



IBM Banking Data Warehouse General Information Manual



Executive Summary

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 such as globalization, deregulation and customer expectations. Aggressive competition, mergers and acquisitions, product and market innovation, restructuring and the need to reengineer outmoded legacy systems apply additional pressures. At the same time, organizations need to manage risk and comply with the requirements of new directives and regulatory demands, such as Basel II, the Single Euro Payments Area (SEPA), the Mortgage Industry Standards Maintenance Organization (MISMO), International Financial Reporting Standards (IFRS) for International Accounting Standards (IAS), the Capital Adequacy Directive (CAD) and Anti-Money Laundering (AML).

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

- Online transaction processing (OLTP) systems are not designed for data analysis
- Data is diverse and complex
- User access is complex
- User access slows down business operations

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

- Enterprise-wide risk management and compliance reporting for the financial services group as well as corporate and retail business divisions
- Customer Relationship Management
- Profitability and performance of customers, products and channels
- Wallet share maximization
- Customer loyalty and retention
- Cross-selling ratio improvement
- Marketing campaign management
- Householding
- Consistent definition of customers and products across the organization
- Behavioral trend analysis
- Identification of purchasing and product usage patterns

In order to be successful, a financial organization must...

- Manage all aspects of the customer relationship
- Identify and retain the most profitable customers
- Identify cross-selling opportunities
- Attract the right customers from the competition
- Properly measure product and organizational profitability
- Understand new markets and the need for new products

Considering...

- In a typical organization, 20% of the customers represent 160% of the profits
- A 5% increase in retention can produce an increase in profits between 25 and 80%
- A customer with one relationship with an organization has a 35% chance of leaving
- A customer with more than three relationships has an 85% chance of staying with the organization for three to five years.
- A shift in the customer mix from 30% (As) – 30% (Bs) – 40% (Cs) to 40-30-30 can raise overall profits by as much as 60%

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 that can be accessed by users in a consistent and subject-oriented format. Data organized around business entities such as customer, product or geographical region is more useful for analysis than data committed to applications that support vertical functions of the business such as order entry, accounts receivable or general ledger.

A data warehouse has a very different data structure compared to an OLTP system.

Data Warehouse	OLTP
Archived and summarized	Current
Organized by subject	Application
Static until refreshed	Dynamic
Simplified for analysis	Complex for computation
Accessed and manipulated	Updated
Unstructured for analysis	Structured for repetitive processing

A data warehouse provides online analytical processing (OLAP) rather than OLTP. Users wishing to perform online analyses can access many records per transaction, while OLTP users can only access one record 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 organization's state at a specific point in time, and 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 users to drill down into the summarized information for further detail.

The data warehouse overcomes limitations of decision-support systems, such as:

- Complex, ad-hoc queries are submitted and executed rapidly because the data is stored in a consistent format
- Queries do not interfere with ongoing operations because the system is dedicated to serving as a data warehouse
- Data is consolidated from multiple sources, enabling organization by useful categories such as customer or product.

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

Business Advantages of a Data Warehouse

The data warehouse enables organizations not only to respond positively to the pressures they face, but actually translate these pressures into business advantage. Several areas of business advantage can be leveraged by constructing a data warehouse:

Risk	Focused use of capital, impact of predicted trends, risk exposure containment, enterprise-wide risk management, etc.
Competitive	Focused marketing campaigns, product packaging, promotional pricing, cross selling, competitor alliances, etc.
Customer	Understanding customer values across all product lines, response to total customer needs, predictive and preemptive approach, focus on increasing the customer base, etc.

Profit	Transaction and service costing, pricing and costing rules, actual charges and discounts, historical activity and price performance, etc.
Organization	Compartmentalization of risk, creation of profitable alliances, maintain optimum organization structure, measure and 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 organization to respond to the pressures of increased competition, the need to move to newer technology, globalization of the business and product innovation. 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 information in the data warehouse in this manner creates the following opportunities:

- 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 prenotification

Cost versus Value Justification

A Data Warehouse can deliver:

- Long-term economic advantage, for example by saving costs through customer relationship optimization
- A mechanism by which strategical growth planning can be achieved, for example by identifying new revenue streams as well as faster and more flexible responses to market conditions
- Improved Customer Relationships, leading to increased customer satisfaction and retention
- Immediate and quantifiable improvement to the business
- A solution whose implementation need not interfere with business operations

Building the Data Warehouse

A typical Data Warehouse implementation involves (without IBM):

- Obtaining operational data from many different sources, both internal and external
- Defining and organizing data structures and standardizing data formats across databases and applications to meet the organization's analytical requirements
- Creating subject-oriented data structures from application-oriented equivalents
- Abstraction of complex business requirements using a logical data model that contains generalized data patterns

The benefit of using the BDW are:

- Low-risk
- Enterprise-wide

IBM Banking Data Warehouse

The IBM Banking Data Warehouse (BDW) is a set of interconnected models and supporting tooling that accelerate the design of business requirements focused data warehouse and data mart models for financial services requirements. BDW is designed for iterative implementation, adding segments of business capability during short development cycles, while minimizing rework associated with the incorporation of new business requirements over time. The major components of BDW are:

- **Banking Data Warehouse Model**

The IBM Banking Data Warehouse Model (BDWM) is a comprehensive logical data model containing the structures required to store all financial services data in an efficient layout.

- **Analytical Requirements Model**

Over 140 predefined business reporting requirements templates addressing the common business reporting and analysis requests from risk, finance, compliance, CRM and line-of-business users.

- **Financial Services Data Model**

Defines the business terms and relationships used by the financial institution. Clear definition of business terms reduces confusion about business requirements between business and IT and provides a self-service capability to business users through glossary tools.

- **Tooling**

Supports the use of all BDW components during data model design projects and links the different BDWMs.

Financial Services-specific Warehousing

BDW enables organizations to build data warehouse solutions to suit their specific needs. BDW has the flexibility to create a range of data warehouse solutions from departmental data marts to enterprise-wide data warehouses, while including the key components required for the core of a data warehousing solution. BDW content models are the cornerstone components of an organization's customized development of a data warehouse and business intelligence (BI) environment. BDW consists of more than 140 predefined Analytical Requirements that 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.

BDW also comprises a proven, flexible and scalable data warehouse technical infrastructure, enabling organizations to build comprehensive data warehouse solutions with a view to rapidly delivering business value without compromising on the need for a sound scalable technical data warehouse infrastructure. Organizations using BDW to address their Basel II requirements or evolving their current risk management and reporting capability to a higher level of maturity, build on a proven foundation that addresses these specific requirements, built using design principles founded upon the principle of an open technology architecture.

BDW covers the following areas:

Risk Management

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, SOX, AML Regulations

Flexible architecture enables organizations to concentrate on specific compliance requirements in phases, while exploiting a common structure.

Reporting templates enable the design of a data warehouse to support reporting to multiple jurisdictions and regulators.

Where applicable, reporting and application data requirements for specific regulatory needs can be stored and mapped to BDW

Relationship Marketing

Consolidated customer view

Single view across the organization

Customer behavior and loyalty indicators

Demographic information

Transaction analysis

Spending patterns

Spatial analysis

Segmentation

Householding

Inquiries and complaints

Profitability

Flexible Structure, enabling the storage of all necessary profitability components

Treat each relationship and 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

Commonly used Profitability Aggregations

Encourage standardized profitability across organization

Summarizations at different levels: Account, Customer, Org Unit, Product

Asset and Liability

Mismatch in liquidity

Mismatch in interest rate structure

Funds optimization

Pooling

Capital adequacy

Balance sheet changes over time

Historic trends analysis

Future events projection

Differentiation

- **Business ready**

The models are proven to foster collaboration and approval between business and IT to turn business requirements into actionable solutions.

- **Regulation aware**

Subject matter experts have distilled compliance regulations into statutory reporting requirements without the need for external development.

- **Comprehensive**

Content from multiple client engagements is turned into interrelated data models with a proven methodology.

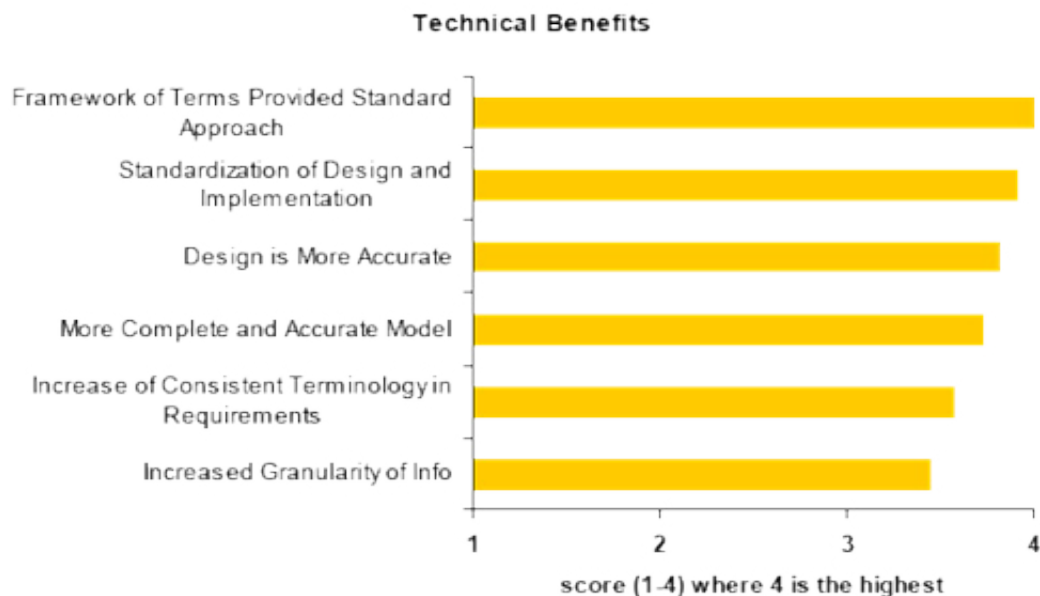
Benefits and Advantages of BDW

- Encapsulates IBM's extensive experience in delivering effective data warehouse solutions to some of the world's leading financial services organizations.
- Delivers competitive advantage by providing consolidated and clean data.
- Supports rapid implementation of warehousing solutions with meaningful financial data.
- Provides a combination of sound infrastructural 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 control more effectively 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.
- Reduces development cost
- Reduces risk by taking an incremental approach to delivering integrated management information

How Data Models have Helped Clients

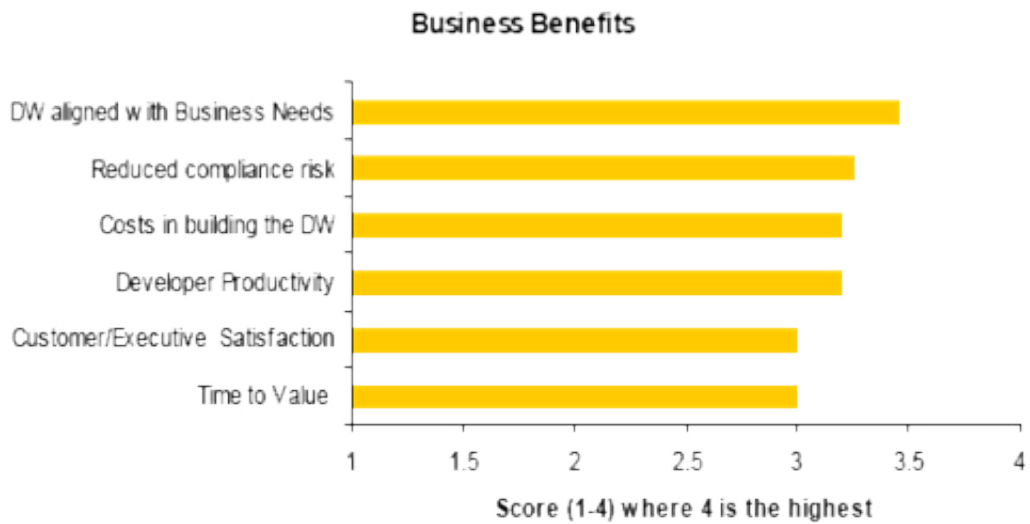
Project Cost Reduction

- 30 to 40% time savings in modeling
- 20 to 25% time savings in design
- 15% time savings in deployment
- 10 to 15% cost savings to build warehouse

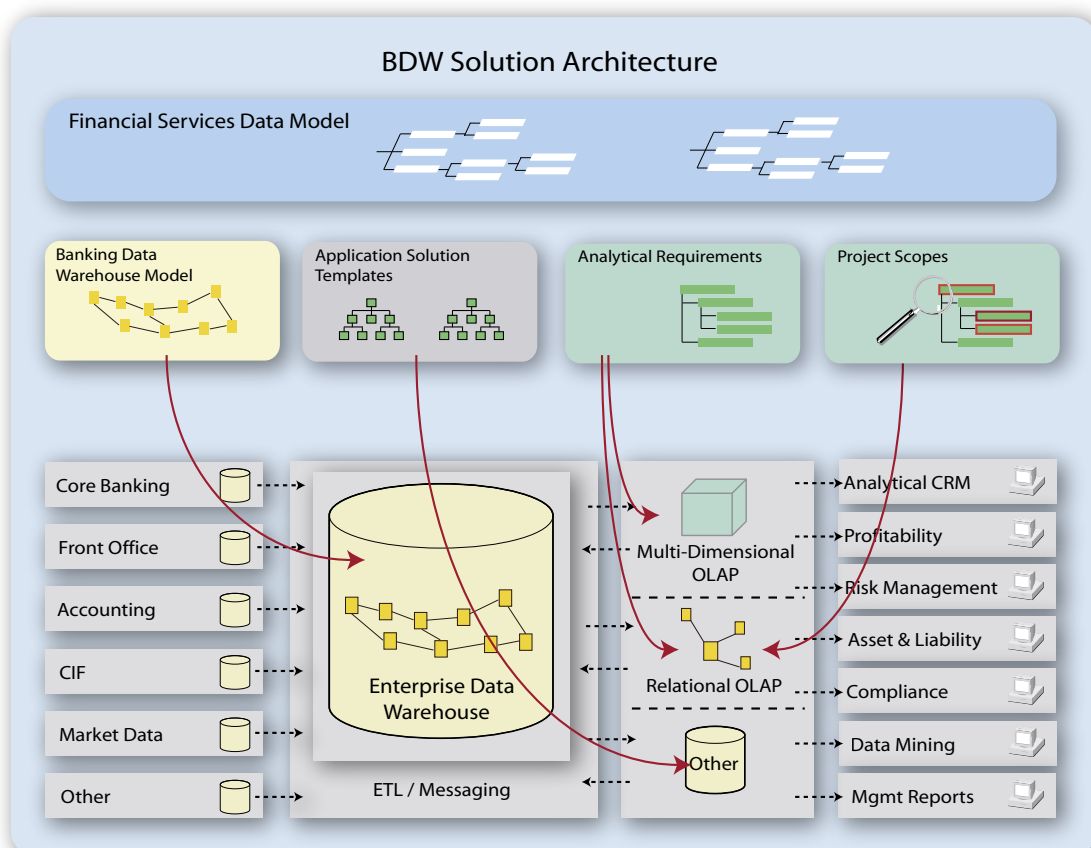


User-reported Benefits

- Reduced compliance risk
- Data warehouse cost reduction
- Customer satisfaction
- Time to value



Solution Architecture



Analytical Requirements

Data mart specifications for a number of predefined business solution areas:

- Profitability
- Relationship Marketing
- Risk Management
- Asset and Liability Management
- Regulatory Compliance
- Investment Management
- Wealth Management

Application Solution Templates

Capture non-reporting requirements in a particular domain and relate those to the BDWM entities, relationships and attributes. Project scopes that define a business issue in terms of a set of items within a BDW project

Banking Data Warehouse Model

Provides predefined data warehouse structures for banks.

Financial Services Data Model

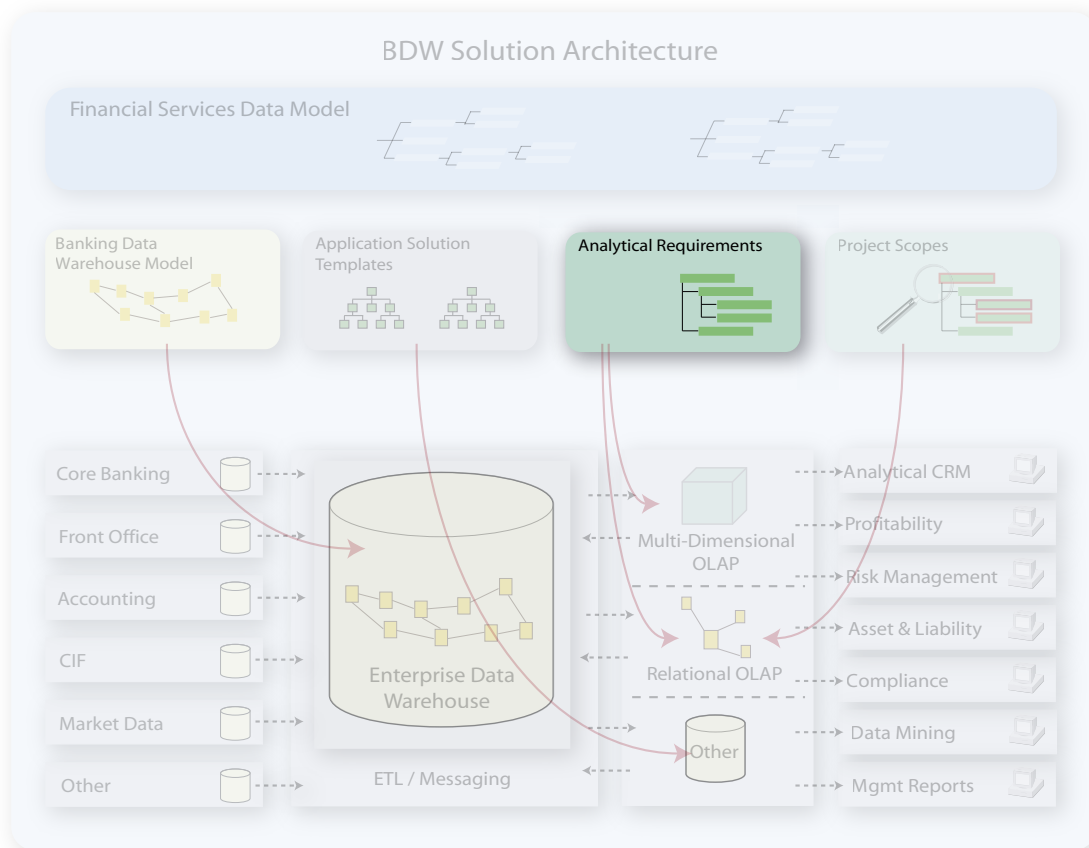
An enterprise-wide data classification model that is the communication link from Analytical Requirements to BDWM and the financial services organization's core data.

Banking Data Warehouse Physical Environment

The physical environment that meets the needs of BDW business coverage.



Analytical Requirements



Business-driven Analysis

Designed and built on the strength of two basic assumptions, BDW incorporates the key components for a successful data warehousing solution in financial services.

- Users have a set of business requirements they wish to fulfil.
- 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. The challenge to the BDW team is to fulfill both requirements.

Analytical Requirements are subject-oriented definitions of the reporting and analysis requirements of an organization. Each Analytical Requirement can be divided into measures and dimensions. A measure is a numerical fact that conveys quantitative information which is important to the organization. Examples of measures include Number of Customers and Profit. A dimension categorizes measures, such as Time and Product. Data marts provide a subject-specific analytical layer in a data warehouse solution. An important aspect of Analytical Requirements is their structural similarity to data marts. As a consequence, Analytical Requirements enable rapid scoping and prototyping of data marts in a financial services organization. Using the BDW modeling software, analysts and business users can work with the Analytical Requirements to gather quickly the reporting and analysis requirements of their organization. Prototype data marts can then be automatically generated either as MOLAP outlines or as star schema models.

Analytical Requirements provide the underlying data mart specifications to support the Basel II Pillar 3 Reporting Tables as defined in the Consultative Package 3 documentation, specifically Analytical Requirements 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 BDWM 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 BI development team can use these Analytical Requirements to create prototype data mart designs for star schemas and OLAP environments. Once these prototype data marts have been populated from the data warehouse it is then possible to create a range of reports and charts.

Focus Areas

BDW contains more than 140 Analytical Requirements covering five business focus areas.

- Risk Management
- Regulatory Compliance
- Relationship Marketing
- Profitability
- Asset and Liability Management
- Investment Management
- Wealth Management

Analytical Requirements are listed in the following section and described in detail in later sections.

Risk Management

Focuses 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.

Advanced IRB And AMA Analysis

Advanced Risk Based Capital Analysis

Asset Pool Performance Analysis

Authority Profiling

Available Unencumbered Asset

Collections Analysis

Concentration Of Funding

Contractual Maturity Mismatch

Credit Risk Analysis

Credit Risk Assessment

Credit Risk Exposure Analysis

Credit Risk Mitigation Assessment

Cross Currency Liquidity Risk

Customer Credit Risk Profile

Debt Restructure Analysis

Economic Capital Analysis

Equity Exposure Analysis

Foreign Currency LCR Analysis

Funding Diversification Risk

Incremental Risk In The Trading Book

Individual Credit Assessment Analysis

Insurance Risk Profile

Integrated Risk Analysis

Interest Rate Risk Analysis

Intra-Day Liquidity Risk

Involved Party Exposure

Liquidity Gap Analysis
Liquidity Position Analysis
Liquidity Retail Funding Risk
Liquidity Risk Analysis
Liquidity Wholesale Funding Risk
Location Exposure
Long Term Liquidity Analysis
Market Risk Capital Charges Analysis
Market Risk VaR Analysis
Marketable Assets Risk
Non Performing Loan Analysis
Off-Balance Sheet Liquidity Risk
Operational Risk Assessment
Operational Risk Loss Analysis
Outstandings Analysis
Payment Card Fraud Analysis
Portfolio Credit Exposure
Product Risk Analysis
Securitization Analysis
Securitization Detail Analysis
Security Analysis
Short Term Liquidity Analysis
Value At Risk Analysis

Regulatory Compliance

A separate category to support regulatory reporting and AML.

Best Execution Analysis
Continuous Auction Analysis
ECB Reporting
Financial Capital Adequacy Analysis
Foreign Financial Account Analysis
Periodic Auction Analysis
Quarterly Transaction Reporting Analysis
Quote Driven Analysis
Sarbanes Oxley Act Analysis (SOX)
Sarbanes Oxley Act Balance Sheet Analysis
Sarbanes Oxley Act Cash Flow Analysis
Sarbanes Oxley Act Statement Of Income Analysis
Sarbanes Oxley Act Stmt Chg Shrhldr Eqty Anlys
Structure of Regulatory Capital
Suspicious Activity Analysis
Transaction Activity Analysis
Transaction Reporting Analysis

Relationship Marketing

Focuses on the quality and effectiveness of the financial services organization's commercial relationships with other Involved

Parties.

Call Centre Performance Analysis

Campaign Analysis

Card Fees Analysis

Card Loyalty Analysis

Cross Sell Analysis

Customer Attrition Analysis

Customer Behavior

Customer Complaints Analysis

Customer Delinquency Analysis

Customer Experience Analysis

Customer Interaction Analysis

Customer Investment Profile

Customer Loyalty

Individual Customer Profile

Lead Analysis

Market Analysis

Mobile Visitor Analysis

Operator Script Performance Analysis

Payment Card Merchant Analysis

Wallet Share Analysis

Website Page Analysis

Website Visitor Analysis

Profitability

Offers analysis of areas of the financial services organization emphasizing profit maximization.

Activity Based Costing Analysis

Business Procedure Performance Measurement

Channel Profitability

Customer Lifetime Value Analysis

Customer Profitability

Income Analysis

Insurance Product Analysis

Investment Arrangement Analysis

Islamic Banking Profitability Analysis

Location Profitability

Organization Unit Profitability

Performance Measurement

Product Analysis

Product Profitability

Profitability Analysis

Transaction Profitability Analysis

Asset and Liability Management

Maximizes long-term wealth for an Involved Party.

Capital Allocation Analysis

Capital Procurement
Credit Loss Allowance Analysis
Economic Balance Sheet Analysis
Equity Position Exposure
Financial Management Accounting
Financial Market Transaction Analysis
Funds Maturity Analysis
High Value Outward Payment
Interest Rate Sensitivity Analysis
Inward Payment Rate Tolerance
Inward Payment User Activity
Inward Payments Volume
Inward Payments
Liquidity Analysis
Net Interest Margin Variance
Outward Payments
Positions Analysis
Short Term Funding Management
Structured Finance Analysis
VWAP Analysis

Investment Management

Emphasizes custody, cash management, performance and attribution, fund accounting and corporate governance.

Class Action Period Holding Analysis
Corporate Action Analysis
Dynamic Performance Analysis
Financial Market Lot Analysis
Foreign Exchange Analysis
Holding Movement Analysis
Investment Fund Analysis
Performance Analysis
Performance Versus Benchmark Analysis
Proxy Vote Analysis
Securities Available For Lending
Settlement Analysis

Wealth Management

Emphasizes portfolio management, relationship management, performance reporting and financial planning.

Asset Allocation Analysis
Client Profitability Analysis
Client Summary Analysis
Portfolio Fee And Tax Analysis
Portfolio Gains Analysis
Portfolio Performance Analysis
Portfolio Risk Analysis
Profit & Loss Attribution Analysis

Analytical Requirements in Detail

Risk Management

Advanced IRB And AMA Analysis - To summarize risk-weighted asset information for banks approved to use advanced internal ratings-based and advanced measurement approaches for regulatory capital purposes.

Typical Measures: Total Exposure At Default, Total Weighted Average Effective Maturity

Typical Dimensions: Credit Risk Approach Type, Protection Provider Treatment Approach

Advanced Risk Based Capital Analysis - To analyze the Risk-Based Capital Numerator and Ratios for Banks and Bank Holding Companies.

Typical Measures: Total Tier 1 Capital, Allowable Tier 2 Capital

Typical Dimensions: Time Period

Asset Pool Performance Analysis - To analyze how a pool of assets are performing. Facets of the pool performance include the value of the assets, the value of late or default asset payments and the relationship of the asset value to any securitization.

Typical Measures: Total Security Value Secured, Total Asset Quantity

Typical Dimensions: Securitized Product Type, Exposure Currency

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

Available Unencumbered Assets - To provide supervisors with data on the quantity and key characteristics, including currency denomination and location, of banks' available unencumbered assets. These assets may potentially be used as collateral to raise additional secured funding in secondary markets and/or eligible at central banks and as such may potentially be additional sources of liquidity for the bank.

Typical Measures: Tot Value Of Stock Of High Quality Assets, Total Collateral Valuation

Typical Dimensions: Arrangement Credit Location Type, Reporting Currency

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 Counter-party, Line of Credit Unutilized Range

Concentration Of Funding - To identify those sources of wholesale funding which are of such significance that withdrawal of this funding could trigger liquidity problems. The metric thus encourages the diversification of funding sources.

Typical Measures: Total Deposit Amount, Total Balance Sheet Amount

Typical Dimensions: Scenario, Organization

Contractual Maturity Mismatch - To analyze the gaps between the contractual inflows and outflows of liquidity for defined time bands. These maturity gaps indicate how much liquidity a bank would potentially need to raise in each of these time bands if all flows occurred at the earliest possible date. This metric provides insight into the extent to which the bank relies on maturity transformation under its current contracts.

Typical Measures: Cumulative Expected Cash Outflow, Cumulative Expected Cash Inflow

Typical Dimensions: Organization, Time Period

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 Exposure Analysis - To analyze the credit risk of various exposure categories. In particular, to address the requirements of Schedules C to J of FFIEC 101, a US Advanced Capital Adequacy Frameworks supplemental report.

Typical Measures: Total Weighted Average Obligor PD, Total Exposure At Default

Typical Dimensions: IRB Advanced CAF Exposure Class, Probability Of Default Category

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 lose 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

Cross Currency Liquidity Risk - A financial institution must: (i) calculate its gross outflows and inflows (and categorize them according to maturity) in relation to each major and currency in which it is active; (ii) estimate how amounts could change under stress; and (iii) determine the extent to which outflows could exceed inflows. For each major currency in which it is active, (i) identify the instrument used; and (ii) identify its main counter parties.

Typical Measures: Total Assets, Total Liabilities

Typical Dimensions: Currency, Idiosyncratic Liquidity Risk Scenario Type

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

Economic Capital Analysis - Economic Capital Comparison Analysis compares the different forms of capital with the Economic Capital.

Typical Measures: Risk Adjusted Return On Capital, Market Value At Risk

Typical Dimensions: Measurement Currency, Organization

Equity Exposure Analysis - To analyze the detail of Equity Exposures Subject to the advanced approaches rules.

Typical Measures: Total Equity Exposure Amount, Estimate Of Loss RWA Amount

Typical Dimensions: Equity Risk Approach Type, Portfolio Type

Foreign Currency LCR Analysis - To capture potential currency mismatches, banks and supervisors should also monitor the LCR in significant currencies. This will allow the bank and the supervisor to track potential currency mismatch issues that could arise.

Typical Measures: Liquidity Coverage Ratio (LCR)

Typical Dimensions: Organization, Idiosyncratic Liquidity Risk Scenario Type

Funding Diversification Risk - To report financial institution's liquidity resource diversification according to: (i) type of instrument and product; currency; (ii) counter party; liability term structure; and (iii) available market for their realization.

Typical Measures: Assets Total

Typical Dimensions: Retail Deposit Stability Type, Wholesale Funding Type

Incremental Risk In The Trading Book - The Basel Committee on Banking Supervision "Guidelines for computing capital for incremental risk in the trading book" July 2009, contains a number of other factors which a Financial Institution must consider when computing the Incremental Risk. Under the proposed rule, a bank that models specific risk for one or more portfolios of covered positions would be required to measure the incremental default risk of those positions. Incremental default risk would be defined as the default risk of a covered position that is not reflected in the bank's VaR-based measure because it reflects risk beyond a ten-business-day horizon and a 99% confidence level. In the case of a securitization exposure, incremental default risk includes the risk of losses that could result from default of the assets underlying the securitization exposure. A bank would be required to measure incremental default risk for both covered debt and equity positions.

Typical Measures: Incremental Default Risk Charge, Total Exposure Amount

Typical Dimensions: Value At Risk Horizon, Sources Of Liquidity Risk

Individual Credit Assessment Analysis - To assess the credit worthiness of a set of Individual Customer arrangements according to the behavior of those arrangements over time. The Individual Credit Assessment Analysis can also be used to historically evaluate the success and accuracy of credit scoring.

Typical Measures: Available Credit Amount, Average Credit Score

Typical Dimensions: Arrangement Age Segment, Housing Tenure

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

Integrated Risk Analysis - To support the reporting of a Financial Institution's key risk measures in an integrated fashion. Encompasses market, credit, operational and liquidity risk.

Typical Measures: Capital Adequacy Ratio, Earnings At Risk

Typical Dimensions: Portfolio, Credit Risk Accounting Category

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

Intra-Day Liquidity Risk - A financial institution should estimate its collateral requirement and estimate how this could unexpectedly change as a result of stress.

Typical Measures: Cumulative Expected Cash Outflow, Cumulative Expected Cash Inflow

Typical Dimensions: Currency, Off Balance sheet Exposure Type

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 Gap Analysis - To analyze the net liquid assets of a financial institution. The excess value of the financial institution's liquid assets over its volatile liabilities. A company with a negative liquidity gap should focus on their cash balances and possible unexpected changes in their values.

Typical Measures: Cumulative Expected Cash Outflow, Cumulative Expected Cash Inflow

Typical Dimensions: Organization, Scenario

Liquidity Position Analysis - To analyze the difference between the sum of liquid assets and incoming cash flows on one side and outgoing cash flows resulting from commitments on the other side, measured over a defined period, being the measure of the liquidity risk.

Typical Measures: Loan To Deposit Ratio (LTD), Liquid Assets To Total Asset Ratio

Typical Dimensions: Organization, Currency

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

Liquidity Retail Funding Risk - Financial Institution's should categorize retail liabilities against certain specified criteria including value and maturity. A financial Institution's retail funding behavioral assessment should take account of the following assumptions: (i) funding from depositors with whom the firm does not have a long established relationship is likely to be less sticky; (ii) online deposits are likely to be less sticky; (iii) deposits covered by deposit protection are likely to be more sticky; (iv) depositor behavior is likely to be impacted by the contractual position; and (v) deposits from overseas depositors are likely to be less sticky.

Typical Measures: Number Of Arrangements

Typical Dimensions: Retail Deposit Stability Type, Organization

Liquidity Wholesale Funding Risk - A financial institution should consider funding from wholesale depositors with the greatest sensitivity to the financial institution's credit rating; (ii) funding from depositors with whom the financial institution does not have a long relationship; (iii) funding from overseas counter parties; (iv) funding from corporations with sophisticated treasuries; (v) funding through unsecured debt instruments; (vi) funding through repo transactions; and (vii) funding from counter parties with low creditor seniority.

Typical Measures: Number Of Arrangements, Wholesale Balance

Typical Dimensions: Organization, Wholesale Funding Type

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

Long Term Liquidity Analysis - To promote resiliency over longer-term time horizons by creating additional incentives for banks to fund their activities with more stable sources of funding on an ongoing structural basis.

Typical Measures: Net Stable Funding Ratio (NSFR)

Typical Dimensions: Idiosyncratic Liquidity Risk Scenario Type, Organization

Market Risk Capital Charges Analysis - The proposed reporting schedule would collect information on reporting entities' value-at-risk measures, specific risk charges and market risk exposures that pertain to the regulatory capital requirements for market risk under the federal banking agencies' proposed revisions to their existing market risk capital framework.

Typical Measures: Standardized Specific Risk Charge, Specific Risk Add-on

Typical Dimensions: Covered Position Type, Financial Market Instrument Type

Market Risk VaR Analysis - To report the Value At Risk (VaR) of portfolios held across the Financial Institution.

Typical Measures: Commodity Risk VaR Amount, Equity Risk VaR Amount

Typical Dimensions: Market Risk Management Type, Market Risk Portfolio

Marketable Assets Risk - To assess the financial institution's marketable asset risk, a financial institution must consider: (i) its ability to realize assets in a timely fashion; (ii) the potential for using the assets as collateral for secured funding; (iii) the likelihood of forced sale loss; and (iv) the effect on its business of changes arising from liquidity stresses.

Typical Measures: Tot Value Of Stock Of High Quality Assets

Typical Dimensions: Time Period, Marketable Security Type

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

Off-Balance Sheet Liquidity Risk - To identify financial institution's all off-balance sheet activities that might affect cash flows and then calculate its expected cash flows arising from those activities and estimate how cash flows might change unexpectedly under liquidity stresses. The financial institution must take into account potential non-contractual off-balance sheet obligations under the liquidity stress.

Typical Measures: Cumulative Expected Cash Outflow, Cumulative Expected Cash Inflow

Typical Dimensions: Organization, Idiosyncratic Liquidity Risk Scenario Type

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 Debts, Total Debts in Period

Typical Dimensions: Product Type, Exception Cause, Clearing System

Payment Card Fraud Analysis - To analyze the risk associated with fraudulent use of Payment Cards (including, but not restricted to, Credit Cards) that are issued under the terms of the Financial Institution's Credit Card Arrangement.

Typical Measures: Number Of Payment Card Usages, Number of Mail Stolen Incidents

Typical Dimensions: Card Technology Type, Identity Fraud Identity Information

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

Product Risk Analysis - To report on the key risk factors associated with Products such as Financial Market Instruments.

Typical Measures: Convexity, Price Earnings (P E) Ratio

Typical Dimensions: Product Type, Exposure 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

Securitization Detail Analysis - To analyze the detail of Securitization Exposures Subject to the Ratings-Based or Internal Assessment Approaches.

Typical Measures: Total SFA Exposure Amount, Tot Synthetic Scrtz Esrs Deduction

Typical Dimensions: Time Period, Securitization Approach Type

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 as 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

Short Term Liquidity Analysis - To promote resiliency over short-term time horizons by creating additional incentives for banks to fund their activities with more stable sources of funding on an ongoing structural basis.

Typical Measures: Liquidity Coverage Ratio (LCR)

Typical Dimensions: Idiosyncratic Liquidity Risk Scenario Type, Organization

Value At Risk Analysis - To report the Value At Risk (VAR) and Mark To Market (MTM) of portfolios held across the Financial Institution.

Typical Measures: Market Value At Risk, Mean Incremental Risk Capital Charge

Typical Dimensions: Value At Risk Confidence Level, Value At Risk Model Type

Regulatory Compliance

Best Execution Analysis - To support the financial institution in the generation of reports and the analysis of data in relation to Article 21 of the Markets in Financial Instruments Directive (MiFID).

Typical Measures: Financial Market Order Quantity, Financial Market Transaction Price

Typical Dimensions: Financial Market Order Identification, Financial Market Instrument

Continuous Auction Analysis - To support the financial institution in the analysis of data in relation to Article 17 of the Markets in Financial Instruments Directive (MiFID). Also relevant to the Trade-Through Rule of Reg NMS.

Typical Measures: First Bid And Offer, Second Bid And Offer

Typical Dimensions: Financial Market Instrument, Time Period

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 counter party and the currency of the arrangement.

Typical Measures: Total Credits In Period, Total Debits In Period

Typical Dimensions: ECB Lending Purpose, ECB Counter-party 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

Periodic Auction Analysis - To support the financial institution in the analysis of data in relation to Article 17 of the Markets in Financial Instruments Directive (MiFID). Also relevant to the Trade-Through Rule of Reg NMS.

Typical Measures: Periodic Auction Satisfied Bid, Periodic Auction Satisfied Offer

Typical Dimensions: Financial Market Instrument, Time Period

Quarterly Transaction Reporting Analysis - To support the financial institution in the generation of reports and the analysis of data in relation to Article 27 of MiFID. Also relevant to SEC transaction reporting.

Typical Measures: Total SI Shares Traded, Average Price SI Shares

Typical Dimensions: Financial Market Instrument, Broker Transaction Type

Quote Driven Analysis - To support the financial institution in the analysis of data in relation to Article 17 of the Markets in Financial Instruments Directive (MiFID). Also relevant to the Trade-Through Rule of Reg NMS.

Typical Measures: Best Bid Price, Best Bid Price Volume

Typical Dimensions: Financial Market Instrument, Time Period

Sarbanes Oxley Act Analysis (SOX) - To support the Financial Institution in the generation and analysis of the Security And Exchange Commissions (SEC) 10Q and 10K reports which support the Financial Institution with regard to compliance with Sections 302 and 404 of the Sarbanes Oxley Act

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 non-cash 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 Institution'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 Institutions in optimizing report generation with regard to the Securities And Exchange Commissions (SEC) 10Q and 10K regulatory filing requirements.

Typical Measures: Capital, Net Income

Typical Dimensions: Time Period, Line Of Business Reporting Group

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

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

Transaction Reporting Analysis - To support the financial institution in the generation of reports and the analysis of data in relation to Article 27 of MiFID. Also relevant to SEC transaction reporting.

Typical Measures: Average Transaction Unit Price, Traded Volume

Typical Dimensions: Financial Market Instrument, Financial Market Transaction Venue

Relationship Marketing

Call Centre Performance Analysis - To analyze the performance in terms of productivity, efficiency and profitability of call centers operated by or on behalf of the Financial Institution.

Typical Measures: Number Of Calls Answered, Number Of Employee Hours

Typical Dimensions: Time Period, Customer Market Segment

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

Card Fees Analysis - To assess the incomings and outgoings that the Financial Institution has in relation to fees and charges for the servicing of card arrangements.

Typical Measures: Total Credit Card Fees

Typical Dimensions: Time Period, Socio Economic Category

Card Loyalty Analysis - To assess the customer propensity to maintain a long term relationship with the Financial Institution for card services beyond the introductory special deal offer period.

Typical Measures: Available Credit Amount, Average Payment Ratio

Typical Dimensions: Arrangement Age Segment, Line Of Credit Utilization Segment

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. For example, 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 they apply for other repayment type products.

Typical Measures: Delinquent Amount, Number of Days Delinquent

Typical Dimensions: Product Type, Credit Reinstatement Status

Customer Experience Analysis - To identify the customer, financial and internal business process measures outlining how the Financial Institution appears to customers and shareholders i.e. are customer and shareholder needs being satisfied, are the critical internal operations satisfying customer and shareholder needs.

Typical Measures: Customer Perception Performance

Typical Dimensions: Time, Product

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

Mobile Visitor Analysis - To analyze the effectiveness and impact of a visit to the Financial Institution's website using a mobile device by an identifiable unique visitor where the visitor is human.

Typical Measures: Number Of Visitors, Average Duration Of Visit

Typical Dimensions: Device Capability, Country

Operator Script Performance Analysis - To analyze the performance in terms of productivity, efficiency and profitability of call center operators and the scripts they use when dealing with the Financial Institution's customers.

Typical Measures: Number Of Calls Answered, Idle Communications Time

Typical Dimensions: Time Period, Channel Delivery Type

Payment Card Merchant Analysis - To assess the arrangements that the Financial Institution has with Merchants which entail the authorization and processing of payment transactions using Payment Cards in exchange for fee income for the Financial Institution.

Typical Measures: Average Card Payment Transaction Amount, Number Of Payment Card Usages

Typical Dimensions: Transaction Type, Merchant

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

Website Page Analysis - To analyze the effectiveness of a Financial Institution's website pages.

Typical Measures: Total Number Of Page Views, Total Number Of Web Events

Typical Dimensions: Website, Referrer

Website Visitor Analysis - To analyze the effectiveness and impact of a visit to the Financial Institution's website by an identifiable unique visitor where the visitor is human.

Typical Measures: Number Of Visitors, Number Of Target Conversions

Typical Dimensions: Website, Visitor Type

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 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 its 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

Income Analysis - To analyze patterns of interest and non-interest revenues and expenses, including actual, potential and foregone items.

Typical Measures: Foreign Exchange Margin Income, Trading and Investment Income

Typical Dimensions: Line Of Business Reporting Group, Product Type

Islamic Banking Profitability Analysis - Islamic Banking provides Profitability Analysis specific to Islamic Banking arrangements.

Typical Measures: Share Of Loss Amount, Purchase Price

Typical Dimensions: Involved Party, Arrangement

Asset and 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

Economic Balance Sheet Analysis - Balance Sheet Analysis records the current asset and liability positions in a Financial Institutions Balance Sheet.

Typical Measures: Net Amount

Typical Dimensions: Organization, Measurement Currency

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

Financial Market Transaction Analysis - To analyze a group of financial market transactions for the purposes of reporting to management or clients.

Typical Measures: Total Transaction Value, Total Commission Fees

Typical Dimensions: Financial Market Instrument, Financial Market Transaction Forward 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

High Value Outward Payment - To determine and analyze all outbound payments as a subset of the outward payment category (i.e. take a value band such as £5k-£25k and provide more detail on the rules applied to this segment of payments).

Typical Measures: Total Payment Settlement Amount, Total Instructed Amount

Typical Dimensions: Payment Currency, Transfer Type

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

Inwards Payments Volume - To determine and analyze a categorization of the inward payments report (i.e. volume of domestic).

Typical Measures: Total Number of Messages Received, Total Number of Messages STP

Typical Dimensions: Message Type, Transfer Type

Inward Payment User Activity - To determine and analyze the number of actions taken by a user regarding the number of times they have processed a payment. It is not a measure of the actual number of payment messages processed e.g. a single payment message may be actioned a number of times depending on whether the action has been rejected by the verifier.

Typical Measures: Total Messages Repaired, Total Messages, Rejected

Typical Dimensions: Message Type, Transfer Type

Inward Payment Rate Tolerance - To determine and analyze the incoming payments where the Rate Tolerance was exceeded. The rate could be applied by a dealer, the Rate Card or Margin Engine.

Typical Measures: Total Original Currency Amount, Total Converted Currency Amount

Typical Dimensions: Message Type, Transfer Type

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

Outward Payments - To determine and analyze all outbound payments within a given time period, usually daily.

Typical Measures: Total Payment Settled Amount, Total Receiver Charge

Typical Dimensions: Payment Collection Method, Transfer Type

Positions Analysis - To analyze and report the trading positions held by the Financial Institution.

Typical Measures: Position Quantity, Financial Market Instrument Volatility

Typical Dimensions: Financial Market Instrument, Geographic Region

Short Term Funding Management - To identify and analyze sources of short-term funding to fulfil the financial services organization's asset, liability and 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

VWAP Analysis - To report the daily Volume Weighted Average Price (VWAP) and related statistics for a selected instrument. Note that this is for the purpose of retrospective, post-trade analysis, not pretrade decision support.

Typical Measures: Volume Weighted Average Price, Tick Count

Typical Dimensions: Financial Market Transaction Group, Time Period

Investment Management

Class Action Period Holding Analysis - To support the financial institution in the analysis of the effect of Class Actions on the value of its investment holdings.

Typical Measures: Total Class Action Amount Paid, Total Closing Quantity Held

Typical Dimensions: Time Period, Investment Manager

Corporate Action Analysis - To support the financial institution in the analysis of the effect of Corporate Actions upon investment funds and investment plans.

Typical Measures: Equity Conversion Rate, Total Cost Allocation

Typical Dimensions: Investment Plan, Equity Instrument

Dynamic Performance Analysis - To support the financial institution in the analysis of investment fund and plan performance on a dynamic or "ad hoc" basis i.e. reports fund statistics, including returns, at any historical point in time based on dimension values chosen.

Typical Measures: Benchmark Return, Excess Return

Typical Dimensions: Time Period, Asset Class

Financial Market Lot Analysis - Supports the analysis of Financial Market Lots.

Typical Measures: Lot Market Value, Total Lot Cost Amount

Typical Dimensions: Time Period, Financial Market Lot

Foreign Exchange Analysis - Supports the analysis of Foreign Exchange transactions in respect of Investment Funds.

Typical Measures: Total Amount Purchased, Total Amount Sold

Typical Dimensions: Investment Fund, Executing Broker

Holding Movement Analysis - This Analytical Requirement supports the analysis of Investment Fund holding movements.

Typical Measures: Total Purchases Value, Total Sales Value

Typical Dimensions: Asset Class, Financial Market Instrument

Investment Fund Analysis - To support the basic analysis of activity in Investment Funds.

Typical Measures: Total Market Value, Investment Fund Net Assets

Typical Dimensions: Asset Class, Investment Fund

Performance Analysis - To support the financial institution in the analysis of investment fund and plan performance.

Typical Measures: Fiscal YTD Excess Return, One Month Excess Return

Typical Dimensions: Asset Class, Industry Sector

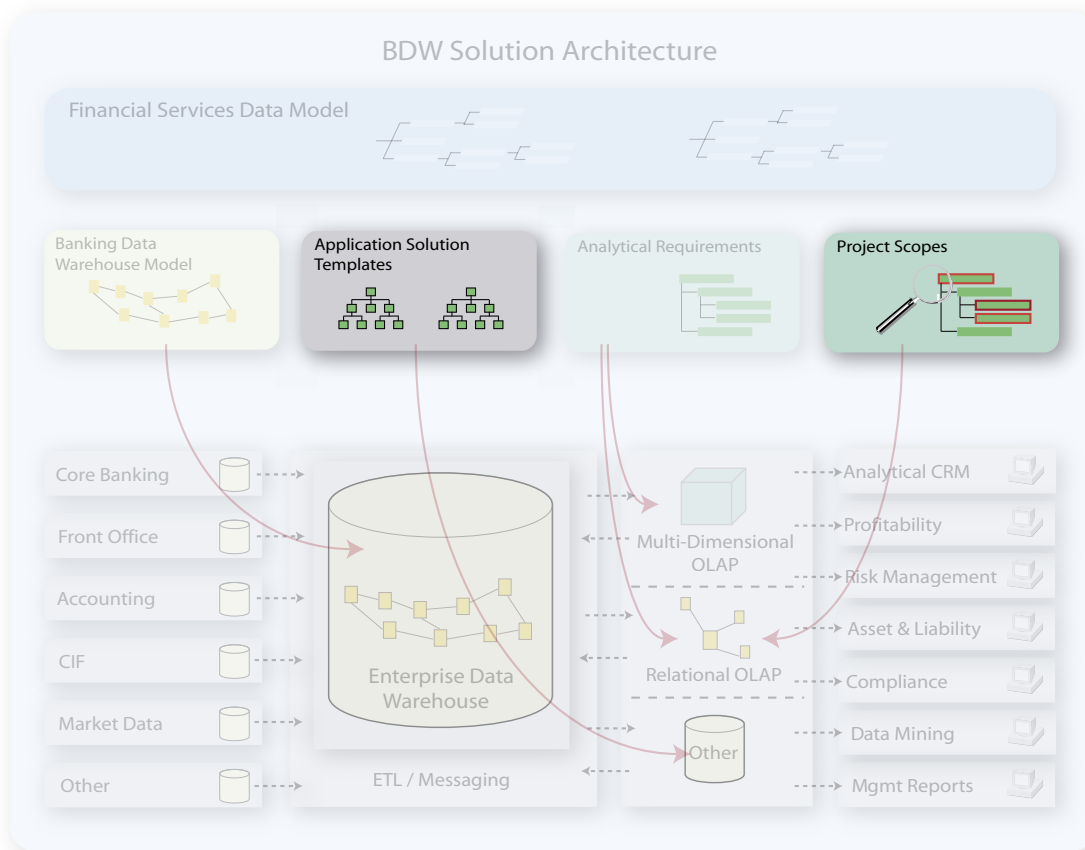
Performance Versus Benchmark Analysis - To support the financial institution in the analysis of investment fund and plan performance compared to benchmarks.

Typical Measures: Total Market Value, Performance v Benchmark Three Month Return

Typical Dimensions: Asset Class, Investment Plan

Proxy Vote Analysis - To support the financial institution in the analysis of the issues in respect of Proxy Voting on Ballots in respect of Equity Instruments held.

Application Solution Templates and Project Scopes



Application Solution Templates

Application Solution Templates (ASTs) integrate external data standards such as Basel II and International Financial Reporting Standards (IFRS) in BDWM by identifying warehouse data elements for non-reporting requirements, while Analytical Requirements relate reporting and Analytical Requirements to the structures in BDWM that support reporting requirements. Analytical Requirements allow the modeling of a particular class of downstream reporting applications in relation to the enterprise warehouse. However, there are many other downstream applications that impose requirements on the content and structure of the warehouse, but are not structured according to the dimensions and measures of Analytical Requirements model. Such applications include 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 ASTs. As with Analytical Requirements, the purpose of ASTs is to capture requirements in a particular domain of interest and then relate ASTs to the BDWM entities, relationships and attributes. To this end, ASTs are defined in the language of the users of the given application. As with usage of Analytical Requirements, the user scopes out the requirements using ASTs, which automatically select the most appropriate data warehouse structures using the BDWM mappings.

ASTs provided with the product describe the data requirements of Pillar 1 of the New Capital Accord, as issued by the Basel Committee of the Bank for International Settlements, commonly known as Basel II, in the language used in the Basel II documentation. These requirements are fully mapped into BDWM in order to indicate how and where those requirements are supported by the BDWM data structures.

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:

- Standardized Approach
- Internal Ratings Based (IRB) Approach

Approaches within the IRB use certain identified risk metrics in order to calculate the required Risk Weighted Asset values. 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

Basel II

Credit Risk - Internal Ratings Based
Credit Risk - Standardized
Capital Adequacy Framework Final Rule
Effective Maturity
Operational Risk
Probability of Default (PD)
Exposure at Default (EAD)
Loss Given Default (LGD)
Expected Loss (EL) And Provisions
Securitization Framework

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 CP3 identified more than 800 Basel II data items that directly contribute to the risk calculations or invoke decision points affecting how the calculations are to be performed. These data items are organized into the Basel II ASTs. Each AST data requirement has detailed mappings to the relevant BDWM entities and attributes.

SEPA

Bank to Bank Space - An Application Solution Template containing the data items required for the Direct Debit Rulebook DS-04 Direct Debit Collection and the Credit Transfer Rulebook DS-02 Interbank Payment Dataset.
Bank to Customer Space - An Application Solution Template containing the data items required for the Direct Debit Rulebook DS-06 Customer to Bank Direct Debit Collection Credit Transfer Rulebook DS-04 C2B Information.
Customer to Bank Space - An Application Solution Template containing the data items required for the Direct Debit Rulebook DS-03 Customer to Bank Direct Debit Collection and the Credit Transfer Rulebook DS-01 C2B Information.
Reversal Events - An Application Solution Template containing the data items required for the Direct Debit Rulebook DS-07 Interbank Reversal Instruction for the Collection by the Creditor (there are no attributes listed for Credit Transfer Rulebook).
Status/Reject/Return Events - An Application Solution Template containing the data items required for the Direct Debit Rulebook DS-05 Reject, Return or Refund of a Collection or a Reversal Credit Transfer Rulebook DS-03 Reject or Return.

IFRS and IAS

Statement of financial position, current/non-current - Consolidated financial statements
Statement of financial position, current/non-current - Separate financial statements
Statement of financial position, order of liquidity - Consolidated financial statements
Statement of financial position, order of liquidity - Separate financial statements
Income statement, by function of expense - Consolidated financial statements
Income statement, by function of expense - Separate financial statements
Income statement, by nature of expense - Consolidated financial statements
Income statement, by nature of expense - Separate financial statements
Statement of comprehensive income - Separate financial statements
Statement of comprehensive income - Consolidated financial statements
Statement of comprehensive income [alternative] - Consolidated financial statements
Statement of comprehensive income [alternative] - Separate financial statements

Statement of cash flows, direct method - Consolidated financial statements

Statement of cash flows, direct method - Separate financial statements

Statement of cash flows, indirect method - Consolidated financial statements

Statement of cash flows, indirect method - Separate financial statements

Statement of changes in equity - Consolidated financial statements

Statement of changes in equity - Separate financial statements

Statement of changes in equity [alternative] - Consolidated financial statements

Statement of changes in equity [alternative] - Separate financial statements

Securities and Exchange Commission (SEC) US Generally Accepted Accounting Principles (GAAP) support

The SEC is an independent federal agency that oversees the exchange of securities to protect investors. The US GAAP are the standard framework of guidelines for financial accounting.

Other

MISMO eMortgage - An Application Solution Template containing the data items required for the support of Mortgage Industry Standards Maintenance Organization (MISMO), a wholly owned subsidiary of the Mortgage Bankers Association. MISMO is dedicated to developing, promoting and maintaining, through an open process, voluntary electronic commerce procedures and standards for the commercial and residential mortgage industries.

Enterprise Payments Platform - An Application Solution Template containing the data items required for Enterprise Payments Platform (EPP) support. EPP is a service-based, payments business architecture underpinned by a technology framework capable of supporting IBM and third-party payment products, as well as bank-developed payment services. Leveraging IBM's history of developing transactional and payment products, this framework provides the core integration and transaction management functionality required to support enterprise payment processing and product development.

ASTs in Detail (Sample)

Operational Risk - An AST 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. ASTs cover 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 counter party 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. Also 12 CFR Part 567 Risk-Based Capital Guidelines Capital Adequacy Guidelines: Standardized Framework; Proposed Ruling.

Standardized Counterparty Risk Weights - The derivation of Risk Weights for Counter parties, 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 counter parties to exposures under the Standardized Approach of Basel II. The main elements taken into account are the Risk Weight of the counter party (e.g. Sovereign, Corporate, Bank), the Rating Assessments (e.g. AAA) given to the counter party 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 counter party (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.

Capital Adequacy Framework Final Rule - The Risk-Based Capital Standards are Advanced Capital Adequacy Framework Basel II and Final Rule. This final rule is implementing a new risk-based regulatory capital framework, based on the New Accord, that is mandatory for some U.S. banks and optional for others. This final rule applies to core banks that are required to apply the advanced approaches, and continues to permit other banks (opt-in banks) to adopt the advanced approaches if they meet the applicable qualification requirements.

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 fulfil 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 counter party, 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.

Enterprise Payments Platform - An Application Solution Template containing the data items required for Enterprise Payments Platform (EPP) support. EPP is a service-based, payments business architecture underpinned by a technology framework capable of supporting IBM and third-party payment products, as well as bank-developed payment services. Leveraging IBM's history of developing transactional and payment products, this framework provides the core integration and transaction management functionality required to support enterprise payment processing and product development.

Project Scopes

Project Scopes 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 models are most likely to include any or all of FSDM, Analytical Requirements, ASTs and BDWM. Users of BDW are free to create their own project scopes to support their project requirements. For example, several project scopes can be created in the course of a project, each capturing data items added in a particular phase of the project. Project scopes 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 over 180 predefined Project scopes capturing 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 BDW structures. Predefined views delivered with BDW include:

Basel II Project scopes

The Basel II Project scopes 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 scopes centered on ASTs. These Project scopes record the data requirements for Capital Adequacy calculations under the Standardized and IRB Approaches, for the various risk components within the IRB Approaches, for the Securitization Framework and Operational Risk.

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

Pillar 2 (Supervisory Review Process)

Issues are captured in project scopes centered on Analytical Requirements. These project scopes record the analytical reporting requirements that 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 scopes centered on Analytical Requirements. These project scopes record the analytical reporting requirements specified in the 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 Counter-party Type	Credit Risk Exposure Detail
Geographic Breakdown	Impaired Loan and Allowance
Maturity Breakdown	Credit Risk Portfolio IRB
Credit Risk Portfolio STD	Counter-party 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
Securitization 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 Scope

Captures analytical reporting requirements related to the detection of money laundering.

Currency Transaction Analysis
Excessive Cash Payments

Foreign Financial Account Analysis
International Transportation of Money
Suspicious Activity

IFRS and IAS Scope

Specifies the information required for the presentation of Financial Statements.

IAS 1 - Common Practice Reference	IAS 1 - Disclosure Reference
IAS 1 - Reference for Examples	IAS 2 - Definition Reference
IAS 2 - Measurement Reference	IAS 7 - Common Practice Reference
IAS 7 - Disclosure Reference	IAS 7 - Standard Reference
IAS 12 - Disclosure Reference	IAS 14 - Disclosure Reference
IAS 16 - Disclosure Reference	IAS 18 - Disclosure Reference
IAS 19 - Disclosure Reference	IAS 27 - Presentation Reference
IAS 32 - Measurement Reference	IAS 32 - Definition Reference
IAS 33 - Presentation Reference	IAS 32 - Presentation Reference
IAS 37 - Disclosure Reference	IAS 37 - Definition Reference
IAS 37 - Recognition And Derecognition Reference	IAS 37 - Measurement Reference
IAS 38 - Disclosure Reference	IAS 38 - Common Practice Reference
IAS 40 - Disclosure Reference	IAS 41 - Disclosure Reference
IFRS 8 - Disclosure Reference	IFRS 7 - Disclosure Reference

Sarbanes Oxley Scope

Sarbanes Oxley Analysis
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

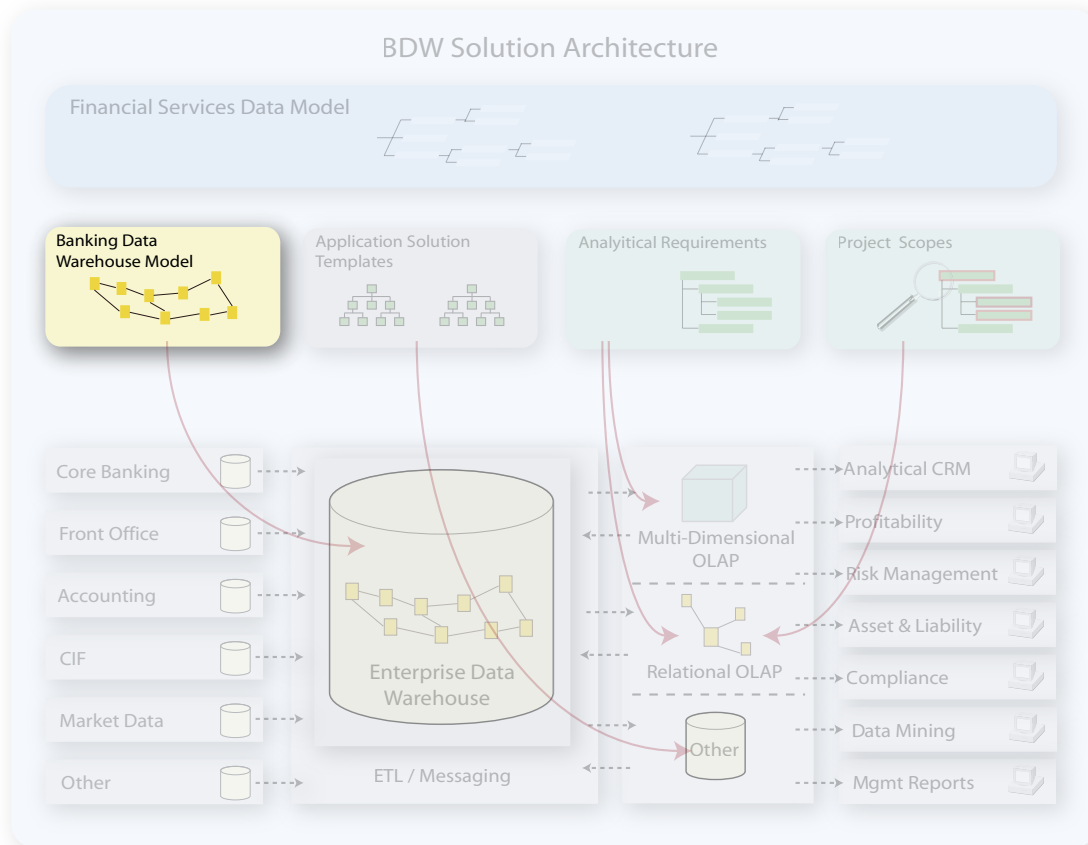
Customer Centricity

Know Your Customer
Campaign Analysis
Customer Insight - Cross Sell
Customer Insight - Customer Lifetime Value
Customer Investment Profile
Individual Customer Profile Analysis

Other

MISMO eMortgage
Insurance Product Analysis
Insurance Risk Profile
Investment Arrangement Analysis
Structured Finance Analysis
Scorecarding

Banking Data Warehouse Model

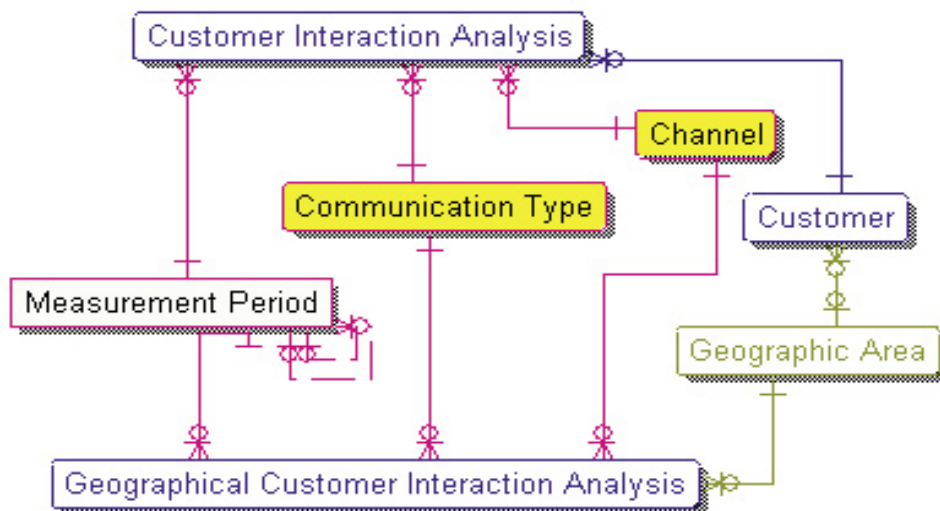


Central Information Repository

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 reduces the development and operational cost in providing business intelligence functionality to a myriad of front and back-office organization units.

BDWM provides financial services organizations with the content and the infrastructure to support the provision of clean, rationalized and easily accessible data from a central information repository, while allowing financial services organizations to exploit the potential of information previously locked in legacy systems inaccessible to the business user. BDWM enables financial services organizations to 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 represented in an Entity Relationship Diagram (ERD), with each model element having its own database. It represents the organization's data, without constraint consideration or implications in connection with platform, tools, software or how the data can be implemented. It is normally generic and flexible in design, facilitating a financial services organization's understanding of the true meaning of its data and how this data relates to other data within the services organization.



An example of a BDWM ERD

BDWM features a flexible System of Record (primary data storage area) as well as the typical summaries needed by most financial services organizations. BDWM is expressed as a logical model with an emphasis on capturing business objects and their relationships to other objects. This logical model can easily be transformed into a database-ready, deployable model known as a physical model. Normally, only a portion of BDWM is generated in the initial project phase. Over time, further areas can be generated as the financial services organization tackles more business areas. With over 1,260 entities and over 7,770 attributes, BDWM handles the storage of raw detailed data from many sources and has predefined aggregation to support key indicators in areas such as delinquency and profitability.

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

BDWM supports the typical data warehouse business requirements of financial services organizations and supports the same business areas as Analytical Requirements, described in the previous section (Relationship Marketing, Profitability, Risk, Compliance, Investment Management, Wealth Management and Asset and Liability Management).

BDWM can be used as:

- The blueprint for designing a central business data warehouse database structure. BDWM enables you create a flexible and extendible, data-warehouse-specific physical database
- 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, where the structure needs to be optimized for the performance of end-user delivery functions.

Major Groupings within BDWM

BDWM has major groupings based on the intended usage of items within a data warehouse environment:

- System of Record
- Summary Area
- Analysis Area

System of Record

The component of the data warehouse that acts as the primary storage area for the data in the data warehouse. This component is populated by data coming from the operational systems. The data structures in the System of Record are generalized and a large proportion of BDWM fits into this component.

Components or entities:

Accounting Unit	- Monitors both monetary and non-monetary standings - Supports the operation of an Arrangement - Facilitate internal requirements to record and monitor quantitative change Includes General Ledger Accounting.
Activity Based Costing	Assigns cost to the activities of the financial services organization and allocates cost to the various agencies within the financial services organization responsible for generating them. In this way, a better image of profitability can be obtained.
Arrangement	Records legally binding agreements between two or more Involved Parties. Arrangements can be for Customer Services, recording agreements between co-operating Banks, Employment terms, etc. Examples: Employment, Product (Loan, Deposit, etc.) and Interbank Agreements Security.
Campaign	Addressed to a segment of the services organization's potential and actual customers with a strong relationship between the Campaign subject area and the Segment subject area.
Classification	A common collection point for simple codes used to classify or codify aspects of the business. Classifications comprise 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. Examples: some codes representing Involved Party Types or Individual Marital Status Types are stored in the Classification structure.
Communication	Records an exchange of information with an Involved Party. Example: receive customer's request for an interim statement; transmit a report on liquidity levels to the US Federal Reserve.
Event	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	<p>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. 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.</p> <p>Example: a Whole Life Insurance Product for Individuals or a Property Insurance Product for a house.</p>
Involved Party	<p>Persons or organized groups of persons about whom the financial services organization wants to keep information. The Involved Party subject area contains areas such as:</p> <ul style="list-style-type: none"> · Customer · Employment Position · Individual · Involved Party Family · Involved Party Fundamentals · Organization · Organization Unit
Limit	<p>Identifies restrictions between entities, generally defined at a generic level as limits on the relationships between objects.</p> <p>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.</p>
Location	<p>Stores the physical or logical locations used by the financial services organization and by Customers.</p> <p>Examples: 2 Burlington Road, Dublin 4, Republic of Ireland; 555 Main Street, Boise, Idaho; www.ibm.com/industries/financialservices</p>
Product	<p>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 of interest to the financial services organization.</p>
Rate	<p>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. Histories are maintained where appropriate.</p> <p>Example: an exchange rate is expressed as a ratio between two currencies, or an interest rate is expressed as a percentage of an account balance.</p>
Resource Item	<p>Tangible or intangible value items that are owned, managed, used by or of specific interest to the financial services organization in pursuit and accomplishment of its business.</p>
Group	<p>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 concepts in one place in order to reuse common data structures.</p>
Transaction	<p>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. BDW stores all transactions in a summarized format and keeps the actual transactions for a limited period.</p>

Summary Area

Contains and describes summaries and aggregations commonly and frequently used throughout the financial services organization. These summary entities are typically, but not exclusively, populated from the System of Record. Creating and maintaining such summaries in a data warehouse standardize such summaries across the financial services organization. These summary entities store key measurements and indicators on a periodic (typically monthly or quarterly) basis.

Components or entities:

Accounting Unit	The basic mechanism for holding numerical data within BDW. The Accounting Unit Summary entity captures the Accounting Unit information on a periodic basis. Example: the quarterly credit and debit balances for a particular segment of the Customer base.
Arrangement	One of the basic foundations of BDWM, making it a very suitable place to position many of the typical summary tables. Once the summary is done at the Arrangement level it is possible to roll up these summaries into dimensions such as Involved Party, Organization Unit, Product and Channel.
Campaign	Track the various internal and external marketing events and segmentation the financial services organization undertakes in order to promote its Products and other aspects of the 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 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 and usage. The Product summary entities in this subject area provide the mechanisms to do this task.
Group	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 concepts in one place in order to reuse common data structures.

Analysis Area

Component of the data warehouse that prepares the data initially stored in the System of Record for subsequent distribution to data marts. The entities in the Analysis Area contain examples of aggregations or data summaries that can be used to model data mart requirements

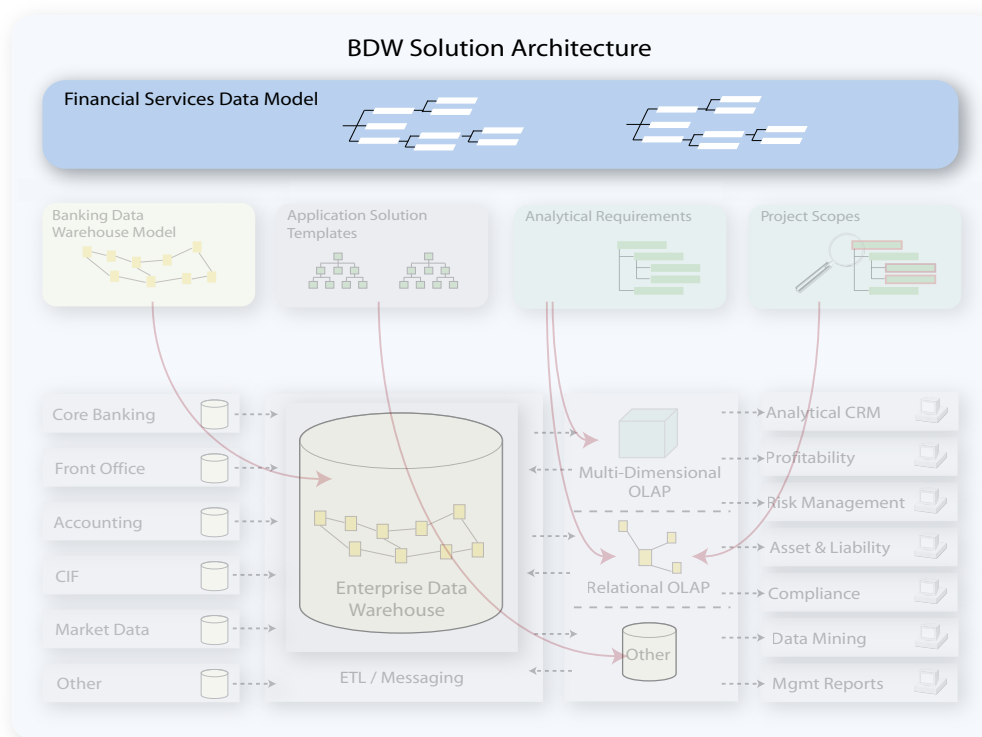
Components or entities:

Campaign	Enable the understanding of the effectiveness of customer and product promotions, marketing drives and advertising.
Complaint	Enable the understanding of the pattern of complaints and the effectiveness of the resolution process.
Credit Profiling	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	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	Enables the understanding of the cause and impact of customers ceasing to use a financial services organization's products and services.

Customer Interaction	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	Enables the determination of the contribution to profit of customers with the financial services organization, allowing for full cost recovery.
Individual Customer Profile	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	Enables analysis of the projected in- and out-flows of cash to and from a financial services organization.
Product Profitability	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	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.



Financial Services Data Model



Enterprise-wide Data View

The purpose of FSDM is to provide a common, enterprise-wide understanding of the vocabulary of the financial services industry. FSDM is a classification model that describes business concepts in a top-down manner, from the most abstract to the most specific. As a generic model, defining data that is widely applicable to financial services organizations, FSDM provides financial services organizations with a jump start in the model development process and maximizes the value of information. The information reflected in the data model is independent of organizational structure and has been validated by multiple sources within the industry.

FSDM is a business model that:

- Merges requirements of existing models
- Provides stability, flexibility and reusability
- Incorporates classification, inheritance, object state behavior and other concepts of object-oriented design.

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. The model provides a framework for the development of consistent cross-enterprise data structures that promote information sharing across business applications. Providing a top-down view from an enterprise perspective, FSDM is a blueprint for database development as well as a tool for understanding and communicating the enterprise information resources of the major business activities of financial services organizations.

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

Benefits of FSDM

- Provides a structured starting point to integrate data and process.
- Provides a rigorous specification of data requirements reducing 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 incorporating the organization's data requirements and business rules.
- Focuses 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.
- Provides business terms, definitions and relationships for populating a business glossary.

Nine Data Concepts

FSDM comprises over 7,400 business definitions, grouped into nine conceptual categories. FSDM represents the business information needs and requirements of the financial services organization using common terms understood by business professionals. FSDM identifies high-level classes called Data Concepts, defines the scope of the enterprise being modeled and provides the model content framework.

FSDM 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 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

The FSDM data items are categorized in nine data concepts:

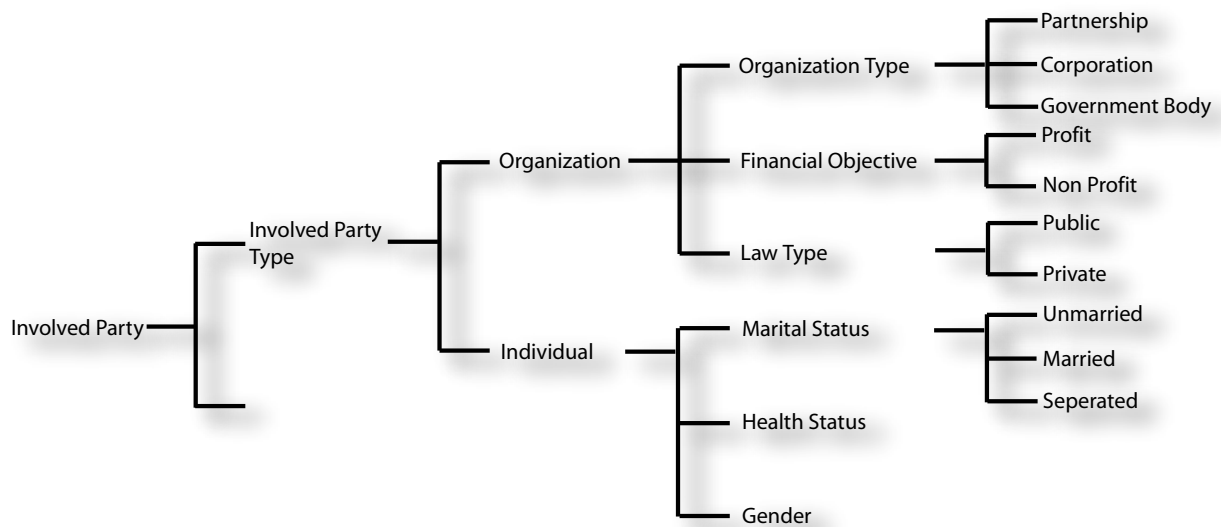
Arrangement	Represents a potential or actual agreement between two or more individuals, organizations or organization units, providing and affirming the rules and obligations associated with the sale, exchange or provision of goods, services and resources.
Business Direction Item	Records an expression of an Involved Party's intent with regard to the manner and environments in which it wishes to carry out its 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: <ul style="list-style-type: none"> • Product sale and servicing • Determination of eligibility to purchase a product • Authority to perform business transactions • Assignment of specific general ledger accounts appropriate for different business transactions • 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 applying 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 part of carrying out its mission and conducting its business.
Involved Party	Represents all participants that 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, 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. Product also includes non-financial goods and services that are of interest to the financial services organization.
Resource Item	Tangible or intangible value items that are 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 identifying and defining the business information needed to support the enterprise in terms used and understood by business professionals, rather than Information System professionals. FSDM organizes the data items supported by each business definition and identifies potential subtypes of the data concepts, 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



Features of FSDM

FSDM is a cross-enterprise model of the business requirements of a global, generic services organization in the financial services industry. The key features of FSDM are:

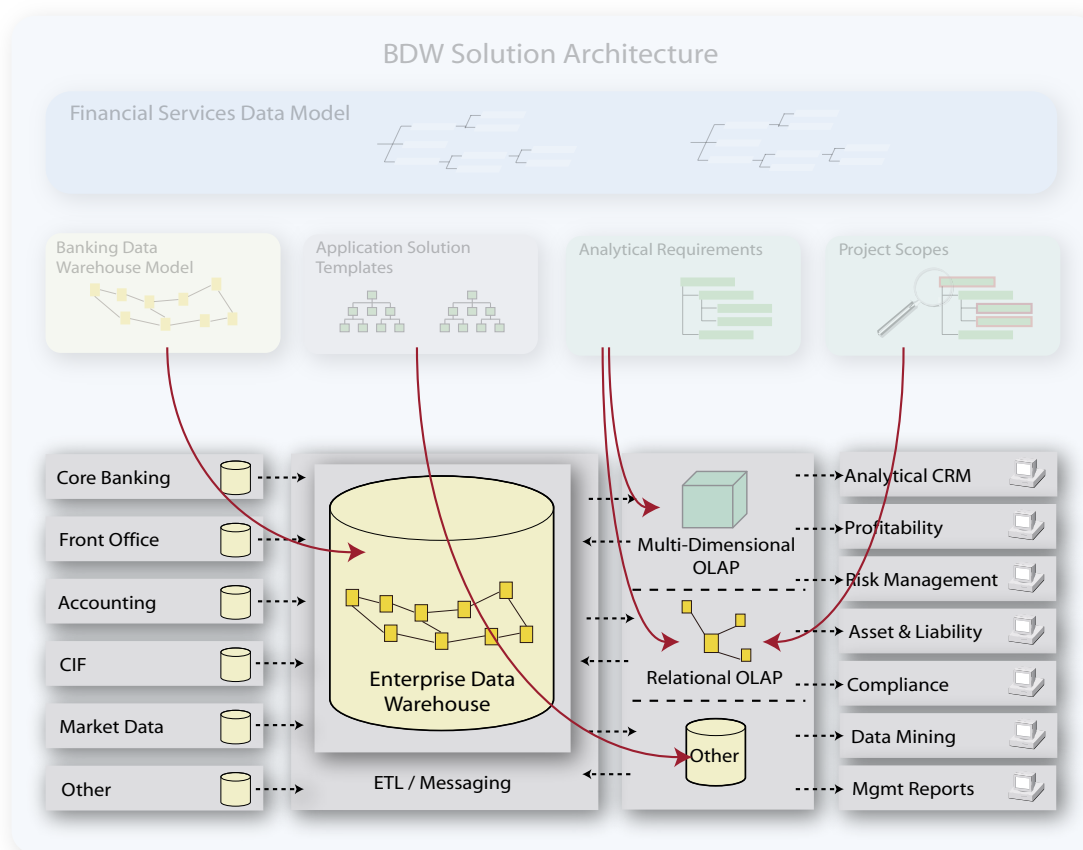
- Layered model with sufficient detail to represent the data requirements of a universal financial services organization operating in an international environment
- Advanced modeling techniques to encourage reusability of system assets
- Composite data model for system requirements
- Flexibility in extension and expansion
- A platform for improved data management and systems development
- Direct benefit in all phases of the systems development life cycle

What are the benefits of implementing FSDM?

FSDM has been developed with the assistance of banking professionals to facilitate 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 FSDM satisfies the needs of analysts. FSDM provides a communication bridge between the banking and information systems professionals within the organization.



Banking Datawarehouse Physical Environment



Open Architecture

BDW promotes an open architecture in which each component adheres to industry standards. This allows financial services organizations to implement the data warehouse using existing tools or preferred tools. The physical environment of BDW provides financial services organizations with the physical data warehouse infrastructure that is tightly integrated with the logical environment incorporating both BDWM and the Analytical Requirements. Financial services organization can automatically generate the required data structures for a full data warehouse physical environment using BDWM, Analytical Requirements, ASTs and project scopes. BDWM translates into the BDW database while rapidly generating prototype relational online analytical processing (ROLAP) and OLAP data marts from Analytical Requirements, ASTs and Project scopes.

The main components of the physical environment are:

- BDW database
- MOLAP and ROLAP
- Business Reports

BDW Database

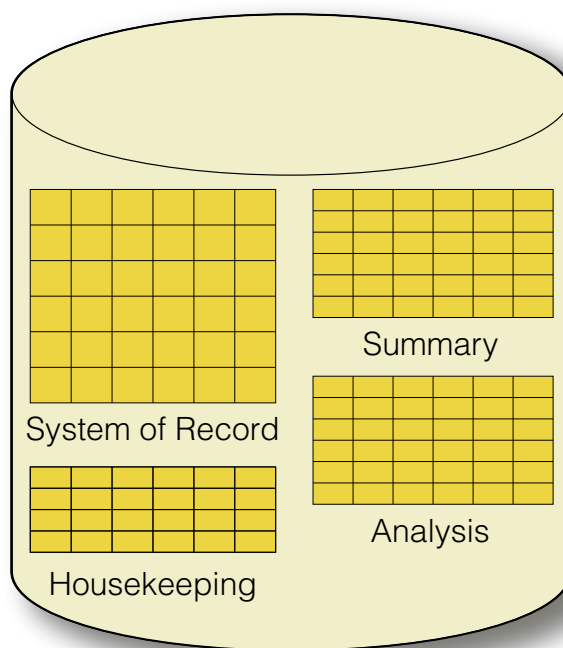
IBM provides a default physical database design, generated from the logical entity relationship data model. This physical data model incorporates IBM's vast experience in implementing data warehouse databases for the financial services sector and can be implemented as is to show how a data warehouse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

The BDW database is forward engineered from BDWM and is designed as a starter kit for financial services organizations wanting 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, which support the needs of a central data warehouse and supplies the data needed by specific Analytical Requirements.

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 can define when two or more entities should be collapsed into one table, when attributes can be replicated in multiple tables or when a subtype entity can be collapsed into its parent table.

The BDW database meets the requirements for a flexible structure and ease of population. 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 into a number of tables:



System of Record

The area of the physical database where the data is stored in a flexible generalized format is known as System of Record. All data supplied to the BDW database as part of normal updates from the operational systems is stored here.

Summary

Providing useful, easily accessible snapshots of data, the data warehouse enables you to identify summaries or aggregations that can be used by 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.

Other examples of Summary Tables include:

- Arrangement Turnover Summary
- Product Profitability Summary

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

Analysis

Designed to aggregate data for use by specific analytical applications. While the summary tables store commonly used aggregations, the analysis table are a staging area for a specific business applications. The analysis tables can be necessary to collect data into a format usable by an analytical tool. In addition, the analysis tables are only of use where the application needs highly summarized data, such as Online Analytical Processing (OLAP) products. An example of an analysis table is the Customer Attrition Analysis table, which gathers data from within the data warehouse for a specific set of OLAP reports and charts dealing with the analysis of Customer Attrition. This table needs to pull data from other data warehouse tables such as Product, Currency, Measurement Period, Customer, Arrangement and Organization Unit.

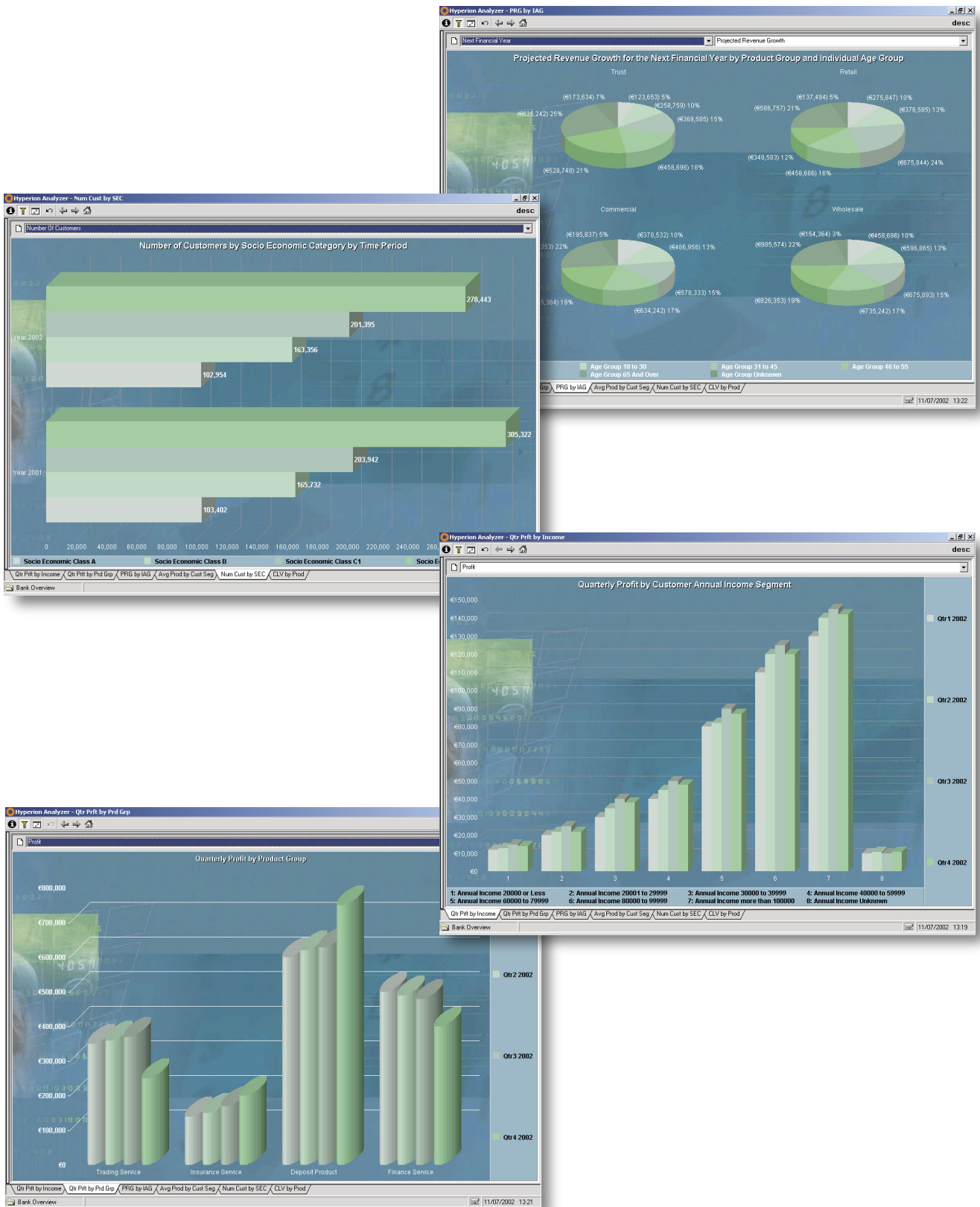
Housekeeping

This table stores a range of static data used by the remainder of the database for verification and integrity purposes. This data is used to record information such as country codes, arrangement types and business unit geographies.

MOLAP and ROLAP

Analytical Requirements provide the basis for the design of star a schema and DB2 OLAP Server data marts enabling the rapid prototyping of the business requirements. DB2 Cube Views is an 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 Analytical Requirements content into DB2 Cube Views, including the Basel II and Anti-Money Laundering Analytical Requirements. The BDW solution provides substantial domain expertise to fast start projects, assisting in bringing them to rapid implementation and benefits realization. When implemented in conjunction with DB2 Cubing Services, 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, while retaining flexibility to enable user departments to select their preferred analytical applications for ease of use, preformed reports or complex analytics capabilities.

Sample Business Reports





IBM Industry Models Software Group

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