

IBM Analytics

IBM Insurance Process and Service Models

General Information Manual



Executive Summary

As the insurance industry continues to deal with a fast pace of change, insurers 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 insurers are beginning to adapt to continuous, unpredictable and accelerating change. Many insurers 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 has exacerbated the problem, saddling organizations with overlapping – and often unproven – technologies. For many insurers, the results are all too familiar: disjointed operations, redundant capabilities, inefficient cost structures and duplication of work across product, geography and business lines.

Most insurers still operate largely within a vertical business structure, whereby distribution occurs mainly by product silo and operations are biased toward internally manufactured or developed products. Achieving material cost reductions in this structure is difficult, and consumers generally see very little or no differentiation among insurers. Given their financial challenges, insurers can no longer afford to have capabilities duplicated across product silos, with each product operating its own processes, systems and specific channels. This duplication causes significantly greater complexity in insurance operations, impacts costs and speed to market, and often increases operational risk.

In large enterprises, initiatives that attempt to optimize these processes in isolation, without first merging them, fail to fully address their complexity and overlapping functions. Process optimization generally focuses on vertical integration and often within single products or business units. To achieve a step change in performance, today's highly complex insurance operating models must be simplified. Moving from process transformation to enterprise transformation is the key that will unlock significant benefits for insurers.

Technology is a fundamental change enabler, but IT decisions need to remain firmly rooted in the business needs of the organization. To operate in a more agile manner, organizations will need to transform the way they operate by re-evaluating their business processes as well as their technology infrastructure.

The secret to success is the adoption of a top-down strategic approach to the transformation of the business not constrained by specific technology, particular products or channels or organizational structure. Such a transformation would be a daunting task if undertaken against a blank canvas, and in reality would probably not succeed by virtue of the management input needed and the overall elapsed time to achieve results.

IBM® Insurance Process and Service Models (IPS) are a content-rich set of models designed specifically for insurance organizations. Enhanced and extended to align with the requirements for risk and compliance and optimally allow for the development of more efficient straight through processing solutions.

By using the models, the approach to transformation could be shortened, with consequent savings in time and money for the organization. The models represent leading practice and have been validated through use with many of the world's leading insurance organizations over several years.

By adopting IPS you could:

- Increase customer satisfaction, grow the customer base and reduce the cost of selling and servicing customers
- Identify opportunities to streamline processes, making service delivery cheaper and quicker
- Identify processes that essentially do the same thing and therefore should be amenable to rationalization. This reduces training and maintenance overheads, improves your cost-income ratio and provides better and less costly service to your customers
- Be better able to ensure completeness in terms of regulatory compliance and risk management, potentially releasing capital to provide additional lending and investment capacity
- Reduce time to market for new products and services by exploiting existing processes and avoiding process redundancy
- Align your business process management efforts to strategic objectives to ensure that you are doing the right things for the right reasons
- Specify requirements clearly to technologists so that high-quality solutions can be developed

How IPS can help

Communication and Standardization

Building systems for the insurance industry requires a wide range of skills: from understanding the fundamentals of the business, to the fine-tuning of databases and component designs, many different people have to be involved. An important success factor is good communication among these different types of resources.

Getting agreement on a common reference is a challenging goal. The IPS approach to this problem is to define models at different levels, some of them purely business-oriented and some of them very technical from an IT point of view, but all enforcing a semantic consistency and traceability between them.

IPS provides you with the tools to 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 to focus on describing the true and full scope of the business issue being discussed. Providing a language that is common to all stakeholders and that describes key aspects of the issue, enables fast and complete scoping of a business issue.

They provide extensible structures and rich business content for all stages of systems development or integration projects. They can be easily customized to cover every single insurer's needs while the pre-defined content provides an important accelerating factor.

They provide a strong base for defining corporate data and development standards. Its use enforces consistency in data or services across projects and lines of business. They also facilitate the understanding between business and IT by transforming the business content into IT artifacts while maintaining traceability of business requirements to IT systems.

There has also been a history of close development cooperation between IBM and ACORD standards which ensures traceability between IPS and ACORD assets. IPS includes a set of features designed to accelerate application development and integration that goes beyond the ACORD Framework.

Business Process Analysis

IPS defines best practice business processes for the insurance industry based on a large pool of requirements collected and validated over many projects. The processes link to other business constructs, in particular to the business component services that describe how IT can support the requirements expressed in those processes. With IPS an insurer can compare its own business processes to best practice business processes, and can understand how to better support them from an IT perspective.

Application Rationalization & Services Oriented

Architectures

It is common for an insurer to have a good deal of duplication in services (functionality) across different IT applications. The negative impact on maintenance and extensibility is very clear. When business functionality needs to evolve, multiple systems will be impacted, which results in significant duplication of effort. The ideal situation is to have a componentized solution where all functionality is clearly identified and allocated to only one, component.

To evolve from a situation with hundreds of applications that are duplicating functionality to a component-based solution is by no means easy and requires a well structured series of steps. IPS addresses this issue at the diagnostic and design levels. This supports the primary business driver for component-based development which is to increase the flexibility of the systems and to decrease the disparity between the required business functionality and what the existing systems provide.

The goal of integration is to make communication possible between systems that have not been designed to communicate. SOA is a technology that can help in integration. SOA as a basis for integration and as a means of structuring large-scale software architectures is rapidly becoming the backbone of the modern insurer. A key factor underpinning a successful SOA is a common enterprise-wide description of the business concepts and processes. Models are required to provide the specification for the structure and content of the services needed for integration. SOA without business content is just an empty shell. IPS provides this business structure.

Product Flexibility

Survival in a highly competitive environment can be achieved through price competition (cost control) or by company differentiation. Customer service supported by a customer-centric view is one differentiating factor; a second factor is product differentiation. To keep pace with the competition, it is essential to innovate and to develop and release new products quickly. IPS offers a set of specialized analysis techniques dedicated to the structuring of insurance products that enable a more rapid release of products to the market. IPS contains a representative set of insurance products structured in accordance with these analysis techniques. These product definitions can be used as templates to accelerate the modeling of insurance products. They also include a design framework for building flexible product engines and administration systems to support both new and existing products.

Business Transformation

Insurance organizations need to re-engineer existing business processes on a continuing basis to meet objectives such as:

- Streamlining and standardizing processes following merger or acquisition
- Improving customer service for competitive advantage
- Reducing operational costs
- Meeting the requirements of regulators
- Adapting to new trends in the market
- Exploiting new products, channels and technology that become available

Re-engineering processes and services can be particularly challenging when undertaken in the absence of a reference model. Without a model as reference, much time is often spent on capturing the “as is” position, and it is often difficult to get agreement on ordinary processes and definitions. These issues become exacerbated when the re-engineering effort is spread over different geographies.

IPS facilitates process re-engineering by:

- Providing tried and tested standard definitions that are easily understood by business people and IT personnel
- Allowing the initiative to focus on the “to be” processes, saving time and effort
- Ensuring coverage based on years of accumulated in-depth knowledge of how best-in-class insurance organizations operate

Mergers & Acquisitions

The competitive pressures that continue to fuel mergers designed to achieve cost reduction through economies of scale result in financial services groups that are larger and more dis-integrated than ever before. The technical consequence is the need to integrate systems that are invariably built on different platforms in different locations and to provide a single internet image to consumers. IPS, particularly through its XML messages, is a perfect fit to provide one single, common, and integrated corporate reference point for those businesses, irrespective of current size and growth strategies.

Risk & Reporting

IPS provides processes and services for the enterprise risk management including the analysis of possible loss to the insurance company, which allows a more prospective view of an insurer’s risk profile and capital needs. This is with highly tailored analytic processes that recognizes each insurer’s unique structure, and with processes that recognizes the benefits and risks of a diversified base of products, investments and geographic spread of business. It also covers the regulatory financial reporting requirements for assets, liabilities, actuarial valuation, Profit & Loss and Solvency, which allows the analysis of the insurance organizations arrangements and activities according to legal statutes, the directives of government and regulatory institutions.

Example: Core Insurance Administration Processing

Faced with increasingly demanding customers and regulatory pressures, insurers are urged to rethink their business strategy and operational plans towards core insurance administration processing. They are challenged to maintain profitability in the face of increased competition. The need to increase operational efficiency and cut costs has never been greater.

These challenges are focusing minds within insurers to achieve seamless, end-to-end, straight-through processing (STP), while simultaneously integrating value-added services.

Core insurance administration solution costs remain high due to the varied approach insurers take to receiving and processing requests and the level of manual interventions in end-to-end processing. If insurers were to achieve maximum cost effectiveness, process efficiency and facilitate an enterprise-wide risk management approach, it is critical that they move towards more homogeneous and standardized business modeling that enables the elimination of a product-silo-development approach and maximize reuse of processes across product lines. Insurers need to look at alternatives to processing core insurance administration in the traditional paper format and move towards implementing electronic STP solutions that result in cost reductions and can cater for higher volumes. An institution needs to take an integrated approach to core insurance administration to reduce cost and complexity. This is a further key to achieving competitive advantage.

In order to achieve the objective of increased automation, IPS helps identify the commonality of processing across the diverse core insurance administration systems, thereby understanding those common elements that can be re-engineered into non-interruptible and automated processes from request receipt all the way to completion and customer communications.

IPS forces insurers to rethink their strategic vision and define core insurance administration solutions not in the standard product silo manner, but to define the commonality across products and systems rather in a vertical/silo. By using IPS, insurers could benefit from a flexible core insurance administration framework that would allow them to respond rapidly to market shifts, customer demands and regulatory requirements.

IPS helps:

- Maximize the speed of core insurance administration
- Minimize operational costs by replacing paper-based manual processes with electronic forms that simplify data capture and eliminate keying errors
- Maximize responsiveness to customers and business productivity by leveraging a common content repository
- Manage risk and exposure to fraud by automating application processing
- Optimize costs and performance throughout deployment and ongoing operations by modeling and monitoring administration processes
- Deliver real business value with an integrated solution that transforms the core insurance administration process

Benefits of IPS

- Reduced development time
- Ready-made processes and services constructed with customer focus, without the need to reinvent the wheel
- Control flow logic pre-analyzed, saving a lot of time in BPR projects
- Consistent activity naming standards bring common understanding to business and technology people
- Parallel processing opportunities reduce processing times
- Triggers enable you to see what stimulus starts an activity or activity stream and what results are produced when an activity is completed
- Integration and consistency with other IBM models make your projects extensible
- Extensive reusability of activities and processes translate into less process maintenance and reduced training costs, while enabling flexibility in the workforce
- Customizable generic templates enable you to meet your organization's specific requirements
- Business requirements are defined in a cheaper, faster, easier and more complete manner
- Leading-practice content validated by world leading financial services organizations over many years
- Improved quality of developed components on any technology platform
- Flexible implementation of process with standards and variables applied to multiple implementation
- Package selection is improved to match your needs

Components

Vocabulary Models

- Business Terms
- Business Functions
- Scopes
- Supportive Content

Process Analysis & Design Models

- Value Chains
- Analysis Process Model
- Orchestration Process Model

Service Analysis & Design Models

- Business Model
- Interface Design Model
- Transfer Object Model
- Web Service Design Model
- Message Service Design Model
- Java Service Design Model
- RESTful API Design Model

Product Models

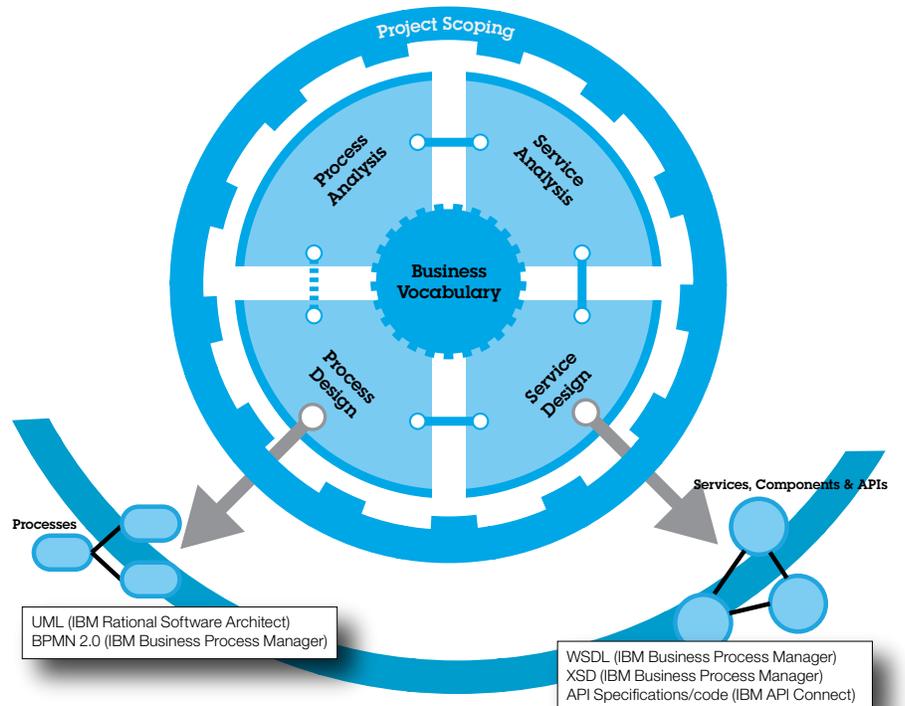


Figure 1. IBM Insurance Process and Service Model components

Vocabulary

Business Terms

Business terms define industry concepts in plain business language, with no modeling or abstraction involved. Business terms have a set of properties and are organized by business category. Clearly defined business terms help standardization and communication within an organization. Mappings to the data models make it possible to create a common, enterprise-wide picture of the data requirements and to transform these requirements into IT data structures.

Business terms define key business information used for business operations and analysis, enabling users to understand information used by IT assets by allowing traceability between business terms and IT assets. As a consequence, developed IT solutions are driven by business requirements.

Business terms should exclude terms that are not meaningful to a business user, such as terms that are too abstract. Business terms do not model data requirements, but capture the data requirements in a simple and flat structure. The modeling activity happens in the subsequent use of the data models, when the business terms are modeled using modeling artifacts such as entities, relationships and attributes.

Business terms are defined by properties that describe in business language, the meaning of the business term and its status, organized by business category within a structured hierarchy.

Business Functions

The functional requirements of an insurance company are expressed as business activities: elementary units of work that are performed as part of the business operations. The IPS business activities are organized into business activity categories, according to a functional view. It is possible to organize the activities differently, e.g., based on the line of business, or according to organizational principles such as in the IBM Component Business Modeling approach.

The Business Functions allow rapid and complete scoping and comparison of the functional aspects of business issues and should be used at the start of any project. By identifying which activities are involved in a particular topic or project, you can quickly create a complete list of the business areas to be considered. If other related topics or projects are scoped in the same way, they can be compared and contrasted using a common language to avoid duplication of effort in overlapping initiatives.

Business Functions also play a role in application portfolio assessment, which consists of describing existing applications across the whole enterprise according to a framework of services. Only by going through such an engagement can you effectively assess the amount of duplication of functionality across several legacy systems. Examples of common duplication are: management of customer-related information, execution of business rules, handling of funds, rating, policy management across lines of business, and so on.

To be able to perform such an assessment, you need an enterprise-wide list of function definitions. This is typically quite difficult to create on your own but you can use an existing industry reference instead of having to create this yourself. IPS Business Functions are such an industry reference, as they define a normalized set of business functions to support the insurance business.

The Business Functions contains over 250 unique function definitions, such as Request risk assessment. In practice, each functionality will be implemented in multiple legacy systems, often in conflicting ways. This is a strong inhibitor to business agility as evolving this capability means that you need to update several systems, which creates additional work and increases the risk of errors and inconsistencies.

Performing such a portfolio assessment is the only way to really understand how to reconcile the business and I.T. priorities. The result is a duplication map that describes all the functional overlaps between the existing legacy applications. The Business Functions give a business view of how the insurance business could be supported by a fully componentized software solution.

It leads solution with a set of business components and defines them by the services they provide.

Specific uses include:

- Understanding the responsibilities of business units and the dependencies among them
- Integrating similar functions across business areas, supporting re-usability 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
- Performing application portfolio assessment to effectively assess the amount of duplication of functionality across several legacy systems.

Benefits:

- Provides enterprise-wide definitions of business function, independent of organizational 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 insurance functions
- Provides an effective framework for performing application portfolio assessment to understand how to reconcile the business and I.T. priorities.

Scopes

Scoping 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 benefit from the component. Scoping is a valuable business and IT planning tool and should be used at the commencement of any new initiative.

Scope business issues: Allows rapid and complete scoping and comparison of the functional aspects of business issues and initiatives. By identifying functions involved in a particular issue, it is possible to quickly create a complete list of the business areas of responsibility to be considered in the initiative. If functions are similarly scoped for another issue, it is possible to compare and contrast the two issues using a common language and avoid duplication of effort in overlapping initiatives.

Determine information systems suitability: For example, an issue may be a proposed application system. Mapping the new system against the function model helps to 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), it is possible to compare the new application scope with the organization unit scope, giving a clear picture of the impact of the new application on the various organization units.

Identify gaps: Similarly, if existing applications are mapped against the function model, the functional overlap between these applications and the proposed application can be readily displayed and evaluated to avoid duplication in application development and facilitate reusable solutions.

Supportive Content

Supportive Content provides a method of mapping both external and internal terms from business standards and other requirements to the Business Terms. This helps business users understand how such business terms are represented in the models, using the naming and definitions of the source. The benefit of such a hierarchy is in logically organizing the data requirements into cohesive groupings, and in translating requirement data needs into their support in the Vocabulary.

For example, requirements such as FATCA and Catastrophe model open standard specification can be represented by structured groupings of data elements. The benefit of such a hierarchy is in logically organizing the data requirements into cohesive groupings, and in translating requirement data needs are supported in both the Vocabulary and the process and service models

Process Analysis & Design

Insurance organizations tend to manage the same functions and execute the same processes in a number of slightly different ways. Insurance organizations that employ pre-analyzed, well-engineered process templates can redeploy some of their analysis effort into customizing their processes with reusable building blocks to create substantial competitive advantage. People and groups who benefit from using process models are those involved in:

Process Definition - Process Models can support analysis of the current “as is” and future “to be” processes by defining the logical activities, triggers and dependencies that comprise processes and by specifying the business rules required to perform each activity. This information ensures an understanding of the complete business context (what, when, why and by whom) in which work is performed.

Information Technology - Process Models can support the definition and analysis of information requirements for systems development. This information is essential to ensuring that systems are aligned with business needs and that the necessary systems support and infrastructure are in place to enable the business to use applications effectively.

Change Management - Process Models can support the analysis and definition of roles, skills and training required to implement new processes. This information enables the assessment of current processes, design of future processes and construction of a plan to transform that future vision into reality. The logical design of processes in the graphical form of process diagrams aids the presentation, discussion and agreement of ideas for change among business users, consultants, analysts, system designers and managers.

IPS process model material is derived from many sources such as:

- IBM consultants who stay in close touch with the insurance services industry, its organizations and associations
- IBM industry specific consultancy practices
- Dedicated IBM Industry Models Lab
- Working with international insurance organizations worldwide
- Alignment with the most current regulatory directives

IPS process model material is under constant review, regularly tested and validated during client assignments. Enhancements and additions are made continually, released via standard software release procedures to those clients with maintenance arrangements in place.

Business Scope of IBM Insurance Process Models

Business processes are closely aligned with the Scoping component and grouped loosely into the following high-level classifications, as well as Line Of Business (LOB) views, such as life, Property and casualty, Group, Health and Reinsurance:

Policy Administration: Policy Administration Business Processes directly affect the provision of services to customers. Insurance organizations need to negotiate policies with specific identified customers, provide policy administration services once the policy has been formulated and established as well as answer queries of all types in a standard way and provide channel servicing for product and service delivery.

Claims Administration: Claims Administration Business

Processes provide benefit to the claimant under the terms of the insurance agreement. The life-cycle of a claim ranges from the recognition of something that may result in a claim (an incident for pre-authorization or a requested service) to the final settlement with the client and, where applicable, the recovery of money from re-insurers or third parties.

Underwriting Management: Underwriting Management

Business Processes provide the activities necessary to support the appraisal of a risk on policies (both new and in force) to determine acceptance, alteration or rejection of the proposed risk. It also provides risk portfolio assessment processes including classification of exposures types and portfolio rating.

Product and Market Management: Product and Market

Management business processes show that insurance organizations are operating in a highly competitive global market place. In order to develop market offerings, such as including products, channels and market segments, that will give competitive advantage and bring those offerings to the market quickly, insurance organizations need to identify gaps in the marketplace for which to analyze market opportunities and direct market communications.

Relationship Management: Relationship Management business

processes directly affect customers of insurance organizations. The organization needs to manage customer relationships to find customers to whom products should be sold. This includes customer evaluation, query handling, personal selling and special customer handling.

Channel Management: Channel Management Business

Processes show the establishment of a sales and service organization, including the definition of intermediary agreement specifications as well as the method for identifying and recruiting intermediaries, changing the role of current intermediaries and managing the relationship the financial services company has with an intermediary.

Provider Management: Provider Management Business

Processes show the management of provision of goods, services, or information by a provider. Insurance organizations may use a provider to obtain or dispose of goods and to gain access to services, information and insurance and reinsurance coverage to meet its own requirements. Insurance organizations may also be involved with providers in paying for and organizing the provision of goods and services as granted benefits for an insurance claim to its clients..

Risk and Compliance Management: Risk and Compliance

Management business processes show insurance organizations where to rethink their business strategies and operational plans in the face of increasingly prescriptive risk and compliance regulatory requirements. The primary motivation for the multitude of risk and compliance initiatives is to enhance investor confidence and provide financial and ethical protection to the industry as a whole. IPS advocates an approach whereby senior managers understand, leverage and optimize the synergies across the various regulatory requirements.

Industry Models can support insurance organizations developing an integrated, strategic, enterprise-wide approach that results in increased internal controls and corporate governance, enhanced relationships with customers, improved decision making, at lower costs. Risk and compliance management is now a key business driver that traverses many regulatory issues and bodies such as Solvency II, IFRS, SOX and FATCA..

Uses of the process analysis and design models

Optimizing processes: Provides a generic core of best practice insurance process definitions and diagrams. Thus it offers 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 analysis process model eliminates the need to start with a blank sheet of paper.

Rationalizing and simplifying product (and other)

processes: Because the analysis process model is designed to be independent of product, channel, organization structure, etc., it is an ideal “target architecture” for process simplification and rationalization projects. It helps integrating similar functions across business areas, supporting reusability of solutions.

Analyzing application impacts and gaps: Being generic, the analysis process model is easily mapped to the functionality of applications. It is a straightforward exercise to compare the functionality of the applications to the insurers existing or future process requirements documented by the customized process model, (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.

Business transformation, re-engineering: Business transformation and business process re-engineering involves the selection, analysis, design and implementation of business solutions, addressing change requirements across dimensions such as strategy, structure, skills, data, function, process, solution, application, network and system. Effective business engineering uses processes as the basis for design with reference to the other dimensions. It provides the basic process logic from which to design more effectively and quickly any future processes and identify specific change requirements.

Continuous improvement: Provides the basis for establishing performance measurement and enhancement initiatives. They can be used to develop a specific model against which process effectiveness (fitness for purpose), service level (responsiveness and service quality) and efficiency (input/output ratio) can be measured for process performance improvement.

Application development and integration/SOA: As a result of using the model for business requirements specification, application developers can analyze, design, code, test and implement applications to improve business performance. Also useful in identifying shared information flows between applications when integration is required.

Specify business requirements to technologists: Use as the basis of business process requirements gathering and analysis means that clear, well-defined, technology-functional requirements can be defined to meet business needs more completely and accurately.

Benchmark and managing best practice: Can provide a common activity model with measures against which an organization can benchmark performance within insurance organizations and with other companies to maintain best-practice information. BPM can be used to compare and improve similar processes across organization units, geographies and lines of business.

Strategic planning: Provides an accessible model of successful insurance management processes, operations and their interrelationships. Provides a framework for strategic planners to understand insurance organizations and the impacts of strategies in one area on another, to ensure that complete, consistent and integrated strategies are defined, and initiatives to implement them are effective.

Acquisitions and mergers: Provides a benchmark against which organizations can be compared. Once process similarities, differences and gaps are identified, the desired “to be” state and merged organizations can be effectively planned and implemented.

Organization structuring: With its focus on flows and interrelationships, provides a strong framework for understanding work content and interdepartmental dependencies. BPM becomes a powerful analytical approach for structuring organizations to best enable process execution and delivery of required outcomes.

Competencies and skills identification: Provides a sound framework against which to identify and define required enterprise competencies as well as specific skills for human resources of insurance organizations. Once specific structures have been defined, activities can be allocated to organization units, and role-skill requirements can be defined to execute those processes. Recruitment, selection, training and development needs can be more effectively identified in the process context.

Outsource the business: Most traditional, integrated insurance organizations view their organizations as centrally consolidated businesses. Together with analysis of the business environment, competition and market presence (current and future). Can identify process components that can be separated from the total insurance value chain to form viable economic businesses, and find unprofitable businesses that can be outsourced or eliminated.

Package evaluation: Enhanced definition of business requirements enables application software selection decisions to be made with greater clarity and confidence. The features and constraints of off-the-shelf package solutions, associated communication and hardware are more readily identified if the full current and future business requirements are clearly defined.

Risk management: Risk Management processes enable the identification of processes where risk may arise in the business and activities to manage the risk, including internal and external reporting where required. Broad coverage of Credit Risk, Operational Risk and Capital Adequacy, including issues such as potential employee fraud, liquidity risk due to changes in market take-up or economic conditions, changes in counter-party risk and the establishment of risk policy are all included.

Benefits of the process analysis & design models

- Brings competitive advantage to insurance organizations by helping to processing transactions more quickly and at less cost
- Helps reduces time to market for new product introduction
- Assists in the improvement of customer service, encouraging retention and relationship development
- Provides ready-made business process definitions with customer focus
- Includes extensive reuse of activities and processes that reduce system support and staff training requirements
- Encourages and promotes a common process language and understanding across disparate lines of business and organization units
- Eliminates redundancy in process variations
- Helps to accelerate solution development, reducing development cost
- Provides a framework to which new products and processes can be easily added
- Provide coverage for adopting certain insurance industry standards

Value Chains

The Value Chains are a representation of a line of business functions that are supported by a set of long running business processes.

Each value chain comprises a linked sequence of phases (chevrons) in the lifecycle of a particular area of business interest, and each chevron is associated with a list of Analysis Process Model (APM) processes that are associated with that phase of the lifecycle. For example, the key functional areas covered by the value chains are:

- Life insurance
- Property and casualty insurance
- Group Insurance
- Health insurance
- Reinsurance

Understanding the strategies to be achieved by an initiative is a prerequisite to scoping processes and prioritizing process customization with the following broader benefits:

- Assists in the improvement of customer service, encouraging retention and relationship development
- Reduces time-to-market for new product introduction
- Provides ready-made business process definitions with a customer focus
- Includes extensive reuse of activities and processes that reduce system support and staff training requirements
- Encourages and promotes a common process language and understanding across disparate lines of business and organization units

- Eliminates redundancy in process variations
- Accelerates solution development to reduce development cost
- Provides a framework to which new products and processes can be easily added

Value chain areas scoped as core to the project, processes and activities within the models can support that area. Process scoping involves testing the relevance of each process through consideration of the:

- Organization unit performing the work
- Present methods of the process versus the prospective state
- Roles involved in process execution
- Product types supported by processes
- Customer segment served by the processes

This scoped list is a useful completeness test. Processes can also be prioritized for the project according to those that support functions most closely aligned with business strategy. Processes that support functions deemed to be peripheral to the project are only of relevance if this project acts as a requirement for the delivery of these peripheral functions.

Analysis Process Model

The Analysis Process Model (APM) contains as much as 80% of all processes undertaken by insurance organizations trading internationally. The business processes are broadly categorized into the following value chains, representing processes that span many business functions:

- Account Agreement Management
- Asset Management
- Billing And Collection Management
- Business Performance Monitoring And Reporting
- Campaign Management
- Channel Management
- Claim Management
- Claim Recovery Management
- Communication Management
- Customer Relationship Management
- Enterprise Resource Management
- Enterprise Risk Management
- Human Resources Management
- Intermediary Agreement Design
- Intermediary Compensation
- Marketing and Promotion Management
- Payment Management
- Policy Acquisition
- Policy Management
- Product Development Management
- Provider Management
- Reinsurance Management
- Security Processing
- Underwriting Management

This categorization is compatible with Business Model, providing consistency that can be propagated throughout the entire model set of the Industry Models. Each individual process represents a strand of work insurance organizations must perform to be successful. The process content represents leading practice that has been validated by insurance organizations across the world over several years. The categories outlined above are the highest level of abstraction and can be decomposed into processes, sub-processes, activities and triggers.

The process analysis & design models contain a large number of enterprise-wide, generic processes and sub-processes made up of thousands of activities and triggers.

Business process engineering projects involve:

- Defining the scope of the project by selecting business processes and making a working copy of the processes in scope
- Customizing the model copy by firstly applying any reengineering optimizations, incorporating best-practice ideas, increasing parallel activities and removing unnecessary activities
- Further customizing the models by making explicit any product and channel-specific activity names
- Adding organizational roles and responsibilities by introducing so-called swim lanes into the process
- 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 process is required, standardization and reusability are maximized.

For projects involved in process simplification, achieving common processes across products and channels, harmonization of processes from merged organizations, and so on, the steps outlined above are preceded by identifying strategies whereby the differing process flows are selected according to how well they can be brought into synchronization. Understanding the strategies to be achieved by a given initiative is a prerequisite for scoping processes and prioritizing process customization.

Orchestration Process Model

The Orchestration Process Model (OPM) provides technical specifications of the processes that form the basis for downstream implementation of executable processes. The process design phase of a project involves the design of executable processes based on the given business requirements and the analysis level processes in the APM.

The OPM is a derived model, created from the Analysis Process Model (APM) and the Service Models: Business Model, Interface Design Model (IDM), Web Service Design Model (WSDM).

Whereas the APM is an analysis-level model, the OPM is closer to execution level, but is not itself an executable model.

Service Analysis & Design

Integration issues are a major concern for insurance organizations. The existing infrastructure must be retained, yet, in order to meet the demands of today's business issues, a consistent architecture is required to maximize reuse and to support the development of new initiatives. Services-oriented architecture (SOA), as a basis for integration and as a means of structuring large-scale software architectures, are rapidly becoming the backbone of the modern insurance organizations. SOA can increase the speed of business changes, improve business efficiency and performance, as well as protect the privacy and security of critical information assets. SOA 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 business concepts and processes of interest to an insurance organization. Without this common language any attempt to support a consistent and flexible architecture will more than likely fail. IPS provides this common language. The models support a complete and unambiguous description of the business services required to support the organization. IPS enables the efficient and accurate gathering of requirements, and guarantees the consistency of definitions with a single integration effort or across multiple projects.

IPS Process Models are tightly coupled with IPS Service Models, describing the underlying services that support these processes at runtime. Using the IPS 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 common services within the organization.

Component based approach

Monolithic applications or package solutions deliver in general a set of functions to meet a particular purpose that is based on a generic set of requirements. During the implementation of these packaged solutions, companies tailor the functionality by adding extra functions as required and by deleting or modifying functions that do not match the business requirements. Inherent to this approach is the fact that most packages usually set rigid limits on the scope of additions and modifications.

A component-based approach does not generally provide a ready-to-use set of business functions that packages do. Instead, it provides major functional components from which a fully customized solution can be built or with which packaged solutions can be evaluated for fit within an organizations' system architecture. With a consistent set of inter-operable components, it is possible to provide a solution that is better tailored to the needs of the business without having to build from scratch.

Recently developed packaged applications define more and more their interfaces in a component style, which makes them much more suited to component-based and service-based architectures.

There are two implementation strategies for the SOA enterprise wide services: Integration (to the legacy systems or package solutions) or components. In almost every case, the solution is a mixture of both approaches.

When opting for implementing components to support the implementation of services, you need to define an enterprise component architecture: how do the components relate to each other, are there dependencies, how do they collaborate, can they be deployed independently?

IPS Service Models proposes an enterprise-wide set of components for the insurance business, such as:

- Account And Fund
- Activity
- Actuarial Statistics And Index
- Assessment Result And Risk
- Business Model Object
- Category
- Claim
- Common
- Contact Point And Preferences
- Event
- Financial Transaction
- Goal And Need
- Legal Action
- Money Provision
- Party
- Physical Object
- Place
- Registration
- Specification - Product And Agreement
- Standard Text And Communication

These components are defined to support an enterprise wide set of SOA services. These two layers are kept completely synchronized and traceability is enforced.

They are compatible with the IBM Insurance Information Warehouse, providing consistency that is propagated throughout the entire set of the Industry Models.

In Model-driven terms, the service design models are Platform-Independent Model (PIM). From this, it is possible to apply some automated transformations to make it target a specific technology.

Business Model

The Business Model provides this conceptual view of the enterprise data. Through its evolution since the early 1990's, the Business Model has been the model of choice in a large number of development projects and has been put to the test and enriched by many insurance companies worldwide. The strength of the Business Model lies in its generic design structures that guarantee its applicability in diverse situations.

The purpose of the Business Model is the clear understanding and communication of business concepts as a means to accelerate project scoping.

For example: what could be meant by "Customer" in a particular business context?"Customer" concepts could include:

- Identifying a specific person or organization
- Knowing all customer addresses
- Knowing all products the customer has bought
- Knowing which market segments the customer belongs to
- Knowing about the customers recent transaction history
- Knowing about the customers complaint history

The meaning of “Customer” can imply some or all of these concepts depending on the business context. For example, in a customer relationship management initiative “Customer” may be quite different to what “Customer” is to current call center operations. The Business Model can be used to define precisely what “Customer” means in either situation and to clarify and reconcile these perspectives.

The Business Model provides business content and guidance for SOA analysts, designers and systems developers. It is used to clearly capture any business requirements at a detailed level. Analysis of reusable elements within business processes defined by the IBM Insurance Process Models allow the identification of candidate business services that support these processes. For example, the business process for Policy Acquisition will require the retrieval of “customer details”. Other business processes, elsewhere in the organization, will have the same requirement. It is possible to identify a single solution that satisfies both these requirements and can be reused across the organization. This solution is a business service.

The service analysis model allows reusable elements within business processes to be explored further with the aim of identifying actual business services. It is structured as:

- An underlying candidate service for each automated activity within business process
- A set of use cases to describe candidate service

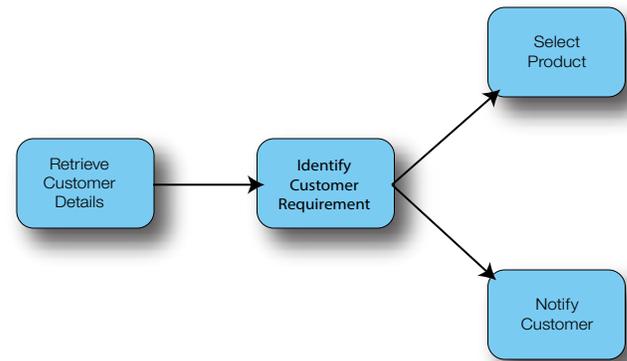


Figure 2. An example of a business process

Candidate Services

Reusable elements within business processes are analyzed further within the service analysis component as candidate services that aid requirements definition. These candidate services are presented as:

- High-level representations of the candidate services and the inputs and outputs of that candidate service as a whole
- Decompositions of these high-level candidate services into sequences of business activities, the interactions between these activities and key system concepts within the model

IBM Insurance Process Models provide the context in which a requirement occurs, while the candidate services in the service analysis model describe the actual requirements.



Figure 3. An example of candidate service

Business Concepts

Part of describing a requirement in a candidate service 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 and how they relate to other concepts in the model. The model contains detailed UML models describing these classes.

For example, the Customer class defines the characteristics, responsibilities and constraints that apply to every customer. The Customer class associates to Person class which defines generic personal information, such as gender, birth date etc.

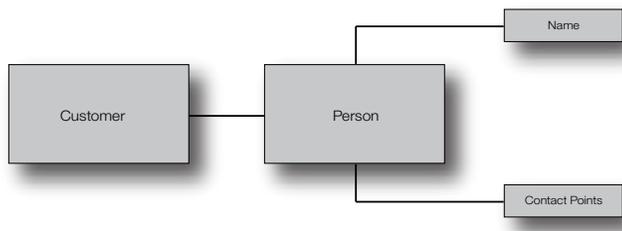


Figure 4. An example of a class

Each class comprises:

Attributes: Describe a piece of information about the class.

For example, the attribute birthDate defined as part of Person provides details on the customer date of birth. Using attributes, the business modeler can capture specific characteristics of any business concept.

Operations: Describe an action that can be performed on a class. For example, the operation getName, defined as part of Person, will retrieve the name of that customer or perhaps a specific type of name depending on the requirements.

Associations: Describe a relationship between two classes. For example, a Person having Contact Points. Often these associations will support the operations of the model, such as getContactPoint.

These classes modeled within the service analysis model are grouped into packages that represent specific business areas, supporting hundreds of business-level capability operations, such as:

- Clear separation of business concepts/classes
- Enhanced model readability
- Easier manipulation of the model as each package can be controlled independently

The candidate service and business concept (class) definitions work together to fully describe the business requirements and rules of an organization with the aim of providing the information necessary to modelers designing SOA.

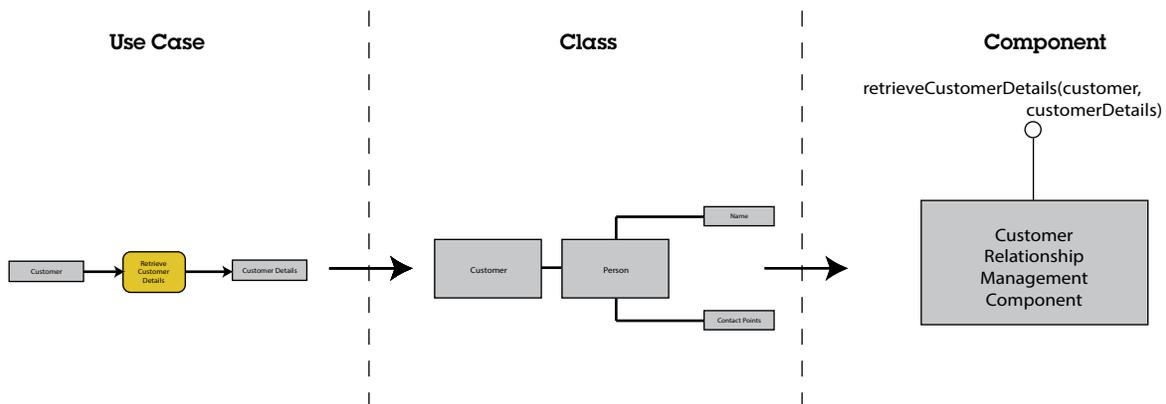


Figure 5. Defining services based on candidate services

Uses of the Business Model

- Capture more detailed requirements of particular business activities.
- Enforce consistency in captured requirements.
- Identify candidate services for SOA.
- Provide a point at which all business requirements can be definitively captured.

Benefits of the Business Model

- Express requirements in a structured way
- Designed to be understood by both business and IT, and acts as a communication bridge between communities
- Provides an environment in which reuse possibilities can be identified and verified
- Provides a firm basis on which integration or SOA 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

Interface Design Model

The Interface Design Model (IDM) takes the analysis-level candidate services and concepts identified within the service analysis model and allow the organization to specify an SOA that meets these requirements. This task is normally performed by a technical team within the organization, who make design-level decisions based on aspects such as the technology environment. This team works from a stable service analysis model that eliminates the need for repeated requirements specification. This greatly increases the applicability of technical solutions and reduces the time to specify them.

The service design models were developed to:

- Assist modelers in designing reusable services that meet the organization's stated requirements
- Define business components that support these services
- Define standard interface definitions that describe communications between software systems in the organization

Business Components

The service design model is structured as a componentized model, describing units of software that satisfy specific business requirements. The actual requirements supported by a component are described as interfaces with group-related services. The components of the service design model are derived from the class models of the service analysis model, such as the Business Model, providing the detailed class definitions and relationships that describe how the component operates. The interfaces of these components are derived from the capability operations of the service analysis model, describing the capabilities of these components and how they interact.

The service design model is designed to meet specific business needs, such as:

Account Agreement Management	Customer Relationship Management
Asset Management	Enterprise Risk Management
Billing and Collection Management	Human Resources Management
Business Process Monitoring and Reporting	Intermediary Agreement Design
Campaign Management	Intermediary Compensation
Channel Management	Marketing and Promotion Management
Claim Management	Payment Management
Claim Recovery Management	Policy Acquisition
Policy Management	Reinsurance Management
Product Development	Security Processing
Provider Management	Underwriting Management

Business Service Interactions

In a similar way that the service analysis model describes the sequence of tasks within a service candidate, the service design model describes the collaboration between services to meet a business goal. For example, the retrieveCustomerDetails service may call other, finer-grained services to perform required tasks, such as getName or getContactPoints. Collaborations between services are essential to a successful SOA as they prevent the definition of monolithic services that are less reusable across multiple projects.

Uses of the IDM

- Assists in SOA design.
- Provides component definitions for software development.
- Provides messages definitions for integration development.

Benefits of 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.

Transfer Object Model

Defines transfer objects, which are simple Unified Modeling Language (UML) data types derived from the IDM class model. Transfer objects are used to explicitly define, at modeling time, the structure of data that will be used in Deployed services and Data objects in executable process models.

This ability to explicitly define data structures at modeling time is a key feature of using transfer objects, rather than attempting to generate data structures directly from the IDM class model. Controlling the size and complexity of artifacts generated from a large and complex class model can be very difficult. Transfer objects can help to ensure the consistency and traceability of data structures deployed in production.

Service & API Design Models

Web Service Design Model

WSDM provides a design for an enterprise-wide and business-services-based architecture through the development of participants, service interfaces, and messages.

Message Service Design Model

Message Service Design Model (MSDM) is a platform-specific model that contains definitions to enable the generation of XSD messages and commands. Messages in MSDM are derived from capability operations in the Business Model. Message-based XSDs and command-based XSDs generated from the MSDM can be used in a messaging environment.

Request messages can be routed to a messaging engine, which can, in turn, invoke lower-level services created from BPS. When required, a response message can be routed back to the sender. Like the other platform-specific design models, messages in MSDM do not directly reference IDM classes or interfaces. XSDs are generated from MSDM using UML-to-XSD Transformation.

Java Service Design Model

JSDM is a platform-specific model that contains definitions to enable the generation of Java services. Service operations in JSDM are derived from capability operations in the Business Model. Like the other platform-specific design models, service operations in JSDM do not directly reference IDM classes or interfaces. Java is generated from JSDM using UML-to-Java Transformation in RSA.

RESTful API Design Model

The RESTful Application Design Model (RADM) is a UML Service model which contains definitions for REST (Representational State Transfer) Applications, REST Resources and associated REST Data Objects (JSON/XML structures). RADM elements are derived from and mapped to IDM Class model elements.

Product Modeling

Survival in a highly competitive environment can be achieved through price competition (cost control) or by company differentiation. Customer service supported by a customer-centric view is one differentiating factor; a second important factor is product differentiation. Therefore, to keep pace with the competition, it is essential to innovate and to develop and release new products quickly.

One of the strengths of IPS is the way it analyses products. The IPS Product Modeling Guide provides a set of techniques for analyzing and defining insurance products in a very structured way. It provides a graphical notation (Product Specification Diagrams) semantic as well as hints and tips for modeling insurance products based on accumulated project experience.

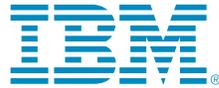
IPS Product Model

IPS Product Models contain a representative set of insurance products structured in accordance with these analysis techniques. These product definitions can be used as templates to accelerate the modeling of insurance products.

- For life insurance: annuities (immediate, deferred, single or joint life), term and whole life, unit linked, and all of their components (waiver of premium, accidental death, loans, etc.) as well as all of their life-cycle transactions (total and partial surrender, fund switch, premium holiday, ...)

- For property and casualty: auto (including liability, own car damage, break of glass, fire, theft, car replacement...), home (with a full set of options and coverages) and travel (with all the options) a fully fledged methodological example of how to customize the product templates.
 - For health insurance: family health indemnity plan with all its features and life-cycle events.
 - For commercial insurance: a construction pollution liability insurance product
 - For group insurance: a health product and a pensions product
 - For specifying intermediary agreements: an agent product
- The next figure shows a simplified example of a Product Specification Diagram for automobile insurance.

Product modeling can be done in a purely analytical way (to rationalize a product portfolio, for example) but it realizes its full potential when the analysis is coupled to the Specification Framework, which is the generic framework that supports the design and development of systems for product definition and agreement administration.



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