IBM Industry Models for Financial Services
The Information Framework (IFW)

General Information Manual

Content

Banking for On Demand Business

As the banking industry continues to deal with a fast pace of change, banks face stark new challenges. In today's marketplace, survival favors the agile; speed can be a critical differentiator; and the organizational status quo is often a liability. Successful banks are beginning to adapt to continuous, unpredictable and accelerating change. Many banks still struggle to manage a complex web of legacy silos, disparate systems, redundant functionality, excess capacity and inconsistent service levels. Enthusiasm for IT spending and decentralization have exacerbated the problem, saddling firms with overlapping – and often unproven – technologies. For many financial services players, the results are all too familiar: disjointed operations, redundant capabilities, inefficient cost structures and duplication of work across product, geography and business lines.

Today, most banks still operate largely with a vertical business structure, where distribution occurs mainly by product silo and operations are biased toward internally manufactured or developed products. Within this structure, making material reductions in the cost base is difficult, and customers generally see very little or no differentiation among banks. Given their financial challenges, banks can now no longer afford to have capabilities duplicated across product silos, with each product operating its own processes, systems and specific channels. This duplication has resulted in significantly greater complexity in banks, has impacted costs and speed to market, and has often increased operational risk.

In large enterprises, however, initiatives that have sought to optimize processes in isolation without merging them have failed to fully address complexity and overlapping. Process optimization has generally focused on vertical integration and often within single products or business units. To achieve a step change in performance, today's highly complex banking operating models must be simplified. Moving from process transformation to enterprise transformation is the key that will unlock significant benefits for banks.

Technology is a key enabler, but IT decisions need to remain firmly rooted in the business needs of the organization. To operate on demand, your organization will need to transform the way it operates by re-evaluating business processes as well as the technology infrastructure.

Business Transformation

To best adapt to these emerging realities, successful firms are challenging their process-centric assumptions with a new set of business transformation tools, and banks today are looking at their businesses from a different view according to a Component Business Model.

Most financial services firms know they need to change, but wonder if the analytical tools available to them are up to the task. Traditional, linear approaches, such as business process re-engineering, have proven useful for optimizing workflows. Indeed, they often yield improved sub-processes, but they do little to highlight similar activities that might be scattered across separate processes within the enterprise. Successful banks require a new way to view their business operations, one that will help them adapt and thrive in an environment of continuous change.

The Component Business Model helps by simplifying the way banks look at their operations. Using it, executives can extract themselves from the process "rut" and get at the real sources of value that drive their companies. With the Component Business Model, they can identify the unique, standalone building blocks that comprise the bank as a whole. Viewing business activities as autonomously managed components that can be optimized individually for greater value to the whole business enables decision makers to cut through historical boundaries that may have built up along organizational, product, channel, customer, geographical and informational lines.

Application Transformation

Use of component-based business modeling, underpinned by industry models, such as the IBM Information FrameWork (IFW), enables banks to define their target business architecture and transformation. This, in turn, drives application transformation and the design and implementation of new custom built application solutions. The IFW industry models, with a rich set of industry application component definitions, can be used as a key accelerator for the logical design and architecture of building new functionality.

The key factor underpinning a successful solution is a common enterprise-wide description of the business concepts that define the business data entities manipulated by the application components. Without this common language, any attempt to support a consistent and flexible architecture will be more difficult. The IFW industry models support a complete and unambiguous description of the business concepts, business activities, and business rules that must be supported within the financial institution.

The Information FrameWork

The Information FrameWork (IFW) is a comprehensive set of banking specific industry models that represent good practice in banking and is a natural extension to the Component Business Model. Once you have started down the path of transforming to an On Demand Business and have identified components for your business, the IFW industry models provide the banking specific business content that can accelerate your resultant IT projects.

The IFW industry models describe the business of the bank and are an efficient communication bridge between business and technology communities. They are designed to be readily accessible to business users and focus on industry issues in areas such as Customer Insight, Multi-Channel Transformation, Core Systems and Risk & Compliance. The IFW comprises:
- **Information Models:** providing banking data content to address areas such as enterprise-wide view of information
- **Process Models:** providing banking business processes content to address areas such as business process re-engineering
- **Service Models:** providing business services content to address areas such as services oriented architectures

The IFW industry models typically support over 80% of business requirements and can be easily customized and extended to cover the specific requirements of a bank. The IFW industry models will assist a bank in implementing a flexible, reusable, extensible and easily customizable architecture, which in turn will enable the bank to:
- Be more adaptive and to respond quickly to changing customer needs
- Focus on achieving competitive differentiation
- Identify and leverage best practice behaviors across the organization

The IFW Industry Models

The IFW industry models are created by identifying, describing and structuring all of the business functions, data and processes that you would expect to find in a large bank in such a way that it can be used to accelerate IT projects. These industry models ensure that business requirements for major initiatives are captured and expressed in a manner that can be understood by the IT organization and are reflected in all levels of the subsequent application development process.

By providing a set of pre-defined industry models, the IFW enables the scoping, specification, design and deployment of information solutions, which are:
- Faster, through use of generic model specifications and designs
- Cost effective, through reduced analysis costs and increased re-use of existing assets

- Better, through increased quality and consistency
- Lower risk, by building on good practice and by ensuring a strategic perspective

The IFW industry models are valuable for initiatives such as:
- Corporate information architecture
- Data warehouse and mart development
- Services oriented architectures/enterprise application integration
- Business process re-engineering
- Information systems scoping and requirements definition
- Application systems package evaluation

IFW Benefits

Implementing Business Strategy

Identify and prioritize the correct initiatives for delivering business value

Understand the impact of initiatives quickly and in detail

Compare and contrast initiatives early and accurately to prevent duplication of effort

Increase consistency of specification, design and delivery of business solutions

Customer Insight

Create a single source of customer information

Achieve a common profile of customer behavior

Ensure consistent treatment of customers across channels

Ensure consistent reporting on campaigns, complaints and other customer interactions

Achieve an enterprise-wide data warehouse by incremental development

Utilize predefined templates for the construction of management reporting and business intelligence systems

Multi-Channel Transformation

Achieve streamlined, consistent business processes

Improve business processes internally and across external business partners

Achieve consistent processes across products and channels

Achieve straight-through end to end processing

Facilitate consistent provision of products through multiple channels

Define workflows and processes independent of line of business, product, channel, organization structure and technology.

Risk & Compliance

Achieve a single architecture to address all compliance issues over time

Promote conformity of Key Performance and Risk Indicators and report summary levels across the enterprise,

Provide detailed financial reporting, down to transaction level of internal business process across the organization

Core Systems

Enable rapid understanding of the impact of business change on the IT inventory

Employ a comprehensive and consistent dictionary for describing business issues, applications and components

Understand the organizational and systems impact of new product initiatives

Compare and contrast existing and new applications rapidly and with a high degree of detail and completeness

Gain a quick start to application design with a selection of predefined component templates

Maximize the re-use of system components to save development costs

Deploying the IFW Industry models

The IFW industry models can be used in conjunction with IBM software products, thereby facilitating transformation to an On Demand Business from requirements gathering, analysis & design and through to deployment.

Using DB2 Information Management Software

IBM DB2 Information Management Software products help banks leverage their existing IT assets so they can maximize the value of their information with advanced Business Intelligence (BI) features for building and working with data warehouses and data marts. IBM's BI solutions enable companies to comb through vast quantities of data quickly, thoroughly and with sharp analytical precision. BI capabilities are built into the DB2 engine, and BI applications have DB2 at their core. The IFW industry models provide banking-focussed data content, which can be deployed on IBM DB2 Information Management Software to address areas such as business intelligence. While the Industry Models help clients define and describe a unified view of their analytical data that persists in a data warehouse, in order for the analytical solution to work, IBM Information Server enables organizations to understand their existing data sources; to cleanse, correct and standardize information; and to load the information into the data warehouse.

Using WebSphere software

IBM WebSphere delivers application infrastructure and integration software that helps companies address key priorities in an on demand world. IBM WebSphere software delivers the ability to integrate disparate applications and systems in a flexible manner that speeds time to value and helps companies maximize the utilization of existing resources. The IFW industry models provide standardized business processes and services definitions which can be deployed on IBM WebSphere software to address challenges such as provision of a services oriented architectures.

Using Rational software

Rational software helps organizations create business value by improving their software development capability. Rational software allows you to:
- Adopt iterative development practices that reduce project risk.
- Focus on architecture to develop more resilient systems.
- Effectively manage change and protect critical strategic assets.

The IFW industry models provide standardized business services which can be deployed on IBM Rational software to address areas such as model driven development.

How this document is structured

The IFW Foundation Models provide us with a tool whereby we can identify the important functions, activities and business concepts that make up a particular business issue.

The IFW Banking Data Warehouse Models assist with creating a consistent enterprise view of information.

The IFW Process Models assist with process simplification and business process re-engineering.

The IFW Service Models assist in the creation of a services oriented architecture environment.

There is also an example case study, which demonstrates, at a high level, how to use the IFW industry models.
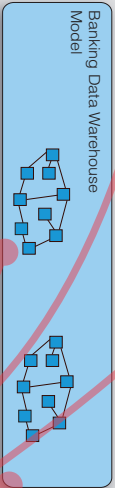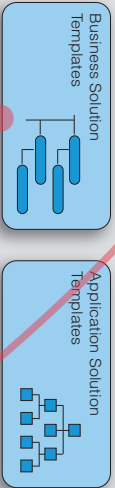
IFW Industry Models Positioning

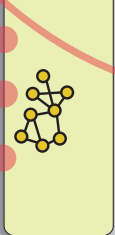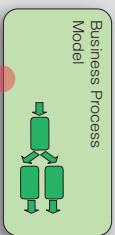**Component Business Model**
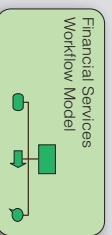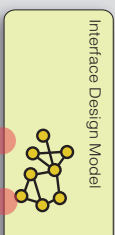
Information FrameWork (IFW)

Enterprise Service Bus

IFW Information Models (Banking Data Warehouse)

IFW Foundation Models

Banking Data Warehouse Model

Business Solution Templates

Financial Services Data Model

Application Solution Templates

B
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IFW Process Models & IFW Service Models

Interface Design Model

Business Object Model

Financial Services Function Model

Business Process Model

Financial Services Workflow Model
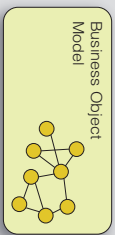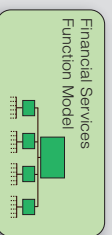
DB2 Information Management Software

WebSphere. software

Rational software

Enterprise Service Bus

Data Warehouse & Marts

New or Existing Application Databases

Master Data

Services

Process Flow

Application Components
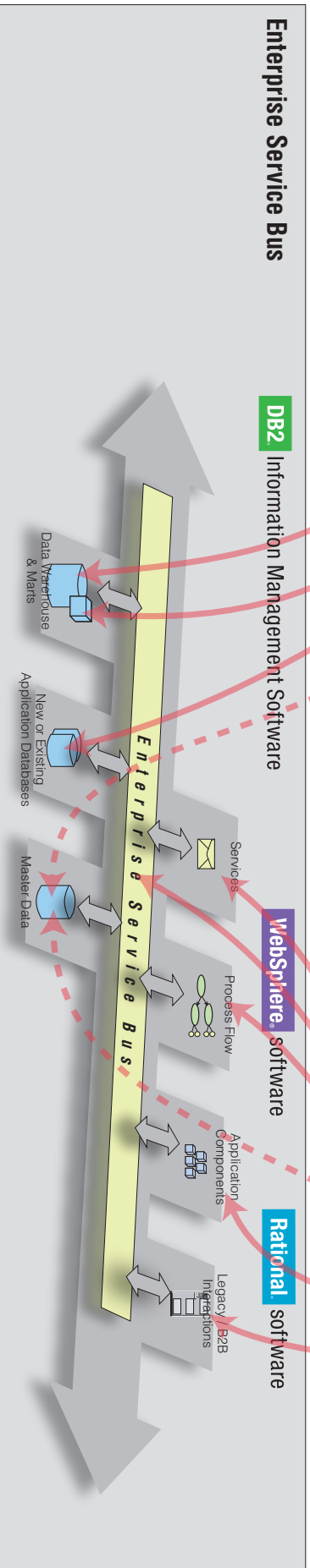
Legacy / B2B Interactions

The IFW Foundation Models provide us with a tool whereby we can identify the important functions and business concepts that make up a particular business issue. The models are deliberately designed to encourage the business and technical professional to "step back" from the constrained detail of the current environment and focus on describing the true and full scope of the business issue being discussed.

- The Financial Services Function Model enables the business functional areas of responsibility involved in the issue to be immediately identified (independent of any organizational, product or channel considerations.
- The Financial Services Data Model then enables the different dimensions and details of the business concepts which make up the issue (e.g. people, locations, products, events) to be identified.

Once the scope is defined in this manner, the IFW Foundation models then enable a detailed analysis of the impact of the issue on the current environment to be carried out.

Speed and completeness are the key value of these models. Providing a language, common to all stakeholders, which can be used to describe key aspects of the issue, enables fast and complete scoping of a business issue.

The Financial Services Data Model

The FSDM is an enterprise-wide classification model. It provides an enterprise-wide view of the concepts and information within the bank and forms the basis of an enterprise-wide information architecture. The fundamental purpose of the FSDM is to enable business concepts to be clearly understood and communicated and as a result help accelerate project scoping.

Take the question of what is meant by "Customer" in a particular business context. "Customer" could include such concepts as:
- Identifying a specific person or organization
- Knowing all addresses the customer uses
- Knowing all products the customer is using
- Knowing which market segments the customer belongs to
- Knowing about the customers recent transaction history
- Knowing about the customers complaint history

Depending on the business context, the meaning of "Customer" could imply some or all of these concepts.

The FSDM provides a detailed classification structure that can be used to define precisely what is meant by, for example, "Customer". in the current context. For example, a bank may be introducing a major new customer relationship management initiative. Precisely what "Customer" means in this context, may be quite different to what "Customer" means as far as the current call center operations are concerned. The FSDM helps clarify these different perspectives.

How the FSDM is used

Managing the Enterprise Data Resource

Key to effective enterprise data resource management is the ability to consistently define the business meaning of data elements. Without this ability, the elements within the data resource cannot be identified, compared and contrasted in order that overlaps, redundancies, impacts and ownership can be highlighted and resolved. By mapping high priority databases to the FSDM, it is possible to understand their content and manage them effectively.

Agreeing on the scope of an initiative or application

Throughout the whole development lifecycle, the incorrect or inaccurate definition of the scope of a business initiative or

system application is the most expensive error to correct. Often, agreeing the scope can be a time consuming process as stakeholders bring their own perspective and language to the discussion. Lack of complete understanding of the subtleties of a particular initiative can lead to major problems and costs later in the development process. The FSDM is a key tool for rapidly, consistently and completely defining (and communicating) the scope of an issue.

Carrying out impact and gap analysis
If a new initiative is scoped using the FSDM, and the FSDM has been previously scoped to existing or other proposed initiatives or applications, then comparing these scopes within the FSDM provides an immediate and detailed indication of the overlaps and gaps in the data aspects of these initiatives or applications.

Deriving logical specifications
Once an issue has been scoped within the FSDM, a simple methodology can be employed to convert the scoped area of the FSDM from a set of classification hierarchies into a more traditional Entity-Relationship Model that can then be used as a basis for database design.

Data warehouse planning
The FSDM is used in two major ways during a data warehouse development project:
- The scope of the project can be defined within the FSDM and then that scope projected to the central warehouse (for example the Banking Data Warehouse Model and the Business Solution Templates in Chapter 3)
- The FSDM can be mapped to applications that are potential sources of data for the warehouse. A scoped set of items within the FSDM can be mapped both to items within the warehouse items and potential sources for those items.

Benefits of the FSDM
- Provides a predefined, readily customizable enterprise data model
- Provides enterprise-wide definitions of concepts and data
- Forms part of a common language between business and IT
- Provides a rapid and accurate scoping tool for new initiatives - saves time and cost
- Reduces data redundancy by providing transparency as to the meaning of data items
- Encourages re-use and consistent data structures across the enterprise
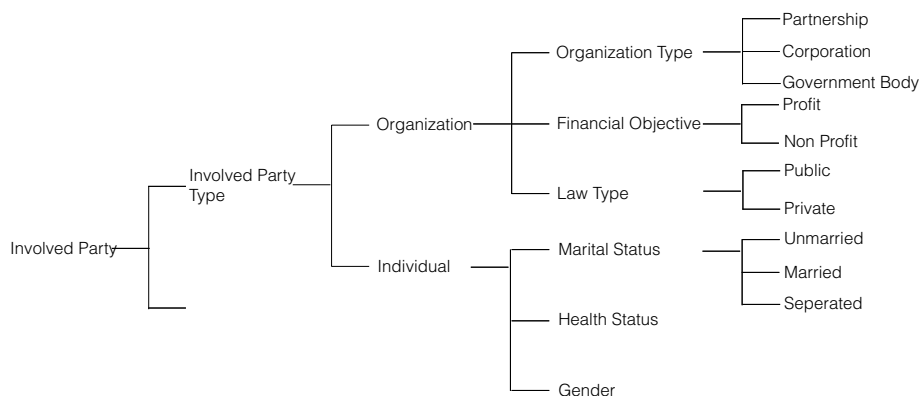
Example of an FSDM classification

The Financial Services Function Model

The purpose of the Financial Services Function Model (FSFM) is to provide a hierarchical list of business functions or areas of responsibility that must be managed by a bank. Functions in this list are "normalized". This means that each function does not include any aspects of other functions in the list. The list is also designed to be complete. This means that the list covers all functions carried out by the bank, regardless of who owns those functions or where they are performed.

The list is created by systematically breaking down broad, high level functions into finer and finer detail. The breakdown finishes when, if an existing function is broken down into finer detail, the lower level functions would not be "normalized", in other words they overlap in their business coverage and begin to describe non-unique activities that tell how a function is performed instead of what responsibilities must be managed.

Thus, the FSFM appears as a hierarchy of functions, where, the "leaves" of the hierarchy comprise the complete, non-overlapping list of functions required for the bank to operate. The FSFM defines the terms that can be used, in a consistent, enterprise-wide manner to identify functions carried out by the bank.

How the FSFM is used

The FSFM allows rapid and complete scoping and comparison of the functional aspects of business issues.

By identifying which functions are involved in a particular issue, it is possible to quickly create a complete list of the business areas of responsibility that need to be considered in the issue. If other related issues are similarly scoped for another issue by selecting relevant functions from the function model, it is possible to compare and contrast the two issues using a common language and avoid duplication of effort in overlapping initiatives.

For example, an issue may be a proposed new application system. Mapping the proposed new system against the function model helps us gain a clear and complete functional profile of the proposed application. If we have already mapped key organization units against the function model (in other words defining what functions are carried out by which organization units), then it is possible to compare the new application scope with the organization unit scope, giving us a clear picture of the impact of the new application on the various organization units.

Similarly, if existing applications are mapped against the function model, then the functional overlap between these applications and the proposed one can be readily displayed and evaluated.

The FSFM is a vital tool in understanding the scope and impact of any new (or existing) business issue or initiative. Mergers and acquisition integration, organizational restructuring, new product and channel design, enterprise architecture design and application systems definition are but a few of the areas that gain great benefit from the FSFM.

The FSFM is a valuable business and IT planning tool and should be used at the commencement of any new initiative.

Specific uses include:
- Understanding the responsibilities of business units and the dependencies among them
- Integrating similar functions across business areas, supporting reusability of solutions
- Aligning business processes and organizational structure to strategy and prioritizing business requirements in functional terms
- Defining project scope clearly and avoiding duplication of effort with other projects
- Laying the foundation for the design of business workflows and application services/components
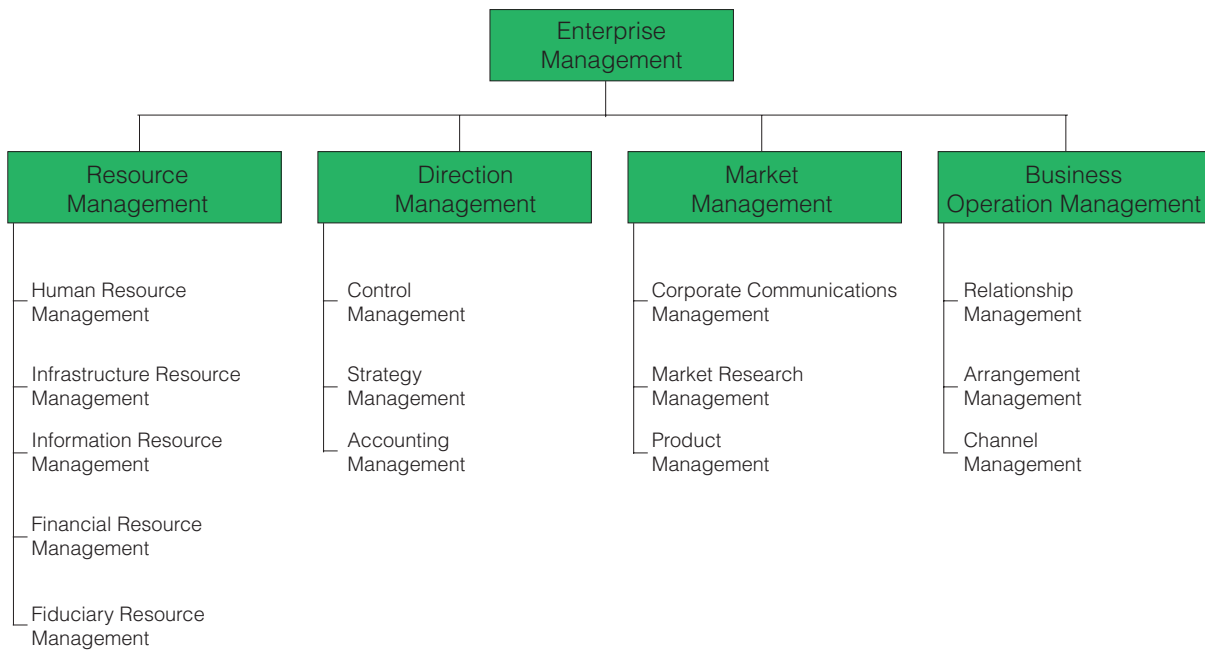
Example of the FSFM hierarchy

Benefits of the FSFM

- Provides enterprise-wide definitions of business function, independent of organization structure or line of business
- Forms part of a common language between business and IT
- Provides a rapid and accurate scoping tool for new initiatives
- Provides a predefined, readily customizable description of banking functions

Banking Data Warehouse Models

The Banking Data Warehouse

Information is one of the bank's most powerful assets. Enterprise data models enable higher data quality and completeness. Analytically, such models allow banks to improve their focus on the profitability of different products and lines of business and to achieve targeted and more effective marketing for sell and cross-selling products and services.

The Banking Data Warehouse (BDW) enables banks to build data warehouse solutions to suit their specific needs. BDW has the flexibility to enable the creation of a range of data warehouse solutions from departmental data marts to enterprise-wide data warehouses and includes all of the key components required for the core of a data warehousing solution for retail banking, capital markets, private banking, credit unions, wholesale banking and central banks.

The BDW provides the blueprint for a single consistent enterprise view of the data. It is a proven solution with the scalability and flexibility needed to address existing and future data consolidation requirements and has pre-defined banking content.

BDW Features:

- A data management toolkit designed to assist banks in building warehousing solutions, analytical and operational.
- Rich data models for the full spectrum of the banking businesses
- Encourages banks to adopt a business-focus when building an information management solution
- Save up to 80% of analysis costs by using predefined data model and templates
- Experience to minimize risks by supporting an iterative development approach to an enterprise wide solution
- Aligned to support industry issues e.g. regulatory compliance and customer insight.
- Delivers the performance and scalability to manage the customer information needs of a large financial enterprise
- Supports consistent access to customer information by all of the enterprise's business applications
- Provides a consistent customer experience

The Banking Data Warehouse Model

The Banking Data Warehouse Model (BDWM) is a 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 banks. The aim of this shared infrastructure is to provide a reusable single point of data platform and data structure environment that will reduce the development and operational costs in providing business intelligence functionality to the myriad of front and back office organization units.

The BDWM provides banks with both the content and the infrastructure to support the provision of clean, rationalized and easily accessible data from a central information repository. It allows banks to exploit the potential of information previously locked in legacy systems and inaccessible to the business user.

The BDWM is a logical model consisting of 80% or more of the data structures typically needed by a bank for its data warehouse. Once it has been customized to meet the requirements of the bank, this model can be automatically generated into the physical data warehouse database.

BDWM Features

- A single overall data architecture for enterprise wide storage of consolidated data needed for customer insight, value based and business performance management, and compliance
- Has structures to handle the storage of raw detailed data from many sources
- Banking specific structures to handle financial instruments, risk mitigation instruments, customer / transaction details
- Pre-defined aggregations to support key indicators in areas such as delinquency, profitability, asset and liability management·

How the BDWM is used

Central Warehouse Scoping and Design:
The BDWM provides the blueprint for a design of a central business data warehouse database structure. The model assists in the creation of a flexible and extensible data warehouse specific physical database.

Consistency of Data Mart Architecture:
The BDWM provides a logical reference point for the consolidation of data definitions and structures across a number of data marts.

Data Mart Design:
The BDWM provides a starter set for the design of a prototype data marts. In this case the structure would have to be optimized for the performance of end-user delivery functions.
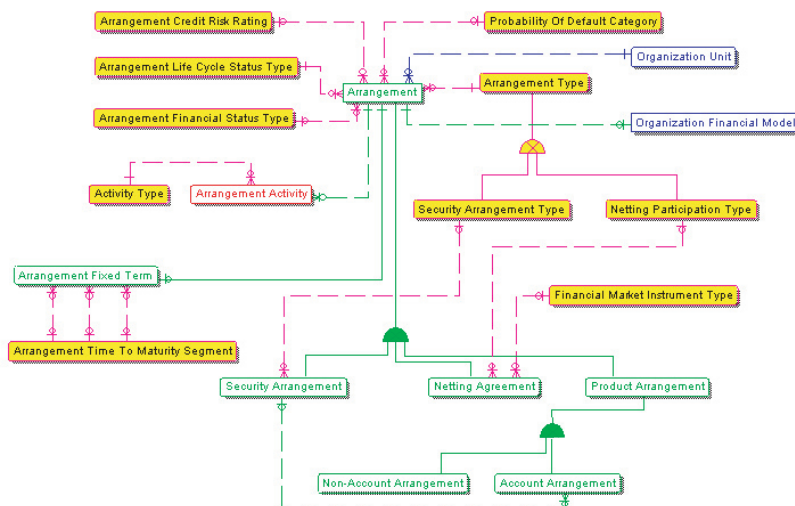
Example of the BDWM

Benefits of the BDWM
- Provides complete data warehouse database structure for banks
- Enables banks to address the infrastructure and storage issues for multiple requirements from a single blueprint
- Promotes the standardization of data across the enterprise
- Delivers competitive advantage by providing consolidated data for MIS, Risk and Financial Reporting
- Flexible enough to address future report requirements across all areas (risk, profitability, CRM, etc.)
- Enables business users to more effectively control the definition and scoping of the data warehouse solution

The Business Solution Templates

The Business Solution templates (BSTs) comprise a set of over 80 templates that allow business managers to quickly and easily define the reporting structures needed to access key information. These BSTs include key performance indicators grouped by functional reporting and provide the basis for rapid customization and prototyping of reporting requirements into a range of reporting environments.

The BSTs cover five major areas of banking information:
- Asset & Liability Management
- Profitability

- Regulatory Compliance
- Relationship Marketing
- Risk

Asset & Liability Management

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

Profitability

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

Regulatory Compliance

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

Relationship Marketing

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

Wallet Share Analysis	

Risk

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

How the BSTs are used

Data mart and Data Warehouse Scoping and Design

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

Benefits of the BSTs

- Business users can more rapidly and effectively control the definition and scoping of a data mart solution
- Provides a consistent structure and consistent reporting for data marts generated from scoped portions of the BSTs.
- Enables accurate scoping of the warehousing solution addressing the immediate needs of the bank
- Provides the ability to generate star schema and OLAP structures for the rapid prototyping if business reports

The Application Solution Templates

The Application Solution Templates (ASTs) allow business managers to quickly and easily identify the non-reporting data requirements required to be supported by a BDW implementation, for example, data mining, credit risk calculators, credit scoring, and balanced scorecard.

As with the BSTs, the purpose of the ASTs is to capture requirements in a particular domain of interest, and then relate those to the entities, relationships and attributes of the BDWM. To this end, the ASTs are constructed in the language of the users of the given application, but are mapped to the relevant items (entities and attributes) of the BDWM that provide the data requirements of the particular AST item. As with usage of the BSTs, the user scopes out their requirements using the ASTs, which automatically selects the most appropriate data warehouse structures using mappings to the BDWM. There are over 10 ASTs including:

Basel II

Credit Risk - Internal Ratings Based
Credit Risk - Standardized
Securitization Framework
Operational Risk

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

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.

International Financial Reporting Standards (IFRS) International Accounting Standard (IAS)

IAS Hedge Measurement - An Application Solution Template containing the data items required for the calculation of Hedge Measurement according to the requirements of the International Financial Reporting Standards (IFRS) International Accounting Standard (IAS) 39.

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.

Benefits of the ASTs

- Enables banks to quickly determine the required coverage in the BDW to address specific applications that calculate derived data
- Can be customized and extended to address other applications such as behavioral scoring or segmentation

The BDW Project Views

Project Views are the method by which a business issue is captured during a BDW development. A Project View defines the business issue in terms of a set of items (possibly from several different constituent models) within a BDW instance. For issues related to data warehousing using BDW, the involved set of models is most likely to include any or all of the FSDM, BSTs, ASTs and BDWM.

The Project Views are a predefined statement of scope across all the models to solve a specific problem . They provide a development accelerator by selecting only the required items from the BDW models that need to be implemented for a specific problem The Project Views can be customized and expanded to address other areas. For example, several Project

Views could be created in the course of a project, each one capturing data items added in a particular phase of the project. Project Views can also be used to capture the required content of a report, or the total coverage of a source system model as mapped into the central warehouse model.

The delivered BDW suite of models comes accompanied with certain pre-defined Project Views, which capture significant issues likely to be of concern to developers of data warehouses. The aim of these views, defined over various models, is to aid in the scoping of exactly which BDWM entities and attributes are relevant to the issue in point. There are over 90 pre-defined views delivered with the BDW including:

Basel II Project Views

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

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

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

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

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

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

Scope of the Application	Capital Structure
Capital Adequacy	Allowance for Credit Losses
By Sector or Counterparty Type	Credit Risk Exposure Detail
Geographic Breakdown	Impaired Loan and Allowance
Maturity Breakdown	Credit Risk Portfolio IRB
Credit Risk Portfolio STD	Counterparty Credit Risk

Credit Risk IRB	Credit Risk IRB Equity
Credit Risk IRB Retail	Credit Risk Losses IRB
Credit Risk Losses IRB Advanced	Credit Risk Mitigation
Securitizatoin Disclosure	Securitization Early Amortization
Capital Adequacy Disclosure STD	Capital Adequacy Disclosure IMA
Operational Risk Basic	Operational Risk Standardized
Equity Disclosure Banking Book	Interest Rate Risk Banking Book

Anti-Money Laundering Views

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

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

IFRS / IAS Views

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

IAS 1	IAS 2
IAS 7	IAS 16
IAS 12	IAS 19
IAS 18	IAS 21
IAS 20	IAS 27
IAS 23	IAS 30
IAS 28	IAS 32
IAS 31	IAS 37
IAS 33	IAS 39
IAS 38	IAS IFRS-SC
IAS 40	IAS IFRIC
IAS ED 7	IFRS 3/5/7
IAS IFRS-CP	

Sarbanes Oxley Views

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

Key Performance Indicators

Executive Dashboard
Risk Manager Dashboard
Operations Management Dashboard

Sales Manager Dashboard

Customer Centricity

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

Other

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

Benefits of the BDW Project Views

- The pre-defined Basel II project views enable banks to quickly see the scope of a particular Basel II requirement across reporting requirements and supporting data structures. Project Views in the area of anti-money laundering (AML) – enable banks to identify the scope to address specific AML reporting requirements.
- Project views for International Accounting Standards show the coverage in the BDW for the key IAS standards (e.g. IAS 39, ED 7, IFRIC)
- Project views for customer insight show coverage for cross sell, customer lifetime value and campaign analysis

The IFW Process Models

In any organization of significant size many business processes that have essentially the same purpose (and therefore should be essentially the same process) are carried out in very different ways in various organization units of the enterprise. The different process flows come about through a number of circumstances such as:

- Mergers and acquisitions
- Varying levels of automation across the enterprise
- Varying organizational structures and responsibilities across the enterprise
- New products or channels

This results in significant cost to the bank, including:

- Inconsistent customer experience across channels
- Errors in serving the customer base (e.g. differing process for different products)
- Increased information technology costs in supporting the disparate processes
- Increased management costs due to increased complexity in audit and regulatory governance
- Increased staff training costs and reduced staffing flexibility
- Difficulty in introducing best practice in an enterprise-wide fashion
- Inability to guarantee compliance with policies and regulations

Banks have found that by streamlining processes across organizational units, products, customers and even geographies, they have achieved very real savings and improved their cost to income ratio measurably.

The IFW Process Models have been developed to address this, as well as to create logical models that capture business requirements for development initiatives and help manage change. They have been created to serve as a business process architecture, which is a vital tool for:

- Enabling cross enterprise business process simplification and rationalization
- Providing a fast-path to an enterprise-wide business process architecture
- Documenting complete business requirements
- Managing process change

Business process architectures provide the enterprise with a clear understanding of its business in the context of its many processes. Clear, well-structured business process architectures have always been vital for ensuring efficiency and effectiveness of business operations. The introduction of new technologies such as business process automation (workflow management tools), centralized rules engines and active data warehouses has made business process architectures even more important than in the past. Initiatives such as straight through processing, achieving a zero latency enterprise, and business activity monitoring, are severely hampered without the use of effective enterprise-wide business process architectures.

The IFW Process Models play a critical role in the definition of a services based architecture. It is only through analysis of the processes that support the operations of a financial institution that the service candidates that will best support those processes can be identified. Process analysis also provides essential information about the context of those services, capturing requirements governing the applications that call services within the architecture, and the human roles within the organization that interact with those applications.

The Financial Services Workflow Model

The purpose of the Financial Services Workflow Model (FSWM) is to provide a consistent, enterprise-wide lexicon for identifying and naming activities and triggers in a manner that is, as much as possible, independent of product, channel, organization structure or technology.

When stripped down to its simplest form, a business process or workflow comprises a series or network of activities, each of which are activated as a result of one or more events or triggers occurring within its environment. Each activity within the workflow can, itself, be the source of events or triggers.

When developing process architectures, the temptation is to immediately start defining the structure of key workflows, that is, defining the interdependencies and sequences of flow within the workflow. However, it is extremely useful to have a set of predefined building blocks that identify the elements necessary to construct workflows. The FSWM is concerned with identifying the elements of workflows rather than defining their structure. It adds value in managing the basic workflow elements in a standard way to identify reusability.

The FSWM defines the terms that can be used in a consistent, enterprise-wide manner to identify activities and triggers that form the basis of processes of interest to the bank.

FSWM Verbs

In order to ensure that activities are identified and named in a consistent manner across the enterprise, it is necessary to have an agreed vocabulary. Naming an activity involves a verb and a noun. An activity does something to something, e.g., "Accept Customer". The rich set of FSDM nouns requires a set of standardized verbs for use in the modeling process. The FSWM provides this verb set, classified by ten key, generic verbs. These are then expanded into over 100 specialized verbs. The generic verbs are:
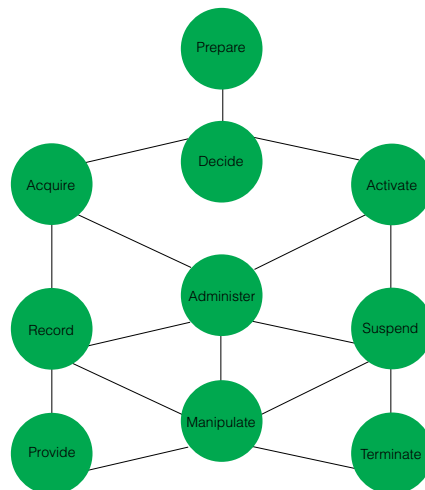
FSWM Triggers

When the wide range of business triggers (also understood as stimuli or events) of interest to a bank are carefully analyzed, it is apparent that they each fall under one of six major classifications:

- Communication driven triggers - relating to communications received or sent by the enterprise
- Condition driven triggers - relating to changes in conditions or parameters
- Decision driven triggers - relating to decisions made by the enterprise
- Incident driven triggers - relating to expected or unexpected incidents noted by the enterprise
- Opportunity driven triggers - relating to business opportunities arising
- Time related triggers - relating to time passing or instants in time

These trigger classifications are expanded into many hundred sub-classifications of trigger types

FSWM Activities

The combination of the FSDM nouns and preferred verbs provides a comprehensive lexicon for naming activities in a consistent manner. Experience with this lexicon suggested that a 'starter set' of frequently occurring activities, with their definitions, is of significant value. Thus, IBM in conjunction with a number of major banks set about developing such a generic activity set. While doing so, it was noted that certain types of activity appeared many times, associated with different business concepts (nouns). For instance, activities associated with 'details', 'quantities' or 'authorizations'. Rather than repeating these activities for each concept, they were grouped under an overall heading of 'Expandable Object Activities'. Thus, the Activity Set comprises two headings, 'Generic Object Activities' and 'Expandable Object Activities'.

The Generic Activities are extended into a set of over 700 activity names and definitions while the Expandable Activities are extended to over 150 Generic Activities. When the Expandable Activities are fully expanded within the Generic Activities, then the FSWM identifies over 3000 standard Activities.

How the FSWM is used

Developing an Enterprise Process Model
Together, the FSWM and BPM (see next page) comprise the major components of a banks enterprise-wide process definitions. While they are constructed to reflect the most important processes that are required by all banks, the models are designed to be rapidly customized to the precise requirements of a particular bank. They assist a bank aiming to develop an enterprise process model in a fraction of the time that would be required if it were to be built from scratch.

Agreeing on a common lexicon
Having a predefined set of activity and trigger names and definitions means that business analysts on different projects can use the same standard wording in modeling workflows and benefit from recognizing and reusing work from similar projects, thus speeding up the development process.

Generating Specific Process Activities within an enterprise-wide context
The activities and triggers within the FSWM are designed to be independent of product, channel. When the bank is designing a process for a specific product, channel, organizational structure etc., appropriate FSWM activities and triggers are copied to the new process design then modified to reflect the specific requirements (specific product, channel etc.) of the process at hand. A mapping is then maintained between the FSWM roots and the activities and triggers in the new processes.

Managing Enterprise-wide Processes
Mappings from the FSWM to specific activities within the bank's processes provide a consistent, enterprise-wide index to processes. This reveals where similar processes are found in different parts of the enterprise. This then encourages re-use, avoids redundancy and promotes business agility.

Benefits of the FSWM

- Fast path to an enterprise process model, often required by regulators
- Consistent identification and naming of activities across the enterprise
- Minimized redundancy of analysis and implementation
- Greater consistency in process design
- Business requirements identified more accurately and faster., and for lower cost

The Business Process Model

The Business Process Model (BPMs) is a set of logical models of the structure of the most important banking processes, where the processes are defined, as much as possible, to be independent of product, channel, organization structure or technology. By maintaining this independence, the BPM displays the fundamental "core" of business activities that are essential for the continued success of the bank. The BPM is represented by flow diagrams of activity networks that graphically describe what is required to be achieved by each process. The BPM comprises a hierarchy of process flows.

- Processes are comprised of Workflows
- Workflows are comprised of activities and activity strings linked by input and output triggers, all of which are derived from the FSWM. All activities and triggers within the BPM have a "parent" in the FSWM. Mappings are maintained between the FSWM and the BPMs, so that like elements can be copied and reused to achieve efficient, standardized logical modeling.

No part of the BPM would be implemented exactly as described within the model. The BPM is designed to reflect the generic, re-usable elements of a business process. To be implemented, the requirements of the specific product, channel, organization structure and technology at hand need to be introduced into the model through customization.

In business process engineering projects, defining a specific workflow would involve:
- Defining the scope of the project by selecting workflows) within the BPM and making a working copy of the workflows in scope.
- Customizing the model copy by firstly applying any re-engineering optimizations (incorporating best practice ideas, increasing parallel activities, removing unnecessary activities, etc.)
- Further customizing the models by making product and channel specific activity names explicit
- Adding organizational responsibilities by introducing "swim lanes" into the workflow
- Adding technology support and constraints by introducing data flows and system interactions

In this way, a generic process flow is made specific to a particular business situation. By starting with the same generic process flow specification wherever a specific process definition for that workflow is required, standardization and re-usability are maximized.

For process simplification projects (achieving common processes across products and/or channels, harmonization of processes from merged organizations) the steps outlined above would be preceded by identifying strategies whereby the differing process flows are selected according to how well they can be brought, as much as possible, into synchronization. Understanding the strategies to be achieved by an initiative is essential as a pre-requisite to scoping workflows and prioritizing workflow customization.

How the BPM is used

Agreeing on the scope of an initiative or application
Having a comprehensive set of business processes to select from enables the scoping of a new initiative to be carried out rapidly and comprehensively. Mapping between the BPM and application specific process models previously created from the BPM enables the potential impact of the new project to be readily and accurately analyzed. Sizing the effort of a project can be made more accurate by knowing how many workflows are involved, allocating time appropriately to each workflow and prioritizing the order of workflow customization in order to do the most important work first.

Optimizing and re-engineering processes
The BPM provides a generic core of "best practice" banking process definitions and diagrams. Thus they provide a fast start for process re-engineering projects by providing an existing structure upon which to map the "as-is" environment, and create the "to-be" solution. The BPM eliminates the need to start with a blank sheet of paper. As they are customer focused, they

are particularly useful when used in Customer Relationship Management initiatives.

Rationalizing and simplifying product (and other) processes
Because the BPM is designed to be independent of product, channel, organization structure, etc. they are an ideal "target architecture" for process simplification and rationalization projects.

Analyzing Application Impacts and Gaps
Being generic, the BPM is easily mapped to the functionality of application packages. It is a straightforward exercise to compare the functionality of the package to the banks existing or future process requirements documented by the customized BPM, (in order to identify how well an application supports those requirements). It is also possible to compare the functionality of one application system to another to identify reusable solution alternatives for those process requirements.

Supporting a Services Oriented Architecture
It is only through analysis of the processes that support the operations of a bank that the service candidates that will best support those processes can be identified. Process analysis also provides essential information about the context of those services, capturing requirements governing the applications that call services within the architecture, and the human roles within the organization that interact with those applications.

BPM Process Catalog

Sales & Relationship Management
Know Your Customer / Account Opening
Lending
Card Products Administration
Commercial / Syndicated Lending
Mortgages / MISMO
Savings, Investments & Deposits
Transfer Services
Payments / Direct Debits
Wealth Management
Product & Marketing Management
Regulatory Compliance
Best Execution / MiFID
Trade Processing
Corporate Actions
Asset & Liability Management
Human Resource Administration

Benefits of the BPM
- Brings competitive advantage by being able to process transaction more quickly and at less cost than its competitors
- Reduces time to market for new product introduction
- Assists in the improvement of customer service, encouraging retention and relationship development
- Provide a ready made set of business process definitions with a customer focus
- Include extensive re-use of activities and workflows which reduce system support and staff training requirements
- Promotes a common process language and understanding across disparate lines of business and organization units
- Eliminate redundancy in process variations
- Accelerate solution development, therefore reducing development cost
- Provide a framework into which new products and processes can be easily added

The IFW Service Models

Integration issues are a major concern for banks. Existing infrastructure must be retained, yet in order to meet the demands of today's business issues, a consistent architecture is required that maximizes reuse and supports the development of new initiatives.

Services oriented architectures (SOA), as a basis for integration and as a means of structuring large-scale software architectures, are rapidly becoming the backbone of the modern bank. An SOA can increase the speed of business changes, improve business efficiency and performance, and protect the privacy and security of critical information assets. It enables IT to align more tightly with business strategies in a cost effective manner and in a secure and managed integration environment.

A key factor underpinning successful SOA is a common enterprise-wide description of the business concepts and processes that are of interest to a bank. Without this common language any attempt to support a consistent and flexible architecture will more than likely fail.

The IFW Service Models provide this common language. The models support a complete and unambiguous description of the business services required to support the bank. The IFW Service Models enable the efficient and accurate gathering of requirement and guarantees the consistency of definitions with a single integration effort or across multiple projects.

The IFW Service Models are tightly coupled with the IFW Process Models, describing the underlying services that support theses processes at runtime. Using the IFW Service Models, business concepts can be traced from analysis level through design level refinements to actual component and message definitions that provide a quick start for the specification of a common services bus within the organization.

The Financial Services Business Object Model

The Financial Services Business Object Model (FS-BOM) provides business content and guidance for analysts and designers working in the context of creating a services oriented architecture and is used to clearly capture business requirements at a sufficiently detailed level. The FS-BOM is also designed so that these requirements are expressed in a manner that is valuable for systems development.

The analysis of the reusable elements that appear within business processes defined by the IFW Process Models will allow the identification of candidate business services that support those processes. For example, the business process for Account Opening will require the retrieval of "customer details". Other business processes, elsewhere in the bank, will have the same requirement. It is possible to identify a single solution that satisfies both these requirements and can be re-used across the bank. This solution is a business service.

The FS-BOM allows reusable elements within business processes to be explored further with the aim of identify actual business services. The FS-BOM is structured as:
- A set of use cases, which describe service candidates
- A model of business concepts, which are used by these use cases
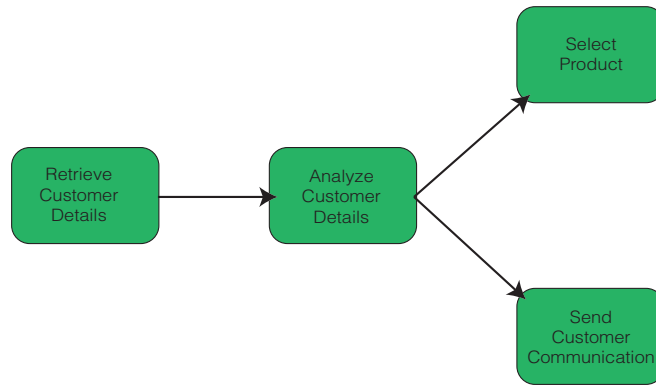
An example business process

Use Cases

Reusable elements within business processes are analyzed further within the FS-BOM as use cases, which will aid the completion of requirements definition. These use cases are presented in two distinct ways:

- A high level representation of the use case and the inputs and outputs of that use case as a whole.
- A decomposition of these high-level use cases into sequences of business activities, the interactions between these activities and key business concepts within the model.
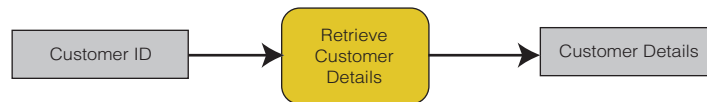
An example use case

The IFW Process Models provide the context in which a requirement occurs while the use cases in FS-BOM describe the actual requirements.

Business Concepts

Part of describing a requirement in a use case is describing the business concepts, or classes, involved in that requirement. For example in the case of retrieving "customer details" it is important to be able to describe the customer details themselves and how they relate to other concepts in the model. The FS-BOM contains detailed UML models describing these classes.
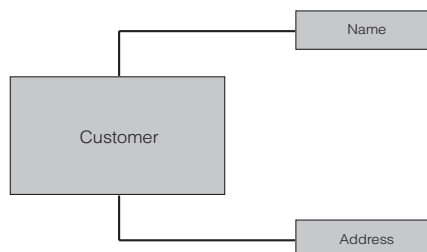
An example class

For example, the class "Customer" defines the characteristics, responsibilities, and constraints that apply to every customer. Each class is composed of:

- **Attributes:** which describe a piece of information about the class. For example, the attribute dateOfBirth defined as part of Customer provides details on the customer date of birth. Using attributes, the business modeler can capture specific characteristics of any business concept.
- **Operations:** which describe an action that can be performed on a class. For example, the operation getName, defined as part of Customer, will retrieve the name of that customer, or perhaps a specific type of name depending on the requirements.
- **Associations:** which describe a relationship between two classes. For example, a Customer having an Address. Often these associations will support the operations of the model e.g. getCustomerAddress.

These classes modeled within the FS-BOM are grouped into packages, which represent specific business areas, supporting a wide scope of over 360 business level use cases. Packages allow:
- Clear separation of business concepts/classes
- Enhanced model readability
- Easier manipulation of the model, as each package can be controlled independently

The use cases and business concept (class) definitions work together to fully describe the business requirements and rules of a bank with the aim of providing the information necessary to modelers designing a services oriented architecture.

Uses of the FS-BOM

- Capture more detailed requirements of particular business activities
- Enforce consistency in captured requirements
- Identify where there are candidate services for a services oriented architecture
- Provide a point at which all business requirements should be definitively captured

Benefits of the FS-BOM

- Express requirements in a very structured way.
- Designed to be understood by both business an IT and acts as a communication bridge between the communities.
- Provides an environment in which reuse possibilities can be identified and verified
- Provides a firm basis on which integration or services oriented architecture solutions can be built
- Enables consistency of definitions
- Provides a ready built model so you can focus on business issues rather than building a model from scratch

The Financial Services Interface Design Model

The Financial Services Interface Design Model (FS-IDM) takes the analysis level use cases and concepts identified within FS-BOM, and allows the bank to specify a services oriented architecture that meets these requirements. This task is normally performed by a technical team within the bank who make design level decisions based on concerns such as the technology environment. This team is working from a stable model of business requirements (FS-BOM) which eliminates the need for repeated specification of requirements. This greatly increases the applicability of technical solutions and reduces the time taken to specify them. The FS-IDM was developed to:
- Assist modelers in designing reusable services that meet the banks stated requirements,
- Define business components that support these services
- Define standard interface definitions that describe the communication between software systems in the bank

Business Service Groupings

The FS-IDM is structured as a component model, describing units of software which satisfy specific business requirements. The actual requirements which are supported by a component are described as interfaces, which group related services. The internals of a component within FS-IDM are derived from the class models of the FS-BOM, providing the detailed class definitions and relationships which describes how the component operates.The interfaces of these components are derived from the use cases of the FS-BOM, describing the capabilities of these components and how they interact.

The components of the FS-IDM are designed to meet specific business needs, for example:

Arrangement Account Administration	Liability Management
Arrangement Management	Liquidity Management
Asset Management	Market Management
Capital Management	Product Development
Channel Management	Product Distribution
Collateral Management	Profit and Loss Management
Communication Management	Relationship Monitoring
Financial Market Offering Management	Risk Management
Financial Transaction Card Access	Special Customer Assistance
Financial Transaction Processing	Human Resource Management
Infrastructure Management	Arrangement Negotiation
Involved Party Evaluation	Arrangement Reporting
Involved Party Management	
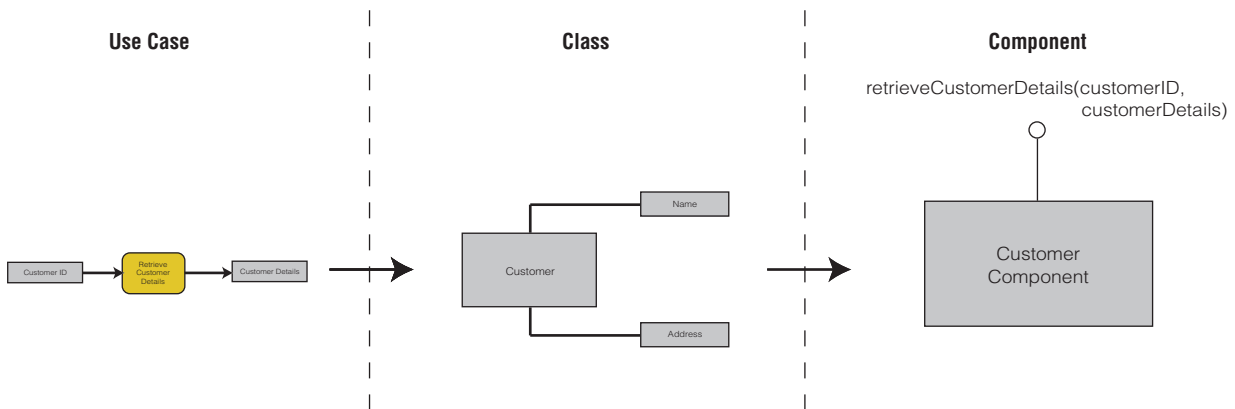
Defining FS-IDM services based on FS-BOM use cases

Business Service Interactions

In a similar way that the FS-BOM describes the sequence of business activities within a use case, the FS-IDM describes the collaboration between services to meet a business goal. For example the retrieveCustomerDetails service may call other finer-grained services to perform the required task. e.g. getCustomerName and getCustomerAddress.

Collaborations between services are essential to a successful SOA as they prevent the definition of monolithic services that would be less reusable across multiple projects.

Uses of the FS-IDM

- Assists in the design for a services oriented architecture
- Provides component definitions for software development
- Provides messages definitions for integration development

Benefits of the FS-IDM

- Allows you to construct services within a formalized model
- Provides traceability back to business requirements
- Structured to maximize reuse of business services
- Enables consistency of definitions
- Provides a ready built model so you can focus on business issues rather than building a model from scratch

Deploying the IFW Service Models

The FS-IDM remains a technology independent view of an SOA and requires transformation into the specifics of a given technology, for example Web Services or XML messaging. However, some of this translation can be done automatically through the use of the IFW Service Model Generators, producing stubs and templates for use in an implementation environment.

The Business Issue – Piloting a new Product

As an example, consider the situation where a bank wishes to "pilot" a new type of product or financial offering. To do this, it will need to, among many things:

- Define the new product in terms of its behavior as a financial service
- Identify any organizational restructuring that may be required in order to effectively support the product
- Identify how existing processes may support the new product, and define new processes or modifications that may be needed
- Define reporting requirements in order to track the success of the product
- Ensure that, where possible, functionality available from existing product systems is used to support the product, rather than "re-inventing the wheel"
- Implement the necessary workflow, reporting and transactional support systems

Below, we will refer to the business issue as the "NEW PRODUCT PILOT".

In general, any business issue will require a number of aspects to be defined and resolved. In particular:

- What new transaction support functionality will be required?
- What new business workflows will be required?
- What new reports and other business information will be required to be produced?
- What is the impact on existing product support systems, organizational responsibilities and structures?

While we have defined a particular business issue for use in the following discussion, the approach described below applies to all issues and initiatives taken by the bank. The difference is purely a matter of emphasis. In some cases, for example, the workflow redesign aspects will be the main focus of attention, while in other cases, the business intelligence aspects, or organizational redesign, etc., may come to the fore.

The Target Environment

Introducing a new product or financial offering will require adjustments and extensions to the existing application architecture (and possibly organization structure). One of the major uses of the IFW industry models is to define the scope and nature of such adjustments. Details of application architecture will vary with each bank. A typical modern architecture is shown below.
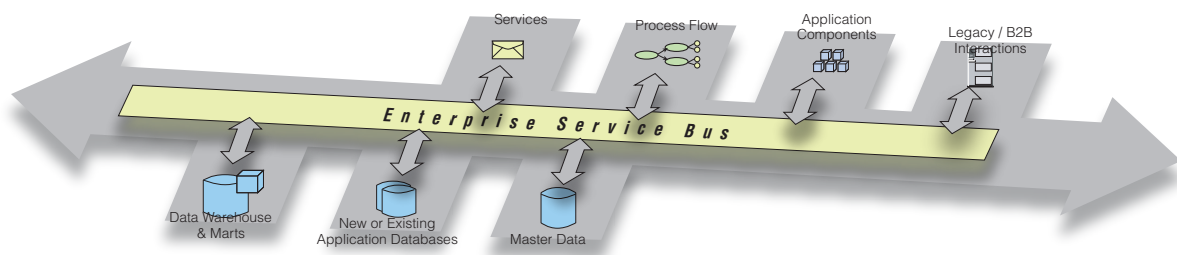
The following paragraphs will outline how the IFW industry models assist in the progression from a loosely defined business issue to specific modifications and enhancements to the application architecture. Note that the discussion below is a high-level description and additional, detailed tasks would be carried out in an actual project.

Initial Scoping and Impact Analysis
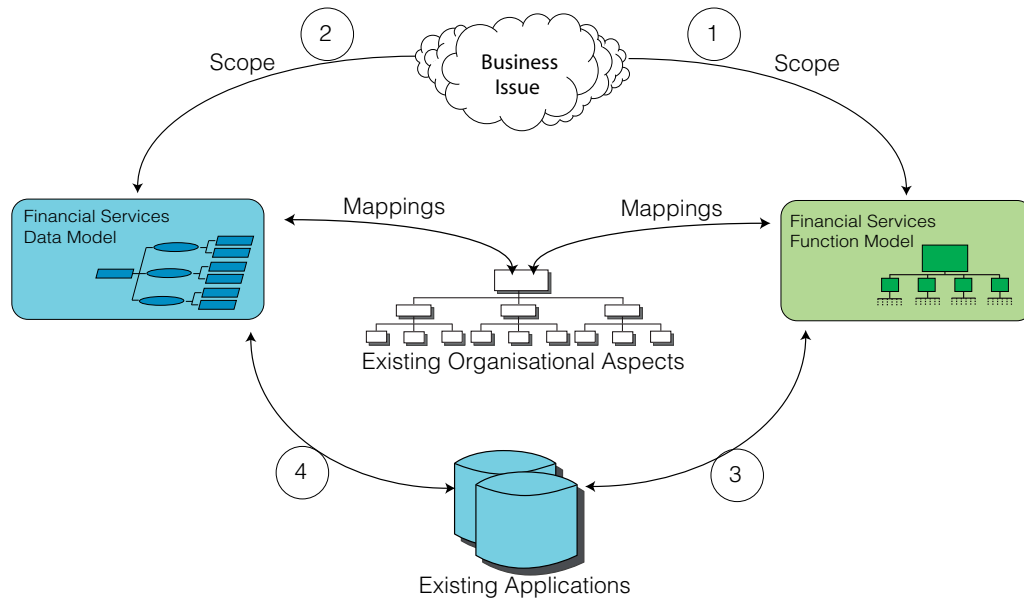
Scoping

The business issue NEW PRODUCT PILOT, is scoped within the FSDM and FSFM.

(1) The FSDM scoping is aimed at identifying the data types that will be required for the new product pilot.

(2) Meanwhile, the FSFM scoping identifies the areas of responsibility of the new initiative.

Impact Analysis

(3) The scope of other related initiatives (perhaps previous product pilots) is compared with the new initiative to identify any problems or opportunities, overlaps or gaps. The organizational structure of the bank is mapped to the FSFM, so areas of organizational impact can be immediately identified.

(4) The NEW PRODUCT PILOT scope within the IFW is compared. Mappings between the FSDM and existing databases enable problems and opportunities associated with making use of existing databases to be quickly highlighted.

As a result of the impact analysis, the project scope may be adjusted.

The Business and Process Redesign Aspects

Scope Refinement

Having tightened up the business scope using the
FSDM and FSFM it is possible now to refine the
scope further by scoping the business issue with
the FSWM and the BPM. This is done intuitively
by selecting which processes support the scoped
functions (5) and which workflows are to be
prioritized and included in the project (6).

Impact Analysis

The FSWM, in its role as part of the enterprise
architecture, is mapped to existing workflows. Thus
a detailed analysis as to the impact on the existing
workflow environment can be readily executed (7).
The scope of
the business issue will be adjusted as
a result of this work.
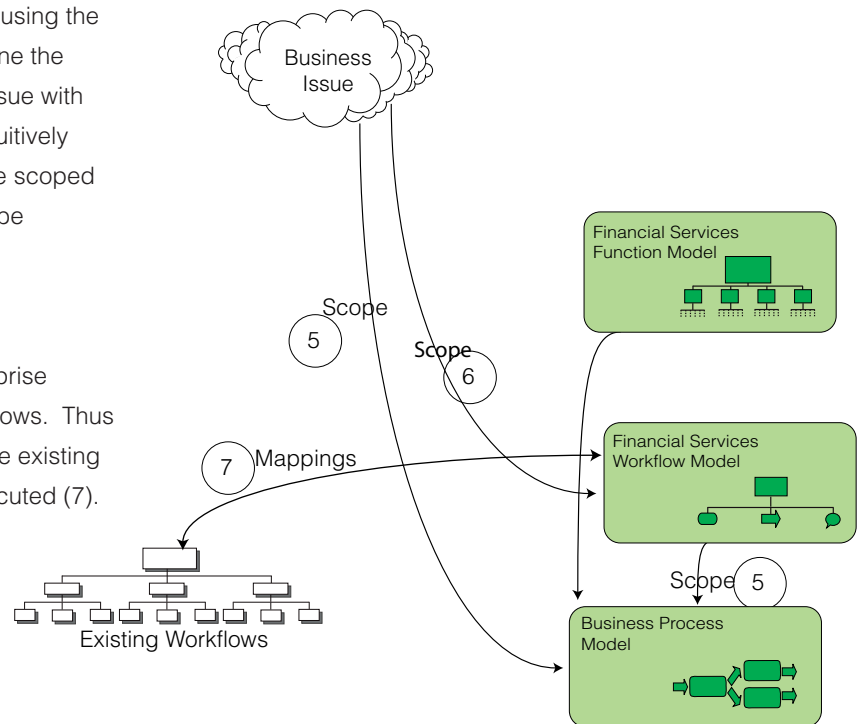
Process Design

If the impact analysis step did not identify existing
workflows that could implement the NEW PRODUCT
PILOT, new workflows are required. The scoped
BPM are used as a basis for the design of these
workflows. The BPM is enhanced to include the
new product requirements, organizational roles and
responsibilities and information technology support
(9). At the same time, any necessary organizational
redesign is made using the scoped FSFM and BPM
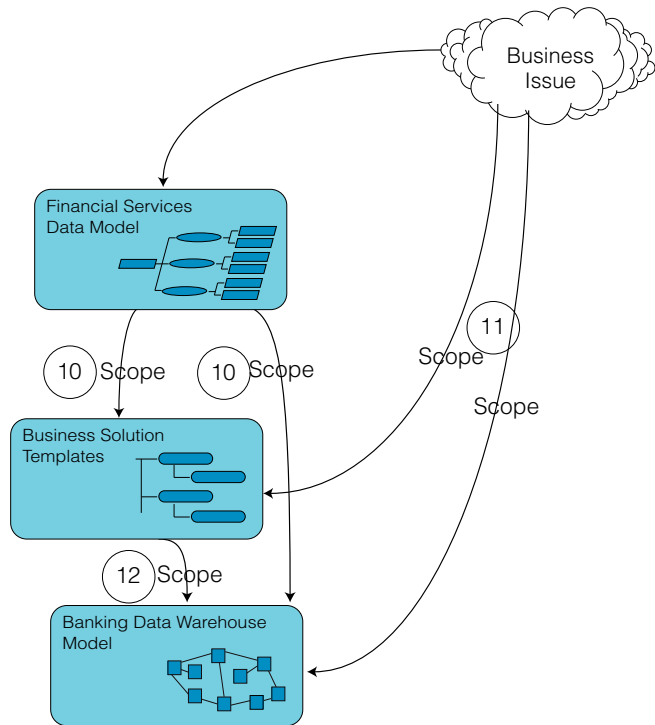(8). The logical workflows are then implemented in a
physical environment.
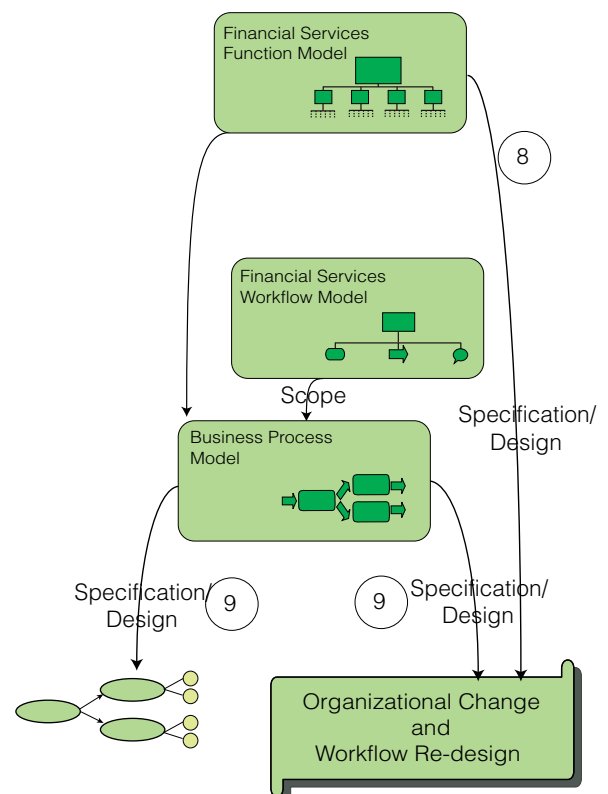
The Business Intelligence Aspects

Most business issues arising within a bank will require some adjustments and enhancements to the institutions management reporting and business intelligence systems. In a modern bank, these systems comprise the enterprise data warehouse and its associated data marts.
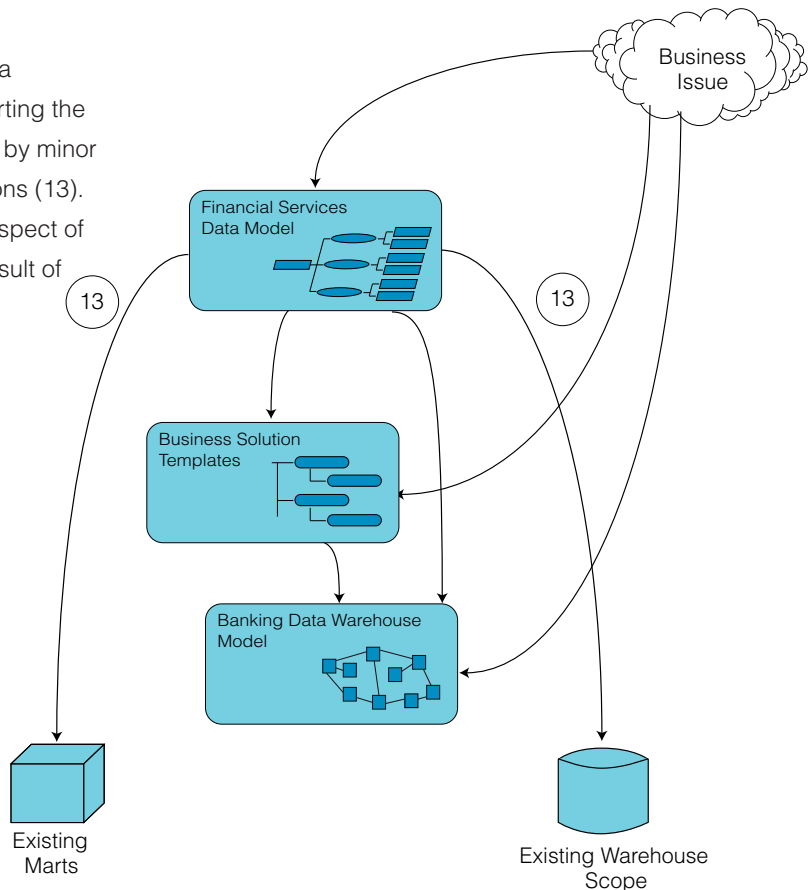
Scope

The FSDM has already been scoped. Mappings exist between the FSDM and BDWM and BST. Thus, the FSDM scope can immediately be projected onto the BDWM and BST (10) Also, the BST defines detailed reporting requirements, so mapping the business issue to the BST will very useful (11). The BST to BDWM mappings show what portions of the BDWM are required to provide relevant information to that element of the BST. Thus, projecting the BST scope onto the BDWM further refines the scope of the BDWM (12).

Business Issue

Financial Services Data Model

10 Scope   10 Scope   Scope   11

Scope

Business Solution Templates

12 Scope
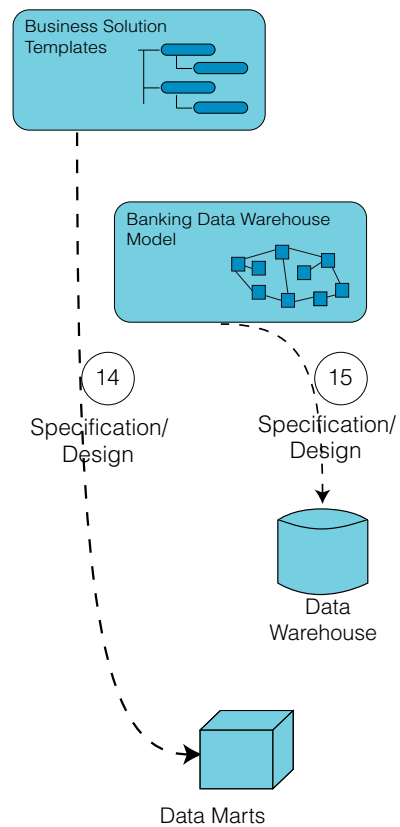
Banking Data Warehouse Model

Impact Analysis

Project views showing the scope of currently implemented data marts and portions of the data warehouse will highlight the possibility of supporting the New Product Pilot using existing applications or by minor expansion of the capability of existing applications (13). The scope, or implementation strategy for this aspect of the New Product Pilot could be adjusted as a result of this analysis.

Business Issue

Financial Services Data Model

13   13

Business Solution Templates

Banking Data Warehouse Model

Existing Marts

Existing Warehouse Scope

Design

Once the scope of the New Product Pilot within the BST and BDWM is clarified, selected elements of these two models are used as a basis for database design. (14) (15)

Business Solution Templates

Banking Data Warehouse Model

(14) Specification/ Design

(15) Specification/ Design

Data Warehouse

Data Marts

The Application Component Aspects

Scoping

The FS-BOM is scoped initially by mapping the scope already agreed within the FSDM, BDWM and the BPM (16). This scope is refined by mapping the business issue directly to the FS-BOM.
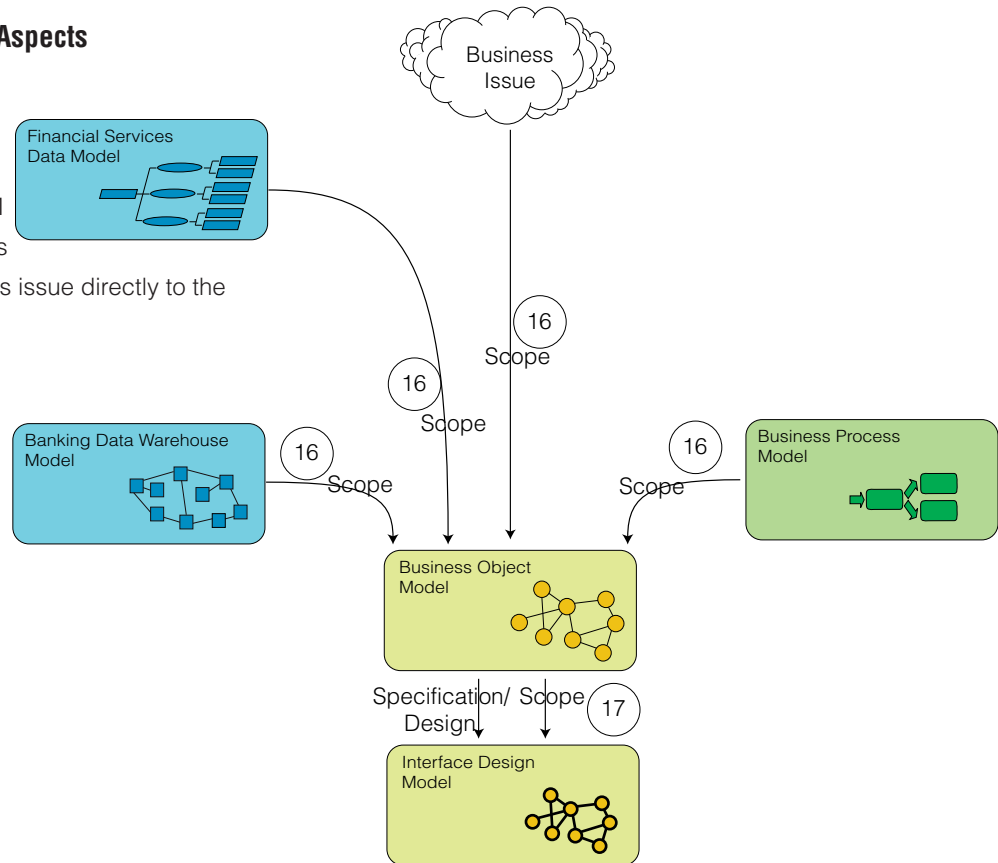
Component Design & Construction

Scoped areas within the FS-BOM are mapped to relevant portions of the FS-IDM (17). The scoped FS-IDM is modified with any additional NEW PRODUCT PILOT requirements, prior to message and code elements being generated directly from the model (18).
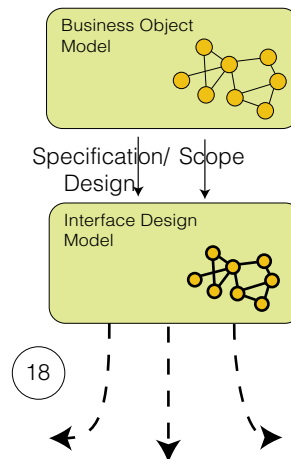
Overall Benefits

From the above discussion, it can be seen that the following benefits arise from the use of the IFW industry models:

- Rapid clarification and scoping of the business issue
- All scoping, requirements and design decisions are carried out within an enterprise-wide context
- Straightforward impact analysis (both technological and organizational)
- Significant re-use of specification and design elements
- Commonality and standardization of data, process and component structures

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