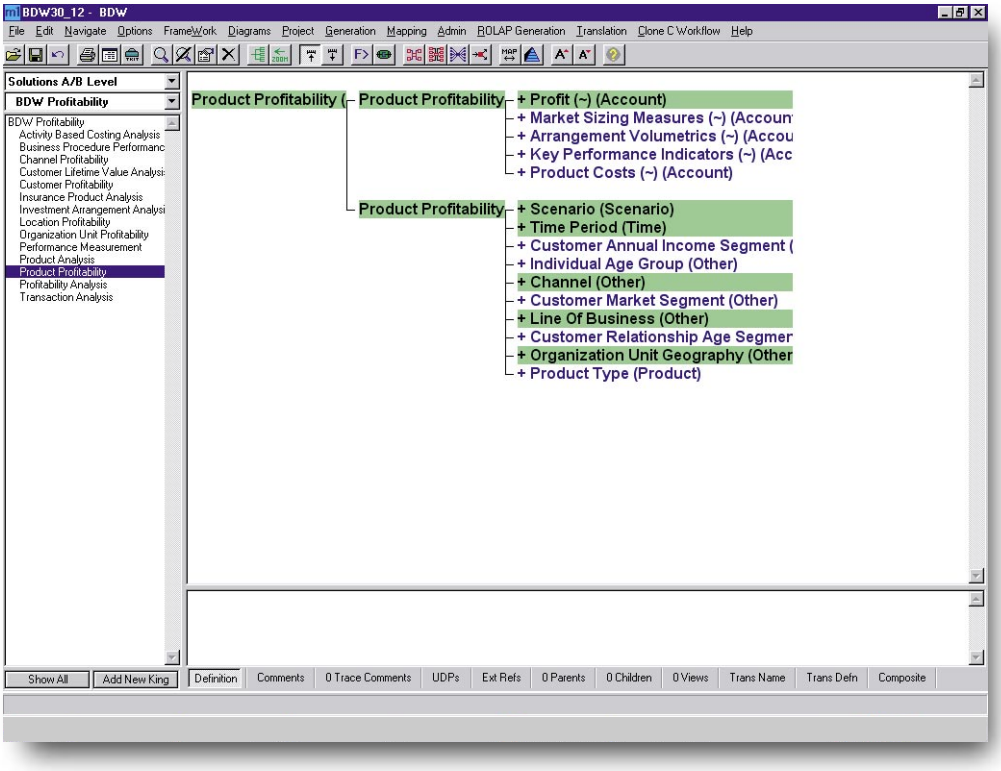
BDW was designed and built based on two basic assumptions. Firstly, that the user has a set of business requirements he/she wishes to fulfill. Secondly, that a set of data can be made available from which to draw the information. These two assumptions represent two divergent concepts. The first is a business-oriented concept, while the second is a technology-oriented concept. Therefore, the challenge to the BDW team is to fulfill both requirements. It does this by fulfilling specific business requirements prior to executing a data driven approach.

BDW offers a set of more than 80 Business Solution Templates (BSTs) that allows business managers to quickly and easily define their reporting and analysis requirements. Each BST consists of a series of measures and dimensions and is effectively a data mart template. A measure is an item that business users wish to count, for example: Number of Customers, Profitability. A dimension is something by which users wish to group measures, for example Time, Product, Branch, Customer Segment. The BSTs provide the framework to rapidly define business requirements and cover all major business intelligence issues faced by financial services organizations.

These BSTs enable the rapid scoping and prototyping of data marts in a financial services organization. Using the modeling software provided as part of BDW, analysts and business users can work with the BSTs to quickly gather the reporting and analysis requirements of their organization. Prototype data marts can then be automatically generated either as MDOLAP outlines or as Star Schema models.

The BSTs now provide the underlying data mart specifications to support the Basel II Pillar 3 Reporting Tables as defined in the Consultative Package 3 documentation. Specifically the BSTs support Credit Risk IRB Advanced as well as initial reporting specifications for Market Risk and Operational Risk. Within BDW these measures and dimensions are mapped back to the BDW Model itself so that the scoping of the reporting and analysis requirements automatically selects the most appropriate data warehouse entities and attributes required to support those requirements.

The following diagram shows and example of the “Product Profitability” BST with some scoped measures and dimensions. This example would generate a prototype data mart outline for the analysis of Product Profitability. Were this data mart developed and placed in production, business end users would be able to use it to analyze Profit by Time Period, Individual Age Group, Channel and Product Type.



Using these BSTs it is possible to generate prototype data mart designs for Star Schemas, OLAP environments and DB2 Cube Views. Once these prototype data marts have been populated from the data warehouse it is then possible to create a range of reports and charts.

The Five Business Areas

BDW contains more than 80 BSTs covering five business areas.

- Risk
- Regulatory Compliance
- Relationship Marketing
- Profitability
- Asset & Liability Management

These BSTs are listed here and are described in further detail later in the next section.

Risk - Focus on the impact of potential changes in the financial services organization's business. Extensive work has been done to support the Pillar 3 reporting requirements of Basel II and the implied reporting and analysis requirements of Pillar 2.

Authority Profiling
Collections Analysis
Credit Risk Analysis
Credit Risk Assessment
Credit Risk Mitigation Assessment
Customer Credit Risk Profile
Debt Restructure Analysis
Insurance Risk Profile
Interest Rate Risk Analysis
Involved Party Exposure
Liquidity Risk Analysis
Location Exposure
Non Performing Loan Analysis
Operational Risk Assessment
Operational Risk Loss Analysis
Outstandings Analysis
Portfolio Credit Exposure
Securitization Analysis
Security Analysis

Regulatory Compliance - Regulatory Compliance has been introduced as a seperate category to support regulatory reporting and AML.

Balance Sheet Classified Approach Analysis
Balance Sheet Order Of Liquidity Approach Analysis
Balance Sheet Net Assets Approach Analysis
Balance Sheet Portfolio Basis Approach Analysis
Cash Flow Direct Analysis
Cash Flow Indirect Analysis
Cash Flow Direct FI Analysis
Cash Flow Indirect FI Analysis
Income Statement By Function Analysis
Income Statement By Nature Analysis
Income Statement FI Approach Analysis
Statement Of Changes In Equity Analysis
Sarbanes Oxley Act Analysis (SOX)
Sarbanes Oxley Act Balance Sheet Analysis
Sarbanes Oxley Act Cash Flow Analysis
Sarbanes Oxley Act Statement Of Changes Shareholder Equity Analysis
Sarbanes Oxley Act Statement Of Income Analysis
ECB Reporting
Financial Capital Adequacy Analysis
Foreign Financial Account Analysis
Structure of Regulatory Capital
Suspicious Activity Analysis
Transaction Activity Analysis

Relationship Marketing - Relationship Marketing BSTs focus on the quality and effectiveness of the financial services organization's commercial relationships with other Involved Parties.

Campaign Analysis
Cross Sell Analysis
Customer Attrition Analysis
Customer Behavior
Customer Complaints Analysis
Customer Delinquency Analysis
Customer Interaction Analysis
Customer Investment Profile
Customer Loyalty
Individual Customer Profile
Lead Analysis
Market Analysis
Wallet Share Analysis

Profitability - Offer analysis of areas of the financial services organization with emphasis on its ability to maximize profit.

Activity Based Costing Analysis
Business Procedure Performance Measurement
Channel Profitability
Customer Lifetime Value Analysis
Customer Profitability
Insurance Product Analysis
Investment Arrangement Analysis
Location Profitability
Organization Unit Profitability
Performance Measurement
Product Analysis
Product Profitability
Profitability Analysis
Transaction Profitability Analysis

Asset & Liability Management - Asset & Liability Management BSTs focus on reporting and analysis requirements for the agement of assets and liabilities to maximize long term wealth for an Involved Party.

Capital Allocation Analysis
Capital Procurement
Credit Loss Allowance Analysis
Equity Position Exposure
Financial Management Accounting
Funds Maturity Analysis
Income Analysis
Interest Rate Sensitivity Analysis
Liquidity Analysis
Net Interest Margin Variance
Short Term Funding Management
Structured Finance Analysis

Business Solution Templates in Detail (Business Coverage)

Risk

Authority Profiling
To evaluate the risk of providing credit and settlement authorization to employees, organization units, organization unit groups, subsidiaries, agencies, and employment positions. It is important to know keep track on the responsibilities and authorization limits accorded to individuals and bodies of people with regards to the provision of credit lines on products and to customers and the settlement limits on arrangements and the allowance of writing off those debts deemed too costly to recover.
Typical Measures: Total Arrears, Total Credit Amount Secured, Total Credit Limit
Typical Dimensions: Organization Unit Authority Designation, Credit Authority Level

Collections Analysis
To determine trends in the collection of loan repayments according to the number of repayments collected, rejected or past due. By keeping information regarding the various reasons and methods for the repayment of loans adopted by customers in relation to their personal characteristics, geographic location and past history on repayments, will enable the financial Services organization to create a Risk rating for customers. This will enable them to assess the risk associated with that customer potentially taking out other products requiring repayment or applying the risk rating to similar types of customers taking out a product.
Typical Measures: Total Loan Repayment Amount Collected, Number of Loan Repayments Past Due
Typical Dimensions: Expected Default of Counterparty, Line of Credit Unutilized Range

Credit Risk Analysis
To analyze the financial Services organization's credit risk in terms of earnings volatility due to variations in credit losses. financial services organizations make their money not on money deposited but on monies lent and the interest accrued during the term of the repayment period. However the risk of never recovering the monies lent could outweigh the potential profit earned from the loan. By keeping information regarding the various losses incurred on loans and the circumstances relating to each loss will enable the financial Services organization to reduce their risk by being more selective to whom and in what circumstances loans are made. It is not to eliminate the risk but rather reduce it in relation to the interest earned.
Typical Measures: Number of Non Performing Accounts, Ratio of Security to Credit
Typical Dimensions: Credit Reinstatement Status, Customer Net Worth

Credit Risk Assessment
To analyze the credit risks of the financial services organization, in accordance with the guidance for Pillar 2 - Supervisory Review Process, and Pillar 3 - Market Discipline in The New Basel Capital Accord from the Basel Committee for Banking Supervision, Bank for International Settlements. In addition to the general requirements of Credit Risk analysis, a financial Services organization may have additional reporting requirements to be in compliance with a particular banking standard. For example, in The New Basel Capital Accord, a financial Services organization is required to disclose information on their outstanding exposures and allowances reserved to cover a loss scenario. Depending on the complexity of their business, a financial Services organization may gain approval from the regulators, to use a higher standard of risk calculation. Rewards include a more comprehensive risk system, improved credit rating and the approval to hold a lower capital reserve amount, thereby releasing more funds into the business. In this case, the bank will be required to disclose more generated statistics such as the probability that a customer will default, the exposure at the time of the default and expected loss and recovery amount in case of that default.
Typical Measures: Total Risk Weighted Assets, Capital Adequacy Ratio
Typical Dimensions: Financial Institution organization Group Reporting Structure, Arrangement Time To Maturity Segment

Credit Risk Mitigation Assessment
To analyze the credit risks mitigation of the financial services organization, in accordance with the guidance for Pillar 2 - Supervisory Review Process, and Pillar 3 - Market Discipline in The New Basel Capital Accord from the Basel Committee for Banking Supervision, Bank for International Settlements. In addition to the general requirements of Credit Risk assessment, a financial Services organization may have additional reporting requirements to be in compliance with a particular banking standard. For example, in The New Basel Capital Accord, a financial Services organization is required to disclose information on their credit risk mitigation techniques and the effect such mitigation has on the financial Services organizations outstanding exposures.
A financial Services organization will be required to disclose information on the type and value of the underlying asset that was given as security when the financial Services organization issued the credit. A financial Services organization needs to determine this information so that it has a better account of its financial assets. Should a default on a loan occur, the financial Services organization has a clear understanding of the actual exposure it has, how quickly it can realize funds from the asset, and how much it may stand to loose on the overall loan. The financial Services organization will also require this information if it intends to offset a large number of its positions in a netting agreement with one of its trading partners.
Typical Measures: Total Collateralized Exposure Amt After Netting, Undrawn Commitments Amount
Typical Dimensions: Netting Method Type, Collateral Risk Weighting

Customer Credit Risk Profile
To determine profiles of Customer Credit Risk in terms of the amount of credit in arrears, average balances, credit score and customer balance sheet, and thereby help to reduce the risk of customer credit by forecasting the profile of the customer most likely to incur credit risk, and give preventative advice. By holding this information it reduces the risk the financial Services organization exposes itself to by regulating the amount and types of new customers it takes on and the amount of exposure it takes on with existing customers requesting loans when their circumstances do not make this a feasible option.
Typical Measures: Number of Non Performing Accounts, Amount of Principal Arrears
Typical Dimensions: Customer Net Worth, Financial Legal Status Type

Debt Restructure Analysis
To determine how a loan arrangement considered to be at risk is being conducted in relation to its applied limits, collateral margin, fee income generated and residual transferable asset value, and thereby help to determine an optimal restructuring formula. This is to reduce the risk for the financial Services organization by getting the loan at risk back on track and avoid it progressing into a possible Write Off situation. It also encourages the customer to review their financial situation, make changes to their proposed repayment structure with assistance from the financial Services organization, provide additional security if available and generally encourages the relationship between the customer and the financial Services organization at a lower risk.

Typical Measures: Percentage of Collateral Value per Loan, Ratio of Loan Utilized to Approved Limit
Typical Dimensions: Arrangement Negotiated Settlement Type, Debt Restructure Difficulty Level

Insurance Risk Profile
To identify the risk factors, income and costs associated with the Customers and Resource Items insured by the financial Services organization, and thereby to establish if a prospective Insurance Arrangement is a good risk. The financial Services organization needs to be sure that the customer is ready, willing and able to afford the necessary repayments for the insurance of their resources and also that the resources being insured are considered worth doing both in asset value and the likelihood that the insurance cover will be called into force by the customer due to a high probability that the resource will become defective.
Typical Measures: Number of Arrangements, Total Amount of Claim Payments
Typical Dimensions: Individual Age Group, Individual Health Status

Interest Rate Risk Analysis
To analyze the exposure of an asset or liability to market fluctuations in the level of interest rates. The fluctuating rate of interest in the market place and the rate of inflation are factors, which financial Services organizations have to constantly be aware of in order to increase the interest rate to customers on deposits when the interest rate on loans rises and also to reduce the interest rate to customers on deposits when the interest rate on loans is low. This information is used to not just to keep in line with the government strategy of interest to inflation but also to insure that you remain competitive with the other financial Services organization with a view to maintaining and possibly increasing your customer base.
Typical Measures: Net Flow, Net Interest Margin
Typical Dimensions: Interest Type, Measurement Currency

Involved Party Exposure
To determine the likelihood that an Involved Party, such as a customer, counter party or supplier, will not support a loan or make a payment according to the agreed conditions; and the degree to which the financial Services organization is at risk in this situation. It is important to know your customers and to know how changes in circumstances can change their expected pattern of behavior. Maintaining and keep track of information about your Involved Parties with regards to exposure with other products, both with yourselves and other financial Services organizations and with regards to the characteristics and demographics of the individual concerned all help build up a constantly changing picture of the person to whom the exposure has been made and the ever changing risk of the financial Services organization not being able to recover all or part of its indebtedness.
Typical Measures: Total Amount Over Limit, Loan Loss Allowances
Typical Dimensions: Exception Cause, Security Coverage Type

Liquidity Risk Analysis
To analyze the uncertainty surrounding the extent of convertibility of assets and the speed of their conversion to cash. In the event of total non-recoverability of the debt to the individual the financial Services organization will try and recovers its exposure from the assets put up a surety against the original loan. It is important to make sure that the asset is a saleable commodity, that the asset value does not go down below that of the loan during the repayment period and also that the lien on the loan or the order of priority on who recovers their exposure from that asset is not more than the value of the immediate sale. The face value of the asset is not to be taken as the actual amount recovered as the sale of the article may be sold 'at best' price in order to recover the money in the shortest time possible.
Typical Measures: Number of Policy Exceptions, Net Flow
Typical Dimensions: Resource Item Liquidity, Arrangement Commitment Term

Location Exposure
To determine the likelihood that within a given Geographic Area (such as a City, State, Region or Country) that loans and payments will not be supported according to the agreed conditions; and the degree to which the financial Services organization is at risk in this situation. This may be due to the exposure of the area to events such as currency devaluation or natural disasters etc... The judgment of the financial Services organization on whether to accept the risk of the loan is based upon the trends of repayments of loans to other individuals from the same location. This will include taking into account the asset value of the surety, the rate of employment, the bankruptcy state and the Location risk rating based upon aspects such as theft, violence and unrest. The financial Services organization will assess the risk and either endorse it with certain extra provisions such as higher interest rates, shorter repayment times, smaller maximum loan amounts, higher surety values etc..
Typical Measures: Number of Non Performing Accounts, Average Duration of Non Performance
Typical Dimensions: Household Annual Income Segment, Geographic Area

Non Performing Loan Analysis
To identify the characteristics of loans that are not being repaid or supported according to their agreed conditions. To reduce the risk by the financial Services organization to loss due to non repayment of loans there is a need not just to identify the trends of the individuals who fail to make their loan repayments but also to review all the non-performing loans and identify what trends there may be with regards to individual types or location demographics or assets being used as surety etc...
Typical Measures: Average Credit Score, Total Amount Over Limit
Typical Dimensions: Security Appraisal Age Segment, Arrangement Time to Maturity Segment

Operational Risk Assessment
To analyze the financial services organization's operational risks, the types or causes of the operational risks, and the amount of regulatory capital required to provide liquidity for the financial services organization against the effect of the operational risks. The financial Services organization must take into consideration the possibility of constant operational risk. In addition to the risk involved in extending credit to customers or market factors affecting banking business, the bank also faces the possibility of loss due to operational risks such as legal, system, reputation, etc... For the purposes of calculating regulatory capital requirements, the bank must reserve a set amount of capital to cover the event of operational risk. This amount may be fixed or varied depending on the particular line of business, as certain areas of the business may be more susceptible to particular types of operational risk.
Typical Measures: Standardized Operational Risk Regulatory Capital Amount, Operational Risk Charge Before Capital Reduction
Typical Dimensions: Line Of Business Reporting Group, Financial Institution Group Reporting Structure

Operational Risk Loss Analysis
To analyze the financial services organization's operational risk loss events, the total exposure, loss insurance amounts, write-offs and other adjustments to determine the actual impact on the financial Services organizations capital. In the determination of Operational Risk capital requirements, a financial Services organization must capture and analyze events that resulted in capital loss. It must be able to

identify specific loss events, thresholds beyond which those events become significant and determine where loss amounts have already been factored into credit risk capital requirements.
Typical Measures: Total Adjustment Amount, Recovery Amount, Gross Loss Amount
Typical Dimensions: Loss Event Type, Event Origination Type

Outstandings Analysis
To identify the net position and pattern of the financial Services organization in trading products, allowing for unpaid or unsettled situations where the traded product is not held by the financial Services organization. Not all loans guaranteed by assets are held by the financial Services organization. When making the decision to guarantee a loan the financial Services organization has to identify and ensure its position in relation to the priority of repayments made to more than one guarantor of the same surety. If the asset or deed is actually held by the financial Services organization then it is more likely to recover its indebtedness immediately than if the surety was held by another financial Services organization and you were forced to 'stand in line' for repayment.
Typical Measures: Total Average Value of Customer Debits, Total Debits in Period
Typical Dimensions: Product Type, Exception Cause, Clearing System

Portfolio Credit Exposure
To evaluate the likelihood a credit Portfolio will not be supported (loans or payments) according to the agreed conditions; and the degree to which the financial Services organization is at risk in this situation. An individual may take out a single loan and put in place an asset to stand as surety. They may increase this loan with a series of other loans and indebtedness against which the same asset or further assets are provided as surety. Each individual loan may score an acceptable risk rate however it is important to be able to review the total indebtedness of an individual or body against their total surety. It is not always prudent to just keep 'adding' to the total portfolio of loans but sometimes to re-structure the total loan portfolio against surety. Sometimes this may work out in favour of reduced interest rates to the customer, other times it might mean the financial Services organization is aware that its risk exposure is too high and call in some of the outstanding debts.
Typical Measures: Portfolio Value, Portfolio Beta Risk Index, Credit Exposure
Typical Dimensions: Customer Net Worth, Asset Type, Measurement Currency

Securitization Analysis
To analyze the securitization exposures of the financial services organization, in accordance with the guidance for Pillar 3 - Market Discipline in The New Basel Capital Accord from the Basel Committee for Banking Supervision, Bank for International Settlements. In the control and management of financial risk, a financial Services organization needs to report on their risk position with regard to their securitization exposures. An Asset Securitization arrangement is where an originator transfers a group of its risk assets (e.g. Credit Card Receivables or Mortgages) to another party, normally a separate legal entity termed a Special Purpose Entity (SPE). Depending on the role of the financial Services organization in the securitization, it needs to identify the amount securitized and the resulting exposure amount as the originator of the securitized exposure is permitted to remove the capital requirements for the transferred assets from its overall capital requirement.
Typical Measures: Total Amount Of Securitization Exposures Retained, Excess Spread
Typical Dimensions: Securitization Type, Bank Securitization Role

Security Analysis
To analyze the effectiveness of resource items or contractual obligations that have or will be used to mitigate potential or actual credit risk, by, or for obligors. This is done by monitoring the monetary amounts involved, and determining the potential for the financial Services organization to realize funds from the credit risk mitigation provided. The value of an asset is not always the amount able to be realized from it by the financial Services organization in times of need. The asset itself may devalue during the period of the loan and the financial Services organization needs to keep aware of the value and nature of the surety in relation to the changing trends of the market place. E.g. Endowment policies were thought to be adequate asset value against mortgages but this has now been found not to be the case and people are expected to provide additional assets as 'lien' or surety to the original loan. The sale of an asset may provide the necessary surety if given the time and conditions in which to find the right buyer however if a loan is to be redeemed early then time is usually not a factor that is important and so the asset is sold for a much as it can realize in the shortest time possible. The analysis has to take this into account when agreeing to take an asset as surety. E.g. Most paintings by well known artists keep increasing in value and will always find ready buyers however shares in stocks can be very volatile and the value will change depending on many market factors.
Typical Measures: Total Collateral Valuation, Adjusted Collateral Valuation
Typical Dimensions: Resource Item Value Segment, Lien Position, Security Coverage Type

Regulatory Compliance

Balance Sheet Classified Approach Analysis
To analyze a financial Services organization Balance Sheet which reports the financial Services organization's assets, liabilities, and net worth at a specific time. The Classified approach is utilized for the associated measures and dimensions. Identifies the key elements of balance sheet disclosures using the "Classified" approach as required by the services organization for internal and external reporting.
Typical Measures: Assets Classified, Liabilities And Equity Classified
Typical Dimensions: Line Of Business Reporting Group, Organization Unit

Balance Sheet Order Of Liquidity Approach Analysis
To analyze a financial Services organization Balance Sheet which reports the financial Services organization's assets, liabilities, and net worth at a specific time. The Order Of Liquidity approach is utilized for the associated measures and dimensions. Identifies the key elements of balance sheet disclosures using the "Order of Liquidity" approach as required by the services organization for internal and external reporting.
Typical Measures: Assets Order Of Liquidity, Liabilities And Equity Order Of Liquidity
Typical Dimensions: Line Of Business Reporting Group, Financial Institution Group Reporting Structure

Balance Sheet Net Assets Approach Analysis
To analyze a financial Services organization Balance Sheet which reports the financial Services organization's assets, liabilities, and net

worth at a specific time. The Net Assets approach is utilized for the associated measures and dimensions. Identifies the key elements of balance sheet disclosures using the "Net Assets" approach as required by the services organization for internal and external reporting.

Typical Measures: Net Assets, Net Liabilities, Equity Net
Typical Dimensions: Line Of Business Reporting Group, Organization Unit

Balance Sheet Portfolio Basis Approach Analysis
To analyze a financial Services organization Balance Sheet which reports the financial Services organization's assets, liabilities, and net worth at a specific time. The Portfolio Basis approach is utilized for the associated measures and dimensions. Identifies the key elements of balance sheet disclosures using the "Portfolio Basis" approach as required by the services organization for internal and external reporting.
Typical Measures: Assets Portfolio Basis, Liabilities And Equity Portfolio Basis
Typical Dimensions: Line Of Business Reporting Group, Measurement Currency

Cash Flow Direct Analysis
To analyze a financial Services organization's Cash Flow which is the amount of cash a financial Services organization generates and uses during a period, calculated by adding noncash charges (such as depreciation) to the net income after taxes. The Direct approach is utilized for the associated measures and dimensions.
International Financial Reporting Standard IAS 1 102
International Financial Reporting Standard IAS 1 8 d
Typical Measures: Net Cash Flow From Operating Activities, Cash And Cash Equivalents Beginning Balance
Typical Dimensions: Line Of Business Reporting Group, Reporting Currency

Cash Flow Indirect Analysis
To analyze a financial services organization's Cash Flow which is the amount of cash a financial Services organization generates and uses during a period, calculated by adding noncash charges (such as depreciation) to the net income after taxes. The Indirect approach is utilized for the associated measures and dimensions.
International Financial Reporting Standard IAS 1 102
International Financial Reporting Standard IAS 1 8 d
Typical Measures: Indirect Cash Flow Operating Activities, Cash And Cash Equivalents Ending Balance
Typical Dimensions: Financial Institution Group Reporting Structure, Organization Unit

Cash Flow Direct FI Analysis
To analyze a financial Services organization's Cash Flow which is the amount of cash a financial Services organization generates and uses during a period, calculated by adding noncash charges (such as depreciation) to the net income after taxes. The Direct Financial Institution approach is utilized for the associated measures and dimensions.
International Financial Reporting Standard IAS 1 102
International Financial Reporting Standard IAS 1 8 d
Typical Measures: Net Increase (Decrease) In Cash And Cash Equivalents, Effect Of Changes In Scope Of Consolidation
Typical Dimensions: Line Of Business Reporting Group, Financial Institution Group Reporting Structure

Cash Flow Indirect FI Analysis
To analyze a financial Services organization's Cash Flow which is the amount of cash a financial Services organization generates and uses during a period, calculated by adding noncash charges (such as depreciation) to the net income after taxes. The Indirect Financial Institution approach is utilized for the associated measures and dimensions.
International Financial Reporting Standard IAS 1 102
International Financial Reporting Standard IAS 1 8 d
Typical Measures: Effect Of Exchange Rate Changes On Cash And Cash Equivalents, Cash And Cash Equivalents Beginning Balance
Typical Dimensions: Line Of Business Reporting Group, Measurement Currency

Income Statement By Function Analysis
To analyze a financial Services organization Income Statement which is a financial report that by summarizing revenues and expenses, and showing the net profit or loss in a specified accounting period it depicts a financial Services organization's financial performance due to operations as well as other activities rendering gains or losses. Also known as the profit and loss statement. The Function approach is utilized for the associated measures and dimensions.
Typical Measures: Profit (Loss) After Tax, Earnings Per Share
Typical Dimensions: Financial Institution Group Reporting Structure

Income Statement By Nature Analysis
To analyze a financial Services organization Income Statement which is a financial report that by summarizing revenues and expenses, and showing the net profit or loss in a specified accounting period it depicts a financial Services organization's financial performance due to operations as well as other activities rendering gains or losses. Also known as the profit and loss statement. The Nature approach is utilized for the associated measures and dimensions.
Typical Measures: Profit (Loss) From Operations, Earnings Per Share
Typical Dimensions: Financial Institution Group Reporting Structure, Organization Unit

Income Statement FI Approach Analysis
To analyze a financial Services organization Income Statement which is a financial report that by summarizing revenues and expenses, and showing the net profit or loss in a specified accounting period it depicts a financial Services organization's financial performance

due to operations as well as other activities rendering gains or losses. Also known as the profit and loss statement. The financial Services organization approach is utilized for the associated measures and dimensions.
International Financial Reporting Standard IAS 1 8

Typical Measures: Earnings Per Share, Profit (Loss) After Tax
Typical Dimensions: Financial Institution Group Reporting Structure, Organization Unit

Statement Of Changes In Equity Analysis
To analyze a financial Services organization's Statement Of Changes In Equity which includes net profit / loss for period, other gains and losses recognized directly in equity and the impact of changes in accounting policy and fundamental errors when these are presented as a prior period adjustment.
Typical Measures: Changes In Issued Capital, Changes In Minority Interest
Typical Dimensions: Measurement Currency, Line Of Business Reporting Group

Sarbanes Oxley Act Analysis (SOA)
To support the financial Services organization in the generation and analysis of the Security And Exchange Commissions (SEC) 10Q and 10K reports which support the financial Services organization with regard to compliance with Sections 302 and 404 of the Sarbanes Oxley Act.
Section 302. Corporate responsibility for financial reports.
Section 404. Management assessment of internal controls.
Typical Measures: Capital, Net Income, Total Assets, Capital Ratios
Typical Dimensions: Financial Institution Group Reporting Structure, Reporting Currency

Sarbanes Oxley Act Balance Sheet Analysis
To analyze the financial Services organizations 10Q and 10K Balance Sheets which report the financial Services organization's total assets, total liabilities, and total shareholders equity at a specific time. The Sarbanes Oxley Act Balance Sheet Analysis template assists financial Services organizations in optimizing report generation with regard to the Securities And Exchange Commissions (SEC) 10Q and 10K regulatory filing requirements.
Typical Measures: Working Capital, Profit, Loan Loss Allowance Ratio
Typical Dimensions: Line Of Business Reporting Group, Organization Unit

Sarbanes Oxley Act Cash Flow Analysis
To analyze a financial Services organization's Cash Flow which is the amount of cash a financial Services organization generates and uses during a period, calculated by adding noncash charges (such as depreciation) to the net income after taxes. The Sarbanes Oxley Act Cash Flow Analysis template assists financial Services organizations in optimizing report generation with regard to the Securities And Exchange Commissions (SEC) 10Q and 10K regulatory filing requirements.
Typical Measures: Net Income, Supplemental Disclosures On Continuing Operations
Typical Dimensions: Line Of Business Reporting Group, Organization Unit

Sarbanes Oxley Act Statement Of Change In Shareholders' Equity Analysis
To analyze a financial Services organization's Statement Of Changes In Shareholders' Equity which includes net profit / loss for period, other gains and losses recognized directly in shareholders equity and the impact of changes in accounting policy and fundamental errors when these are presented as a prior period adjustment. The Sarbanes Oxley Act Statement Of Changes In Shareholders' Equity Analysis template assists financial Services organizations in optimizing report generation with regard to the Securities And Exchange Commissions (SEC) 10Q and 10K regulatory filing requirements.
Typical Measures: Capital, Net Income, Share Capital
Typical Dimensions: Organization Unit, Measurement Currency

Sarbanes Oxley Act Statement Of Income Analysis
To analyze a financial Services organization Income Statement which is a financial report that by summarizing revenues and expenses, and showing the net profit or loss in a specified accounting period it depicts a financial Services organization's financial performance due to operations as well as other activities rendering gains or losses. Also known as the profit and loss statement. The Sarbanes Oxley Act Statement Of Income Analysis template assists financial Services organizations in optimizing report generation with regard to the Securities And Exchange Commissions (SEC) 10Q and 10K regulatory filing requirements.
Typical Measures: Earnings Per Share Information, Income, Long Term Debt
Typical Dimensions: Line Of Business Reporting Group, Measurement Currency

ECB Reporting
The statistical reporting requirements foreseen by the European Central Bank (ECB) for Monetary financial Services organizations within the European Monetary Union area. This assists the financial Services organization in the analysis of arrangement balances and credit or debit totals throughout the reporting period, broken down by the purpose of the loan , the sector or residency of the counterparty and the currency of the arrangement.
Typical Measures: Total Credits In Period, Total Debits In Period
Typical Dimensions: ECB Lending Purpose, ECB Counterparty Residency

Financial Capital Adequacy Analysis
To analyze the financial services organization's regulatory capital requirements for a number of different types of risk, and compare the amount of required regulatory capital for the specified risk types, against the total amount of recognized regulatory capital available to the financial services organization. For regulatory reporting requirements such as those defined in The New Basel Capital Accord by the

Basel Committee for Banking Supervision, it is essential for the financial Services organization to be able to analyze and report on their capital situation with regard to the required regulatory capital amount and the amount which is deficient or in surplus of that requirement for credit, market and operational risk. They also need to be able to break capital requirements down into Tier totals and capital adequacy ratios and be able to identify the value at risk throughout the measurement period.
Typical Measures: Total Capital Deficiency Amount, Value At Risk
Typical Dimensions: Financial Institution Group Reporting Structure, Consolidation Method

Foreign Financial Account Analysis
To analyze the financial Services organization's Foreign Financial Accounts in an effort to curb money laundering and other fraudulent activities. With new anti money laundering legislation enforced worldwide, there is an increasing need for the financial Services organization to analyze their accounts so they can identify and report illegitimate accounts or customers. This would include the analysis of their foreign account balances, the location of the account creation, the individuals or organizations creating those accounts and a study of those parties including their address, method of identification, nationality, etc...
Typical Measures: Number Of Joint Owners, Foreign Exchange Margin Income
Typical Dimensions: Account Type, Country Of Account

Structure Of Regulatory Capital
To analyze the amount and types of supervisory or regulatory recognized capital available to the financial services organization.
For regulatory reporting requirements such as those defined in The New Basel Capital Accord by the Basel Committee for Banking Supervision, it is essential for the financial Services organization to analyze and report on their capital situation with regard to the required regulatory capital amount for the consolidated financial Services organization reporting group. They may be required to segregate the capital requirement into overall eligible capital and multiple tier capital which may be further divided into stock, reserves, capital instruments, goodwill and other surplus capital. The financial Services organization may be required to disclose such values including the method of consolidation the financial accounts of each legal entity within the financial services group.
Typical Measures: Capital Deduction Amount For Group Entity, Surplus Capital
Typical Dimensions: Consolidation Method, Financial Institution Group Reporting Structure

Suspicious Activity Analysis
To identify suspicious transactions between the financial services organization and its customers in an attempt to target money laundering activities.
With new anti money laundering legislation enforced worldwide, there is an increasing need for the financial Services organization to analyze their accounts, customers and activities so they can identify and report fraudulent and suspicious activities. Some activities may be easily identified as fraudulent, however others may require a much more in-depth analysis over a longer measurement period. To do this, a financial Services organization needs to have a clear understanding of those activities identified as fraudulent and it needs to have the ability to analysis historic data for trends in activities, which at an individual level are acceptable, but when analyzed as a group may be considered suspicious. A financial Services organization also needs to have a better understanding of their customers. It needs to record information such as geographic residency and employment of the customer, method of identification to the financial Services organization for the creation of accounts and completion of transactions. The ultimate aim of Suspicious Activity analysis, is to identify who is involved in the activity as a provider and as a recipient of funds and if all the activities are legitimate.
Typical Measures: Number Of Suspicious Transactions, Inter Company Borrowings
Typical Dimensions: Alias Or Doing Business As Name, Organization Economic Intent

Transaction Activity Analysis
To enable the transactions that are handled by the financial Services organization to be analyzed with a view to monitoring currency transactions and international transportation of money in an effort to curb money laundering and other fraudulent activities. With new anti money laundering legislation enforced worldwide, there is an increasing need for the financial Services organization to analyze the activities on their accounts so they can identify and report fraudulent and suspicious activities. The financial Services organization needs to analyze patterns in the activities on accounts which would include the amount transferred in a transaction, frequency of the transaction and particular traits of the transactions such as time of day, currency of transaction or the method by which the transaction was processed. It is also important for the financial Services organization to identify the geographic properties of the transaction including where it was initiated and to whom and where the funds are to be received.
Typical Measures: Total Transaction Amount, Foreign Exchange Conversion Charges
Typical Dimensions: Geographic Area Of Transaction Destination, Funded Currency

Relationship Marketing

Campaign Analysis
To analyze and compare the effectiveness of customer and product promotions, marketing drives, and advertising. By keeping track of the costs and effort in promoting a campaign, by recording the responses to advertising and by tracking the increase in revenue by sales of products and services together with any additional customers, you can determine if it is cost effective to hold these campaigns in the future.
Typical Measures: Number of New Arrangements from Campaign, Response Percentage
Typical Dimensions: Customer Market Segment, Communication Response Type

Cross Sell Analysis
To analyze the characteristics of multi-product usage by customers. Identifying profitable trends usage of a base product suggests complementary product and service purchases. This also allows review of a financial Services organization cross-selling plans.
By knowing how successful the sale of complimentary products are in regards to revenue and profit will enable you to target those

customers already owning or currently purchasing the 'base' product and encourage the sale of further products. E.g. A Mortgage product linked with a Life Assurance policy product linked with House Insurance and Contents Insurance products protected by a Mortgage Protection product.
Typical Measures: Total New Funds from Cross Sell, Number of New Arrangements For Existing Customers
Typical Dimensions: Initial Product, Secondary Product, Line of Business

Customer Attrition Analysis
To understand the reason and impact of customers ceasing to use the financial Services organization's products and services. By recording the reasons why an existing customers transfers to a competitor and identifying what the financial impact is on revenue and profit, you can improve on your efficiency to prevent further defections and possibly target your old customers back by improving the services and products causing the original defections

Typical Measures: Net Change in Number of Arrangements, Total Customer Net Worth
Typical Dimensions: Customer Market Segment, Reason for Leaving

Customer Behavior
To understand customer trends, and define the lifetime activity patterns of the financial Services organization's customers, in order to assess and guide the provision of products and services to the customer community. By knowing about your customers and their characteristics and assessing this information over time will enable you to identify trends and behaviors, which enable you to target specific products and services at selected target customers in the community.
Typical Measures: Number of Delinquent Transactions, Total Cost of Financial Transactions
Typical Dimensions: Customer Relationship Status, Communication Type

Customer Complaints Analysis
To understand the pattern of complaints and the effectiveness of the resolution process. By knowing the existing customers complaints and the effectiveness of your resolution process in dealing with them – will enable you to manage your customer base retention by not losing existing customers to the competition.
Typical Measures: Average Complaint Response Time, Customer Complaint Ratio
Typical Dimensions: Resolution Status, Communication Form

Customer Delinquency Analysis
Customer Delinquency Analysis analyzes Customers who have at least one Arrangement that has been deemed delinquent, in terms of the length of time for which the delinquencies have occurred, and the delinquent amounts outstanding. By knowing which customers have products with outstanding repayments and how long these missed repayments have been outstanding will enable you to identify those customers who have a higher risk association if the apply for other repayment type products.
Typical Measures: Delinquent Amount, Number of Days Delinquent
Typical Dimensions: Product Type, Credit Reinstatement Status

Customer Interaction Analysis
Analysis of how the financial Services organization interacts with its customers, and the effectiveness of communications and channels in terms of winning new business. The analysis measures active threads of communication. A Thread is a series of sequential Communications on a given subject. Examples are a Complaint Thread initiated by a Customer, or a Product Sales thread initiated by the financial Services organization. An active thread is defined as being a thread on which a Communication was sent or received within a given Measurement Period. By knowing and keeping track of the communication process you can assess how much business you gain or how many customers you may lose by poor communication. E.g. Complaints handling communication initiated by the customer or a Product sales communication handled by the financial Services organization.
Typical Measures: Number of Arrangements Opened, Total Number of New Arrangements from Communications
Typical Dimensions: Communication Type, Channel

Customer Investment Profile
To determine profiles of Customer Investment Portfolios in terms of activities, turnover, strategy and objectives. Hence to increase Customer retention and consequent investment-related revenue to the financial Services organization by advising Customers on methods of maximizing those Investments in which the financial Services organization has an involvement. By knowing your customers investments, you can advise if, when, why or what a customer should be advised to invest their money in with the financial Services organizations products and services.
Typical Measures: Total Investment Balance, Total Number of Investment Units
Typical Dimensions: Investment Objective, Investment Use

Customer Loyalty
To understand the determination a customer has for continuing to use the services of the financial Services organization, while recognizing the customer has alternative choices. By knowing why certain customers stay loyal with the financial Services organization and knowing why others leave will enable you to improve those products or services targeted as being the reason for staying or leaving.
Typical Measures: Average Number of Products Held by Customer, Number of Complaints
Typical Dimensions: Customer Relationship Status, Customer Attrition Propensity

Individual Customer Profile
To identify the demographics of the financial Services organization's customer base and compare them with that of the target population and of peer financial Services organizations' customer bases. By knowing details per specific individual customers you can target individuals as to their needs based upon these characteristics and by a comparison to other similar individual customers products purchases.
Typical Measures: Average Net Worth, Average Number of Products Held by Customer

Typical Dimensions: Socio Economic Category, Housing Tenure

Lead Analysis

To identify prospects for new product and service sales, and analyze the effectiveness of this activity. By knowing the characteristics of your customers and the community, new products and services can be potentially sold to this group. The resultant gain in customers and revenue to the financial Services organization from these Leads is documented and can be used in future Lead analysis.
Typical Measures: Market Size, Number of New Product Arrangements
Typical Dimensions: Competitive Win Status, Campaign Type, Channel Delivery Type

Market Analysis

To identify the demographics of a market and the financial Services organization's customer base within the market; and compare the results with that of the target population and of peer financial Services organizations' customer bases. By identifying details regarding particular trends occurring in the marketplace and also recording your customer base characteristics and preferences, you can identify where new product sales could occur. By collating information on the households of existing customers you can identify potential sales to members of the household who hold competitor products or who have no products at all.
Typical Measures: Customer Market Share, Average Household Annual Income
Typical Dimensions: Financial Institution Product Mix, Customer Market Segment

Wallet Share Analysis

To identify the available wealth of Customers compared to their utilization of products and services of the financial Services organization, with a view to measuring the actual and potential sell of the financial Services organization. By knowing what the total number of potential customers are in the marketplace, what your percentage share of that number is based upon your own customer base and what households contain customers with your products – will enable you to target the remaining percentage share as potential customers of your products and services.
Typical Measures: Customer Market Share Percentage, Average Wallet Share
Typical Dimensions: Product Type, Customer Market Segment

Profitability

Activity Based Costing Analysis

To determine how the costs and income received by the financial Services organization are being cross charged between the different Profit Centers, and thereby help to determine an accurate income and cost allocation algorithm. The costs and income are cross charged in relation to the type of the Activity occurring. financial Services organizations need to know they operate in the most efficient and effective way. To do this these costs must be transparent. Transparency is achieved by correctly apportioning costs to Products and Services. Traditional systems distort these costs, as they do not allow for the diverse ranges of products and services, which differ in both volume and complexity. ABC actually relates costs to 'individual' products and services rather than grouping them all together. ABC focuses the management of the operational costs on the underlying causes of the cost at a root level. To reduce costs and improve revenue and therefore the efficiency and effectiveness of organizations, you can now begin to improve the processes which carry out these activities by looking at the costs at the component level of each activity. The Measures and Deliverables associated with this can record the information of costs at the 'Direct Costing' level and the 'Indirect Costing' level. It can record the 'Number of Transactions' and individual product costs and total costs for groups of specific types of Products and Services. It can record the 'Source Allocation' and 'Destination Allocation' centers in order to see how the costs and incomes are cross-charged among different Profit Centers and it also is able to record the 'Allocation reasons' and 'types'. This ensures that information regarding the activities surrounding the Products and Services are captured at an individual level and component level rather than grouping the costing for Products and Services when they can differ in both volume and complexity. However this does demand a 'rigor' on the part of the customer who must be able to accurately record and measure in their source system (GL), the costs of the constituent parts of each broken down activity which relates to the Products and Services. This information will then be able to be extracted and loaded into the BDW in the relevant locations in order to effect detailed Management reporting on the Activity Based Costing of individual or groupings of Products and Services.
Typical Measures: Total Direct Cost, Total Indirect Cost
Typical Dimensions: Source Allocation Center, Allocation Reason

Business Procedure Performance Measurement

To identify the effectiveness and pattern of performing business procedures against benchmarks set by peers, such as comparable organizations and organization units. By keeping track of competitors business processes and procedures and setting targets of excellence you can improve your own processes and procedures in order to exceed those levels set by your competitors.
Typical Measures: Number of Transactions, Number of Complaints
Typical Dimensions: Transaction Type, Complaint Type

Channel Profitability

To identify the contribution to profit of the financial Services organization's channels, including branch networks, agencies, correspondents, and electronic channels. Keeps control on costs of the various methods of communication and delivery mechanisms used in the financial Services organization. Enables a view to be taken on the cost of using a process in the financial Services organization or using a lower costing equivalent by renting or using another services organizations process.
Typical Measures: Arrangement Volumetrics, Key Performance Indicators
Typical Dimensions: Channel Ownership Type, Organization Unit Geography

Customer Lifetime Value Analysis

To evaluate the total projected earnings of a customer to the financial Services organization over the probable lifetime of that customer. This enables you to project the potential for purchases by the customer of additional products or higher value products already owned during the time that customer is with the financial Services organization.

Typical Measures: Retention Savings, Acquisition Cost
Typical Dimensions: Individual Age Group, Customer Relationship Age Segment

Customer Profitability
To evaluate the contribution to profit of the customers of the financial Services organization. This profit contribution by customers can be selected by various different characteristics of the customer base E.g. where the customers resides; how much they earn; age groupings of customers etc..,
Typical Measures: Derived Net Profit, Total Transaction Amount
Typical Dimensions: Customer Market Segment, Length of Time at Current Address

Insurance Product Analysis
To analyze the performance and profitability of Insurance Products in terms of activity counts, premiums received, costs and benefits paid. In order to perform this analysis detail is recorded against aspects such as Number of claims received and accepted; the financial amount of those claims received, accepted or deducted; the average cost of these claims against the number received etc.., Typical *Measures: Number of Lodged Claims, Total Insured Value*
Typical Dimensions: Insurance Hazard Type, Customer Market Segment

Investment Arrangement Analysis
To analyze Investment Arrangements in terms of activities, turnover, income and cost. Hence to determine the performance of Investment Managers and Investment Products. By keeping details on the Investment Arrangements you can identify those products, which perform better than others and therefore promote those to your customers. This also enables you to identify the quality and accuracy of the advice provided by the Investment Managers to the customers with regards to the purchasing choice of selected Investment Products over others.
Typical Measures: Average Investment Arrangement Balance, Total Number of Investment Units
Typical Dimensions: Investment Fund Management Type, Investment Objective

Location Profitability
To identify the contribution to profit of geographic areas served by the financial Services organization. The contribution is based upon how much is spent by the customer on the financial services organizations products with regards to their proximity to the financial services organization, to their proximity to competitors and the proximity of the financial services organization to their competitors.
Typical Measures: Arrangement Volumetrics, Key Performance Indicators
Typical Dimensions: Competitor Proximity, Geographic Area Density Designation

Organization Unit Profitability
To evaluate the contribution to profit of the organization units of the financial services organization. The profitability of the financial services organization is dependant upon the profitability of it individual units or departments of which it is comprised. You can control costs and profit by knowing which units or departments make the most money with the lowest overheads by keeping track of the products and services they deal in; by their level of responsibility and ownership and also by their geographic location.
Typical Measures: Arrangement Volumetrics, Key Performance Indicators
Typical Dimensions: Organization Unit Structure Type, Organization Unit Geography

Performance Measurement
To identify the effectiveness and pattern of Organization Units business performance against benchmarks set by peers, such as comparable organizations and organization units. By keeping detail on how you perform in relation to your competitors with regards to the gain and loss of customers, the number of complaints received and responses to those complaints, the amount of the financial services organizations assets comprising Loans at risk, enable you to keep in perspective how well or how badly you are doing when relating it to your competitors.
Typical Measures: Number of New Customers, Total Inward Customer Communications
Typical Dimensions: Line of Business Reporting Group, Organization Unit Function

Product Analysis
To define products and services according to their features, facilities and conditions, and to compare them with competitors' products. In order to maintain the edge over your competitors you need to keep track of their products and services and how they compare to your own. Therefore you need to know your products and services down to a more detailed level such as Product costs, interest rates, price etc..
Typical Measures: Number of Products, Number of Non Performing Accounts
Typical Dimensions: Product Characteristics, Finance Service Repayment Type

Product Profitability
To evaluate the contribution to profit of the products of the financial services organization. Knowing the details of your products and how much they add to your profit will determine whether you increase profitably lines and decrease costly lines in order to maximize on the financial services organizations revenue and overall profit. To determine the best or worst products you need to track development costs, operational costs and sales costs against the sales of these products and weigh this up against factors such as location, delivery mechanisms etc..,
Typical Measures: Product Costs, Key Performance Indicators
Typical Dimensions: Product Type, Channel Delivery Type

Profitability Analysis
To evaluate the various contributions to profit of the financial services organization based on net directly attributable income and expense, allowing for risk, transaction usage, and transfer pricing for funds. By keeping information about all the component parts of your products and services regarding where the costs occur and the revenues are generated will enable detailed analysis on the amount of profitability

and the reason for the profitability for the financial services organization to occur.
Typical Measures: Profit, Arrangement Volumetrics, Market Sizing Measures
Typical Dimensions: Geographic Area, Transaction Type

Transaction Profitability Analysis
To enable the transactions that are handled by the financial services organization to be analyzed with a view to evaluating the volumes and cost (to the financial services organization) of such transactions. Such measures can be broken down by dimensions such as Transaction Type, originating channel and geography to facilitate comparison. By identifying the total amount of transactions handled by the financial services organization and identifying those which make a profit and those which make a loss due to large deductions and smaller profit margins will enable you to increase overall profit by keeping revenue from transactions up but reducing the more costly and less efficient transactions.
Typical Measures: Total Transaction Amount, Total Transaction Cost
Typical Dimensions: Transaction Type, Measurement Currency

Asset & Liability Management

Capital Allocation Analysis
To evaluate compliance under various capital allocation schemes and regulatory scenarios. Capital loans are made available to the financial services organization either by a regulatory process from the Central Bank or via discretionary loans made available by the financial services organization itself. The loans are subjected to stringent rules of compliance and use and there is usually a requirement to report back to the lender commenting and illustrating the use of the loan and that it is being used under the agreed terms and conditions
Typical Measures: Return on Equity, Return on Capital
Typical Dimensions: Capital Type, Line of Business Reporting Group

Capital Procurement
To identify, classify and structure methods of generating outside capital according to the different types of instruments and their characteristics such as cost and risk. When looking to obtain outside capital from various market sectors there are different processes to adhere to in order to obtain the loan. The primary factors to take into consideration when looking for, evaluating and making a formal plan for obtaining the loan is to be aware of the Costs in obtaining the loan against the return on the use of it and also to look at the risks involved.
Typical Measures: Risk Adjusted Return On Capital, Capital Volume
Typical Dimensions: Arrangement Commitment Term, Organization Unit Geography

Credit Loss Allowance Analysis
To determine and analyze the ongoing amount of reserve funds needed as a buffer against loan defaults and for contingency in case of unexpected events that require additional capital funds. financial services organizations pay interest on money deposited with them to the investors to whom the money belongs. The financial services organization will then make use of this money on deposit for loans to other individuals and services organizations charging a higher rate of interest than that paid out to the depositors. There needs to be analysis done on estimating what percentage of the deposited money needs to be retained by the financial services organization in order to be able to pay any and all of the depositors who may suddenly request the return of their money. This may occur due to factors such as a sudden loss of confidence in the financial services organization. If there are not sufficient funds to meet a sudden demand then this leads to a further lack of confidence and ultimately to the failure and possible closure of the financial services organization. Money typically utilized, as this allowance would be that which was deposited in the short-term investment accounts. Money deposited in long term investments and in Notice accounts tend to be less likely to be withdrawn without notice and can then be safely reinvested by the financial services organization into other loans.
Typical Measures: Loan Loss Allowance, Loss Coverage Ratio
Typical Dimensions: Product Type, Line of Business Reporting Group

Equity Position Exposure
To provide an overall analysis of trading book positions, report on the reliability of valuation estimates, review the performance accuracy of internal models and support independent verification of financial instrument prices.
Typical Measures: Total Annual Equity Value, Realized Trading Gain In Period
Typical Dimensions: Equity Holding Intention Type, Investment Type

Financial Management Accounting
Financial Management Accounting analysis is used to measure and report the financial results of the financial services organization and to provide other analytical information such as statistical and financial data for internal use of the management of the financial services organization.
For example, production of Balance Sheets, Income Statements (Profit and Loss Accounts), allocation of costs between organization units, as well as key indicators of the financial strength of the financial services organization, such as Capital Adequacy.
Typical Measures: Off Balance Sheet Accounts, Income, Expense
Typical Dimensions: Organization Unit Geography, Allocation Type

Funds Maturity Analysis
To project the financial Services organization's assets and liability maturity position after changes caused by inflows and outflows of cash. The financial services organization management will need to constantly be able to report or enquire on the current Net Position or where the financial services organization stands with regards to their total assets or liability after all liabilities have been accounted for. There is also the need to be able to project where this position could be given that data is scheduled to come in or go out of the financial services organization.

Typical Measures: Net Asset/Liability Position, Liquidity Ratio
Typical Dimensions: Arrangement Commitment Term, Arrangement Time to Maturity Segment

Income Analysis
To analyze patterns of interest and non-interest revenues and expenses, including actual, potential and foregone items. The financial services organization bases projected positions of revenue and growth upon both actual receipts and payments of money and proposed receipts and payments of money. These positions need to be able to be recalculated and reanalyzed when these expected assets or liabilities are not realized. Examples of assets not realized are monies written off due to a decision to waive fees or to refund payments as 'goodwill' gestures. Examples of liabilities not realized are when other financial services organizations may write off expected fee or interest payments or where a scheduled development where the money had been allocated did not take place.
Typical Measures: Income, Expense, Waived Income
Typical Dimensions: Product Type, Organization Unit Geography

Interest Rate Sensitivity Analysis
To project changes to the financial services organization's interest rate differential caused by interest rate changes. This differential can be referred to as the Rate Sensitivity Gap, which is a way of measuring the difference between rate sensitive assets and rate sensitive liabilities. This indicates the probable effect of interest rate changes on the financial services organization's net interest income - for example, if the Rate Sensitivity Gap is negative (indicating that the rate sensitive liabilities are greater than the rate sensitive assets), it indicates that the financial services organization's net interest income is likely to decrease if interest rates rise.
Typical Measures: Rate Sensitivity Gap
Typical Dimensions: Interest Rate Type, Interest Rate Segment

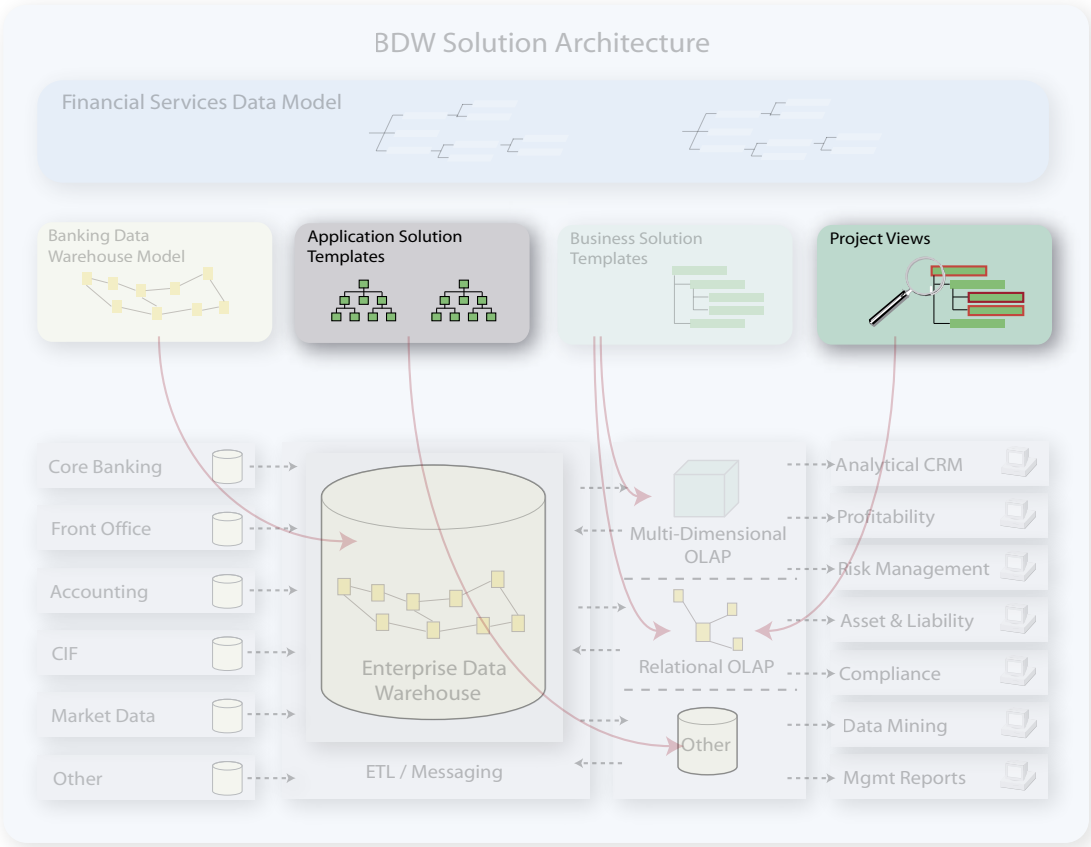
Liquidity Analysis
To provide analysis of the projected inflows and outflows of cash to/from the financial services organization. By knowing what the liquidity status of the financial services organization would be given that anticipated inflows or outflows of cash occur would enable a program of expansion and development to take place or for a period of rationalization and contraction to occur.
Typical Measures: Net Flow
Typical Dimensions: Cash Flow Availability, Resource Item Value Segment

Net Interest Margin Variance
To evaluate the variability of assets and liabilities due to fluctuation in interest rates. Even without receiving in or paying out any monies from the financial services organization would not result in a stable and static balance sheet. This is due to the factors of a variable interest rate and variable rate of inflation both of which will affect the projected returns or payments on the amounts of money already allocated. This will not just depend on the home economy fluctuations but also on the international economies where the variances in currencies around the world and the changing interest rates internationally will affect the 'status quo' of a financial services organizations monetary position.
Typical Measures: Net Interest Margin
Typical Dimensions: Interest Type, Arrangement Commitment Term

Short Term Funding Management
To identify and analyze sources of short-term funding to fulfill the financial services organization's asset, liability & liquidity plans. The financial services organization needs to have either on hand or able to call upon other services organizations for funds if it requires to satisfy a need for short term funding. This could be a sudden unexpected rush of depositors requiring their short term monetary holdings back due to a loss of confidence in the security of their money at the financial services organization or that a large amount of medium to long term held deposits all came to maturity at the same time such as in the case of the now defunct TESSA savings accounts.
Typical Measures: Funding Requirement, Funding Capacity
Typical Dimensions: Organization Unit Function, Line of Business Reporting Group

Structured Finance Analysis
To identify the utilized and unutilized credit associated with Structured Finance arrangements, together with interest and fee amounts. Hence to monitor the performance and profitability of the Structured Finance arrangements. A Structured Finance arrangement is a Financial Engineering Service in which the financial services organization arranges for credit to be provided to an Involved Party by a group of Involved Parties. The syndicated credit can be for any types of credit such as loans, guarantees, backup facilities or funding for complex, long term projects. The analysis is to identify how the credit arranged for the Involved Party is being used and also to identify if credit arranged is not being used and why this would be. It may be that advice from the financial services organization on the use of the credit is required by the Involved Party and that there is an opportunity for the financial services organization to make money out of the sale of its products or services by getting the Involved Party to make use of the credit which the financial services organization had been paid to arrange to be available.
Typical Measures: Number of Credit Extensions, Total Draw down Amount
Typical Dimensions: Repayment Period, Arrangement Financial Status

Application Solution Templates & Project Views



Application Solution Templates

The Application Solution Templates (ASTs) enable the identification of warehouse data elements which are required for non-reporting requirements, while the BSTs relate reporting and analytical requirements to the structures in the BDW Model that will support reporting requirements. The BSTs allow the modeling of a particular class of downstream reporting applications in relation to the enterprise warehouse. However, there are many other downstream applications whose existence may also impose requirements on the content and structure of the warehouse, but which are not structured according to the dimensions and measures of the BST model. Such applications include, for example, data mining, credit risk calculators, credit scoring, and balanced scorecard.

In the BDW suite of models, such non-analytical reporting downstream applications are modeled in the Application Solution Templates (ASTs). As with the BSTs, the purpose of the ASTs is to capture requirements in a particular domain of interest, and then relate those to the entities, relationships and attributes of the BDW Model. To this end, the ASTs are constructed in the language of the users of the given application, but are mapped to the relevant items (entities and attributes) of the BDW Model that provide the data requirements of the particular AST item. As with usage of the BSTs, the user scopes out their requirements usi the ASTs, which automatically selects the most appropriate data warehouse structures using the BDMW mappings.

A set of Application Solution Templates (ASTs) has been provided which describes the data requirements of Pillar 1 of the New Capital Accord (as issued by the Basel Committee of the Bank for International Settlements, and commonly known as Basel II) in the language used in the Basel II documentation. These requirements are fully mapped into the BDW Model in order to indicate how and where those requirements are supported by the data structures of the BDWM.

Pillar 1 of Basel II defines the data, mapping tables and calculation formulae to be used for the derivation of Capital Requirements for Operational and Credit Risk. Two main approaches are specified for Credit Risk: the Standardized and Internal Ratings Based (IRB) Approaches. Approaches within the IRB use certain identified risk metrics in order to calculate the required Risk Weighted Asset values. The ASTs for Basel II are organized in the same way for ease of identifying both the risk elements required and underlying data structures in the warehouse to support them.

AST Coverage

Basic Indicator and Standardized approaches to Operational Risk:

Operational Risk

Standardized Approach to Credit Risk

This AST itself contains two ASTs, dealing with the assignment of risk weights to counterparties and the assignment of risk weights to exposures:

Standardized Counterparty Risk Weights
Standardized Risk Weighted Assets

Internal Ratings Based Approach to Credit Risk

This AST itself contains 5 ASTs, representing the individual Risk Components as specified in Basel II:

Probability of Default (PD)
Exposure At Default (EAD)
Loss Given Default (LGD)
Effective Maturity (M)
Expected Loss (EL)

Capital adequacy aspects of asset securitizations

Securitization Framework

Hedge Measurement according to the requirements of the International Financial Reporting Standards (IFRS) International Accounting Standard (IAS) 39:

IAS Measurement

Each AST gives a complete breakdown of the data requirements of the relevant Basel II component, as defined in the Basel II Third Consultative Paper (CP3) documentation. Analysis of that documentation identified more than 800 data items that directly contribute to the risk calculations, or that invoke decision points affecting how the calculations are to be performed. It is these 800+ Basel II data items that are organized into the Basel II ASTs. Each AST data requirement has detailed mappings to the relevant BDW Model entities and attributes.

Application Solution Templates In Detail

Operational Risk

An Application Solution Template containing the data items required for the calculation of Capital Requirements for Operational Risk according to the requirements of the New Capital Accord (Basel II). This AST captures the Basel II data requirements for the derivation of Capital Requirements arising from Operational Risk factors in the processes of the financial services organization. The AST covers the Basic Indicator, Standardized and Alternative Standardized Approaches of Basel II for Operational Risk. (The Advanced Measurement Approach is more suitable to capture by process models rather than data models).

Credit Risk – Standardized

"An Application Solution Template containing the data items required for the calculation of Risk Weighted Assets for Credit Risk, according to the requirements of the Standardized approach of the New Capital Accord (Basel II)."

The Basel II Standardized Approach to Credit Risk assigns Risk Weights to assets according to the Risk Weighting of the counterparty to the exposure, to any mitigating factors that reduce the risk, and to haircut calculations that account for volatility in the exposure or the mitigating factors. This AST is just a placeholder for the ASTs for Standardized Counterparty Risk Weights and Standardized Risk Weighted Assets.

Standardized Counterparty Risk Weights

The derivation of Risk Weights for Counterparties, according to the requirements of the Standardized approach of the New Capital Accord (Basel II). This AST captures the Basel II data requirements for assigning Risk Weights to counterparties to exposures under the Standardized Approach of Basel II. The main elements taken into account are the type of the counterparty (e.g. Sovereign, Corporate, Bank), the Rating Assessments (e.g. AAA) given to the counterparty by rating agencies (e.g. an External Credit Assessment Services organization (ECAI)), and the eligibility of a given ECAI to issue such assessments.

Standardized Risk Weighted Assets

The derivation of Risk Weighted Assets for exposures, according to the requirements of the Standardized approach of the New Capital Accord (Basel II). This AST captures the Basel II data requirements for assigning Risk Weights to exposures under the Standardized Approach of Basel II. The main elements taken into account are the Risk Weight of the counterparty (see Standardized Counterparty Risk Weights above), credit assessments of the exposure, any available mitigation for the exposure, and any factors that could affect the relative values of either the exposure or any related mitigation, such as price volatility, currency mismatches or maturity mismatches.

Credit Risk – Internal Ratings Based (IRB)

An Application Solution Template containing the data items required for the calculation of Risk Weighted Assets for Credit Risk, according to the requirements of the Internal Ratings Based approaches of the New Capital Accord (Basel II). This AST captures the Basel II data requirements that determine exactly which Risk Weight Formula is to be applied to the given exposure, and any special adjustments to be applied to the designated formula. Principal factors involved include the Asset Class of the exposure, the IRB Approach to be applied, and any other general factors that apply across any or all of the specific Risk Components (e.g. the properties of a pool of retail exposures, the handling of equity exposures). This AST combines all the individual Risk Component ASTs and other relevant factors into a structure defining the derivation of the required IRB Risk Weighted Asset value.

Probability Of Default (PD)

An Application Solution Template containing the data items required for the calculation of Probability Of Default (PD), according to the requirements of the Internal Ratings Based approaches of the New Capital Accord (Basel II). This AST captures the Basel II data requirements for the derivation of the Risk Component for Probability Of Default, designated as PD. The PD value of an exposure is expressed as a percentage and defines the likelihood that the exposure will fail to fulfill its terms and conditions within a given time horizon, usually one year. The higher the PD value, the more likely the exposure is to default. For non-retail exposures, the PD for the exposure is closely based on the PD value of the relevant counterparty, with some additional factors taken into account. For retail exposures, the PD is derived from grades assigned to a pool of similar exposures.

Exposure At Default (EAD)

An Application Solution Template containing the data items required for the calculation of Exposure Of Default (EAD), according to the requirements of the Internal Ratings Based approaches of the New Capital Accord

(Basel II). This AST captures the Basel II data requirements for the derivation of the Risk Component for Exposure At Default, designated as EAD. Whereas the PD value defines the likelihood of an exposure defaulting, EAD is expressed as a monetary value and defines what would be the outstanding exposure amount if such a default should actually occur

Loss Given Default (LGD)

An Application Solution Template containing the data items required for the calculation of Loss Given Default (LGD), according to the requirements of the Internal Ratings Based approaches of the New Capital Accord (Basel II). This AST captures the Basel II data requirements for the derivation of the Risk Component for Loss Given Default, designated as LGD. LGD is expressed as a percentage value of EAD and defines the amount that the financial services organization would actually be liable to lose in the event of a default occurring. LGD therefore takes into account factors such as available collateral and guarantees, levels of security provided and seniority of the financial services organization's claims over other creditors.

Effective Maturity (M)

An Application Solution Template containing the data items required for the calculation of Effective Maturity (M), according to the requirements of the Internal Ratings Based approaches of the New Capital Accord (Basel II). This AST captures the Basel II data requirements for the derivation of the Risk Component for Effective Maturity, designated as M. The Effective Maturity of an exposure is the time period within which the exposure will be expected to complete, taking into account factors such as repayment levels. Depending on whether the repayments are accelerated or delinquent, the Effective Maturity date may occur respectively before or after the Notional Maturity date i.e. the maturity date set at commencement of the arrangement. Effective Maturity is measured in years.

Expected Loss (EL)

An Application Solution Template containing the data items required for the calculation of Expected Loss (EL), according to the requirements of the Internal Ratings Based approaches of the New Capital Accord (Basel II). This AST captures the Basel II data requirements for the derivation of a value for the Expected Loss (EL) due to an exposure. EL values for Basel II are principally used in the calculation of Risk Weighted Assets for Purchased Receivables. NOTE: As a result of the Madrid conference (10-11-03), the Basel Committee on Banking Supervision made a concession that Regulatory Capital no longer needs to be based on Expected Losses, so EL is not expected to appear in the final draft of the New Capital Accord.

Securitization Framework

An Application Solution Template containing the data items required for the calculation of Risk Weighted Assets for Credit Risk according to the requirements of the Securitization Framework of the New Capital Accord (Basel II). This AST captures the Basel II data requirements for the derivation of Risk Weighted Assets arising from asset securitizations. One of the principal purposes of an asset securitization is to remove risk from the balance sheet of the financial services organization. The Securitization Framework of Basel II ensures that any risk remaining after the securitization is properly accounted for in the financial services organization's Capital Adequacy calculations.

Project Views

Project Views are the method by which business issues are captured within a BDW implementation project. A Project View defines the business issue in terms of a set of items (possibly from several different constituent models) within an BDW instance. The involved set of models is most likely to include any or all of the FSDM, BSTs, ASTs and BDWM. Users of the BDW are, of course, free to create their own Project Views to support their own project requirements. For example, several Project Views could be created in the course of a project, each one capturing data items added in a particular phase of the project. Project Views can also be used to capture the required content of a report, or the total coverage of a source system model as mapped into the central warehouse model.

BDW is delivered with a set of pre-defined Project Views which capture significant issues likely to be of concern to developers of data warehouses. The purpose of these views is to aid in the scoping and identification of areas of interest across all structures of the BDW. Pre-defined views delivered with the BDW include:

Basel II Project Views

The Basel II Project Views capture important aspects of the three Pillars of the New Capital Accord (commonly known as Basel II).

Pillar 1 (Minimum Capital Requirements) issues are captured in Project Views centered on the Application Solution Templates (ASTs). These Project Views record the data requirements for Capital Adequacy calculations under the Standardized and Internal Ratings Based (IRB) Approaches, for the various Risk Components within the IRB Approaches, for the Securitization Framework and for Operational Risk.

Counterparty Credit Risk Current Exposure Method	Counterparty Credit Risk Internal Model Method
Counterparty Credit Risk Standardized Method	Counterparty Credit Risk
Effective Maturity	Expected Loss and Provisions
Exposure At Default	IRB Credit Risk
Loss Given Default	Operational Risk
Probability Of Default	Securitization Framework
hort-Term Maturity Adjustment In IRB Approach	Standardized Counterparty Risk Weights
Standardized Risk Weighted Assets	Treatment of Doube Default

Pillar 2 (Supervisory Review Process) issues are captured in Project Views centered on the Business Solution Templates (BSTs). These Project Views record the analytical reporting requirements that will support the management oversight of the financial services organization's risk management processes.

Collateral Management	Credit Loss Allowance Analysis
Economic Capital Allocation	Involved Party Exposure
Location Exposure	Non Performing Loan Analysis
Operational Risk Assessment	Operational Risk Loss Analysis
Outstandings Analysis	Portfolio Exposure
Revolving Credit Facility Securitization	

Pillar 3 (Market Discipline) issues are captured in Project Views centered on the Business Solution Templates (BSTs). These Project Views record the analytical reporting requirements specified in tables in Part B "The Disclosure Requirements" of Pillar 3 of Basel II.

Scope of the Application	Capital Structure
Capital Adequacy	Allowance for Credit Losses
By Sector or Counterparty Type	Credit Risk Exposure Detail
Geographic Breakdown	Impaired Loan and Allowance
Maturity Breakdown	Credit Risk Portfolio IRB
Credit Risk Portfolio STD	Counterparty Credit Risk
Credit Risk IRB	Credit Risk IRB Equity
Credit Risk IRB Retail	Credit Risk Losses IRB
Credit Risk Losses IRB Advanced	Credit Risk Mitigation
Securitizatoin Disclosure	Securitization Early Amortization
Capital Adequacy Disclosure STD	Capital Adequacy Disclosure IMA
Operational Risk Basic	Operational Risk Standardized
Equity Disclosure Banking Book	Interest Rate Risk Banking Book

Anti-Money Laundering Views

The Anti-Money Laundering Views capture analytical reporting requirements related to the detection of money laundering activities.

Currency Transaction Analysis
Excessive Cash Payments
Foreign Financial Account Analysis
International Transportation of Money
Suspicious Activity

IFRS / IAS Views

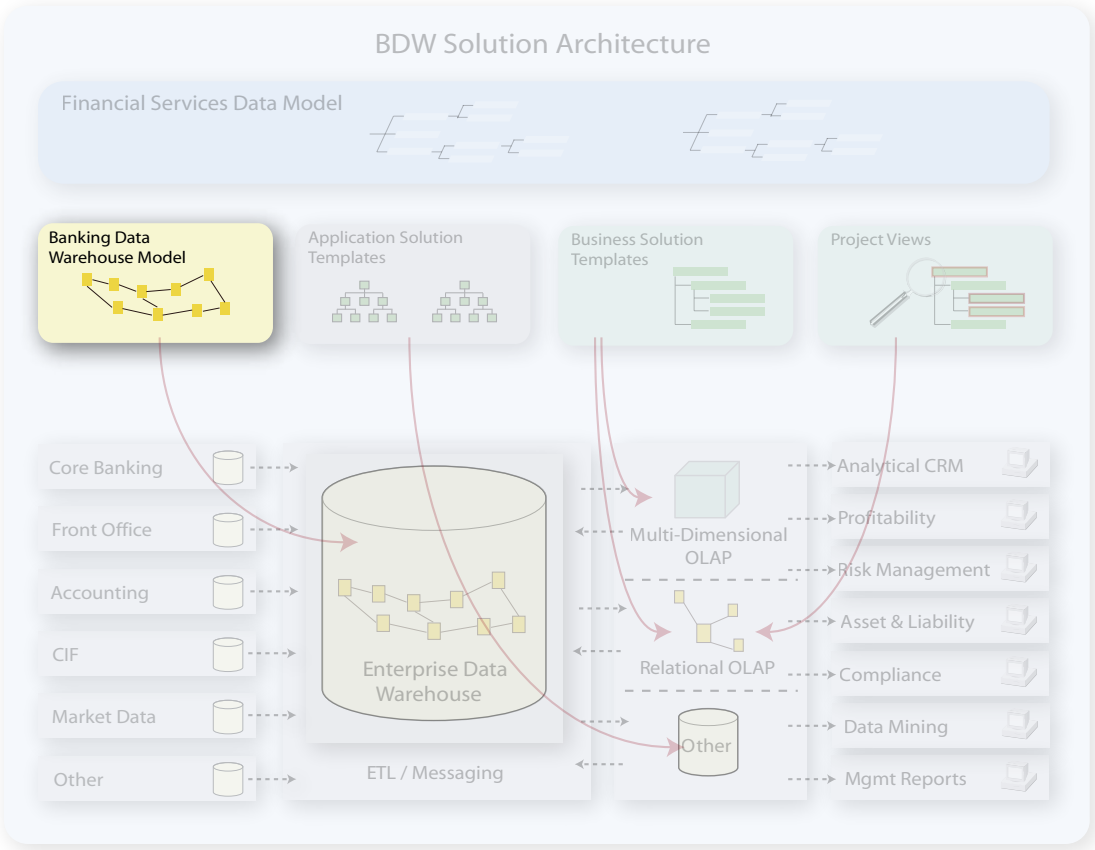
The IFRS/IAS Views specify the information required for the presentation of Financial Statements.

IAS 1	IAS 2
IAS 7	IAS 11
IAS 12	IAS 16
IAS 18	IAS 19
IAS 20	IAS 21
IAS 23	IAS 27
IAS 28	IAS 30
IAS 31	IAS 32
IAS 33	IAS 38
IAS 39	IAS 40
IAS	IAS
IAS ED 7	IAS IFRIC
IAS IFRS-CP	IFRS 3/5

Sarbanes Oxley Views

Notes To Consolidated Financial Statements Analysis
Consolidated Statement Of Cash Flows Analysis
Consolidated Statement Of Changes in Shareholders' Equity Analysis
Consolidated Balance Sheet Analysis
Consolidated Statement Of Income Analysis
Management's Discussion And Analysis Of Financial Condition and Results Of Operations

Banking Data Warehouse Model



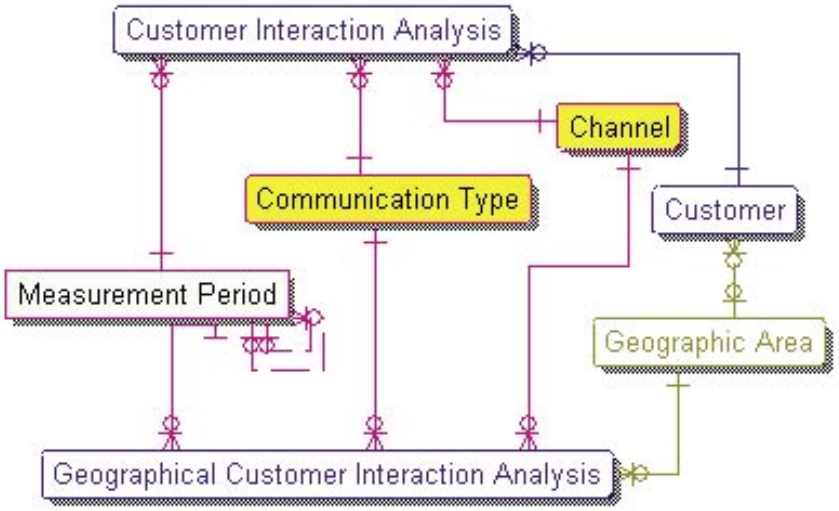
Central Information Repository

IBM's Banking Data Warehouse Model (BDWM) is an entity relationship data model that provides the historical and atomic data needed for a data warehouse and business intelligence infrastructure supporting multiple lines of business and analytical functions within medium to large financial services organizations. The aim of this shared infrastructure is to provide a reusable platform and data structure environment that will reduce the development and operational costs in providing business intelligence functionality to the myriad of front and back office organization units.

The BDWM provides banks with both the content and the infrastructure to support the provision of clean, rationalized and easily accessible data from a central information repository. It allows banks to exploit the potential of information previously locked in legacy systems and inaccessible to the business user. It enables financial services organizations address the infrastructure and storage issues for multiple compliance requirements from a single blueprint.

A logical model is a representation of an organization's data or information requirements and is usually represented in an Entity Relationship Diagram (ERD), with business definitions. It represents the organizations data, without constraint consideration or implications of the platform, tools, software or how the data will be implemented. It is normally generic and flexible in design. It facilitates a financial services organization's understanding of the true meaning of it's data and how it's data relates to other data within the Services organization.

An example of an ERD from the BDWM is shown:



The BDWM features a flexible “System of Record” (primary data storage area) as well as the typical summaries needed by most financial services organizations. The BDWM has been designed to be “one-step” from a physical data base generation. Normally, only a portion of the BDWM is generated in the initial project phase. Over time further areas can be generated as the financial services organization tackles more business areas. The BDWM contains the structure to handle the storage of raw detailed data from many sources. The BDWM also has pre-defined aggregation to support key indicators in areas such as delinquency, profitability etc.….

This comprehensive data model is derived from IBM’s highly successful Financial Services Data Model (FSDM), which is described later in this document, and can be used as the basis for supporting a detailed analysis of the areas of most concern to bankers today:

- Relationship management
- Profitability and performance of customers, products and channels
- Maximization of wallet share
- Customer loyalty and retention
- Enterprise-wide risk management
- Improvement of cross-selling ratios
- Marketing campaign management
- House holding
- Consistent definition of customer and products across the organization
- Identification of purchasing and product usage patterns

The BDWM is designed to support the typical data warehouse business requirements of financial services organizations and supports the same business areas as the Business Solution Templates (BSTs), described in the previous section (Relationship Marketing, Profitability, Risk, Compliance, and Asset & Liability Management).

The BDWM can be used as:

The blueprint for a design of a central business data warehouse database structure. In this case the BDWM will assist in the creation of a flexible and extendible data warehouse specific physical data base.
A logical reference point for the consolidation of data definitions and structures across a number of data marts.
A starter set for the design of a data mart. In this case the structure would have to be optimized for the performance of end-user delivery functions.

Major Groupings within the Banking Data Warehouse Model

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

System of Record

This is the component of the data warehouse which acts as the primary storage area for the data in the data warehouse. Typically this component is populated by data coming from the operational systems. The data structures in the System of Record are typically generalized and the bulk of the BDWM would fit into this component.

Typical components, or entities, of the System of Record are:

Accounting Unit	Accounting Unit is 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 financial services organization to facilitate myriad internal requirements to record and monitor quantitative change.
Activity Based Costing	The purpose of Activity Based Costing is to enable the assignment of costs to the activities of the financial services organization, and to then allocate those costs out to the various agencies within the financial services organization that can be considered to be responsible for generating them. In this way, a better image of profitability can be obtained.
Arrangement	An Arrangement records any legally binding agreement between two or more Involved Parties. Arrangements can be for Customer Services, recording agreements between co-operating Banks, Employment terms, etc... Examples of Arrangements are : Employment Arrangements Product Arrangements (Loan Arrangements, Deposit Arrangements etc...) Interbank Agreements Security Arrangements.
Campaign	Campaign identifies a process the financial services organization undertakes in order to accomplish specific business defined objectives. A Campaign is generally addressed to a Segment of the Services organization's potential and actual customers. As such, there is a strong relationship between the Campaign Subject Area and the Segment Subject Area.
Channel	Holds Channel, together with its attributive, associative, classification and immediate subtype entities.
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 sets of codes representing Involved Party Types - these are stored in the Classification structure; there are sets 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.
Event	Event describes a happening about which the financial services organization wishes to keep information as a part of carrying out its mission and conducting its business.
Insurance	Insurance represents Products or Arrangements where an Involved Party, such as an Insurance Company, agrees to provide financial coverage if certain events adversely affect the insured item or the Involved Party; for example, a Whole Life Insurance Product for Individuals or a Property Insurance Product for a house. Insurance Arrangements are of interest to the financial services organization either because the financial services organization offers them or because they are used to insure Loans and Assets of the financial services organization.

Involved Party	Involved Parties are persons or organized groups of persons about whom the financial services organization wants to keep information. Involved Party includes Individuals, Organization, Grouped Individuals, Organization Units, and Employment Positions. The Involved Party Subject Area contains further subject areas such as: · Customer · Employment Position · Individual · Involved Party Family · Involved Party Fundamentals · Organization · Organization Unit
Limit	Limit identifies restrictions that can be defined between entities. These are generally defined at a generic level as limits on the relationships between objects - for example, maximum over night limits imposed on a dealer for a Trading Arrangement are recorded using the Arrangement/ Involved Party Relationship Limit. Limit also tracks changes to these limits, which record the history of each change to the limit over time.
Location	Location stores the physical or logical locations used by the financial services organization and by Customers. Examples of Locations are: 2 Burlington Road, Dublin 4, Republic of Ireland; 555 Main Street, Boise, Idaho; www.ibm.com/industries/financialservices
Product	Product describes goods and services that can be offered, sold or purchased by the financial services 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 financial services organization.
Rate	A Rate uses a standard or scale to express a quantity or amount in relation to another quantity or amount, usually for the purposes of comparison or charging. For example, an Exchange Rate is expressed as a ratio between two Currencies; an Interest Rate is expressed as a percentage of an account balance. Histories are maintained where appropriate.
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 financial services organization in pursuit and accomplishment of its business.
Segment	Segment is concerned with the various ways in which items are grouped. The current implementation, being Data warehouse oriented, concentrates on Segments of Involved Parties (Market Segments) and Segments of Products (Product Groups). Segment is a structure used to hold these two different concepts in one place in order to reuse common data structures.
Transaction	Transaction tracks the actual customer transactions enacted against Customer or Facility Arrangements. Whilst these Transactions are the atomic pieces of processing from which most of the summary information held in the Data warehouse can be derived, it is not feasible, or necessary, to store a complete history and image of every Transaction. The intent of the Banking Data warehouse is to store all transactions in a summarized format, and only keep the actual Transactions for a limited period.

Summary Area

This area contains and describes summaries and aggregations which are commonly and frequently used throughout the financial services organization. These summary entities are typically (but not necessarily exclusively) populated from the System of Record. Creating and maintaining such summaries in a data warehouse assists in ensuring a standardization of such summaries across the financial services organization. These summary entities are designed to store key measurements and indicators on a periodic (typically monthly or quarterly) 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 Banking 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	The Arrangement forms one of the basic foundations of the Banking Data warehouse Model. This makes it a very suitable place to position many of the typical summary tables. Once the summary is done at the Arrangement level it is then possible to roll-up these summaries into dimensions such as Involved Party, Organization Unit, Product, Channel, etc...
Campaign	The Campaign Summary entities are used to track the various internal and external marketing events and segmentation that the financial services organization undertakes in order to promote its Products and other aspects of its business. The Campaign Summary entities enable the financial services organization to monitor the effectiveness of such Campaigns, as well as the cost of each.
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	It is important for financial services organizations to measure the effectiveness of their Products in terms of profitability, usage, etc... The Product Summary entities in this Subject Area provide the mechanisms to do this task.
Segment	A Segment is concerned with the various ways in which items are grouped. The current implementation, being data warehouse oriented, concentrates on Segments of Involved Parties (Market Segments) and Segments of Products (Product Groups). Segment is a structure used to hold these two different concepts in one place in order to reuse common data structures.

Analysis Area

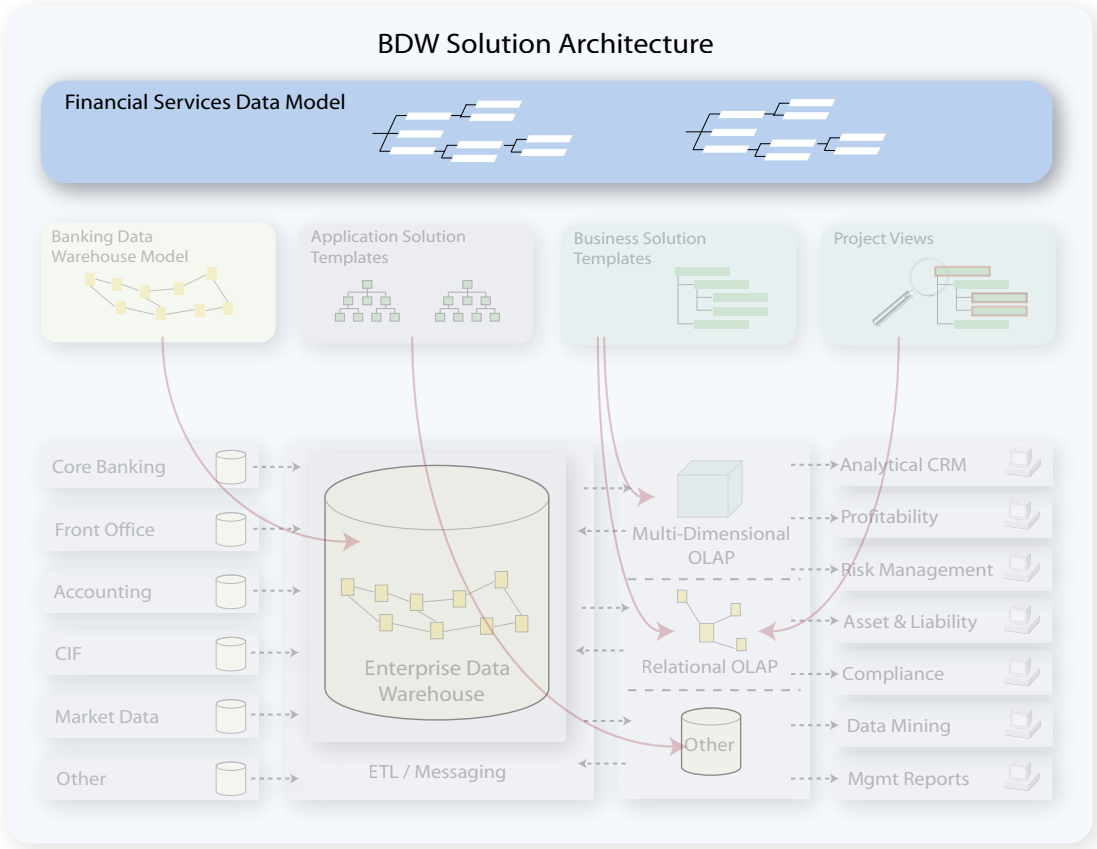
This is the component of the data warehouse which prepares the data initially stored in the System of Record for subsequent distribution to data marts. The entities in the Analysis area contain the specific aggregations or summaries of data needed to be a specific data mart or part of a data mart.

Typical components, or entities, of the Analysis Area include:

Campaign Analysis	Enable the understanding of the effectiveness of customer and product promotions, marketing drives, and advertising.
Complaint Analysis	Enable the understanding of the pattern of complaints and the effectiveness of the resolution process.
Credit Profiling Analysis	Enables the evaluation of the risk of position taking with existing or potential customers and counter parties, including providing credit and allowing settlement periods.
Cross Sell Analysis	Enables analysis of the characteristics of multi-product usage by customers. Identifying profitable trends usage of a base product suggests complementary product and service purchases. This also allows review of a financial services organization cross-selling plans.
Customer Attrition Analysis	Enables the understanding of the cause and impact of customers ceasing to use a financial services organization's products and services.
Customer Interaction Analysis	Enables analysis of how the financial services organization interacts with its customers, and the effectiveness of communications and channels in terms of winning new business.
Customer Lifetime Value Analysis	Enables the determination of the contribution to profit of customers with the financial services organization, allowing for full cost recovery.

Individual Customer Profile Analysis	Enables the understanding of the demographics of the financial services organization's customer base and allows the financial services organization to compare them with that of the target population and of peer financial services organizations' customer base.
Liquidity Analysis	Enables analysis of the projected in- and out-flows of cash to/from a financial services organization.
Product Profitability Analysis	Enables the ranking of products and services, individually and in combination, based on net attributable income and expense, allowing for risk, transaction usage, and transfer pricing of funds.
Wallet Share Analysis	Enables the analysis of the customer utilization of products and services belonging to the financial services organization. This is with a view to measure the potential sell and actual sell of the financial services organization.

The Financial Services Data Model



Enterprise Wide View of Data

The fundamental purpose of the FSDM is to enable the business concepts, which make up a particular issue, to be clearly understood and communicated.

It provides an enterprise-wide view of data common to all financial services organizations. The FSDM is structured in a hierarchical, 'top to bottom' structure, or conceptual to physical design, with multiple layers of business content models containing industry standard business definitions of data. Each layer of the structure contains a content model which provides more detailed data based on the previous layer.

The FSDM has been developed to provide the financial services organization with a "jump start" in its model development process and assist in maximizing the value of information. The FSDM is a generic model, defining data that is widely applicable to any inancial services organization. The information reflected in the data model is independent of organizational structure and has been validated by multiple sources within the industry.

The FSDM 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.

The FSDM is data centered and represents the business information requirements of a generic financial services organization, along with the necessary rules to assure information integrity. It is structured to be cross-enterprise in scope. The model provides a framework for the development of consistent cross-enterprise data structures which promote information sharing across business applications. Since it provides a top-down view from an enterprise perspective, the FSDM provides a blueprint for database development as well as a tool for understanding and communicating the enterprise information resources of the major business activities of a generic financial services organization.

The FSDM can be used for:

Agreeing on the scope of an initiative or application
Managing the enterprise data resource
Managing the enterprise component architecture
Carrying out impact analysis
Deriving logical specifications
Data warehouse planning
Business concept structuring

The Benefits of Using FSDM are:

- Provides a structured starting point to integrate data and process
- Provides a rigorous specification of data requirements that helps to reduce redundancy of information across the enterprise
- Provides common definitions for improved accuracy and consistency of data
- Facilitates the application development life cycle thereby reducing system and lost opportunity cost
- Provides a consistent data architecture for modeling new or changed requirements
- Creates a customizable model that also incorporates the organization's data requirements and business rules
- Focuses the development effort on validating, enhancing and extending data requirements rather than devoting time to the labor-intensive process of developing a data model for the services organization

The Nine Data Concepts

There are over 3100 business definitions in the FSDM grouped into the nine conceptual categories. The FSDM represents the business information needs and requirements of the financial services organization using common terms which are understood by business professionals. The FSDM A-level identifies high-level classes called Data Concepts. It defines the scope of the enterprise being modeled and provides the framework for the model content.

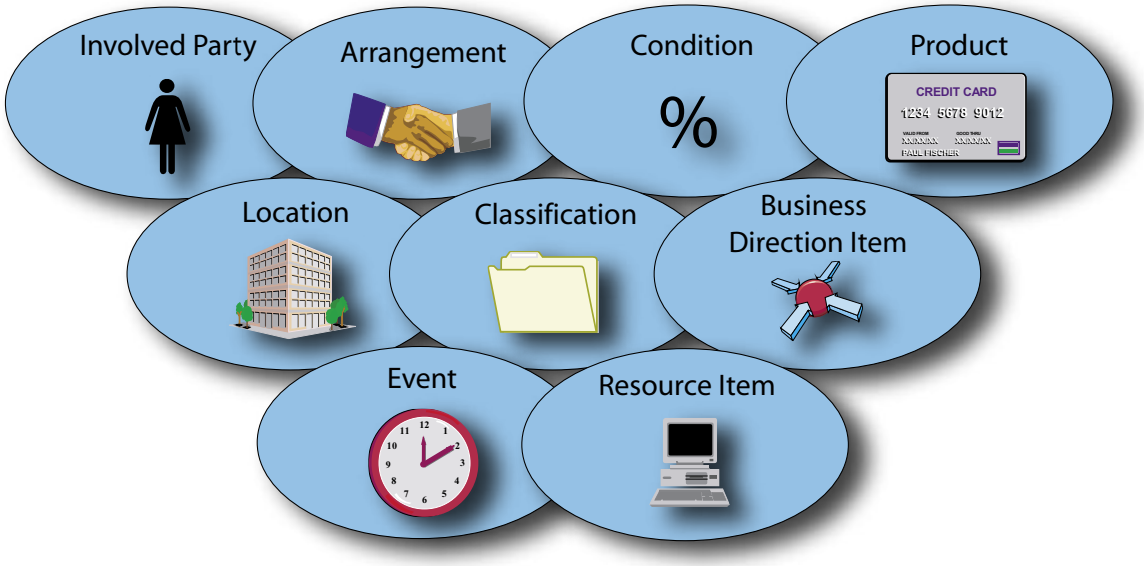
The FSDM B-level contains business definitions of the data items that are important and common to the typical financial services organization. These definitions are organized for detailed modeling and are structured to be independent of application requirements. This layer identifies:

- Important classes of data items
- Important data entities
- Important relationships between the data entities
- Generic inheritance structure

Each of the data items in the FSDM is categorized as belonging to one of the nine data concepts.

Arrangement	Represents a potential or actual agreement between two or more individuals, organizations or organization units, which provides and affirms the rules and obligations associated with the sale, exchange or provision of goods, services or resources.
Business Direction Item	Records an expression of an Involved Party's intent with regard to the manner and environments in which it wishes to carry out it business.

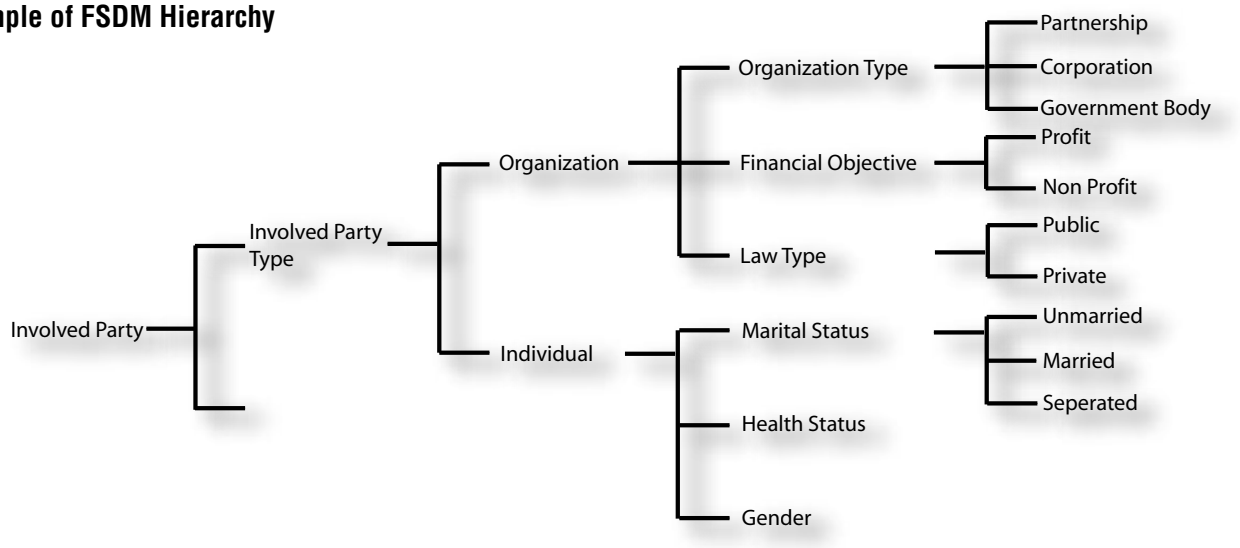
Condition	Describes the specific requirements that relate to how the business of a financial services organization is conducted and includes information such as prerequisite or qualification criteria and restrictions or limits associated with these requirements. Conditions can apply to various aspects of a financial services organization's operations, such as the • Sale and servicing of products • Determination of eligibility to purchase a product • Authority to perform business transactions • Assignment of specific general ledger accounts appropriate for different business ransactions • Required file retention periods for various types of information • Selection criteria for a market segment.
Classification	Organizes and manages business information by defining structures that provide classification categories that apply to one or more Data Concepts and groups of business concepts that apply to multiple Data Concepts.
Event	Describes a happening about which the financial services organization wishes to keep information as a part of carrying out its mission and conducting its business.
Involved Party	Represents all participants that may have contact with the financial services organization or that are of interest to the financial services organization and about which the financial services organization wishes to maintain information. This includes information about the financial services organization itself.
Location	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 financial services organization wishes to keep information.
Product	Describes goods and services that can be offered, sold or purchased by the financial services organization, its competitors and other Involved Parties during the normal course of business. The Data Concept also includes non-financial goods and services that are of interest to the financial services organization.
Resource Item	Includes and describes and value item, either tangible or intangible, that is owned, managed, used by or of specific interest to the financial services organization in pursuit and accomplishment of its business.



The emphasis of the business requirements level is on identification and definition of the business information needed to support the enterprise in terms used and understood by business professionals, rather than Information System professionals.

The B level organizes the data items supported by each business definition. It identifies potential subtypes of the Data Concepts, some fundamental property types, and relationships. The fundamental information requirements are structured into Data Concepts Hierarchies, using principles of classification theory. Each data concept has schemes and values. The schemes correspond to the criteria or questions that you can apply to instances of the data concept, while the values are the answers to the questions.

Sample of FSDM Hierarchy



The Features of the FSDM

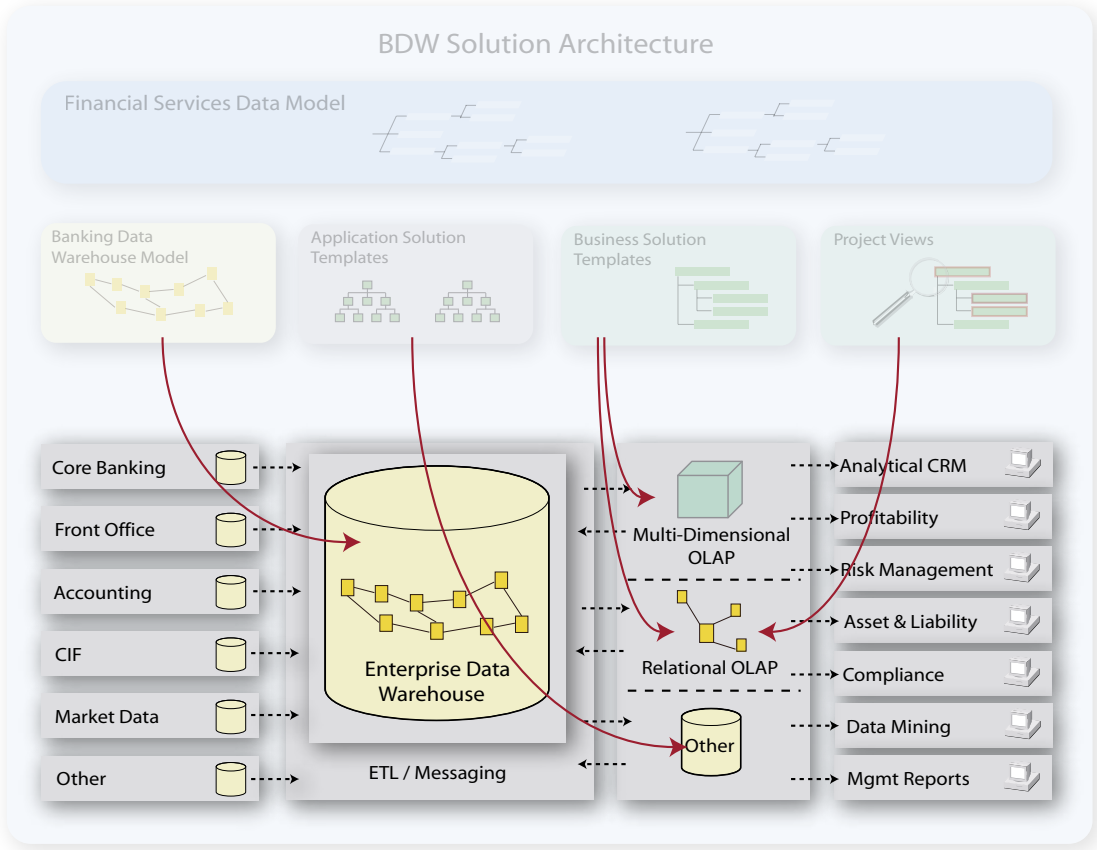
The FSDM is a cross-enterprise model of the business requirements of a global, generic services organization in the Financial Services Industry. The FSDM is a data model that covers many business areas in the financial industry. The key features of the FSDM are:

- It is a layered model, with sufficient detail to represent the data requirements of a universal financial services organization operating in an international environment
- It uses advanced modeling techniques to encourage reusability of system assets
- It is a composite data model for system requirements
- It has been designed for flexibility in extension and expansion
- When customized, it provides a platform for improved data management and systems development
- It is structured to provide direct benefit in all phases of the systems development life cycle

What are the benefits of implementing the FSDM?

The FSDM has been developed with the assistance of banking professionals. The structure 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 FSDM satisfies the needs of the analyst. Consequently, the FSDM provides a communication bridge between the banking and Information Systems professionals within the organization.

BDW Physical Environment



Open Architecture

The BDW Solution promotes an open architecture. Each component adheres to industry standards. This allows the financial services organization to implement the data warehouse using existing tools or preferred tools.

The Banking Data Warehouse (BDW) physical environment provides a financial services organization with the physical data warehouse infrastructure. This infrastructure is tightly integrated with the logical environment incorporating both the Banking Data Warehouse Model (BDWM) and the Business Solution Templates (BSTs).

It is possible for a financial services organization to automatically generate the required data structures for a full data warehouse physical environment using the BDWM, the BSTs and the ASTs/Project Views . The BDWM translates into the banking data warehouse database while it is possible to rapidly generate prototype ROLAP/OLAP data marts from the BSTs/ASTs and Project Views.

The main components of the physical environment are:

- BDW Database
- Multi Dimensional and Relational OLAP
- Business Reports

Banking Data Warehouse Database

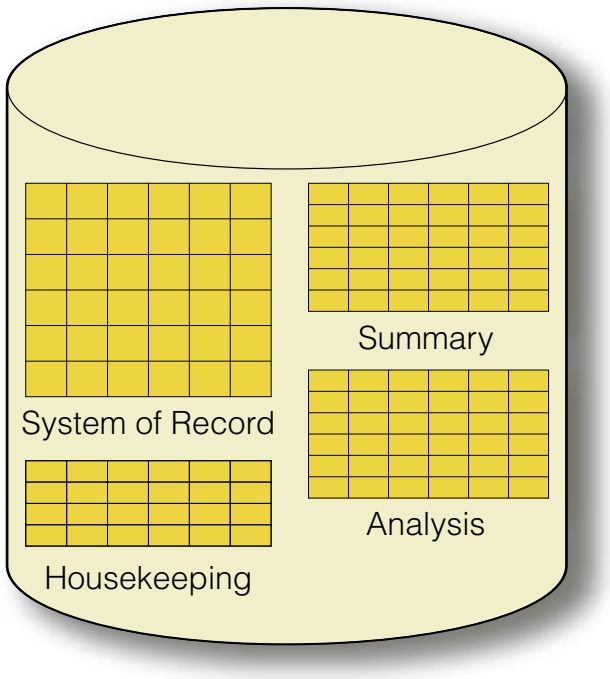
IBM provides a default physical database design, generated from the logical entity relationship data model. This physical data model incorporates IBM's vast experience in implementing data warehouse databases for the financial services sector, and could be implemented as is, to show how a data warehouse database should work. It is more likely though, that it will be customized further by a data warehouse design team of experts comprised of senior warehouse architects and database administrators, so as to ensure optimal configuration for the financial services organization's data distribution and performance characteristics.

The BDW Database is forward engineered from the BDWM and is designed as a starter kit for financial services organizations who wish to create an overall data warehouse solution. The BDW Database provides a blueprint for a data warehouse which consolidates data from operational systems and supplies data to a range of downstream data marts. It has been designed to support the needs of a central data warehouse and supplies the data needed by specific BSTs.

Transformation rules are used for identifying the adjustments made to a logical data model (BDWM) to transform the structure into a more physical design; for example, these rules might define when two or more entities should be collapsed into one table, when attributes might be replicated in multiple tables or when a subtype entity might be collapsed into its parent table.

The BDW Database is designed to provide a compromise between the need to provide a flexible structure and one which is relatively easily populated. The need for flexibility is driven by the requirement to support a range of different types of analytical and other future applications, without knowing the exact requirements of these applications. The ease of population is an objective driven by the need to ensure that the data warehouse is as easy to maintain as possible.

The BDW Database is divided up into a number of areas:



System of Record Tables

The area of the physical database where the data is stored in a flexible generalized format in known as the System of Record Tables. Typically, all data supplied to the BDW Database as part of the normal updates from the operational systems would be stored here.

Summary Tables

Within a data warehouse it is usually possible to identify a number of summaries or aggregations which could potentially be used by a proportion of the users across the financial services organization. While this information is not detailed or atomic in nature, it still has widespread use across the financial services organization. The BDW Database identifies these tables as Summary Tables.

An example of a summary table would be CUST_SUM (Customer Summary Table). This table records an aggregation of commonly used data for each customer for a particular time period (usually by month). The Customer Summary Table records information such as the number of arrangements, number of accounts, total deposits, total loans and advances, and so on.

Other examples of Summary Tables include:

- Complaints Summary
- Arrangement Turnover Summary
- Product Profitability Summary

These summary tables are populated from data already stored in the System of Record Tables and in the Housekeeping Tables, and are typically summarized for a particular period of time.

These summary tables provide a set of useful, easily accessible snapshots of data in the Data warehouse over a period of time.

Analysis Tables

The analysis tables are designed to aggregate the data for use by specific analytical applications. While the summary tables are designed to store commonly used aggregations, the analysis table are effectively a staging area for a specific business applications.

The analysis tables may be necessary to collect the data into a format which is usable by an analytical tool. In addition, the analysis tables are typically only of use where the application needs highly summarized data, such as On-line Analytical Processing (OLAP) products.

An example of an analysis tables is the Customer Attrition Analysis table. This table is designed to gather the data from within the Data warehouse for a specific set of OLAP reports and charts dealing with analyzing Customer Attrition. This table needs to pull data from other Data warehouse tables such as Product, Currency, Measurement Period, Customer, Arrangement, and Organization Unit.

Housekeeping Tables

There is a need to store a range of fairly static data which is used by the rest of the database for verification and integrity purposes. This data would be used to record information such as valid country codes, valid arrangement types, list of valid business unit geographies and so on.

Multi Dimensional & Relational OLAP

The BSTs have the facility to be generated into Star Schema, DB2 OLAP Server data marts and into DB2 CubeViews enabling the rapid prototyping of the business requirements.

The Star Schema generation is handled by the BDW Analysis Generator which generates a Fact Table and associated Dimension tables in BDW Analysis Area. Fact Table Measures are generated from the BST Measures while Fact Table

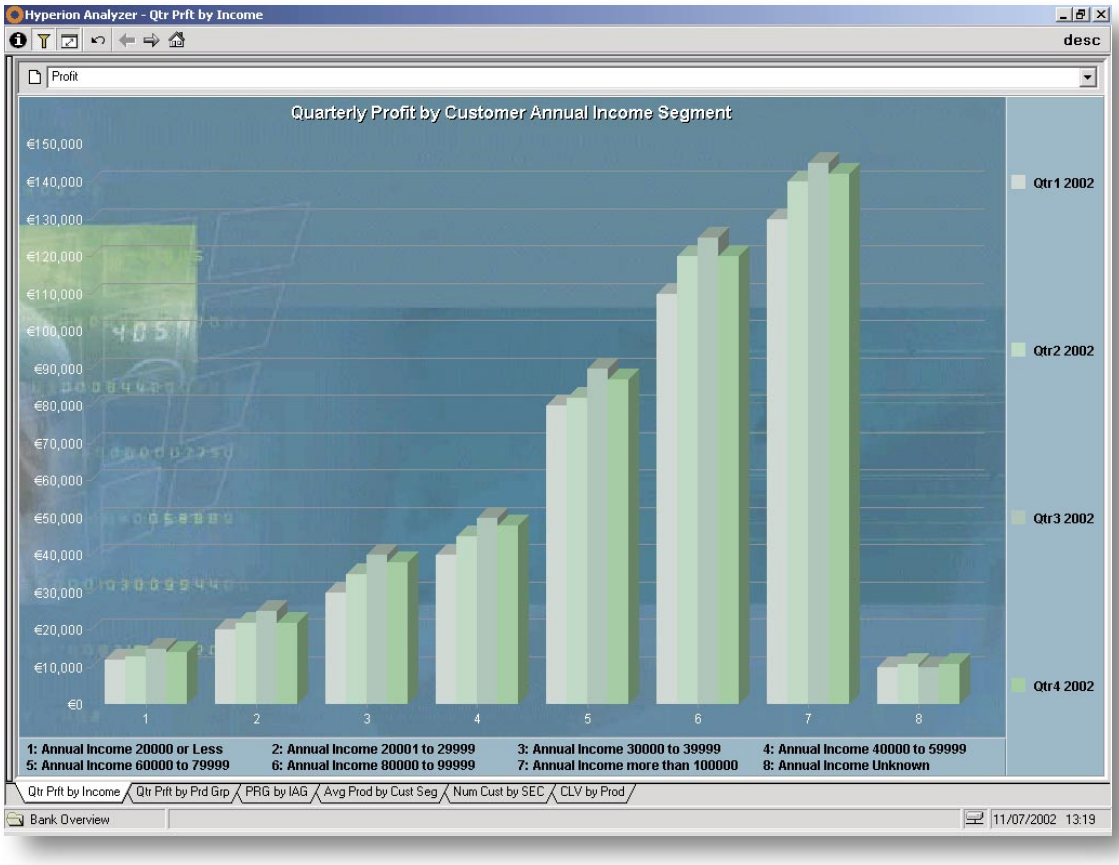
Dimensions are cloned from existing entities in the BDW Model (BDWM).
DB2 Cube Views is an Online Analytical Processing (OLAP) accelerator for producing summary reports and analysis serving the needs of multiple managerial requests. By providing a bridge from BDW to DB2 Cube Views the benefit is faster delivery of new reports and analytic applications, based on consistent data, provided by a mature Enterprise Data Warehouse architecture.

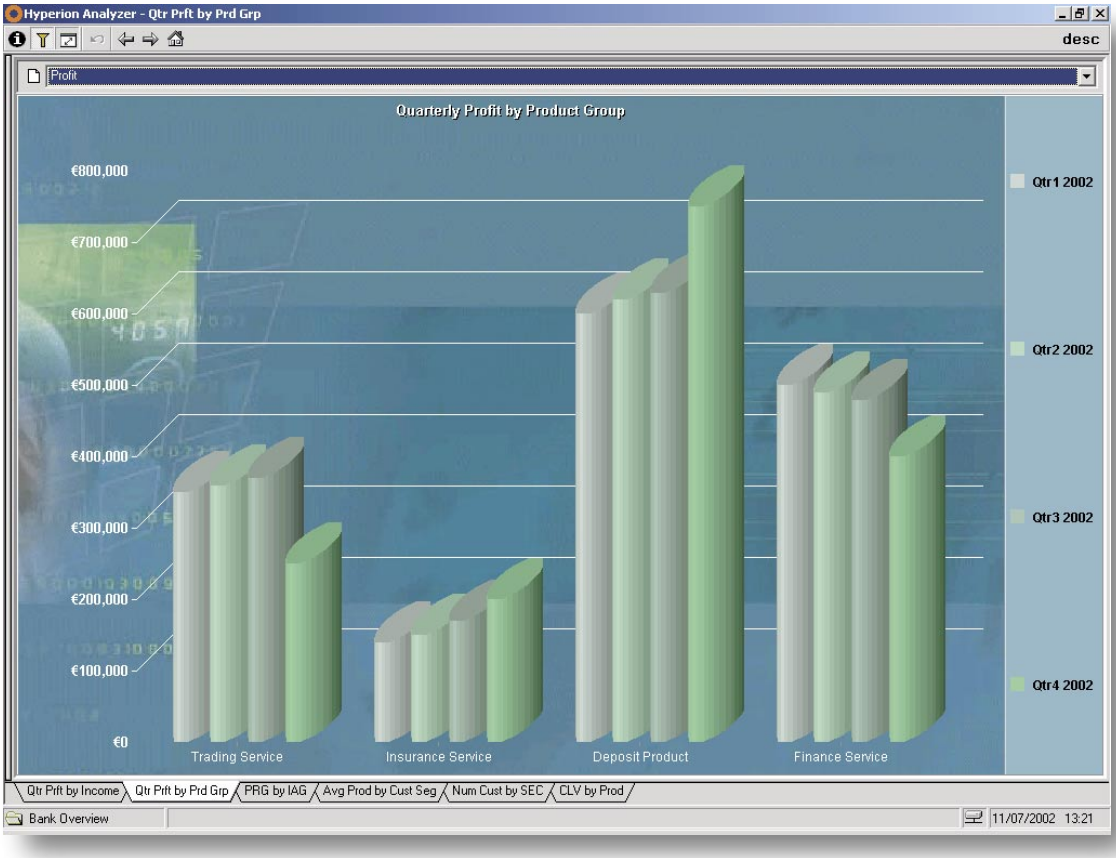
BDW support for DB2 Cube Views enables the immediate porting of many of the BDW Business Solution Templates (BST reports) content into DB2 Cube Views, including the Basel II and Anti-Money Laundering BSTs.

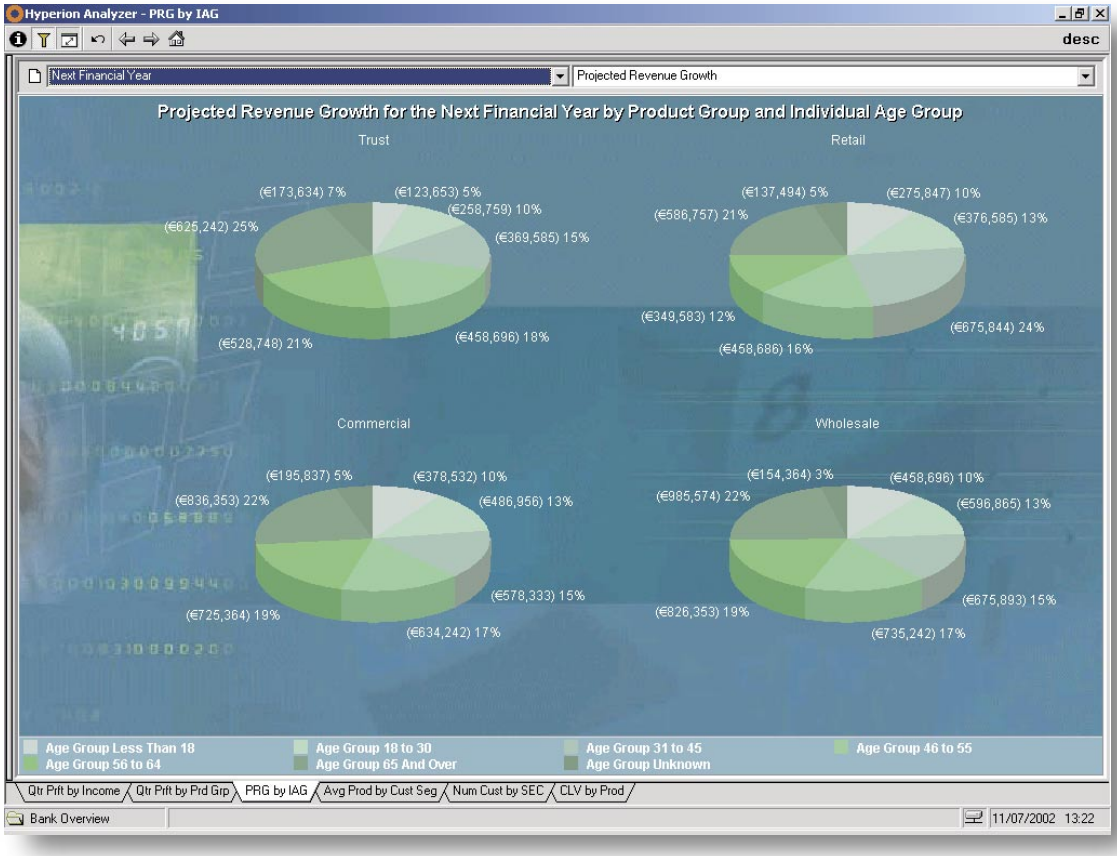
The BDW solution provides substantial domain expertise to fast-start projects, assisting in bringing them through to rapid implementation and benefits realization. When implemented in conjunction with DB2 Cube Views, BDW enables enterprise-wide standard definitions and consistency for all BI data while delivering this data across the organization on consolidated or multiple platforms. This allows for lower-cost maintenance and centralized control of all data, but retains the flexibility to enable user departments to select their preferred analytical applications for ease of use, pre-formed reports or complex analytics capabilities.

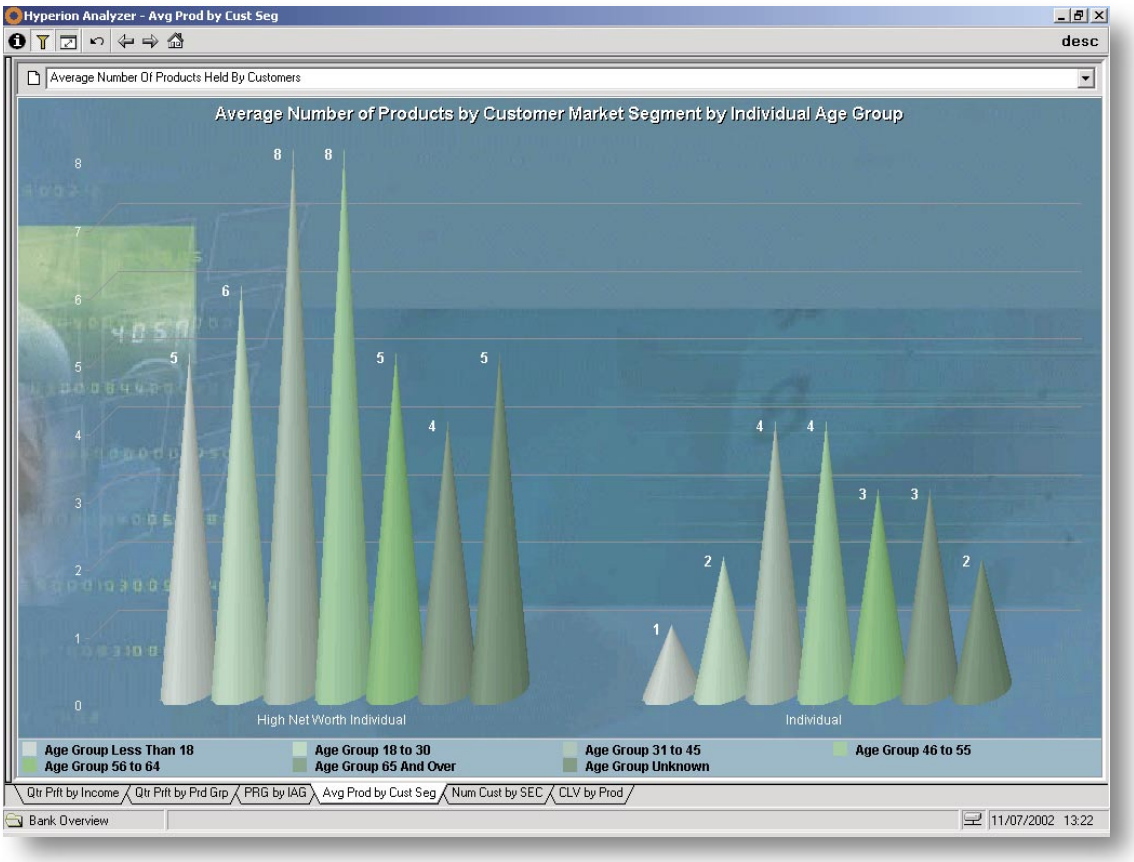
The BDW / DB2 CubeViews interface enables the creation of OLAP metadata in DB2 CubeViews from the BSTs. OLAP metadata passed to DB2 CubeViews describes the Star Schemas created using the BDW Analysis Generator..

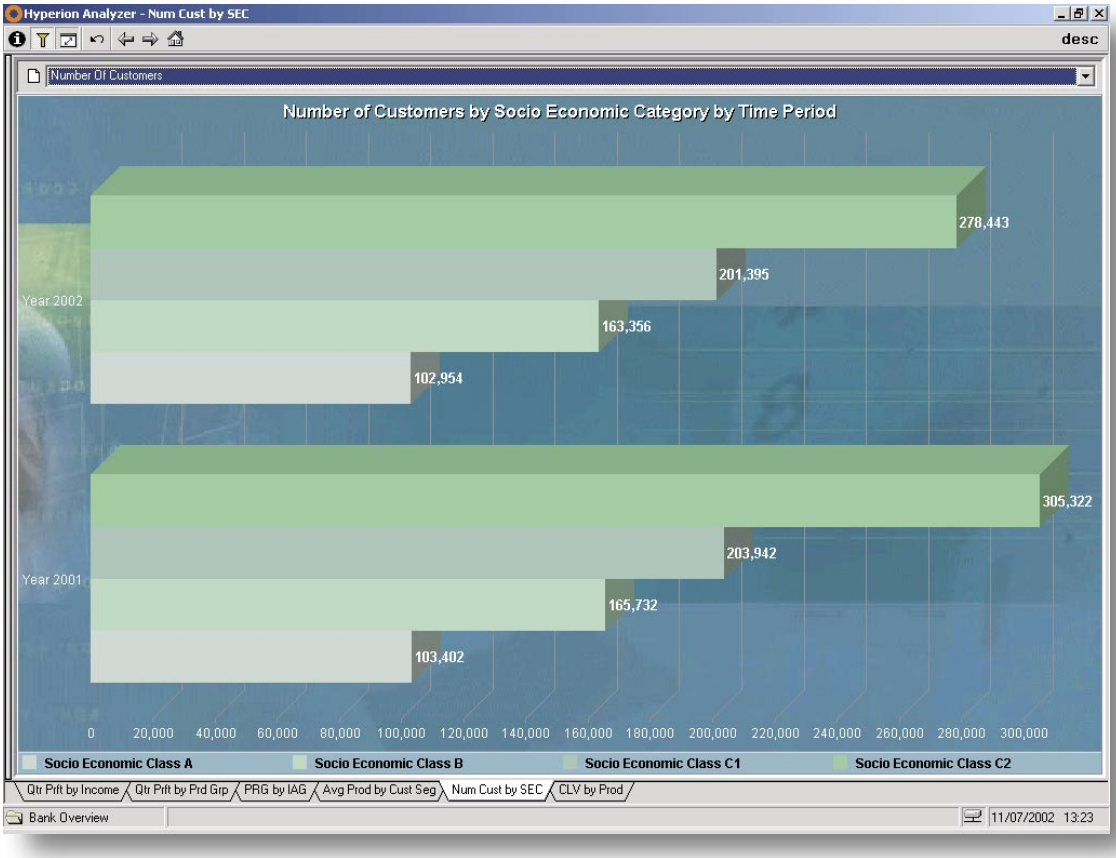
Sample Business Reports




Hyperion Analyzer - Qtr Prft by Prd Grp
desc
Profit
Quarterly Profit by Product Group
€800,000
€700,000
€600,000
€500,000
€400,000
€300,000
€200,000
€100,000
€0
Trading Service
Insurance Service
Deposit Product
Finance Service
Qtr1 2002
Qtr2 2002
Qtr3 2002
Qtr4 2002
Qtr Prft by Income
Qtr Prft by Prd Grp
PRG by IAG
Avg Prod by Cust Seg
Num Cust by SEC
CLV by Prod
Bank Overview
11/07/2002 13:21


Hyperion Analyzer - PRG by IAG
desc
Next Financial Year
Projected Revenue Growth
Projected Revenue Growth for the Next Financial Year by Product Group and Individual Age Group
Trust
(€173,634) 7%
(€123,653) 5%
(€258,759) 10%
(€625,242) 25%
(€369,585) 15%
(€528,748) 21%
(€458,696) 18%
Retail
(€137,494) 5%
(€275,847) 10%
(€586,757) 21%
(€376,585) 13%
(€349,583) 12%
(€675,844) 24%
(€458,686) 16%
Commercial
(€195,837) 5%
(€378,532) 10%
(€836,353) 22%
(€486,956) 13%
(€578,333) 15%
(€725,364) 19%
(€634,242) 17%
Wholesale
(€154,364) 3%
(€458,696) 10%
(€985,574) 22%
(€596,865) 13%
(€675,893) 15%
(€826,353) 19%
(€735,242) 17%
Age Group Less Than 18
Age Group 18 to 30
Age Group 31 to 45
Age Group 46 to 55
Age Group 56 to 64
Age Group 65 And Over
Age Group Unknown
Qtr Prft by Income
Qtr Prft by Prd Grp
PRG by IAG
Avg Prod by Cust Seg
Num Cust by SEC
CLV by Prod
Bank Overview
11/07/2002 13:22


Hyperion Analyzer - Avg Prod by Cust Seg
desc
Average Number Of Products Held By Customers
Average Number of Products by Customer Market Segment by Individual Age Group
High Net Worth Individual
Individual
Age Group Less Than 18
Age Group 18 to 30
Age Group 31 to 45
Age Group 46 to 55
Age Group 56 to 64
Age Group 65 And Over
Age Group Unknown
Qtr Prft by Income
Qtr Prft by Prd Grp
PRG by IAG
Avg Prod by Cust Seg
Num Cust by SEC
CLV by Prod
Bank Overview
11/07/2002 13:22


Hyperion Analyzer - Num Cust by SEC
desc
Number Of Customers
Number of Customers by Socio Economic Category by Time Period
Year 2002
278,443
201,395
163,356
102,954
Year 2001
305,322
203,942
165,732
103,402
Socio Economic Class A
Socio Economic Class B
Socio Economic Class C1
Socio Economic Class C2
Qtr Prft by Income
Qtr Prft by Prd Grp
PRG by IAG
Avg Prod by Cust Seg
Num Cust by SEC
CLV by Prod
Bank Overview
11/07/2002 13:23

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